FCS Station

Combustion Turbine No.1

Notes

Revised: *5/31/2022*

Operator Name: _____

Date: _____

Purpose:

The purpose of this document is to provide guidance and documentation for performing an operational round on plant equipment. These rounds are necessary to ensure maximum operational availability and reliability.

Scope:

The scope of this document is the Combustion Turbine No.1 and its support equipment.

Description:

1) In addition to periodic monitoring, operating logs should be taken on Combustion Turbine No.1 DAILY when in operation. The initial set of operating logs should be taken AFTER the machine has reached steady operating conditions after reaching the expected loading. The parameters on these log sheets can be used as a comparison point if operating conditions (i.e., loading) is changed during the course of that day.

2) Pre-Startup Logs should be taken WEEKLY when CT-1 is in a "ready to start" condition and within 24 hours of startup if practical (i.e., non-emergency starts).

Action:

Inform the Shift Supervisor of abnormal conditions found and attempt to correct them during the round. Document any abnormal conditions noted during the round, personnel notified, and actions taken to correct them (if applicable) in the remarks section.

Notes:

Note 1:	Inspect all electrical components for faults, targets, and signs of phsyical damage or overheating (i.e. charring, abnormal smells). Immediately report electrical abnormalities to the Shift Supervisor.
Note 2:	General Inspection includes: Cleanliness, leaks; damage; lighting; abnormal temperatures, sounds, vibrations or smells; safety and fire hazards, and other abnormal conditions.
Note 3:	Check for variance between channels. Record highest value and associated channel.

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CT Operating Logs

DATE_____

#	System	Location	Check	MIN	Normal	MAX	Units	Actual Reading
			Control Enclosure					
	General	Control Enclosure	Inspect Control Enclosure (Note 2)		SAT			SAT / UNSAT
	Control Enclosure	PowerPac LCP	Generator Actual Load			18	MW	
	Control Enclosure	PowerPac LCP	Generator Reactive Load			19	MVAR	
	Electrical Distribution	PowerPac LCP	Bus Voltage (Note 3)				VAC	
	Generator Electrical	PowerPac LCP	Stator Temperature (Note 3)			100	deg C	
	Exciter	PowerPac LCP	Field Current (Note 3)				A	
	Exciter	PowerPac LCP	Field Voltage (Note 3)				VDC	
	Generator Electrical	PowerPac LCP	Generator Voltage (Note 3)			4325	VAC	
	Generator Electrical	PowerPac LCP	Generator Current (Note 3)				A	
	Combustion Turbine	PowerPac LCP	Free Turbine Speed (N_3)	900	3600	4100	RPM	
	Combustion Turbine	PowerPac LCP	Gas Generator Speed (N_2)	5400		9000	RPM	
	Exciter	PowerPac LCP	Voltage Regulator Operating Mode		AUTO			
	Exciter	PowerPac LCP	Droop Mode Selector 43-3		PARALLEL			
	Generator Electrical	Relay Cabinet	Inspect Relays (Note 1)		SAT			SAT / UNSAT
	Auxiliary Electrical	MCC	Inspect MCCs (Note 1)		SAT			SAT / UNSAT
	Electrical	Battery	Inspect Batteries for damage		SAT			SAT / UNSAT

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CT Operating Logs

DATE_____

#	System	Location	Check	MIN	Normal	MAX	Units	Actual Reading
Turbine Compartment								
1	General	Turbine Compartment	Inspect Turbine Compartment (Note 2)		SAT			SAT / UNSAT
2	Lube Oil	Lube Oil Reservoir	Gas Generator Lubricating Oil Tank Level (Dipstick)	L	3/4	F		
3	Lube Oil	Gas Generator	Main Oil Pressure	35	40-50		psig	
4	Lube Oil	Gas Generator	Strainer D/P		8-10	30	psid	
5	Lube Oil	Gas Generator	Oil Temperature to Gas Generator		130-150	225	deg F	
6	Lube Oil	Gas Generator	Oil System Breather Pressure		0-2.5	5	psig	
7	Lube Oil	Lube Oil Reservoir	Free Turbine Lubricating Oil Tank Level (Dipstick)	L	3/4	F		
8	Lube Oil	Free Turbine	Main Oil Pressure	35	40-60		psig	
9	Lube Oil	Free Turbine	Strainer D/P		8-10	30	psid	
10	Lube Oil	Free Turbine	Oil Temperature to Free Turbine		130-150	225	deg F	
11	Lube Oil	Free Turbine	Oil System Breather Pressure		0-1	3	psig	
12	Lube Oil	Free Turbine	Scavenge Oil Pressure		15	30	psig	
Generator Compartment								
13	General	Generator Compartment	Inspect Generator Compartment (Note 2)		SAT			SAT / UNSAT
14	Fire Protection	Generator Compartment	Inspect CO_2 Bottles and Fire Protection system for past due calibration dates and/or signs of damage.					SAT / UNSAT
15	Lube Oil	Lube Oil Reservoir	Lubricating Oil Tank Level (Dipstick)	L	3/4	F		
16	Generator Cooling	Generator Compartment Gauge Board	Exciter Air Discharge Temperature			170	deg F	
17	Generator Cooling	Generator Compartment Gauge Board	Generator Air Discharge Temperature			170	deg F	

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#	System	Location	Check	MIN	Normal	MAX	Units	Actual Reading
18	Lubricating Oil	Generator Compartment Gauge Board	Generator Outboard Bearing Oil Temperature		130	150	deg F	
19	Lubricating Oil	Generator Compartment Gauge Board	Generator Inboard Bearing Oil Temperature		130	150	deg F	
20	Lubricating Oil	Generator Compartment Gauge Board	Bearing Oil Pressure	5	13		psig	
Fuel Oil Skid								
21	Fuel Oil	Fuel Oil Forwarding Skid	Inspect Fuel Oil Skid (Note 2)		SAT			SAT / UNSAT
22	Fuel Oil	Fuel Oil Forwarding Skid	Fuel Oil Pressure	1	5-50	50	psig	
23	Fuel Oil	Fuel Oil Forwarding Skid	Fuel Oil Temperature			100	deg F	
24	Fuel Oil	Fuel Oil Forwarding Skid	Fuel Oil Strainer Pressure				psid	
25	Fuel Oil	Coalescer	Inspect Coalescer		CLEAN	DIRTY		
AirPac Enclosure								
26	Service Air	AirPac Enclosure	Inspect AirPac Enclosure (Note 2)		SAT			SAT / UNSAT
27	Service Air	Air Compressor	Check Air Compressor Oil Level	Low	Normal	High		
28	Starting Air	AirPac Gauge Board	Starter Supply Air Pressure	50		60	psig	
Control Room								
29	General	Control Room	Inspect Control Room (Note 2)		SAT			SAT / UNSAT
30	Generator Electrical	Starting Sequence Screen	Generating Mode		Parallel			
31	Engine Mechanical	Operating Overview Screen	Low Pressure Compressor (N_1) Speed			6700	RPM	
32	Engine Mechanical	Operating Overview Screen	High Pressure Compressor (N_2) Speed			9000	RPM	
33	Engine Mechanical	Operating Overview Screen	Free Turbine (N_3) Speed		3600	4125	RPM	
34	Combustion Air	Operating Overview Screen	Turbine Discharge Temperature (Average)			VARIES	deg F	

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CT Operating Logs

#	System	Location	Check	MIN	Normal	MAX	Units	Actual Reading
35	Combustion Air	Operating Overview Screen	Turbine Discharge Temperature Spread (Delta)			150	deg F	
36	Generator Electrical	Loading Overview Screen	Generator Voltage (Note 3)			4325	VAC	
37	Generator Electrical	Loading Overview Screen	Generator Current (Note 3)			1641	A	
38	Generator Electrical	Loading Overview Screen	Power Factor	0.85		1	pF	
39	Generator Electrical	Loading Overview Screen	Generator Frequency		60		Hz	
40	Electrical Distribution	Loading Overview Screen	Bus Voltage				VAC	
41	Electrical Distribution	Loading Overview Screen	Bus Frequency		60		Hz	
42	Generator Electrical	Loading Overview Screen	Exciter Voltage				VDC	
43	Generator Electrical	Loading Overview Screen	Exciter Current				A	
44	Vibration Monitoring	Vibration Monitoring Screen	Vibration Monitor - Gas Generator 1			5.00	mils	
45	Vibration Monitoring	Vibration Monitoring Screen	Vibration Monitor - Gas Generator 2			5.00	mils	
46	Vibration Monitoring	Vibration Monitoring Screen	Vibration Monitor - Free Turbine Inlet End			8	mils	
47	Vibration Monitoring	Vibration Monitoring Screen	Vibration Monitor - Free Turbine Exhaust End			8	mils	
48	Vibration Monitoring	Vibration Monitoring Screen	Vibration Monitor - Generator Inboard (Turbine)			2.5	mils	
49	Vibration Monitoring	Vibration Monitoring Screen	Vibration Monitor - Generator Outboard (Exciter)			2.5	mils	
50	Combustion Air	Exhaust Temperatures Screen	Hottest Temperature (Note 3)			1215	deg F	
51	Combustion Air	Exhaust Temperatures Screen	Average Temperature (Note 3)				deg F	
52	Combustion Air	Exhaust Temperatures Screen	Coldest Temperature (Note 3)				deg F	

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CT Operating Logs

#	System	Location	Check	MIN	Normal	MAX	Units	Actual Reading
53	Combustion Air	Exhaust Temperatures Screen	Spread			150	deg F	
54	General	Ovation Control System	Review All Screens for Faults, Alarms or Warnings		SAT			SAT / UNSAT
Outside/General Checks								
55	General	CT-1 Enclosure	Walk outside of CT-1 Enclosure and note any abnormal conditions. (Note 2)					SAT / UNSAT
56	Electrical	Transformer	Output Transformer Oil Level	LO		HI		
57	Electrical	Transformer	Output Transformer Temperature			50	deg C	

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CT Operating Logs

Log all abnormal conditions, comments, and notifications below	
TIME	**REMARKS**

Record CT Operating Hours _____ hrs

Record Part Load Time _____ hrs

Record Base Load Time _____ hrs

Record Peak Load Time _____ hrs

Record Fuel Oil Totalizer _____ gal

Record Average Daily Fuel Consumption _____ gal

Was Lubricating Oil Added? If yes, record amount added: _____ gal

Sump: _____

Operator Name: _____ Date: _____