[redacted] REG.SERV.MGR.
HEADQUARTERS SERVICE ENG.

ELLIOTT COMPANY
SERVICE ENGINEERING DEPARTMENT
SERVICE MAN'S REPORT

[redacted]

DATE August,16-22,1965.

User's Name	S.O.	Equipment	Serial No.
Northern Chemical Inds.,	R-2074-5-6	2CER Turbines	R-2074-5-6
Location	S.O.	Equipment	Serial No.
Searsport, Maine.			
Reported To:	Service Order No.		
Mr C.L. West	ER65-0223		

PLAINTIFF'S EXHIBIT ET-20

August,16,1965.

Turbine Serial No.2074 driving the boiler fee 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 draft 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.-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.

Form 1117(8-62)

☐ .....REG.SERV.MGR.	ELLIOTT COMPANY SERVICE ENGINEERING DEPARTMENT **SERVICE MAN'S REPORT**		PAGE ____ OF ____ DATE _____	
☐ HEADQUARTERS SERVICE ENG.	User's Name Northern Chemical Inds.	S.O. ,7402	Equipment Turbine	Serial No. 18798
☐	Location Searsport, Maine	S.O. 9-10 1S-10008-	Equipment Generators	Serial No. 9-10 1S-10008-
☐	Reported To: Mr C.L. West.	Service Order No. SA-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 genrator, 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 -Croker Wheeler induction motor Serial No.20810 which was sent to Westinghouse Company repair shop in Augusta Maine, returned to 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 for 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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REG.SERV.MGR.
ADQUARTERS SERVICE ENG.

ELLIOTT COMPANY
SERVICE ENGINEERING DEPARTMENT
SERVICE MAN'S REPORT

PAGE ___ OF ___
DATE August 10, 13, 1963

User's Name	S.O.	Equipment	Serial No.
Westinghouse Electrical Ind.,	[illegible]	[illegible]	1770[illegible]
Location	**S.O.**	**Equipment**	**Serial No.**
Augusta, Maine	13-10000-9	Generators	1 1000[illegible]
Reported To:	**Service Order No.**		
Mr C.L. Mack.	81-77-1[illegible]		

August, 12, 1963.

The exciter armature received from the Westinghouse company repair shop at Augusta, Maine, the insulation resistance at the present is ".5 megohms, this is the greatest value that could be obatined, 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 .005", the coupling end .005"

August, 14, 1963.

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

No.1	.306"
No.2	.377"
No.3	.310"
No.4	.302"
No.5	.346"
No.6	.342"
No.7	.402"

This setting changed from factory settings due to the binding of unit.

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

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

...REG.SERV.MGR. / HEADQUARTERS SERVICE ENG.	ELLIOTT COMPANY SERVICE ENGINEERING DEPARTMENT SERVICE MAN'S REPORT		PAGE ____ OF ____ DATE ____	
☐ Boston	User's Name: Northern Chemical Inds	S.O.: 7402	Equipment: Turbine	Serial No.: [illegible]
☐	Location: Searsport, Maine	S.O.: 10000-9-10	Equipment: Generators	Serial No.: 10 18-10003-9
☐	Reported To: Mr. C.L. West.	Service Order No.: SA-[illegible]-0238		
☐				

This unit started and placed in service operating at light load of about 700 KW, this is the load that will be maintained during the weekend, unit operating very well the minimum governor speed being, 3500 rpm maximum speed about 3800 rpm, overspeed trip at 3940 rpm, the main plant to be placed in service on August, 19th., the exciter balance at at 1/2 miles commutator bearing, same on field and coupling and bearing.

The Crocker Wheeler Elliott Company induction motor driving the [illegible] feed water pump serial number 20810, rated at 200 HP, out of service due to loosing its starting torque, it appears as if the copper bar to the torque ring has loosened. This motor has been shipped to Westinghouse Electric Company, Augusta, Maine repair shop this to be returned to the plant on August, 19th, remains to be in progress during the weekend.

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[illegible] REG.SERV.MGR. / ADQUARTERS SERVICE ENG.	ELLIOTT COMPANY SERVICE ENGINEERING DEPARTMENT SERVICE MAN'S REPORT		PAGE ____ OF ____ DATE August, [illegible]	
☐ Boston	User's Name: Northern Chemicals Inds.,	S.O.: [illegible]	Equipment: Turbine	Serial No.: 1829
☐	Location: [illegible], Maine	S.O.: 10 [illegible]	Equipment: Generators	Serial No.: 10 [illegible]
☐	Reported To: Mr C.L. West.	Service Order No.: SA-[illegible]-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 were 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, cause by the metal segements the wear to these rings abut .002" these rings will be used again, the metal segments fitted so as to allow clearance to the packing rings, and free to take proper settings the inside diameter of these ring about 8.521", original diameter 8.519", 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 .005", original diameter 8.5[illegible]", the designed clearance not changed, as was requested.

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

No.2 Bearing and Shaft
Shaft, 5.9915"
Bearing [illegible].006"

No.3 Bearing and Shaft.
Shaft 6.[illegible]9"
Bearing 7.00[illegible]"

No.4 Bearing and Shaft
Shaft 6.9[illegible]5"
Bearing 7.010"

August, [illegible], 1963.

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

It is expected that the exciter armature will be returned from the Westinghouse Company repair shop on August, 12th, balancing of armature to be made after that date, the balancing could not be accomplished until insulation resistance was at a standard valve, if accomplished before [illegible] the balance may have been upset again.

Returned to Portsmouth this afternoon for the weekend.

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[illegible] REG.SERV.MGR. / ADQUARTERS SERVICE ENG.	ELLIOTT COMPANY SERVICE ENGINEERING DEPARTMENT SERVICE MAN'S REPORT		PAGE ___ OF ___ DATE August, 7-8, 1963	
Boston	User's Name: Northern Chemical Inds.	S.O.: 7402	Equipment: Turbine	Serial No.: 18793
	Location: Searsport, Maine	S.O.: 1S-10003-19	Equipment: Generators	Serial No.: 1S-10003-1
	Reported To: Mr C.L. West.	Service Order No.: SA-90-0238		

August, 7, 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 5.992"
Bearing 6.009"

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 sidewise in the packings easethis may 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 vlave 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 insualtion resistance was only 600,000 ohms, this is not safe operating conditions for this unit.

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..... REG. SERV. MGR. / ADQUARTERS SERVICE ENG.	ELLIOTT COMPANY SERVICE ENGINEERING DEPARTMENT SERVICE MAN'S REPORT		PAGE ____ OF ____ DATE [illegible]	
	User's Name	S.O.	Equipment	Serial No.
	[illegible]	[illegible]	[illegible]	[illegible]
	Location	S.O.	Equipment	Serial No.
	[illegible]	[illegible]	[illegible]	[illegible]
	Reported To:	Service Order No.		
	[illegible]	[illegible]		

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 100,000 ohms on the fields, at the present these are being cleaned, the armature commutator will be resurfaced.

The bearings for unit being opened for inspection.

August, 6, 1963.

The exciter commutator resurfaced the diameter of the commutator after resurfacing was 7.7[illegible]" 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 ingood condition, governor dismantled new governor weight [illegible] to be installed these slightly distorted.

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