

SOUTH TEXAS PROJECT  
ELECTRIC GENERATING STATION

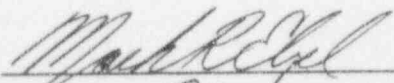


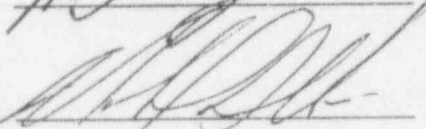
UNIT 2

HOUSTON LIGHTING AND POWER  
COMPANY

PUMP AND VALVE  
INSERVICE TEST PLAN

REVISION 4

SUPPLEMENT 2

Prepared by:	<u></u>	<u>10-25-94</u> Date
Reviewed by:	<u></u>	<u>10-25-94</u> Date
Reviewed by:	<u></u>	<u>10-26-94</u> Date
Approved by:	<u></u>	<u>10/26/94</u> Date

RR5

Test Requirement

IWP-4120 requires the full scale range of each instrument to be three times the reference value or less.

Basis for Relief

The Centrifugal Charging Pumps (located in the Mechanical Auxiliary Building) and the Residual Heat Removal Pumps (located in the Reactor Containment Building) are in areas of high radiation. For ALARA considerations, the Vibration Monitoring System (located in the Control Room) is used to measure vibration amplitude. The vibration monitoring system is an online system which constantly monitors the machine and provides alarms when alert limits are reached. The full scale range of each instrument is fixed and the above requirement could be exceeded. Rescaling the instrument to meet the requirements of IWP-4120 for a low reference value would impair the ability of the system to monitor the machine up to the severity limit determined by size, speed and application.

Alternate Testing

The Vibration Monitoring System will be used to obtain vibration data for the Residual Heat Removal and Centrifugal Charging Pumps. The system provides overall readout repeatability within the accuracy limits specified in Table IWP-4110-1 with indication in increments of at least 0.2 mils. If the Vibration Monitoring System is unavailable, portable vibration indicators will be used as described in RR4.

RR6

Per NRC Letter ST-AE-HL-93298, RR not required. |

RR10

Test Requirement

IWP-3400(a) states that an inservice test be run on each pump nominally every 3 months during normal plant operation. It is also recommended that this test frequency be maintained during shutdown periods if this can reasonably be accomplished.

Basis for Relief

STPEGS has three RHR pump trains used only for long-term cooldown events following auxiliary feedwater operation. The RHR system does not serve the LHSI function as they are required to do in standard plants. For these reasons, the STPEGS RHR system is not critical to immediate accident mitigation.

Since the RHR system has a negligible impact on core damage frequency, less emphasis can be placed on testing the RHR system at power. (See ST-HL-AE-4544, Risk-Based Evaluation of Technical Specifications.)

Alternate Testing

Inservice tests will be run on each pump nominally every 6 months during normal plant operations. This test frequency will be maintained during shutdown periods if it can reasonably be accomplished.

RR-11

Test Requirement

IWP-3400(a) states that an inservice test be run on each pump nominally every 3 months during normal plant operation. It is also recommended that this test frequency be maintained during shutdown periods if this can reasonably be accomplished.

Basis for Relief

STPEGS has three CS pump trains used only for protecting containment integrity following a core damage event for other events where radiological release is postulated. Due to the CS's negligible impact on core damage frequency and large early release frequency, less emphasis should be placed on testing. (See ST-HL-AE-4544, Risk-Based evaluation of Technical Specifications.)

Alternate Testing

Inservice tests will be run on each pump nominally every 6 months during normal plant operations. This test frequency will be maintained during shutdown periods if it can reasonably be accomplished.

RR-12

System

Component Cooling Water

Components

Component Cooling Water Pumps 2A, 2B, and 2C

Component Function

Provide cooling water for removal of heat from Engineered Safety Feature Equipment.

Code Requirement

IWP-4110 and IWP-4120 for pressure instrumentation accuracy and full-scale range.

Basis for Relief

The installed suction pressure gauges for the component cooling water pumps have a range of 160 psig and an accuracy of 0.5%. The reference values for suction pressure for these pumps have been as low as 21 psig. The ASME Code requires each analog instrument to have a full-scale range 3 times the reference value or less and an accuracy of  $\pm 2$  percent of full-scale. The installed suction pressure gauges for these component cooling water pumps has a full-scale range greater than 3 times the reference value, but has an accuracy of  $\pm 0.5$  percent which is more conservative than the Code. The combination of the range and accuracy of the installed suction pressure gauge yields a reading at least equivalent to the reading achieved from instruments that meet the Code requirements. The installed suction pressure gauge meets the intent of the Code requirements and yields an acceptable level of quality and safety for testing.

Alternate Testing

The permanently installed suction gauges for component cooling water pumps 2A, 2B, and 2C will be used to obtain test measurements for evaluating pump operability.

RR-13

System

Essential Cooling Water System

Components

Essential Cooling Water Screen Wash Booster Pumps 2A, 2B, and 2C

Component Function

Provide water at high pressure to backwash debris off the traveling screens located at the Essential Cooling Water pump suction inlet from the Essential Cooling Pond.

Code Requirement

IWP-4100 and IWP-4120 for pressure instrumentation accuracy and full-scale range.

Basis for Relief

The installed discharge pressure gauges for the cooling water screen wash booster pumps 2A, 2B, and 2C have a range of 300 psig and an accuracy of 0.5%. The reference values for discharge pressure for these pumps have been as low as 87 psig. The ASME Code requires each analog instrument to have a full-scale range 3 times the reference value or less and an accuracy of  $\pm 2$  percent of full-scale. The installed discharge pressure gauges for these essential cooling water screen wash booster pumps have a full-scale range greater than 3 times the reference value, but has an accuracy of  $\pm 0.5$  percent which is more conservative than the Code. The combination of the range and accuracy of the installed discharge pressure gauge yields a reading at least equivalent to the reading achieved from instruments that meet the Code requirements. The installed discharge pressure gauge meets the intent of the Code requirements and yields an acceptable level of quality and safety for testing.

Alternate Testing

The permanently installed discharge gauges for essential cooling water screen wash booster pumps 2A, 2B, and 2C will be used to obtain test measurements for evaluating pump operability.

RR-14

System

Reactor Makeup Water

Components

Reactor Makeup Water Pumps 2A and 2B.

Component Function

Provide makeup water to the Spent Fuel Pool, Component Cooling Water Surge Tank, and CVCS Boron Blending Tee.

Code Requirement

IWP-3100 for varying the resistance of the system until either the measured flowrate or differential pressure equals a corresponding reference value.

Basis for Relief

The Reactor Makeup Water Pumps utilize a non-isolatable full flow recirculation loop around the pumps with an additional recirculation line back to the Reactor Makeup Water Storage Tank. To perform the test, the pump discharge valve downstream of the recirculation lines is closed creating a closed-loop fixed-resistance recirculation flow path. All pump parameters required by the code except those specifically exempted by other relief requests will be measured.

Alternate Testing

Pump testing will be performed using a fixed-resistance flow path. The measured flowrate and differential pressure will be compared to their respective reference values to determine pump operability. Deviations from the reference values will be compared to the allowed limits and corrective action taken. (Reference OM-6, Part 5.2 c&d)

RR-15

System

Chemical and Volume Control

Components

Centrifugal Charging Pumps 2A and 2B.

Component Function

Provide rated water from the Volume Control Tank or Reactor Makeup Water Storage Tank to the Reactor Coolant System.

Code Requirement

IWP-3100 for varying the resistance of the system until either the measured flowrate or differential pressure equals a corresponding reference value.

Basis for Relief

The Centrifugal Charging Pumps utilize a mini-flow recirculation line from the pump discharge to a point upstream of the line leading to the Seal Water Heat Exchanger. To perform the test, the pump discharge valve downstream of the recirculation lines is closed. Valves in the recirculation line are not designed to perform the function of a throttle valve and therefore are left fully open creating a closed-loop fixed-resistance recirculation flow path. All Pump parameters required by the code except those specifically exempted by the other relief requests will be measured.

Alternate Testing

Pump testing will be performed using a fixed-resistance flow path. The measured differential pressure will be compared to the allowable ranges given in Table IWP-3100-2 to determine pump operability.



Unit 2 IST Valve List  
Component Cooling Water - CC

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VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST C	ST O
MOV-0059	CHW to RCFC 21A, 22A OB Isol.	2	F05017	D2	A	8	B	MO	NO	FAI	Q, R, MT	--	10	14
											LT	--	--	--
MOV-0137	CHW to RCFC 21B, 22B OB Isol.	2	F05018	D2	A	8	B	MO	NO	FAI	Q, R, MT	--	10	14
											LT	--	--	--
MOV-0199	CHW to RCFC 21C, 22C OB Isol.	2	F05019	D2	A	8	B	MO	NO	FAI	Q, R, MT	--	10	14
											LT	--	--	--

CC-0058	CCW to RCFC 21A, 22A IB Ck.	2	F05017	D2	AC	14	CK	SA	NO	--	CV(RR)	ROJ-1	--	--
											LT	--	--	--
CC-0138	CCW to RCFC 21B, 22B IB Ck.	2	F05018	D2	AC	14	CK	SA	NO	--	CV(RR)	ROJ-1	--	--
											LT	--	--	--
CC-0198	CCW to RCFC 21C, 22C IB Ck.	2	F05019	D2	AC	14	CK	SA	NO	--	CV(RR)	ROJ-1	--	--
											LT	--	--	--



Unit 2 IST Valve List  
Component Cooling Water - CC

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VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST	
													C	O
CC-0013	CCW to RHR 2A HTX IB Check	2	F05017	E2	AC	16	CK	SA	NC	--	CV (RR)	ROJ-1	---	---
											LT	--	---	---
CC-0123	CCW to RHR 2B HTX IB Check	2	F05018	E2	AC	16	CK	SA	NC	--	CV (RR)	ROJ-1	---	---
											LT	--	---	---
CC-0183	CCW to RHR 2C HTX IB Check	2	F05019	E2	AC	16	CK	SA	NC	--	CV (RR)	ROJ-1	---	---
											LT	--	---	---

FV-4531	RHR 2A HTX Outlet	3	F05017	G2	B	16	B	AO	NC	FO	Q,R,MT	--	---	21
FV-4548	RHR 2B HTX Outlet	3	F05018	G2	B	16	B	AO	NC	FO	Q,R,MT	--	---	20
FV-4565	RHR 2C HTX Outlet	3	F05019	G2	B	16	B	AO	NC	FO	Q,R,MT	--	---	19

MOV-0049	CCW from RHR 2A IB Isol.	2	F05017	G4	A	16	B	MO	NO	FAI	Q,R,MT	--	17	17
											LT	--	---	---
MOV-0129	CCW from RHR 2B IB Isol.	2	F05018	G4	A	16	B	MO	NO	FAI	Q,R,MT	--	15	16
											LT	--	---	---
MOV-0189	CCW from RHR 2C IB Isol.	2	F05019	H4	A	16	B	MO	NO	FAI	Q,R,MT	--	16	16
											LT	--	---	---

Unit 2 IST Valve List  
Component Cooling Water - CC

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VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST	
													C	O
MOV-0404	CCW from RCP OB Isolation	2	F05021	H1	A	12	B	MO	NO	FAI	Q,R,MT	--	10	---
											LT	--	---	---
FV-4493	CCW from RCP OB Isolation	2	F05021	H1	A	12	B	AO	NO	FC	Q,R,MT	--	8	---
											LT	--	---	---

THIS SECTION OF VALVES DELETED

Unit 2 IST Valve List  
Component Cooling Water - CC

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VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST	
													C	O

THIS SECTION OF VALVES DELETED

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST	
													C	O
FV-0862	CCW from RCFC 21A,22A OB Isol.	2	F05017	C4	A	8	B	AO	NO	FC	Q,R,MT	--	3	---
											LT	--	---	---
FV-0863	CCW from RCFC 21B,22B OB Isol.	2	F05018	C4	A	8	B	AO	NO	FC	Q,R,MT	--	3	---
											LT	--	---	---
FV-0864	CCW from RCFC 21C,22C OB Isol.	2	F05019	C4	A	8	B	AO	NO	FC	Q,R,MT	--	5	---
											LT	--	---	---

Unit 2 IST Valve List  
Essential Cooling Water - EW

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VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST	
													C	O
EW-0262	ECW Loop A to Essential CHW Chillers	3	F05038	H6	C	14	CK	SA	NO	--	CV	--	---	---
EW-0263	ECW Loop B to Essential CHW Chillers	3	F05038	F6	C	14	CK	SA	NO	--	CV	--	---	---
EW-0264	ECW Loop C to Essential CHW Chillers	3	F05038	C6	C	14	CK	SA	NO	--	CV	--	---	---

FV-6935	ECW Loop A Drain to ECW Sump	3	F05038	F7	B	4	GT	AO	NO	FC	Q,R,MT	--	5	---
FV-6936	ECW Loop B Drain to ECW Sump	3	F05038	C7	B	4	GT	AO	NO	FC	Q,R,MT	--	7	---
FV-6937	ECW Loop C Drain to ECW Sump	3	F05038	A7	B	4	GT	AO	NO	FC	Q,R,MT	--	8	---

EW-0403	EWC Self-Cleaning Strainer Emergency Backflush Check	3	F5038	G4	C	6	CK	SA	NC	--	CV (DI)	RR51	---	---
EW-0404	EWC Self-Cleaning Strainer Emergency Backflush Check	3	F5038	E4	C	6	CK	SA	NC	--	CV (DI)	RR51	---	---
EW-0405	EWC Self-Cleaning Strainer Emergency Backflush Check	3	F5038	B4	C	6	CK	SA	NC	--	CV (DI)	RR51	---	---

EW-0370A	ECW Pump 1A Discharge Vent	3	F5038	G4	C	3	CK	SA	NO	--	CV(DI)	RR47	---	---
EW-0370B	ECW Pump 1B Discharge Vent	3	F5038	E4	C	3	CK	SA	NO	--	CV(DI)	RR47	---	---
EW-0370C	ECW Pump 1C Discharge Vent	3	F5038	B4	C	3	CK	SA	NO	--	CV(DI)	RR47	---	---

EW-0277	ECW Self Cleaning Strainer Emergency Backflush	3	F5038	G4	B	6	M	M	NC	FAI	MS	--	---	---
EW-0278	ECW Self Cleaning Strainer Emergency Backflush	3	F5038	E4	B	6	M	M	NC	FAI	MS	--	---	---
EW-0279	ECW Self Cleaning Strainer Emergency Backflush	3	F5038	B4	B	6	M	M	NC	FAI	MS	--	---	---

Unit 2 IST Valve List  
Steam Generator Blowdown - SB

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VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST	
													C	O

THIS SECTION OF VALVES DELETED

VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NORM. POS.	FAIL POS.	TEST REQUIREMENT	RR/C	ST	
													C	O
FV-4153	SG 2A to Flash Tank Isol.	2	F20001	G5	B	4	GT	AO	NO	FC	Q,R,MT	--	32	---
FV-4152	SG 2B to Flash Tank Isol.	2	F20001	G1	B	4	GT	AO	NO	FC	Q,R,MT	--	31	---
FV-4151	SG 2C to Flash Tank Isol.	2	F20001	C1	B	4	GT	AO	NO	FC	Q,R,MT	--	33	---
FV-4150	SG 2D to Flash Tank Isol.	2	F20001	C5	B	4	GT	AO	NO	FC	Q,R,MT	--	35	---

Unit 2 IST Valve List  
Standby Diesel Generator Starting Air - SD

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VALVE ID	VALVE FUNCTION	CL	P&ID	GC	CAT	SIZE	TYPE	ACT	NO. PO	FAIL POS.	TEST REQUIREMENT	RR/C	ST	
													C	O
FV-5435	DG 21 Right Bank Cranking Air Valve	3	8041-00108	F2	B	3	GT	AO	NC	FC	Q,MT(NST)	RR40	---	---
FV-5434	DG 21 Left Bank Cranking Air Valve	3	8041-00108	F3	B	3	GT	AO	NC	FC	Q,MT(NST)	RR40	---	---

FV-5535	DG 22 Right Bank Cranking Air Valve	3	8041-00108	F2	B	3	GT	AO	NC	FC	Q,MT(NST)	RR40	---	---
FV-5534	DG 22 Left Bank Cranking Air Valve	3	8041-00108	F3	B	3	GT	AO	NC	FC	Q,MT(NST)	RR40	---	---

FV-5635	DG 23 Right Bank Cranking Air Valve	3	8041-00108	F2	B	3	GT	AO	NC	FC	Q,MT(NST)	RR40	---	---
FV-5634	DG 23 Left Bank Cranking Air Valve	3	8041-00108	F3	B	3	GT	AO	NC	FC	Q,MT(NST)	RR40	---	---

SD0003A	DG 21 Starting Air Receiver No. 21 Inlet Check Valve	3	F22546	8F	BC	1	CK	SA	NO	--	Q	--	---	---
SD0004A	DG 21 Starting Air Receiver No. 22 Inlet Check Valve	3	F22546	7F	BC	1	CK	SA	NO	--	Q	--	---	---
SD0003B	DG 22 Starting Air Receiver No. 23 Inlet Check Valve	3	F22546	5F	BC	1	CK	SA	NO	--	Q	--	---	---
SD0004B	DG 22 Starting Air Receiver No. 24 Inlet Check Valve	3	F22546	4F	BC	1	CK	SA	NO	--	Q	--	---	---
SD0003C	DG 23 Starting Air Receiver No. 25 Inlet Check Valve	3	F22546	2F	BC	1	CK	SA	NO	--	Q	--	---	---
SD0004C	DG 23 Starting Air Receiver No. 26 Inlet Check Valve	3	F22546	1F	BC	1	CK	SA	NO	--	Q	--	---	---

RR45

Per NRC Letter ST-AE-HL-93298, RR not required.

RR46

Per NRC Letter ST-AE-HL-93298, RR not required.

RR47 (Cold Shutdown Justification)

Test Requirement

Exercise check valves for operability at least once every three (3) months.

Basis for Relief

Due to plant design, it is not practical to verify by any positive means, either directly or indirectly, the operability of these normally open check valves per the requirements of IWV-3522(a).

The following series check valves are installed in their respective systems with no provisions for independently testing each valve:

CC-0327 and CC-0759	CC-0363 and CC-0757
CC-0321 and CC-0756	CC-0346 and CC-0758
CC-0540 and CC-0541	CC-0402 and CC-0763
CV-0036A and CV-0037A	CV-0036B and CV-0037B
CV-0036C and CV-0037C	CV-0036D and CV-0037D

The following valves can not be tested due to the requirement to disable all of the Component Cooling Water system in order to verify valve closure:

CC-0051, CC-0131, AND CC-0191

The following valves are installed in such a way that verifying valve closure is impractical:

RM-0003, RM-0010, and RM-0013  
EW-0370A, EW-0370B, and EW-0370C  
EW-0403, EW-0404, and EW-0405

Alternate Testing

These check valves will be verified operable by disassembling one valve each refueling outage on a rotating basis for inspection to ensure no degradation has occurred and to provide baseline data for the non-intrusive check valve testing program. If any check valve selected during any refueling outage shows signs of unacceptable degradation, all other check valves in the sample group will be disassembled and inspected during the refueling outage. The number of valves selected for disassembly each refueling outage will ensure that all valves in any sample group are disassembled and inspected within six years. When approved and sufficient baseline data has been obtained, inspections for operability on these check valves will be performed using non-intrusive methods. Disassembly and inspection will be used when results of the non-intrusive method is inconclusive or show signs of degradation.



Unit 2 Pump and Valve  
Inservice Test Plan

Rev. 4, Supp. 2

ROJ-1 (Refueling Outage Frequency Justification)

Applicable Valves

2R202TCC0058: CCW Supply A Train RCFC ICIV  
2R202TCC0013: CCW Supply A Train RHR ICIV  
2R202TCC0138: CCW Supply B Train RCFC ICIV  
2R202TCC0123: CCW Supply B Train RHR ICIV  
2R202TCC0198: CCW Supply C Train RCFC ICIV  
2R202TCC0183: CCW Supply C Train RHR ICIV

Test Requirement

OMa Part 10 Section 4.3.2 Exercising Frequency. Check valves shall be exercised nominally every 3 months, except as provided by paragraphs 4.3.2.2, 4.3.2.3, 4.3.2.4, and 4.3.2.5.

Basis for Deferral (Refueling Outage Justification)

The subject check valves are located inside containment. Due to the CCW System design, during plant operations and cold shutdowns it is not practical to verify by any positive means, either directly or indirectly, the obturator movement to the closed position per OMa Part 10, 4.3.2.2(a) and 4.3.2.4(a).

Alternate Testing

In accordance with OMa Part 10, 4.3.2.2(e) these valves will be exercised each refueling outage in conjunction with the 10CFR50 Appendix J Local Leak Rate Test. Currently STP has not incorporated OMa Part 10 into its Inservice Test Program; however, past correspondence with NRR (Ref. ST-AE-HL-93298) indicates Code Relief is not required to incorporate a provision of the ASME Section 1989 Edition (including OMa Part 10) which was incorporated by rulemaking on September 8, 1992.