

ELLIOTT COMPANY

SERVICE ENGINEERING DEPARTMENT

SERVICE MAN'S REPORT

DATE August, 16-22, 1965.

RECEIVED REG. SERV. MGR.	User's Name		S.O.	Equipment	Serial No.
HEADQUARTERS SERVICE ENG.	Northern Chemical Inds.,		R-2074-5-6	20HP Turbines	R-2074-5-6
	Location		S.O.	Equipment	Serial No.
	Searsport, Maine.				
	Reported To:		Service Order No.		
	Mr C.E. West		ER65-0223		

PLAINTIFF'S
EXHIBIT
ET-20

August, 16, 1965.

Turbine Serial No. 2074 driving the boiler feed water pump inspected and reassembled, new nozzle ring installed in the unit, also shaft carbon packing rings, at the next overhaul the shaft under the carbon packings should be reconditioned, the show wear and are scored.

August, 17, 1965.

Turbine Serial No. 2076 driving the boiler forced draft fan has been dismantled, this unit in good condition, reassembly has been started, the the air operated governor or constant pressure regulator being installed, this regulator has been change from the original as shipped to correspond to standard linkage as shown in instruction book 100-G figure 171, the customer requesting that this change be made so that the unit will at all time be operated on the control valve rather than the mechanical shaft governor.

August, 18, 1965.

The inspection and repairs to turbine unit R-2076 completed.
Started the inspection and repairs to turbine unit Serial No. R-2075 driving the induced boiler shaft fan, new rotor and nozzle ring being installed in this unit. The constant pressure regulator governor also being installed on this unit.

August, 19, 1965.

The inspection and repairs to unit Serial No. R-2075 completed today, these unit were started today and operated for the setting of governor speed.

Unit Serial No. R-2076 driving the forced draft boiler fan checked the overspeed trip set at 5500 rpm the mechanical shaft governor at 4600 rpm, the pressure regulator set to operated and minimum and full speed of about 4100 rpm, the unit operated very well control speed as required.

Unit Serial No. R-2075 also started and operated, the overspeed trip set at about 5600 rpm, mechanical shaft governor at about 4650 rpm, the constant pressure regulator at minimum and full speed of about 4100 rpm, this unit operating satisfactory.

The speeds of these unit set at the customer request, in case of failure to the constant pressure regulator that the mechanical shaft governor would take over and operated at required speed and load without reducing the plant operation.

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HEADQUARTERS SERVICE ENG.	SERVICE MAN'S REPORT		DATE _____	
User's Name	S.O.	Equipment	Serial No.	
Northern Chemical Inds.	7402	Turbine	13793	
Location	S.O.	Equipment	Serial No.	
Leicester, Maine	9-10	Generators	9-10	
Reported To:	Service Order No.			
Mr C.L. West.	18-10008	18-10008		
	EA-90-0238			

August, 19, 1963.

The turbine generator unit operating at light load, during the day the 3000 HP. synchronous motor was started and operating at light load the turbine generator load being about 2000 KW, it was observed that there was a slight sparking of the inside ring of the rotor of the generator, attempted to clear this condition, there appears to be a flat spot on this ring which may cause the sparking, this condition to be observed during the night if sparking continues the unit may be shutdown and this ring reconditioned again.

The Elliott-Crocker Wye Per Induction motor Serial No. 20610 which was sent to Westinghouse Company repair shop in Augusta, Maine, reason of the plant cause for the failure of this motor was the loose bars in rotor, these were silver solder to the retaining rings, motor now operating satisfactory.

August, 20, 1963.

The turbine generator unit shutdown for the reconditioning of the inside ring of the generator rotor, the sparking continued to such an extent that the sparking was excessive, after the ring was reconditioned using the portable grinder the unit started and placed in service, no sparking observed, unit operating at a load of about 2000 KW.

August, 21, 1963.

This job completed, unit all operating satisfactory, returned to Portsmouth.

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HEADQUARTERS SERVICE ENG.		SERVICE MAN'S REPORT		DATE August 12, 1963	
User's Name	Hobbs & Co. Electrical Ind.	S.O.	400	Equipment	Turbine
Location	St. Petersburg, Maine	S.O.	20	Equipment	Generators
Reported To:	Mr. C.D. West.	Service Order No.	81-77-1730	Serial No.	1 10000-1

August, 12, 1963.

The exciter armature returned from the Westinghouse company repair shop at Augusta, Maine, the insulation resistance at the present is 1.5 megohms, this is the greatest value that could be obtained, new bearing sleeves installed for this unit.

August, 13, 1963.

The exciter assembled ready for the balancing, it will necessary to delay the balancing of this unit until the turbine unit is operated.

The bearing clearances of the exciter bearing sleeves is commutator end .000", the coupling end .007"

August, 14, 1963.

The turbine steam admission valves checked, these in good condition, the opening settings of these valves as follows:

No. 1	.300"	
No. 2	.377"	this setting changed from factory settings to
		to stop hunting of unit.
No. 3	.310"	
No. 4	.302"	
No. 5	.340"	
No. 6	.342"	
No. 7	.422"	

The exciter was realigned to the generator the alignment as follows:

Coupling Rim		Coupling Face.
Top	.000	.000
R.R.S.	-.001"	.000
Bot.	.002"	-.002"
L.R.S.	.000-	.000

Steam supply will be available for operation of unit on August, 15th.

August, 15, 1963.

The unit started and operated for the grinding of collector rings and exciter armature commutator, this completed, also the balancing of the exciter armature completed the amount of weight applied was 1 oz., on the commutator end, the unbalancing of this unit now about 1/2 mil, unit shutdown for the assembly of the collector ring and exciter brush yokes.

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REG. SERV. MGR.			DATE	
HEADQUARTERS SERVICE ENG.				
☐ Boston	User's Name Northern Chemical Inds	S.O. 7402	Equipment Turbine	Serial No. 10
☐	Location Searsport, Me.	S.O. 10001-0-10	Equipment Generators	Serial No. 18-10002-7
☐	Reported To: Mr. C. J. West.	Service Order No. SA-10-0238		

This unit started and placed in service operating at light load of about 700 HP, this is the load that will be maintained during the weekend, unit operating very well the minimum governor speed being, 3500 rpm a speed about 3800 rpm, overspeed trip at 3940 rpm, the unit plant to be placed in service on August, 10th., the oil is being at 1/2 oiler contactor bearing, some on filter and coupling and bearing.

The Crocker Wheeler Elliott Company induction motor driving the 1000 HP ed water pump serial number 20310, rated at 200 HP, out of service due to losing its starting torque, it appears as if the contact bar to the torque ring has loosened. This motor has been shipped to Westinghouse Electric Company, Augusta, Maine re air shop this to be returned to the plant on August, 10th, pending to be in progress during the weekend.

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REG. SERV. MGR. HEADQUARTERS SERVICE ENG.		DATE August, 7 30, 1963	
SERVICE MAN'S REPORT			
User's Name	S.O.	Equipment	Serial No.
Portsmouth Chemical Inds.	71401	Refrigerator	18281
Location	S.O.	Equipment	Serial No.
Refrigerator, 1000	10	Refrigerators	10
Reported To:	Service Order No.		
Mr. C.L. West.	64-20-0238		

August, 9, 1963,

The carbon packings for the exhaust end of turbine removed for inspection found the same condition as on the high pressure end packings the wear being on the top side of rings, the original tool marks on the bottom side of these rings, also these rings tight in the packing case, caused by the metal segments the wear to these rings about .002" these rings will be used again, the metal segments fitted so as to allow clearance to the packing rings, and free to turn providing the inside diameter of these ring about 3.521", original diameter 3.519", the high pressure end carbon packing have been installed also freeing the metal segments for clearance in the packing case, the size of these rings show a wear of about .003", original size 3.579", the designed clearance not altered, as was requested.

All bearings inspected, but not the top half of bearings in place, the size of these bearings are as follows,

No. 2 Bearing and Shaft
Shaft 5.9015"
Bearing 6.006"

No. 3 Bearing and Shaft.
Shaft 6.439"
Bearing 7.007"

No. 4 Bearing and Shaft
Shaft 6.985"
Bearing 7.010"

August, 10, 1963.

All bearing housing in place, started to inspect the steam admission valve gear.

It is expected that the exciter structure will be returned from the Hawthorne Company repair shop on August, 12th, balancing of structure to be made after that date, the balancing could not be accomplished until insulation resistance was of a standard value, if accomplished before it being the balance may have been upset again.

Returned to Portsmouth this afternoon for the weekend.

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REG. SERV. MGR. HEADQUARTERS SERVICE ENG.		DATE <u>August, 7-8, 1963</u>	
SERVICE MAN'S REPORT			
User's Name	S.O.	Equipment	Serial No.
<u>Northern Chemical Inds.</u>	<u>7407</u>	<u>Turbine</u>	<u>18731</u>
Location	S.O.	Equipment	Serial No.
<u>Seabrook, Maine</u>	<u>18-1000-1</u>	<u>Generators</u>	<u>18-1000-1</u>
Reported To	Service Order No.		
<u>Mr C.L. West.</u>	<u>SA-20-0238</u>		

August, 8, 1963.

The main and thrust bearings of steam end of turbine has been inspected, these in good condition, the total thrust float is .012", the shaft and bearing size are as follows:

Shaft 5.9921"
Bearing 6.0091"

The exciter armature still being cleaning to increase the insulation resistance at the present time resistance is 600,000 ohms, heat being applied during the night after another thorough cleaning with solvent.

When the carbong packings for the steam end of turbine were removed found these to show wear on top the original tool marks on the bottom side, also these appear to be tight sideways in the packings cause this may be the cause for the manner in which these are wearing.

August, 8, 1963.

The the inspection of the governor completed new governor weight springs, pilot valve and bushing installed, the bearings and gears in good condition.

The exciter armature shipped to the Westinghouse Electric Company Augusta, Maine repair shop, for the repairs to the insulation resistance they have the facility at that plant for cleaning and baking after the cleaning attempted for three days at this plant the maximum insulation resistance was only 600,000 ohms, this is not safe operating conditions for this unit.

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ADQUARTERS SERVICE ENG.	SERVICE ENGINEERING DEPARTMENT		DATE _____	
User's Name _____		S.O. _____	Equipment _____	Serial No. _____
Location _____		S.O. _____	Equipment _____	Serial No. _____
Reported For _____		Service Order No. _____		

August, 5, 1963

Reported into this plant this morning for the inspection and overhaul of the equipment installed in this plant.

During the day the exciter was dismantled for cleaning before attempting to balance the armature of this unit, the insulation resistance of this unit was zero on armature and about 10,000 ohms on the fields, at the present there are being cleaned, the armature commutator will be resurfaced.

The bearings for unit being opened for inspection.

August, 6, 1963.

The exciter commutator reinforced the diameter of the commutator after resurfacing was 7.704, the armature being cleaned the insulation resistance increased to about 60,000 ohms, cleaning to be continued.

The bearings for main unit opened these all appear to be in good condition, governor dismantled new governor weight and pin to be installed these slightly distorted.

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