VOGTLE ELECTRIC GENERATING PLANT - UNIT 2

Inservice Testing Program

ISI-P-016

Revision 2 Summary of Changes

Pages 1-2, 1-3, Table 4-1	These changes are editorial, e.g., correction of typographical errors, and/or provides additional clarification to the text.
Page 3-4	It was originally intended to submit a relief request for VEGP-2 similar to PR-4 for VEGP-1 relative to vibration monitoring instrumentation. Subsequently, PR-4 was withdrawn for VEGP-1 since it was determined that relief was not required due to the use of portable vibration monitoring instrumentation. Similar reasons apply for not requiring relief for VEGP-2. Accordingly, Relief Request PR-4 for VEGP-2 is not required and the program page on which it was to have appeared has been intentionally left blank. For the sake of consistency, relief request content and numbering are similar for the inservice testing programs for VEGP-1 and 2.
Pages 1-3 and 3-5	Relief Request PR-5 proposes that a microprocessor controlled digital vibration monitor be used for pump testing. This monitor has a feature which autoranges therefore necessitating Code relief from IWP-4120 which limits instrument ranges. NRC Generic Letter 89-04 does not cover the technical areas addressed in this relief request.

Revision 2 Summary of Changes

Drawings ISI-D-268 and 269	Manual globe valves 006, 007, and 151 have been replaced. Valves 006, 007 have been replaced with gate valves while valve 151 has been replaced with a plug valve. The new valves are less restrictive to flow and allow the Containment Spray Pumps to be tested at higher flow rates, thus reducing the chances of pump damage. Accordingly, program changes have been made to reflect these design changes to the plant.
Tables 4-9, 4-10 Drawings ISI-D-256, 257 Tables 5-2 thru 5-7, 7-2 and 7-3 Drawings ISI-D-266, 267 Tables 9-2, 9-3 Drawings ISI-D-270, 271	New pressure gauges have been installed that fully comply with ASME Section XI. Temporary test gauges are no longer required for pump tests. Accordingly, program changes have been made to reflect these design changes to the plant. Deleted miniflow test circuit for RHR pump testing.
Drawings ISI-D-277 and 278	Drawings were modified to show the actual flow path for testing.
Tables 10-3, 10-4, 10-5, 11-2, and 11-3	The tables were modified to show actual instrumentation used for this testing.
Tables 4-1, 4-2, 5-1, 6-1, 7-1, 8-1, 9-1, 9-4, 10-1, 10-2, 11-1	Added test procedure numbers to tables.
Pages 12-43 and 14-34	These program changes will full-stroke exercise check valves 1208-U4-284 and 299. A flow indicator (FI-40001) has been added to the Boric Acid Transfer Pumps recirculation line which now allows quarterly verification of design flow during pump tests. Cold shutdown justification CS-34 is no longer required for those valves and is being withdrawn.

ISI-P-016

Revision 2 Summary of Changes

Pages 13-5, 13-6, and 14-7	Relief Requests RR-5 and RR-6 and Cold Shutdown Justification CS-7 were revised to comply with the full-stroke testing requirements for check valves as described in position 1 of Generic Letter 89-04.

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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 three general valve relief requests which have been written are RR-2, RR-3,and RR-27. 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-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.

RR-27 requests relief from IWV-3427(b) for all Category A and AC Containment Isolation Valves 6-inch nominal diameter and larger. Relief is requested from performing valve trending to determine seat degradation.

The one general pump relief request which has been written is PR-5. PR-5 requests relief from the instrument range requirements of IWP-4120 for vibration measuring instrumentation.

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.

RELIEF REQUEST

PR-4

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RELIEF REQUEST

PR-5

PUMPS:	All
CLASS:	2 and 3
TEST REQUIREMENT:	IWP-4120 requires that the full scale range of each instrument be no more than three times the reference value.
BASIS FOR RELIEF:	One of the instruments used to monitor pump vibration is a Computational Systems Incorporated CSI model 2110 portable vibration monitor. The CSI model 2110 is a microprocessor controlled digital vibration monitor. The instrument autoranges by scanning the input signal for each measurement and sets the input range to maximize the dynamic resolution. The accuracy of the instrument is $\pm$ 5% of the actual vibration amplitude displayed. This instrument provides significantly higher accuracy than an analog amplitude meter which is read visually and subject to human error and parallax.
ALTERNATE TESTING:	The autoscaling digital vibration monitor will be used for Code required pump vibration measurements.
GENERIC LETTER 89-04 REVIEW:	Generic Letter 89-04 does not cover the technical areas addressed in this relief request.

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 (gal/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
Test Procedure Number	14802-2

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
Test Procedure Number	14801-2

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-8895	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
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

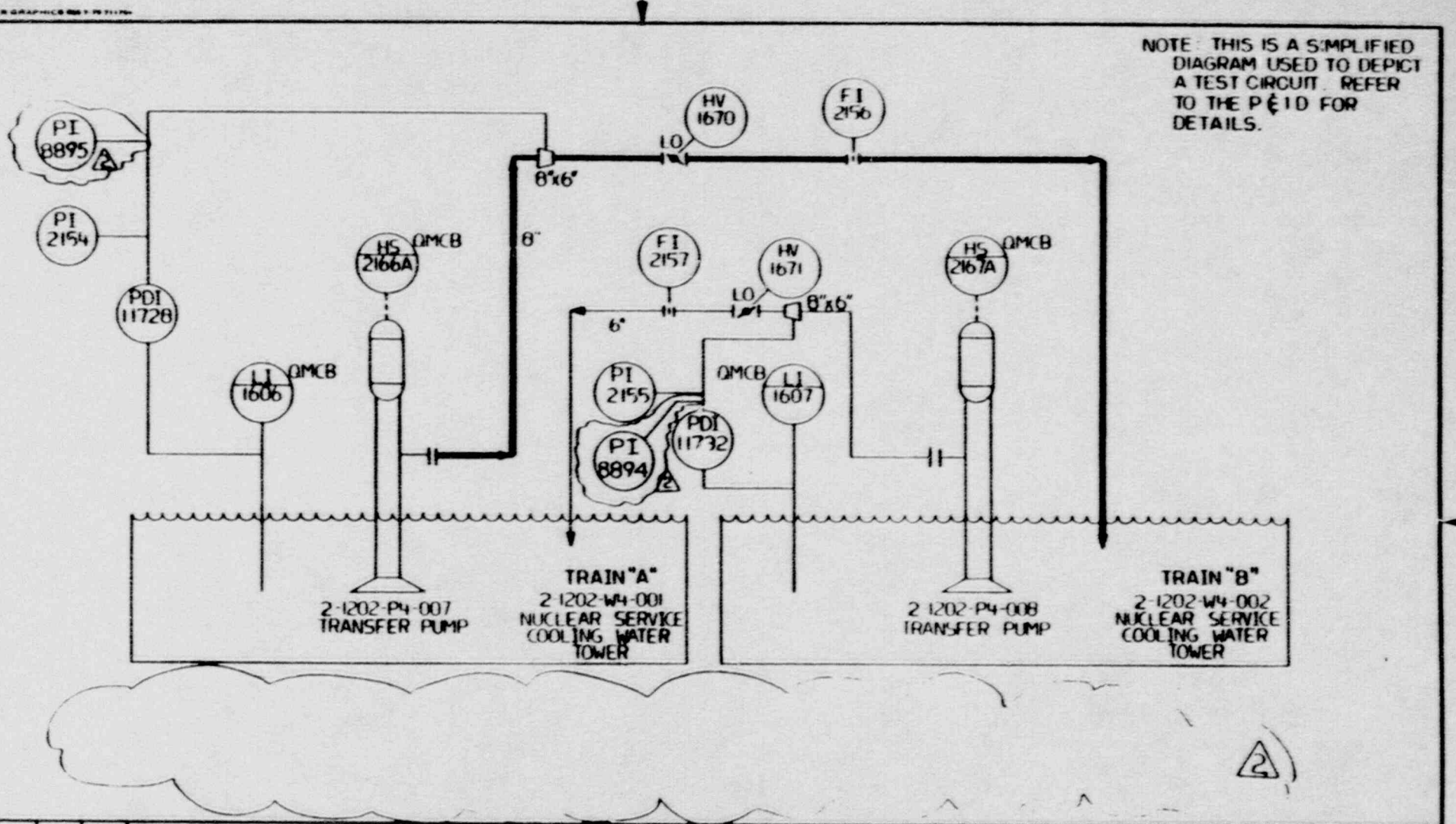
Test Parameter Table for Pump 2-1202-P4-008

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-8894	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-2157	Qr (2)	
Vibration Amplitude	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

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 PST					
1	1-24-89	[illegible]	RCB	UPDATED TO REV. 20 2X4DB133-1 & REV. 19 2X4DB133-2					
2	4-19-89	TLW	JHH	ADDED PI-8894 & PI-8895 DELETED RSCW HEADERS					

REMARKS

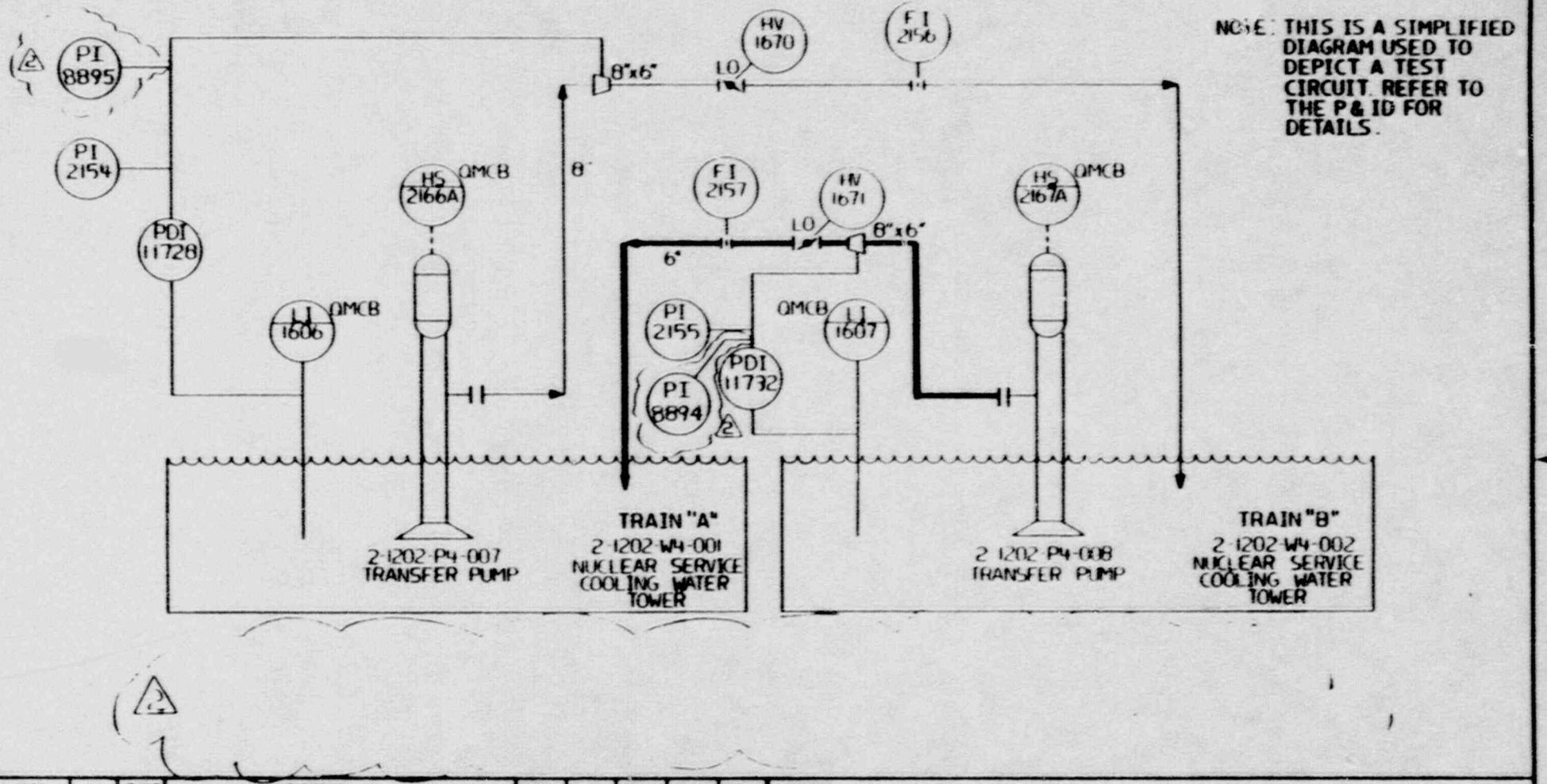
Southern Company Services, Inc. FOR Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE INSPECTION LOOP
FOR TRANSFER PUMP
2-1202-P4-007

DESIGNED	ET	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	2

FORM NO. S-201



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	RGB	WS	ISSUED FOR PSI					
1	1-12-88	JMA	RLB	UPDATED TO REV 20 2X4DB133-1 & REV 19 2X4DB133-2					
2	3-19-89	TEW	JMA	ADDED PI-8894 & PI-8895 DELETED NSCW HEADERS					

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 E.T. DRAWN DRC
TYPED CHECKED WS
SCALE NONE CONTINUED ON SHEET

PROJ. NO.	DRAWING NUMBER	SHEET	REV
N/A	N/A	ISI-D-257	1 OF 1	2

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
Test Procedure Number	14803-2

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)	PI-1878	N/A	Pi ≥ 7.4 psig (17 ft)
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)	PI-1881	N/A	Pi ≥ 7.4 psig (17 ft)
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-P4-063

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-1879	N/A	Pi ≥ 7.4 psig (17 ft)
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:
( ) Measure before pump startup and during test
(.) Reference values determined per INP-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)	PI-1882	N/A	Pi ≥ 7.4 psig (17 ft)
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)	PI-1880	N/A	Pi ≥ 7.4 psig (17 ft)
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)	PI-1883	N/A	Pi ≥ 7.4 psig (17 ft)
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

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		
Test Procedure Number	14804-2		

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	
	Design	**Maximum**
Runout		
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	
Test Procedure Number	14805-2 & 14812-2	

Table 1-2

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)	PI-8884	N/A	Pi ≥ 6.0 psig (14 ft)
Outlet Pressure (Po)	Quarterly	PI-8886	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-0618A	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 1-3

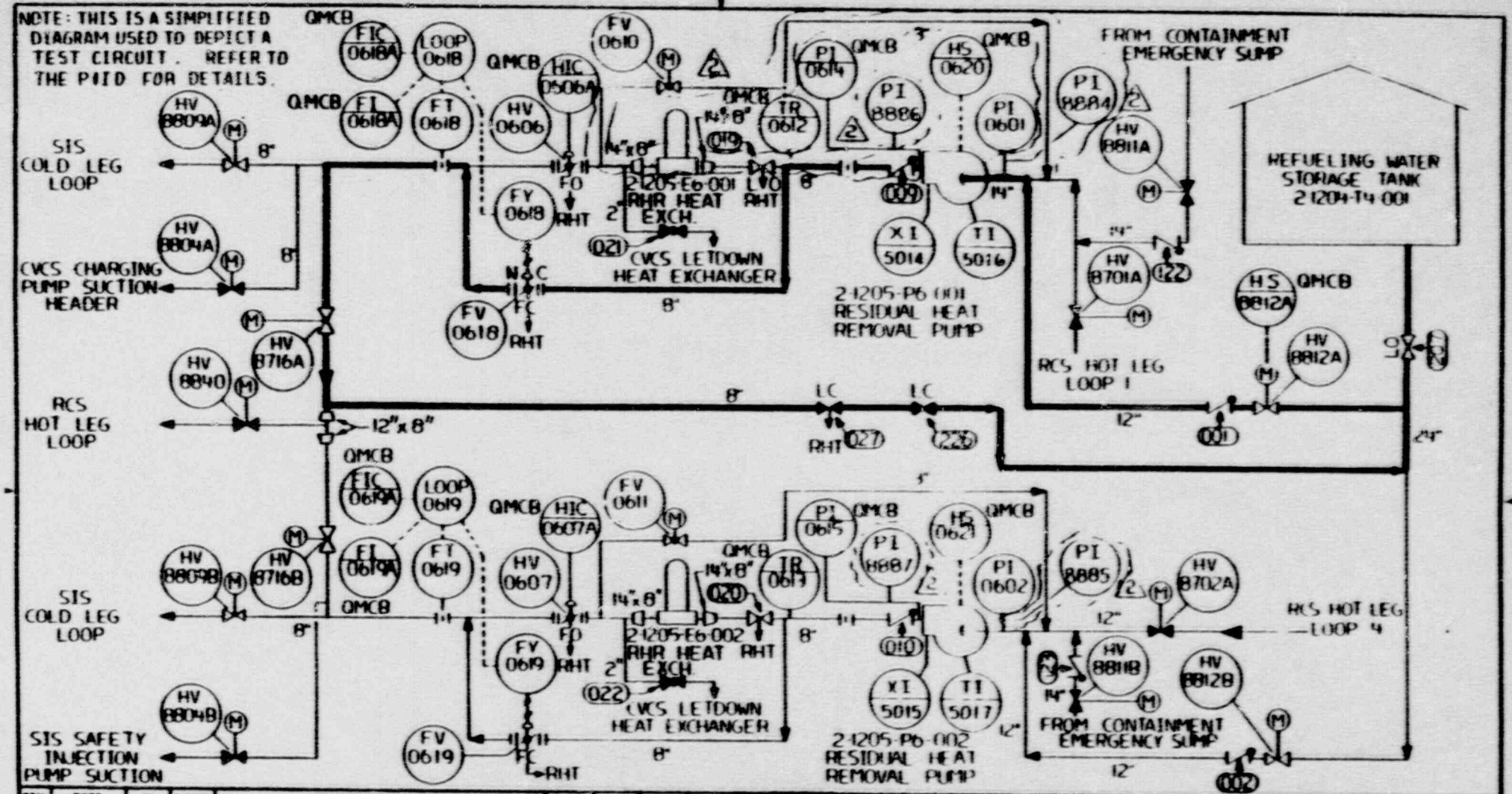
Test Parameter Table for Pump 2-1205-P6-002

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)	PI-0005	N/A	Pi ≥ 6.0 psig (14 ft)
Outlet Pressure (Po)	Quarterly	PI-0007	N/A	
Differential Pressure (dP)	Quarterly	N/A (dP = Po - Pi)	dPr (2)	
Flowrate (Q)	Quarterly	FI-0619A	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 INP-3110
(3) Temporary test equipment (M&TE) used



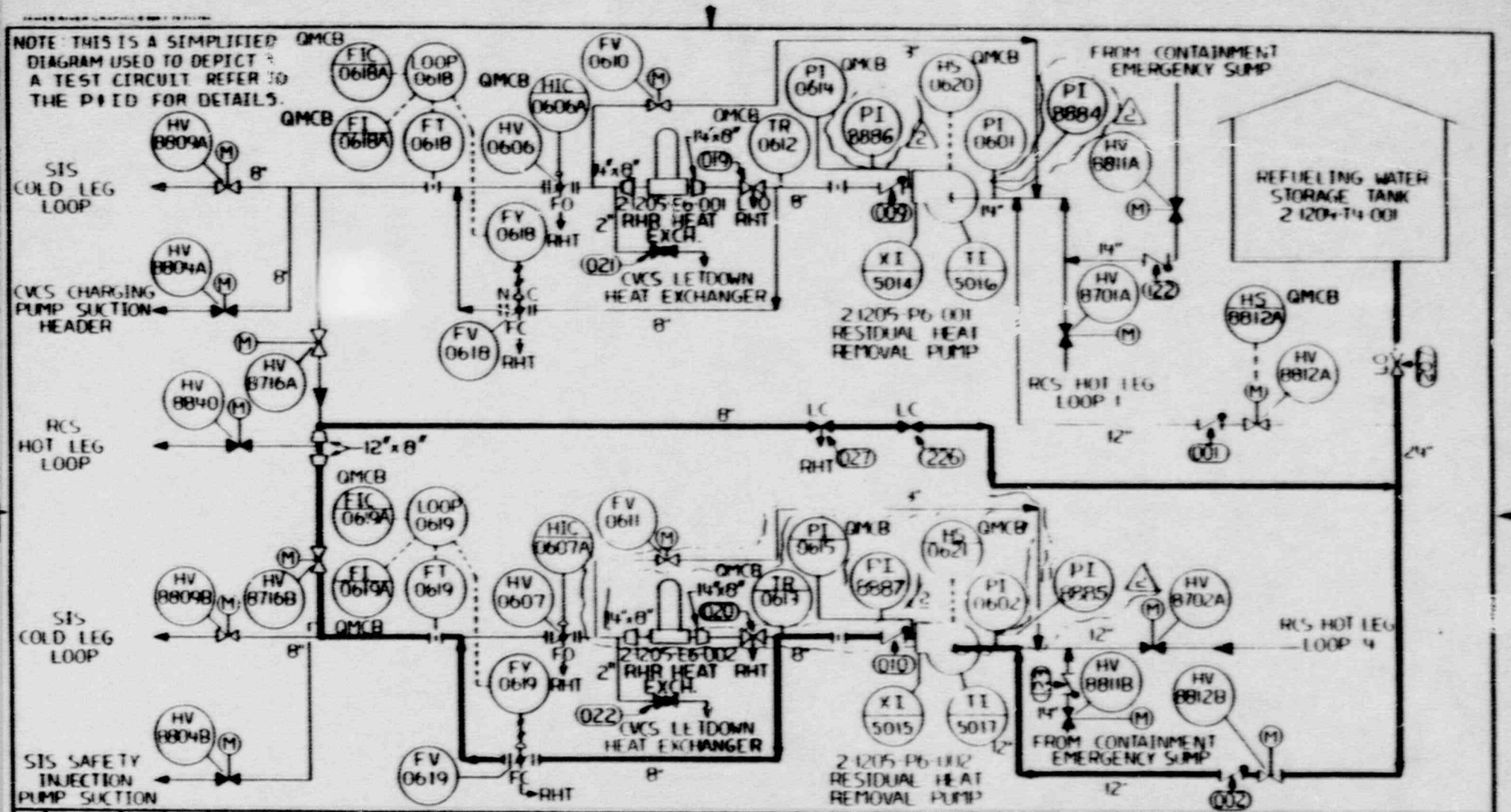
REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84			ISSUED FOR PST					
1	1-26-88			UPDATED TO REV. 17 OF 2X4DB122					
2	4-19-89			ADDED P [illegible] DELETED FUNC. FLOW TEST					

Southern Company Services, Inc. — Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP FOR RESIDUAL HEAT REMOVAL PUMP 2-1205 P6-1101

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

PROJ. NO.	DRAWING NUMBER	SHEET	REV
N/A	N/A	ISI-D-266	1 OF 1	2



REV.	DATE	BY	CHK'D	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	MCJ	WLS	ISSUED FOR PST					
1	1-16-86	CL	RLD	UPDATED TO REV. 17 OF 2X4DB122					
2	4-19-89	TE	JMA	ADDED PI-8884, 8885, 8886 & PI-8887, DELETED MINI FLOW TEST					

Southern Company Services, Inc. for Georgia Power Company

VOGTLE ELECTRIC GENERATING PLANT
UNIT-2
PUMP INSERVICE TESTING LOOP
FOR RESIDUAL HEAT REMOVAL PUMP
2120S-P6-002

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

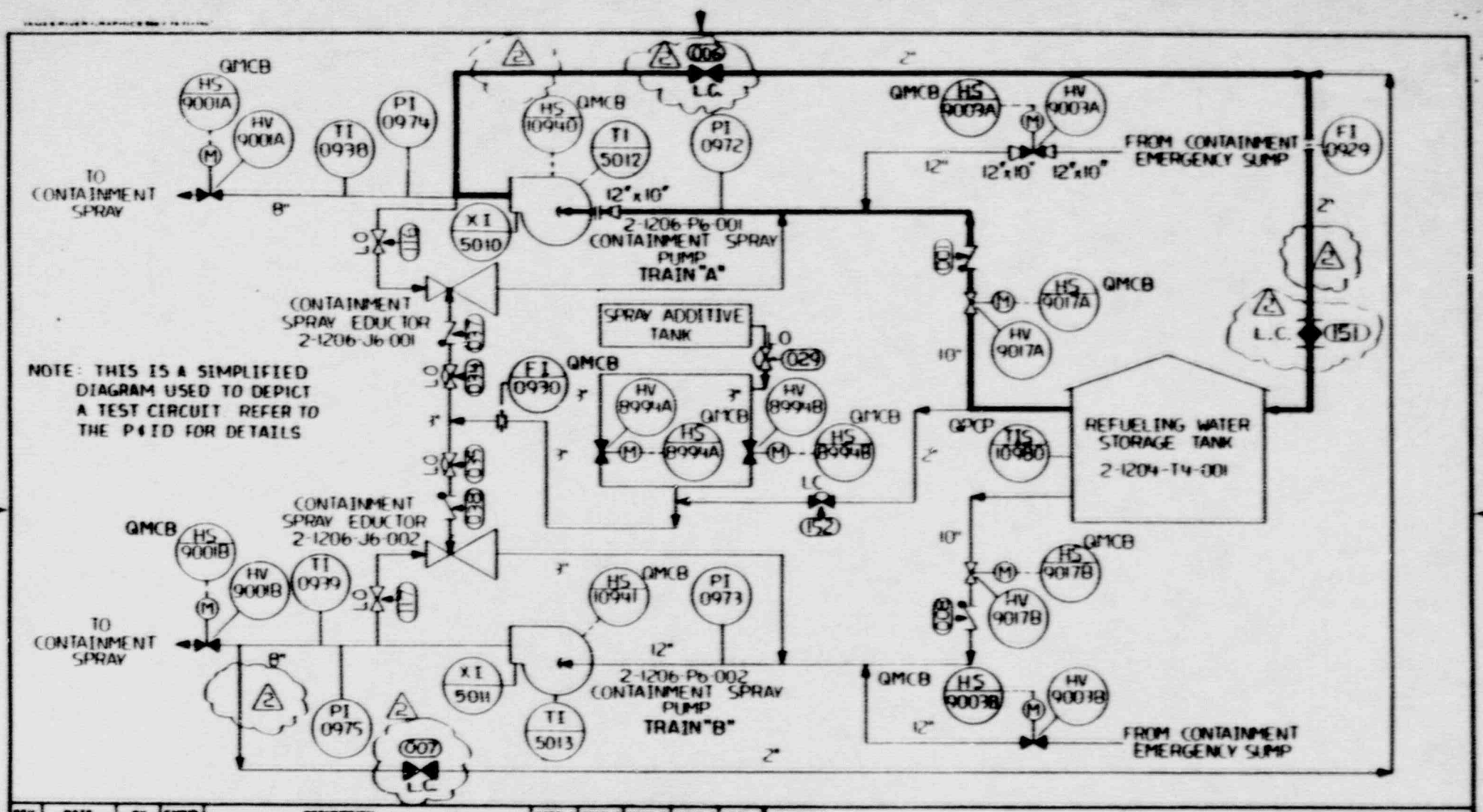
PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	N/A	ISI D-267	1 OF 1	2

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
Test Procedure Number	14806-2



REV	DATE	BY	CHKD	DESCRIPTION	APPR 1	APPR 2	APPR 3	APPR 4	APPR 5
0	9-2-86	[illegible]	[illegible]	ISSUED FOR PST	[illegible]				
1	1-26-88	[illegible]	[illegible]	UPDATED TO REV. 15 OF 2X4DB131	[illegible]				
2	4-19-89	[illegible]	[illegible]	REVISED VALVES: 006, 007, 151	[illegible]				

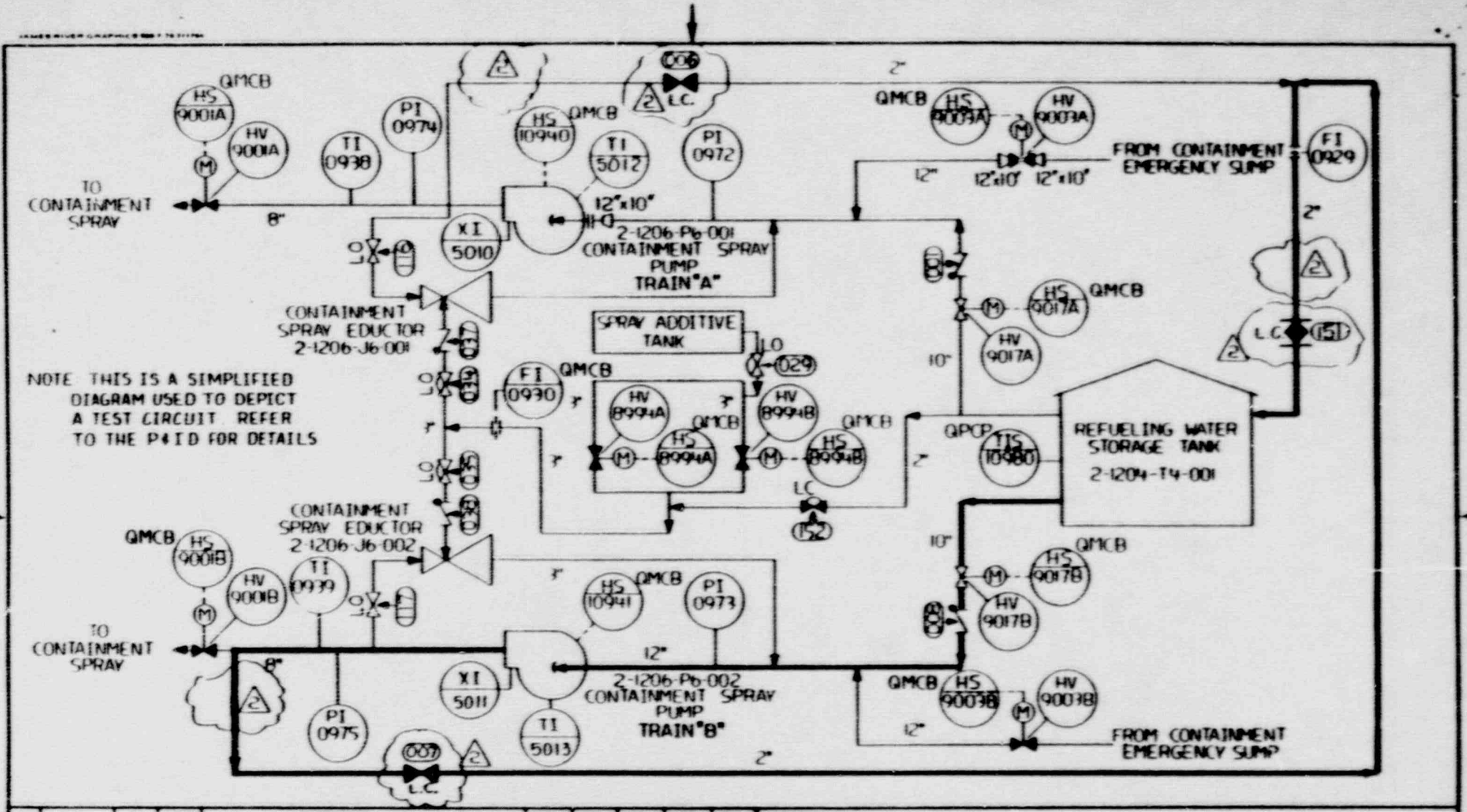
REMARKS

Southern Company Services, Inc. — Georgia Power Company

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

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

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	N/A	ISI-D-268	1 OF 1	2



REV	DATE	BY	CHKD	DESCRIPTION	APPR. 1	APPR. 2	APPR. 3	APPR. 4	APPR. 5
0	9-5-84	[illegible]	[illegible]	ISSUED FOR PSI	[illegible]				
1	1-26-88	CL	[illegible]	UPDATED TO REV 15 OF 2X4DB131	[illegible]				
2	4-19-89	[illegible]	JMH	REVISED VALVES 006, 007 & 151	[illegible]				

REMARKS

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 RS
SCALE NONE CERTIFIED BY CHIEF

	PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	N/A	1S1-0-269	1 OF 1	2

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
Test Procedure Number	14808-2

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)	PI-8891	N/A	Pi ≥ 7 psig
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)	PI-8892	N/A	Pi ≥ 7 psig
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.

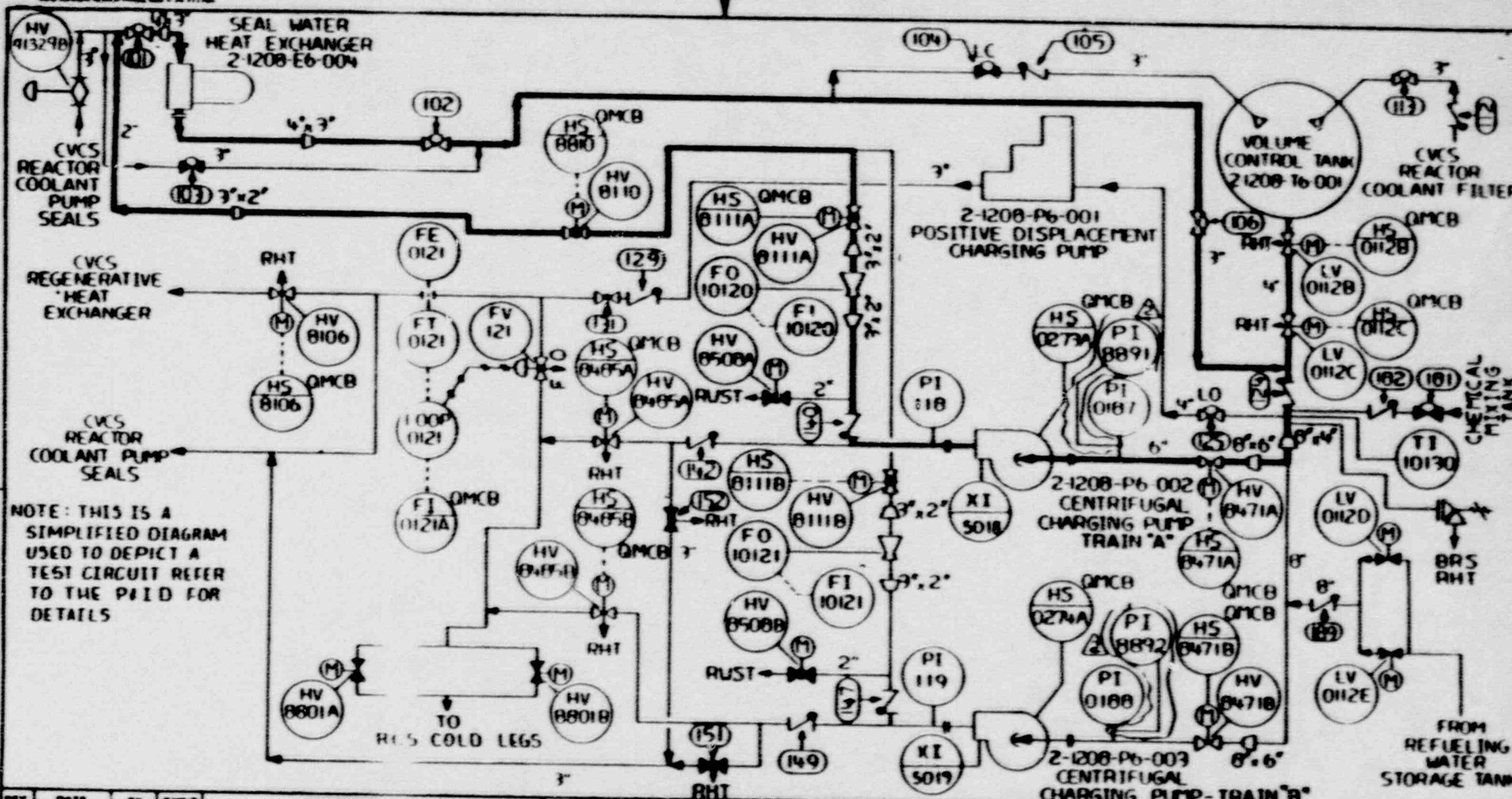
Notes:
(1) Measure before pump startup and during test
(2) Reference values determined per IWP-3110
(3) Temporary test equipment (M&TE) used

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
Test Procedure Number	14811-2

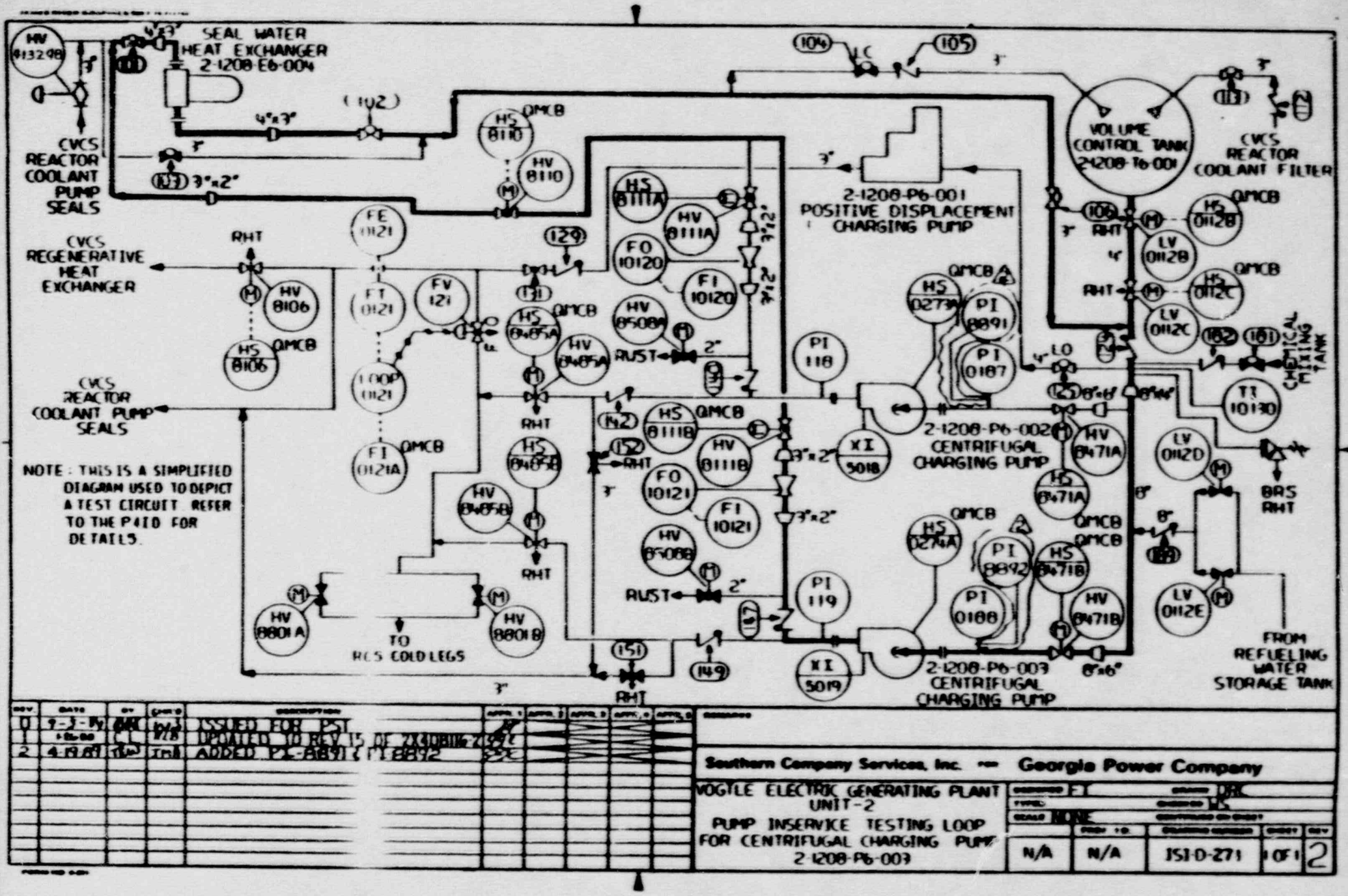


REV.	DATE	BY	CHK'D	DESCRIPTION
0	7-5-??			ISSUED FOR PST
1	1-26-00			UPDATED TO REV ?? OF 2X4DB????
2	4-19-89			ADDED PI-8891 & PI-8892

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

N/A	N/A	ISI-D-270	1 OF 1	2



REV	DATE	BY	CHKD	DESCRIPTION	APPD 1	APPD 2	APPD 3	APPD 4	APPD 5
0	9-2-87	[illegible]	[illegible]	ISSUED FOR PST					
1	[illegible]	[illegible]	[illegible]	UPDATED TO REV 15 OF 2X4DB114					
2	4-13-89	[illegible]	[illegible]	ADDED PI-8891 & PI 8892					

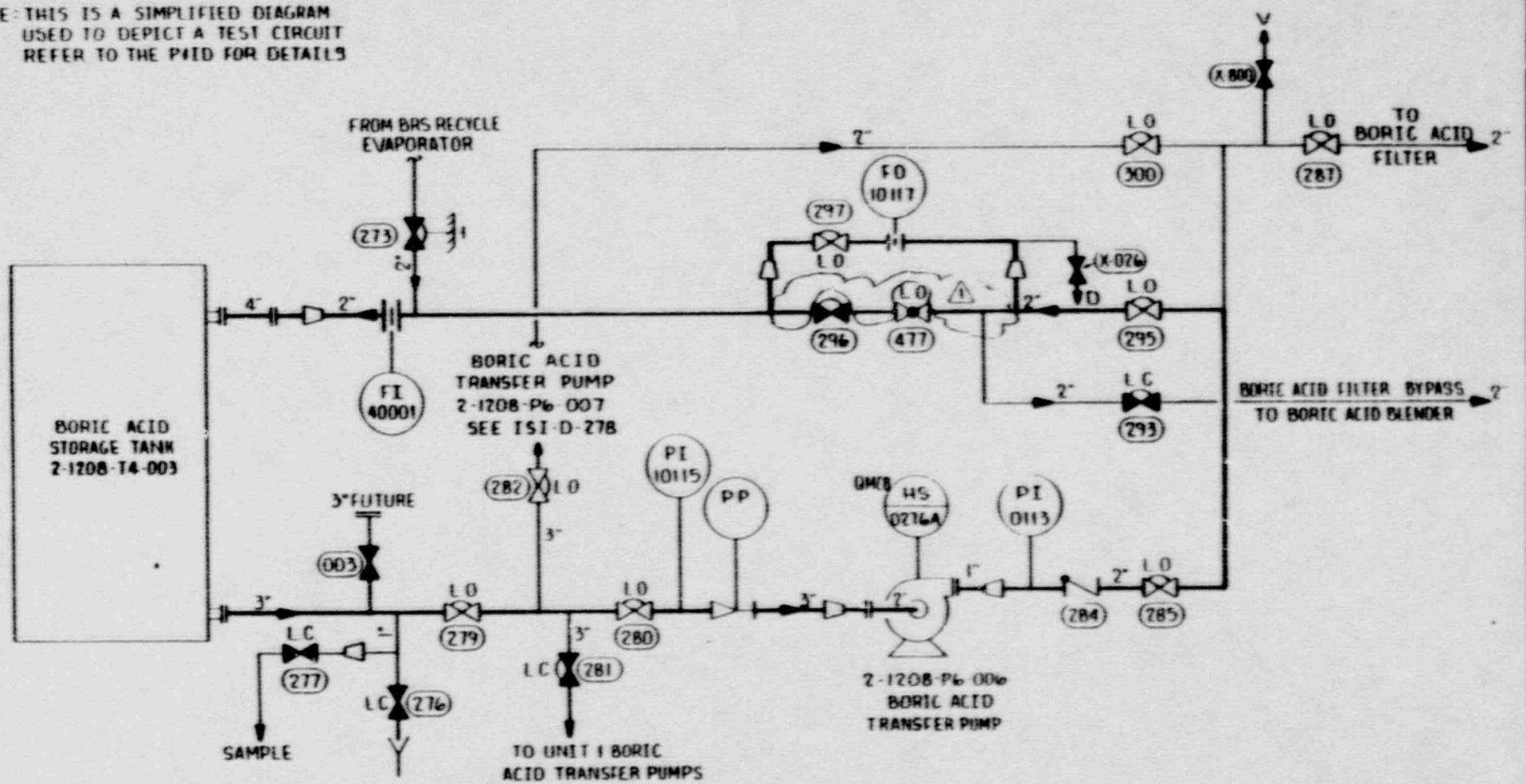
Southern Company Services, Inc. — Georgia Power Company

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

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

N/A	N/A	1S1-D-271	1 OF 1	2

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	BBC				
1	5-16-89	TRAN	JMB	REVISED TEST FLOW PATH	BJC				

REMARKS

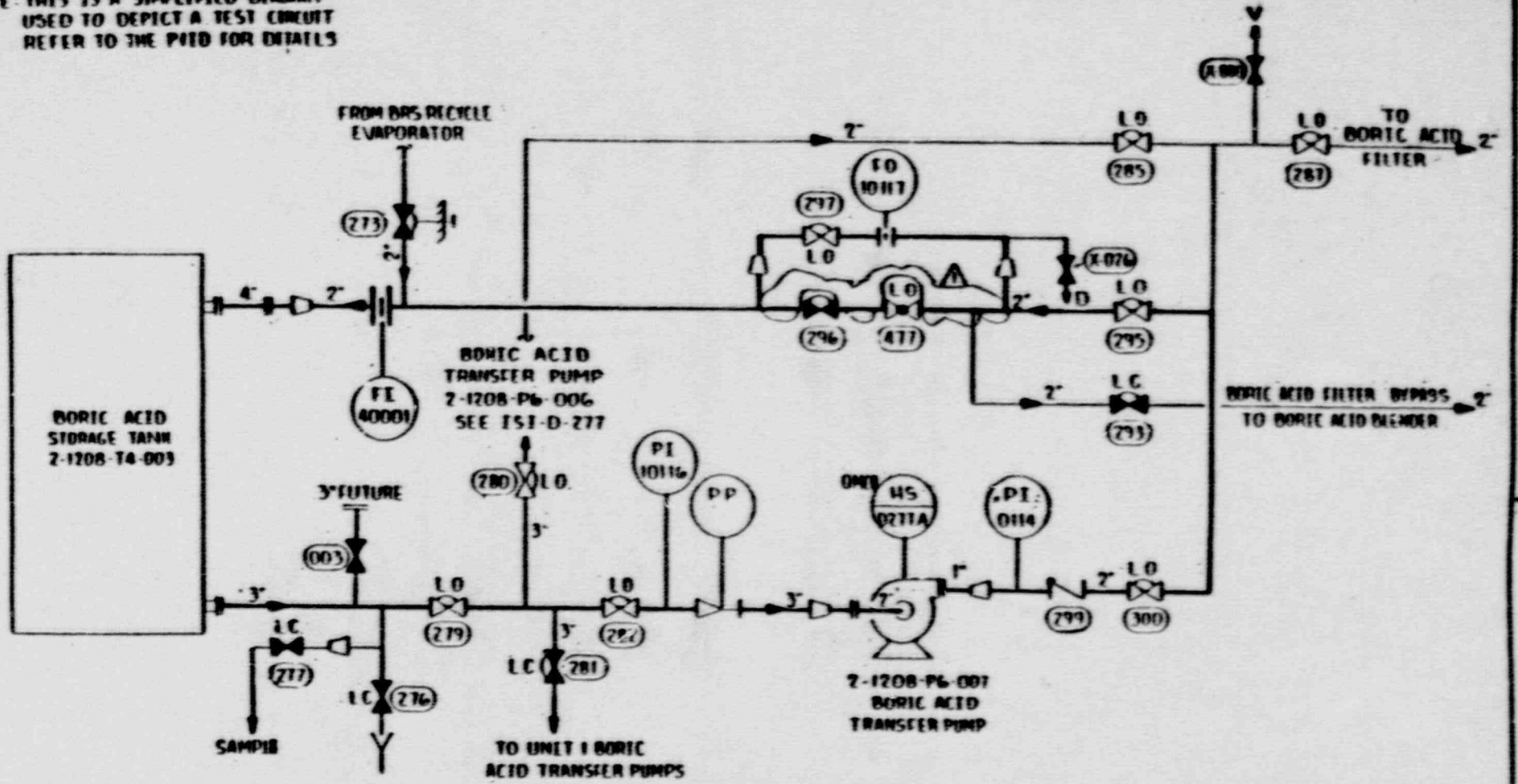
Southern Company Services, Inc. FOR GEORGIA POWER COMPANY

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

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

PROJ. I.D.	DRAWING NUMBER	SHEET	REV
N/A	N/A	ISI-D-277	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	CHKD	DESCRIPTION	APPD 1	APPD 2	APPD 3	APPD 4	APPD 5
0	1-16-88	CL	WEB	ISSUED FOR PST / IST	DJC				
1	5-16-89	TEW	JHH	REVISED TOT FLOW PATH	DJC				

REMARKS

Southern Company Services, Inc. — GEORGIA POWER COMPANY

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

DESIGNED DJC | DRAWN C.L. | TYPED | CHECKED WEB | SCALE NONE | CONTINUED ON SHEET

N/A	N/A	ISI-D-278	SHEET 1 OF 1	REV 1

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
Test Procedure Number	14810-2

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
Test Procedure Number	14807-2

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)	PI-5110A	N/A	Pi ≥ 6.9 psig (16 ft)
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)	PI-5128A	N/A	Pi ≥ 7.4 psig (17 ft)
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)	PI-5129A	N/A	Pi ≥ 7.4 psig (17 ft)
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 INP-3110
(3) Temporary test equipment (M&TE) used

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
Test Procedure Number	14809-2

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)	PI-22410	N/A	Pi ≥ 4 psig
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)	PI-22411	N/A	Pi ≥ 4 psig
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 Asplitude (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

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 284	3	313	2X4DB118 (D-5)	C	2.00	CK	S	C	N/A	O	A	Q						Boric Acid Transfer Pump Discharge
U4 299	3	313	2X4DB118 (B-5)	C	2.00	CK	S	C	N/A	O	A	Q						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 No. 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
U5 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

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. The maximum required accident condition flow through each valve will be verified.

GENERIC LETTER 89-04 REVIEW: This relief request complies with the full-stroke testing requirements for check valves as described in position 1 of Generic Letter 89-04.

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 maximum required accident condition flow through each valve will be verified. 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.

GENERIC LETTER 89-04 REVIEW: This relief request complies with the full-stroke testing requirements for check valves as described in position 1 of Generic Letter 89-04.

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 the 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 maximum required accident condition flow through each valve will be verified.

GENERIC LETTER 89-04 REVIEW: This justification complies with the full-stroke testing requirements for check valves as described in position 1 of Generic Letter 89-04.

COLD SHUTDOWN JUSTIFICATION

CS-34

WITHDRAWN