

PLAINTIFF'S
EXHIBIT

WB-940

City of Austin
Holly Street
Unit No. 3

Turbine C N 13-A-2835-1
Gen: C N 18-69-P-168

Austin, Texas
Book No. 1



H000721

Instruction Book



165,000 KW TURBINE

for

CITY OF AUSTIN, TEXAS
Holly Street Power Station
Unit Number Three
Austin, Texas

General Order SA-32800-T1

Serial No. H.P.-I.P. 13-A-2835-1
L.P. 13-A-2836-1

Instruction Book 1250-C606

June, 1965

Westinghouse Electric Corporation

Steam Divisions - South Philadelphia Works
Essington, Pennsylvania

13-A-
2834

CONFIDENTIAL - PURSUANT
TO PROTECTIVE ORDER

H000759

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HEAT EXCHANGE EQUIPMENT	2

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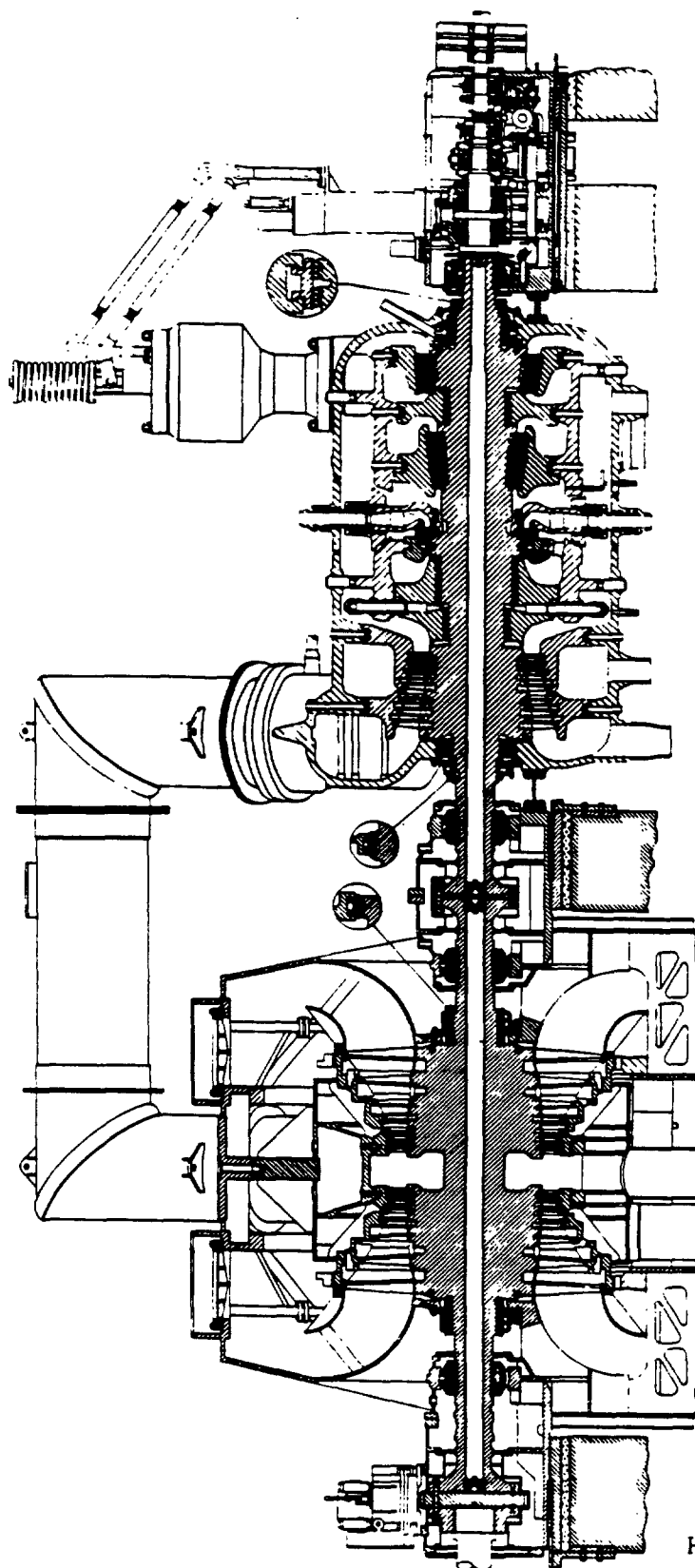
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165 M.W. REHEAT TURBINE
 TANDEM-COMPOUND DOUBLE-EXHAUST 3600 RPM
 1800 PSIG-1000F-1000F REHEAT-20 IN. HG ABS



P-69610

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Longitudinal Section
 P-69610

SPECIAL DATA



CAPABILITY 165,000 KW

SPEED 3600 RPM

DESIGN CONDITIONS

Steam Inlet Pressure 1800 PSIG.
Steam Inlet Temperature 1000°F.T.T.
Steam Reheat Temperature 1000°F.T.T.
Exhaust Pressure 2.0 IN.HG.ABS.

EXTRACTION OPERATION - Feedwater Heating - 6 Stages

ALLOWABLE STEAM PRESSURE AND TEMPERATURE VARIATIONS

The turbine rating, capability, steam flow, speed regulation and pressure control are based on operation at rated steam conditions. The turbine-generator unit is capable of operation under the following variations in steam pressure and temperature.

These allowable variations are intended to provide for operating emergencies and it is expected that such abnormal operation will be kept to a minimum, especially the occurrence of simultaneous variations in pressures and temperatures.

Initial Pressure

The initial steam pressure at the turbine throttle valve inlet flange shall be controlled so that it does not exceed 1980 psig but it may rise to 2070 psig as the turbine output approaches zero. During abnormal conditions the pressure may reach 2340 psig momentarily but the aggregate duration of such momentary swings shall not exceed 12 hours per 12-month operating period.

Reheat Pressure

The steam pressure at the turbine reheat admission is not controllable so no limits for swings or transients are necessary. The first relief valve should have a minimum setting of 15 percent above the high pressure turbine exhaust pressure when the high-pressure turbine is passing the maximum flow with rated steam and operating conditions.

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SPECIAL DATA

At full relief, the pressure at the high-pressure exhaust connection should have a pressure not greater than 25 percent above the high-pressure turbine exhaust pressure when the high-pressure turbine is passing the maximum flow with rated steam and operating conditions.

The recommended setting for the first relief valve in pounds per square inch gauge will be shown on the outline drawing and is based on the specific heat-balance diagram and pressure drop from the high-pressure exhaust connection to the inlet of the interceptor valve for the unit.

Initial Temperature

The steam temperature at the turbine throttle valve inlet flange shall average not more than rated temperature over any 12-month operating period. In maintaining this average, the temperature shall not exceed rated temperature by more than 15°F.

During abnormal conditions temperature shall not exceed rated temperature by more than 25°F for operating periods not more than 400 hours per 12-month operating period, nor 50°F above rated temperature for swings of 15 minutes duration or less, aggregating not more than 80 hours per 12-month operating period.

Reheat Temperature

The steam temperature at the turbine reheat admission shall average not more than rated temperature over any 12-month operating period. In maintaining this average, the reheat temperature shall not exceed rated reheat temperature by more than 15°F.

During abnormal conditions reheat temperature shall not exceed rated temperature by more than 25 degrees for operating periods not more than 400 hours per 12-month operating period, nor 50°F above rated reheat temperature for swings of 15 minutes duration or less, aggregating not more than 80 hours per 12-month operating period.

OUTLINE DRAWING	671-J-845
OIL SYSTEM AND CONTROL DIAGRAM	672-J-276
STEAM, DRAIN AND GLAND PIPING DIAGRAM	627-J-272
UNIT WIRING DIAGRAMS	456-B-556 621-C-443
	456-B-557 621-C-444
	456-B-558 788-D-996
	456-B-559

SPECIAL DATA

LONGITUDINAL SECTION PHOTO P-69610

BLADING

H.P. Turbine 1 - Curtis Stage
9 - Pairs of Rows of Reaction Blading

I.P. Turbine 12 - Pairs of Rows of Reaction Blading

L.P. Turbine 14 - Pairs of Rows of Reaction Blading
(7 Pairs of Rows in Each End)

GLANDS - Steam and Labyrinth Sealed

WEIGHTS

H.P.-I.P. Turbine Cylinder Cover (Including 2 Interceptor Valves)	76,000 LBS.
L.P. Turbine Cylinder Cover	45,800 LBS.
L.P. Blade Ring (Upper Half)	42,000 LBS.
H.P.-I.P. Turbine Rotor	33,000 LBS.
L.P. Turbine Rotor	48,000 LBS.
Generator Rotor	63,100 LBS.

CONTROL SETTING INSTRUCTIONS



I.B. 1250-C606

Frame - All Sizes - 300 Psi Oil System - Dwg. 458-B-731

NOTE: All pressures are at the turbine centerline.

Main Oil Pump Discharge - At Speed	320-380 Psig
Main Oil Pump Suction - On Auxiliary Pump & Turning Gear	10-20 Psig
Main Oil Pump Suction - At Speed	10-45 Psig
Bearing Oil On Auxiliary Pump - Relief Valve Closed	10-20 Psig
Brg. Oil At Speed - Relief Valve Disch. Pipe 1/4 to 1/2 Full	10-15 Psig
Governor Impeller Discharge - At Speed - Set Impeller Orifice	29-31 Psig
6 Turns Open from Breakdown Position	
Auxiliary Oil Pump Discharge	250 Psig or Higher
A.C. Turning Gear Oil Pump	10-25 Psig
D.C. Turning Gear Oil Pump	10-25 Psig
Autostop Oil Pressure - Relief Valve Setting	120-140 Psig

Governor Valve Servomotor

Control Oil Pressure - Valves Wide Open	45 Psig
Control Oil Pressure - Valves Closed	20 Psig
Servo Motor Travel	8 Inches

NOTE: Travel of servomotors pistons to be within 1/16 inches of each other throughout entire stroke.

Throttle Valve Servomotor & Controller

(Closed).	20 Psig
(Open).	43-47 Psig

Interceptor Valve Servomotor

(Closed).	17 Psig
(Open).	25-27 Psig

Reheat Stop Valves - Open.	50-60 Psig
Relief Valve Setting	80-90 Psig
Low Bearing Oil Trip - Reset 1 Psig Above Trip Point	5-7 Psig
Low Vacuum Trip - Reset 2-3 In. Above Trip Point	18-22 In. Vac.
Exhaust Pressure Trip	2.5-4.5 Psig
Overspeed Trip	3996 RPM

Pressure Switches

Turning Gear Motor	1-3 Psig
Auxiliary Oil Pump.	9-10 Psig
A.C. Bearing Oil Pump.	6-8 Psig
D.C. Bearing Oil Pump.	3-4 Psig
Hydraulic Thrust Trip	
Alarm	30 Psig
Trip - Electric or Hydraulic	50 Psig
Eccentricity Recorder Cutout (Approx. 1 Psig)	600 RPM

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CONTROL SETTING INSTRUCTIONS

Main Governor Relief Valve Setting 55-60 Psig

Governor Runback

Switch Closed at 40 Psig Auxiliary Gov. Cup Press.

Hydraulic Throttle Pressure Regulator

With 90-95% Rated Throttle Press. - Control Press. 45 Psig

With 80% Rated Throttle Press. - Control Press. 25 Psig

Rated Throttle Pressure 1800 Psig

Auxiliary Governor - Accelerometer

Cup Valve Pressure at Rated Speed 45 Psig

Dump Valve Trip Pressure 19-21 Psig

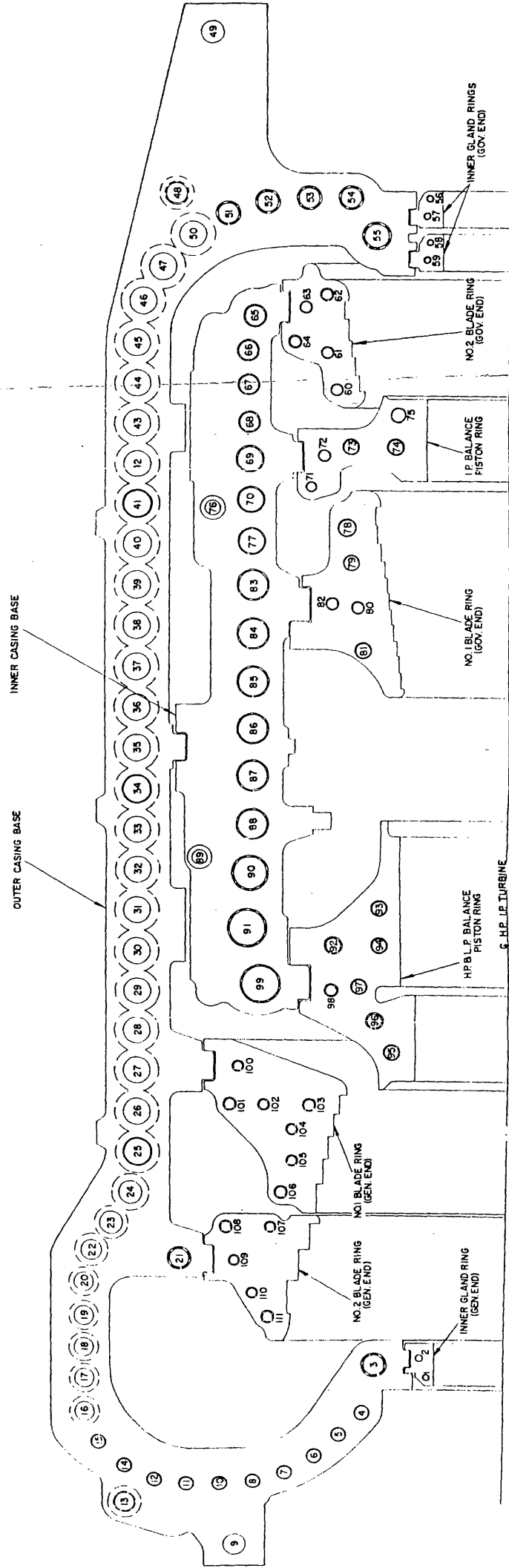
Relief Valve Setting 55-60 Psig

High Pressure Oil Smoothing Device

Relief Valve Setting 100-110 Psig

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NOTE: Due to the diversity of materials and sizes in cylinder flange bolting, refer to numbers shown on this diagram when ordering replacements.

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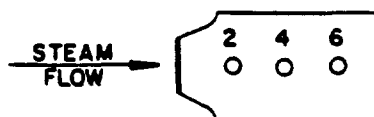
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Cylinder Bolting Diagram
674-J-767

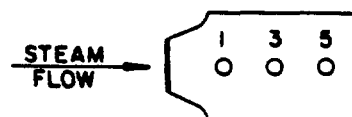


GOVERNING VALVE SETTING DIAGRAM

GOVERNING VALVE SETTING DIAGRAM



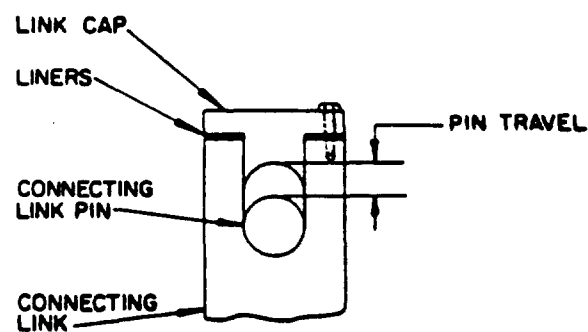
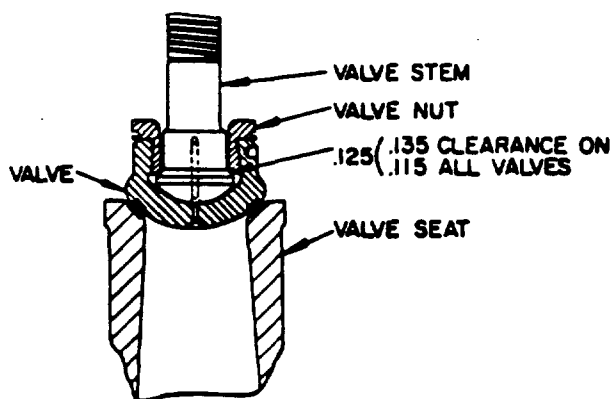
LEFT HAND CHEST



RIGHT HAND CHEST

VALVE NO.	VALVE LIFT	PIN TRAVEL
2	0.470	0.000
4	0.440	1.530
6	0.455	3.545

VALVE NO.	VALVE LIFT	PIN TRAVEL
1	0.470	0.000
3	0.465	1.065
5	0.530	3.015



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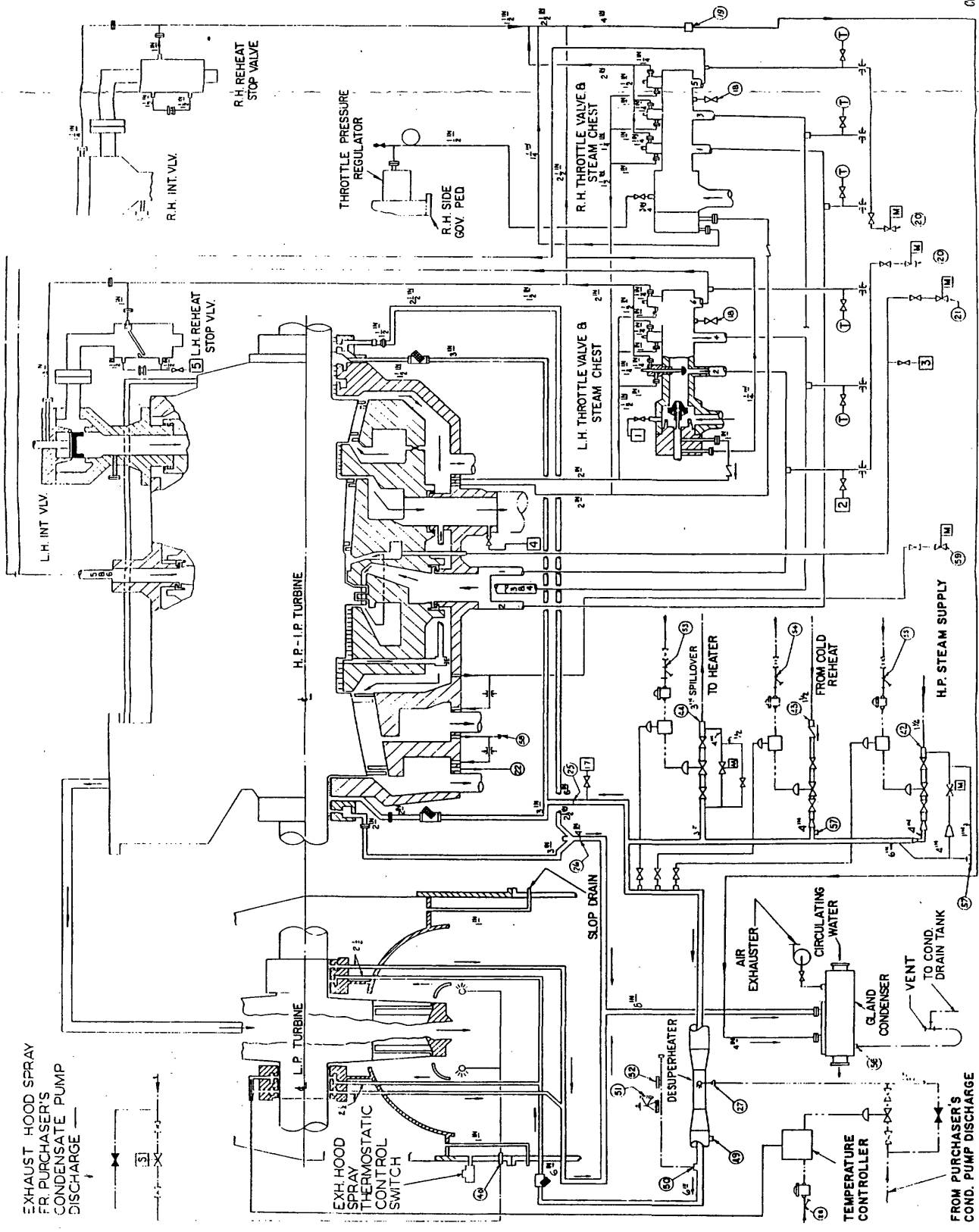
- LEGEND**
- ✗ VALVE (NORMALLY OPEN)
 - ✗ VALVE (NORMALLY CLOSED)
 - ⊠ MOTOR-OPERATED VALVE
 - ⊠ RELIEF VALVE
 - ⊠ SWING CHECK VALVE
 - ⊠ PNEUMATICALLY-OPERATED VALVE
 - ⊠ SOLENOID-OPERATED VALVE
 - ⊠ FIXED ORIFICE
 - ⊠ FLOW ORIFICE WITH TEST CONNECTIONS
 - ⊠ FLOW NOZZLE WITH TEST CONNECTIONS
 - ⊠ STEAM STRAINER
 - ⊠ TRAP
 - ⊠ GAUGE CONNECTION
 - ⊠ TEST GAUGE CONNECTION
 - PURCHASER'S PIPE CONNECTION
 - PURCHASER'S PIPING
 - AIR LINE
 - ⊠ PRESSURE REDUCING VALVE (AIR)
 - ⊠ CONTROL PILOT (AIR)
 - ⊠ SAFETY HEAD
 - ⊠ VENTURI REDUCER

NOTES

1- FOR ENCLOSED NUMBERS ☐ OR ☐ SEE SUPPLEMENT TO TURBINE OUTLINE. (PURCHASER'S PIPE CONNECTIONS)

2- REFER TO GLAND CONDENSER OUTLINE FOR LOCATION OF CONNECTIONS ON GLAND CONDENSER.

3- FOR OPERATING PRESSURES, TEMPERATURES & QUANTITIES OF STEAM FLOW AT PURCHASER'S PIPE CONNECTIONS, SEE TURBINE OUTLINE SUPPLEMENT (PURCHASER'S PIPE CONNECTIONS) DATA SHEET



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GLAND STEAM SEALING SYSTEM



I.B. 1250-C606

The function of the rotor gland steam sealing system is to prevent the leakage of air into, or steam from the turbine cylinders along the rotor ends. This function is accomplished by the following components, arranged as shown on the "Steam, Drain and Gland Piping Diagram" immediately following this leaflet.

The rotor glands are of the labyrinth type described in separate leaflets identified on the "Contents Sheet" of the instruction book.

The gland condenser, also described in a separate leaflet, maintains a pressure slightly below that of the atmosphere in the gland leakoff system so as to prevent the escape of steam from the ends of the glands.

The regulator valves, which maintain sealing steam to the rotor glands at a constant pressure of approximately 18 psia. under all operating conditions, their pressure control pilot valves and pressure reducing valves are shown diagrammatically on the "Steam, Drain and Gland Piping Diagram".

Drawings of these valves, supplied by their manufacturer, immediately follow the Steam, Drain and Gland Piping Diagram to enable the Purchaser to identify any parts required for replacement.

Each of the regulator valves is an air operated diaphragm control valve of the single seated design, having stainless steel trim with a renewable seat which is easily removed for examination or replacement.

The operating air to each valve is controlled by a pressure control pilot that is mounted on each of the valves. This pilot is a mechanical device that utilizes air at constant pressure and produces a variable output in response to a pressure change applied to a sensing element.

Air at a constant pressure of 20 to 22 psig is maintained to the pilot valve by an air set which consists of a strainer and reducing valve.

Isolation valves on the inlet and outlet side of each regulator permit maintenance on the valves. A by-pass line around the valve in the high pressure and spillover lines permits operation of the turbine during maintenance on the valve. The by-pass line is not required when the valve in the cold reheat line is isolated, since the sealing steam will be supplied from the high pressure system.

OPERATION

The following describes the operation of the regulator valves under various turbine operating conditions.

Sealing steam is required for all rotor glands. The shut-off valves in the high pressure steam system, the cold reheat system and in the spillover line to the heater will be open and the valves in the by-pass lines will be closed. The pneumatic gland pressure regulating valves are put in service by opening the air supply valves admitting

the desuperheater through a pipe to the spray nozzle located in the throat of the desuperheater. The cooling water is injected into the gland supply steam and the spray water droplets become atomized with the steam, thereby reducing the temperature of the mixture. The flow of cooling water to the spray nozzle is controlled by a diaphragm control valve responsive to an air signal from a temperature controller having its sensing bulb located at one of the L.P. glands.

Turbine Drain Valves

The main inlet steam piping, impulse chamber, and outer cylinder is provided with four drain valves which are motor operated to permit their operation from a remote location. Two of these valves are connected to the inlet piping through orifices with the third and fourth valve being connected directly to the impulse chamber and the outer cylinder. The arrangement of these valves and their associated piping is shown diagrammatically on the "Steam, Drain and Gland Piping Diagram".

P.O. No. 51-1-2835-085
Leslie Co. 64-13904

LESLIE CO. ITEM NO.	QTY.	SIZE & CLASS	DWG. NO.	REMARKS
1	1	1-1/4" DOUPX 2500# 6" STUB WELD ENDS	CV-21210 F.	Normally Open Code No. 7X6A5PLX CODING SEE DWG. CV-8094 F. Spring No. 34252

1A	1	PDA-1	CP-12740 F.	Control Pilot 13 psia. 20 psig.
----	---	-------	-------------	------------------------------------

1	1/4" AF-1	RV-19180 F.	Air Loader
---	--------------	-------------	------------

PER WESTINGHOUSE DWG. 784D594 SUB 7

2	1	1-1/2" DOS SWE 600#	CV-12815 F.	Normally Open Code No. 3P5A3PLX CODING SEE DWG. CV-8094 F. Spring No. 24301
---	---	------------------------------	-------------	--

2A	1	PDA-1	CP-12740 F.	Control Pilot 13 psia. 20 psig.
----	---	-------	-------------	------------------------------------

1	1/4" AF-1	RV-19180 F.	Air Loader
---	--------------	-------------	------------

PER WESTINGHOUSE DWG. 784D718

3	1	3" DDL5-1 BWE 150# Sch. 40 pipe	CV-15046 F.	Normally Closed Code No. 3P5A3RL CODING SEE DWG. CV-8094 F.
---	---	--	-------------	---

3A	1	PDA-1	CP-12740 F.	Control Pilot 13 psia. 20 psig.
----	---	-------	-------------	------------------------------------

1	1/4" AF-1	RV-19180 F.	Air Loader
---	--------------	-------------	------------

PER WESTINGHOUSE DWG. 784D719 ITEM-3

CERTIFIED CORRECT - LESLIE CO.


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H000776

Westinghouse Electric Corporation
P.O. No. 52-1-2835-097
Leslie Co. 64-17119

LESLIE CO. ITEM NO.	QTY.	SIZE & CLASS	DWG. NO.	REMARKS
1	1	3" ELSX BWE 600# Sch. 40 pipe	21291-B	Normally Closed Code No. 3X5X2X CODING SEE DWG. CV-8094 F. (X)=LIMITORQUE PER SPEC 325 STAINLESS 420 NITR STEM AND Main Valve HIGH TEMP. PACKING

PER WESTINGHOUSE DWG. 790D998 ITEM-1

CERTIFIED CORRECT - LESLIE CO.

S. Bilanick

Serial #
13-A-2835

Installation

Date 11/8/66

To HOUSTON - C. E. DETTY District Manager Steam Service

To G-3 SERVICE - T. B. GETTYS Manager Repair Service

S.O. 13A2835.2836 G.O. SA-32800

Customer CITY OF AUSTIN

CC: Lester Works, G-3, L. T. Division Service - J. R. Barrett, Mgr.

CC: E. Pgh. Works - LRAD - Gen. Service - H. Kindelberger, Mgr.

CC: G-3 DIVISION SERVICE - G. H. MIDDLEAUGH

CC: _____

The above unit is in commercial service and is being transferred as of this date to Repair & Division Service for future service problems. A final Field Report by the Erecting Engineer has been written listing outstanding problems, and/or work to be performed on the unit. A copy of his report is attached for Repair Service. Corrective action for the following incomplete deficiencies has been discussed with Mr. G. H. MIDDLEAUGH of Division Service.

UNIT WAS ROLLED WITH STEAM AT 7:53 AM 8/24/66 AND WAS PLACED ON THE LINE AT 1:52 PM THE SAME DATE.

UNIT HAS BEEN OPERATED TO RATED LOAD AND TEMPORARY STEAM STRAINERS HAVE BEEN REMOVED.

UNIT WAS PLACED IN COMMERCIAL OPERATION 10/31/66.

THE ERECTOR HAS BEEN INSTRUCTED TO SEND IN HIS START-UP REPORT COVERING OPERATION OF THE UNIT.

NOTE: No further work is to be authorized against the general order nor additional costs incurred after this date without Installation Service approval. PLEASE CLOSE THE "M" ORDER.

It is the responsibility of District Service to take prompt action and close open deficiency orders after corrective programs have been completed.

Manager, Installation Service E.F. WELLNER/T. HARDIN

H000787

CUSTOMER	STATION	RATING OR SIZE
City of Austin	Holly	165000
SA 32800	SERIAL NUMBER 13-A-2835	FRAME 2236-RT-7
7-26-65	Installed guide rollers on both ends of lower half of L.P. Inner blade case. (4) Installed the inner blade ring in the same case. Blew out the oil passages in #34 & #4 Brgs. Reamed the lower half with coupling guide. Brought the internal pipe for the steam oil supply and leak-off from the phillips and covered into the neck of the condenser. (3) Reamed by pass of #34 H bearing and reamed the thickened oil skin pads. Installing oil piping	
7-26-65	Put #34 & #4 Brgs in place, set the L.P. spindle in bearings and took taking clearances. (4) Reamed the under blocks from under the generator setting plate and set generator at approximate elevation on jack bolts. (4) Installing oil piping checked seal strut clearance. Set spindle on "K" 17" dimension moved all the way FWD .172" moved from "K" all the way aft .470".	
7-28-65	Put top half of L.P. Inner casing on and started it, although it leaked. Found wetness about 16 - 1 1/2 x 3 1/2 inch area. Called Roy Brown. (2) Put external on bottom of generator box. L.H. Redesign - case. Spindle travel FWD with top half on .172" AFT .475". Installing oil piping. L.H. Brown	

STATION

RATING OR SIZE

SERIAL NUMBER

FRAME

JA 52800

15-A-2835

7-14-59

Cleaning parts for motor

7-24

Work on front cooling water in
condenser.

7-24

Received 12 x 34 extension 2.0 and

7-30

put in and tightened. Put covers on
extension and installed them
which in the top half.Work on rear and side working
on broken and undrained.

H000818

ENGINEER'S SIGNATURE

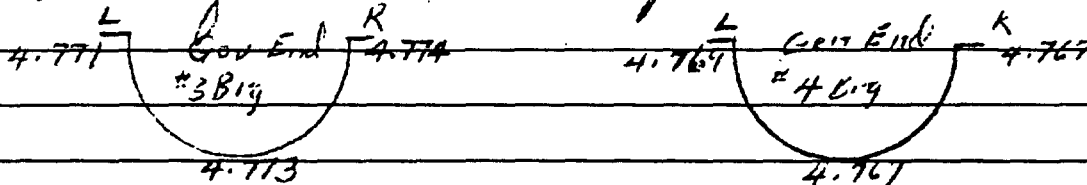
K.K. M. S. S.

CUSTOMER City of Austin	STATION Holly	RATING OR SIZE 165000
SA-32800	SERIAL NUMBER 13-A-2835	FRAME 27.96-RT-2

Monday

8-2-65

Miked from spindle to "O" marks on L.P. Turbine side by #3 & #4 bearings.



Obtained material made up and welded in place
4-9-20-25 Dwg 6714 J-1.11 - Echo Hood Spray Piping

Completed installing Thermal shields on top half

Put the lower halves of both steam seals in place and started the bolts.

Cleaning generator parts in preparation to assay

Tuesday

8-3-65

Cleaned all oil passages and honed all surfaces of the T.E. bearing bracket. Put the lower 3/4 of the shroud support in generator, and reassemble the lower half of the T.E. Brg. Bracket.

Put covers on the L.P. casing but did not bolt down

Wed

8-4-65

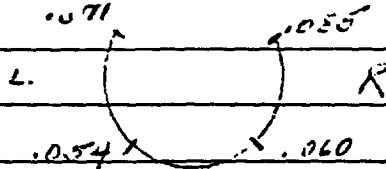
Bolted down the L.P. cover. Removed all the studs in the flanges of the inner and outer casing where the cross-over pipe bolts and - and lapped the threads with Fil-Dis.

CUSTOMER	STATION	RATING OR SIZE
	SERIAL NUMBER	FRAME
Wed 8-4-66 Can't id	Put generator shroud support in place and bolted to lower half of Brg. Bracket. Kyn. lower half of O.E. Brg. bracket. Started in with rotor.	
	Cleaned the surfaces on the generator and bushing bot and raised into place.	
Thursday 8-5-66	Completed putting rotor in and set it on the bearings.	
	Finished putting bolts in bushing bot flange and snugged up.	
Friday 8-5-66	Cleaned both hydrogen gland seal case, and mounted gaskets to them, could not find bolts and micarta tubes and washers to bolt them on. Called C.S. Brimber.	
	I still have not received the amount to add to the "G" Dimension to get the "FG" dimension for setting the generator.	
	I have not received any details of how to set the spacers that go between the generator seating plates and the L.P. turbine seating plate.	
ENGINEER'S SIGNATURE	H000816 K.K. McElroy	

No 0012C14

CUSTOMER City of Austin SAM 32800	STATION Holly SERIAL NUMBER 13-A-2835	RATING OR SIZE 165000 FRAME 2236-RT-2
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8-9-65 Generator shroud support seal clearance before
Monday top quarter is bolted in.

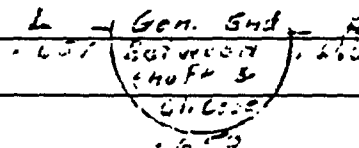
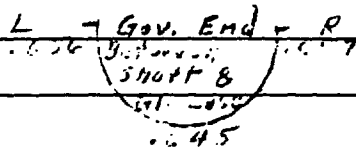


Set L.P. Spindle at "L" Dimension P. 76B

Spindle mike reading H.P. Tur. End .590

" " " Generator " .379

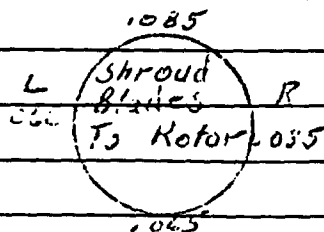
At the lower halves of the L.P. Shroud Cases



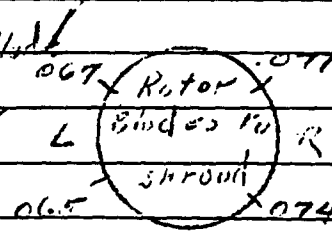
Installed lower half of shroud to shroud support.
Installing current transformer on generator

Tuesday
8-10-65 Three balance weights in holes 1-2-3 of the
generator half of coupling

Installing current transformer on generator
Installing lower blades on generator rotor
and installed the top quarter of the shroud



Generator Top Blade
Tip clearance .067
with top quarter
of shroud
support off.



Made a tool to lift top halves of gland
cases in place

CUSTOMER	STATION	RATING OR SIZE
City of Austin	Holly Street	165000
SAM 32800	SERIAL NUMBER	FRAME
	13-A-2825	2236-KT-2
Monday 8-16-65 Tuesday 8-17-65	Entire crew working on cables. checked material on CPSL against the pink packing slips which had been previously checked against contents of boxes.	
Wednesday 8-18-65	Put conductors, conduit, and miscellaneous trim on CTS. (3) Morning checked each against hardware shortage list. ordered blue paints and fast. Bolt.	
Thursday 8-19-65	Bolted metal base to overhead, installed micrometers, adaptors, and miscellaneous trim on CTS.	
	Put top half of ground (Gen End) on and made up. (2)	
Friday 8-20-65	Put top half of ground (Gen End) on and made up. (1)	
	Continued installing trim on CTS and bus clamps.	

CUSTOMER

City of Austin, Tx.

STATION

Holly Street

RATING OR SIZE

16.5000

SERIAL NUMBER

13-A-2835

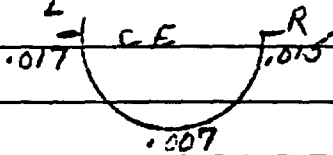
FRAME

22.36-RT-2

TE
Monday

8-23-65

Set lower half of F.E. hydrogen gland case



megged 100 megohms

Installed F.E. seal ring and set on the top half of gland case. Pressed plug and checked ring for free movement.

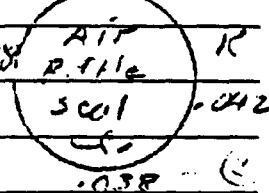
Painted bottom of pedestal and set on bearing plates. Pins installed for alignment. Marked thrust collar and retainer ring.

Cleaned and honed surfaces in L. Palace and pedestal for centering bearings. Cleaned H.P. bearings.

Tuesday

8-24-65

Bolted air. nipple to gland case.



Set lower half of short end hydrogen gland seal. Set to Gov. end.



megged 125 megohms

Cleaned both centering beams, and mounted H.P.-L.P. centering beam to H.P. base.

Set Ped. to tight line to get shape.

ENGINEER'S SIGNATURE

K. L. M. C. Elroy

H000810

CUSTOMER	STATION	RATING OR SIZE
	SERIAL NUMBER 12-A-2235 Cont'd	FRAME
Wed 8-25-65	Installed Gov. End hydrogen seal ring, and put on top half of gland area and check ring for free movement. Installed top quarter of gas shroud support and made up. Checked all bolts for tight fit. 0.072 CL L Shroud 0.072 R 0.088 1- Rotor 0.072 0.083 CL L Shroud 10.00 R 10.072 1- Rotor 0.051 Aligning Front Pedestal	
Thursday 8-26-65	Placed out chain hoists as the inner cold winding was made restricted. Following sheet iron in generator cooler baffles and trying to figure how they go. Aligning pedestal. In order to get shroud concentric with pedestal base it was necessary to lower N2 bearing .055" Now setting against from factory. 4.0119 Front Ped R Base 4.0119 4.0150 4.0195 4.0195 Rotor 4.0195 4.0150 4.0195 77.34 Shroud 77.34 77.35 77.34 Parallel 77.34 77.35 77.34 COMC Dial Ind on L.R. half of coupling 77.34	
Friday 8-27-65	Installing Cooler Baffles on Gen. Aligning Pedestal.	

ENGINEER'S SIGNATURE

R. K. McElroy

CUSTOMER	STATION	RATING OR SIZE
City of Austin	Holly Street	165000
DATE	SERIAL NUMBER	FRAME
Mon. 8-30-65	13-A-7835	2236-RT-2
SA M 32800		
DATE	DESCRIPTION	
Mon. 8-30-65	Completed forcing Pelletal as it would slide easily	
	Checked lining for H.P. casing support lug keys	
	Cleaned support lug surfaces	
	Cleaned H.P. ft. belt contact surfaces and H.P. cover	
	Continued installing cooler buffers	
	Installing oil piping	
Tuesday 8-31-65	Turned H.P. cover and placed on support lugs.	
	Started putting coolers in generator	
	Installing oil piping	
Wed 9-1-65	Mr. Elroy Started Port at Vacation Park Beach 9-15-65	
	Moved generator to approximate alignment so f/f	
	Setters could bolt side to flanges	
	Continued putting coolers in generator	
	Installing oil piping	
Thursday 9-2-65	Continued putting coolers in generator	
	Working on nuts and bolts of H.P. lower casing	
	according to Instr. Book.	
	Installing oil piping	
Friday 9-3-65	Continued putting coolers in generator	
	Cleared belts and surfaces for interlocks valve	
	and H.P. cover.	
	Installing oil piping	
	Ran beltting test in Cond. belt rollers and	
	Cleaned surfaces. Hoses - end of H.P. cover.	
ENGINEER'S SIGNATURE		
H000809		
R. K. M. C. Elroy		

No 0012C20

CUSTOMER		STATION	RATING OR SIZE
City of Austin		Holly Street	165000
SERIAL NUMBER		FRAME	
SAM 52800		13-A-22.25	22.36-RT-7
Monday	9-6-65	Holiday - Labor Day	
Tuesday	9-7-65	Cleaned entire blade ring and marked nuts Cleaned studs and surfaces for cross over pipe on H.P. cover Ran bottoming tap in gland belt hole and cleaned surfaces on stem end of H.P. cover Ran bottoming tap in gland belt hole and cleaned surfaces on cover, both H.P. cover Reamed entire from L & R hand to stem end of cover Installing bolt piping	
Wednesday	9-8-65	Cleaned all inside Ring No 1 Box end Cleaned all inside Ring No 2 Box end Installing bolt piping	
Thursday	9-9-65	Cleaned A.P. off running Ring T.P. Box End Cleaned Nos 1 & 2 Inside of running Ring and cover Installed bolt piping	
Friday	9-10-65	Cleaned from joint studs bolts and nuts Installing bolt piping	

No 0012C23

CUSTOMER	CITY of Austin	STATION	Holly Street	RATING OR SIZE	16.5000
	SA 32800	SERIAL NUMBER	13-4-2835	FRAME	2236-RT-7-

7 Hours

9-16-65

Cleaned #25 152 Gov. Ford engine steam gland and generator and steam gland, and mounted studs and nuts. Cleaned top half of turbine and gear. Big bracket and started bracketing in place. Installing oil feeding & hangers. Installed gland oiling. Found and effecter went to Graham that will be in centering beam where when not here they start to put the when extra. Note for 40 up to 100.00 in the basement. Part #90891 - oil. Oil boxes, contained the centering beam spacers (to be machined in field). The centering beam spacers and with the same spacers.

Friday

9-17-65

Completed bracketing the top half of turbine and generator bracket in place. Installing oil feeding and hangers. Cleaning, marking, and oiling glands. To Marking Centering beam center.

CUSTOMER	City of Austin	STATION	Nelly Street	RATING OR SIZE	11.5"
	DA 32800 - F.R.	SERIAL NUMBER	12-VA-2835	FRAME	27.6-15.2

DATE 9-20-65

Installing air piping
 Troughed duct to house generator (working last
 morning) containing beam (P.D. and) line.
 Checking to find oil piping to determine a
 at home. It is a sharp curve. Pressure
 shortage in the C.P.S. but it seems
 to all be here. (Report this to Roy Brown)
 The 1/2" motor operating by P.D. and
 around the H.P. gland there supply reg.
 is not here and came at 11:45 AM
 it was indeed. (Brown and Doug 672-5-972.
 Reported to G.H. McElldown. Work
 shortage list. checked known shortages list
 and mailed to Roy Brown.

Thursday
 9-21-65

Installing air piping
 Installed (W) duct of H₂ making water pipe
 completed working containing beam
 list. (Brown and Doug 672-5-972)

Standard description. (Brown and Doug 672-5-972)
 on top of head last 24. (Brown and Doug 672-5-972)
 to be in last 19, but both (Brown and Doug 672-5-972)
 and (Brown and Doug 672-5-972)

Mr. McElldown to cover and (Brown and Doug 672-5-972)
 on (Brown and Doug 672-5-972)
 (Brown and Doug 672-5-972)

CUSTOMER	City of Canton	STATION	Shelly Street	RATING OR SIZE	1100
	32 5-10	SERIAL NUMBER	11-11-2235	FRAME	11-11-2235

ATE	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235
11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235

With spindle set on 2" Dim. 2.647 11-11-2235
 6.220" found the gas with respect to
 the journals.

Welded in new bearing in neck set in
 causing the roller bearing to be in position
 found and was not set and assembled of
 roller, and in a bearing set back in
 roller bearing.

Installing set bearing

11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235
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11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235	11-11-2235
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Revised to show that steady set bearing
 11-11-2235

Installed the gas bearing

Installing and set bearing station

CUSTOMER	CITY of Austin	STATION	Holly Street	RATING OR SIZE	16.5.000
	SA 32800	SERIAL NUMBER	13-A-28.75	FRAME	22.36-RT-2

1-27-65	H.P. Turbine Lower halves of Bearings.
	Set Spindle on "K" Dim. Left side .113
	Right - .115
	"L" Dimension was 2.647"
	Travel FWD from "L" Dim .122"
	" BACK " " " .124"
	Installing oil piping
	Installing steam piping

Tuesday	Blade Tip Clearance					
1-28-65	Left side		Right side		Left = H.P. Dummy	Right
HP 1	St. 1st to 2nd .036	2nd to 3rd .041	St. 1st to 2nd .025	2nd to 3rd .027	Max .032	.029
2	.037	.041	.025	.028	Min .027	.027
3	.038	.042	.024	.026	Avg .029	.028
4	.036	.038	.024	.024	L.P. Dummy	
5	.037	.039	.024	.024	Max .031	.028
6	.039	.037	.026	.023	Min .026	.027
7	.038	.036	.025	.026	Avg .028	.027
8	.038	.039	.024	.024	Intermediate Dummy	
9	.039	.038	.024	.025	Max .035	.028
10	.021	.037	.016	.023	Min .026	.024
11	.038	.039	.022	.021	Avg .020	.025
12	.036	.037	.021	.020	Gov End Inner Seal No 1	
13	.037	.039	.021	.021	Max .020	.020
14	.041	.040	.023	.021	Min .018	.013
15	.032	.033	.047	.039	Avg .019	.016
16	.044	.042	.037	.043	Gov End Inner Seal No 2	
17	.026	.025	.042	.041	Max .023	.020
18	.023	.023	.041	.040	Min .020	.013
19	.033	.026	.037	.036	Avg .021	.016
20	.034	.037	.036	.034	Gov End Inner Seal	
21	.027	.029	.034	.033	Max .027	.026
					Min .022	.010
					Avg .024	.015

CUSTOMER	City of Houston	STATION	Holly Street	RATING OR SIZE	16.5000
	SA B2 200	SERIAL NUMBER	12-H-2835	FRAME	223C-PT-2

Friday
10-1-65 Drilled and tapped hole for exhaust spray which
may or thermostat!

Took spacers, that go between gins and L.P.
two. slating slates, to machine shop to
drill and tap for tripod leveling beams
to support spacers while it is being grouted

Heating, for stretch, the low point walls of
the inner casing.

Installing oil piping and hangers

Installing gland steam piping at Regulators

The support beam on the low water heater
50 # 144-A-401 were not according to
Spec. 622-C-933. Called Mr. Pasichuk in
Phila. and he called back and said they
had found the error and were mailing
me a sketch today for correcting the error.

WTH

CUSTOMER	City of Austin	STATION	Holly Street	RATING OR SIZE	165000
	SA 32 PDU	SERIAL NUMBER	13-A-2895	FRAME	2236-RT-2

DA	Monday	Bolt Tightening - Inner Casing (H.P.)					
10-4-65	Bolt H.P.	Strut	Bolt H.P.	Strut	Bolt H.P.	Strut	Bolt H.P.
	65L	.028	65R	.036	84L	.049	84R
	66L	.050	66R	.082	85L	.039	85R
	67L	.043	67R	.040	86L	.055	86R
	68L	.048	68R	.034	87L	.052	87R
	69L	.052	69R	.045	88L	.051	88R
	70L	.053	70R	.046	90L	.054	90R
	77L	.053	77R	.043	91L	.051	91R
	83L	.040	83R	.057	99L	.042	99R

Bolts numbered according to Bolt cyl. Dia. 670-757

Tried to weigh the substation at this time (with top half of casing coming off). Lifted the left side .075" and right side but it came up. Lifted the right side .065" and the left side but it came up.

Installing oil piping and hangers

Putting brackets in spare, waiting section, and surge pump compartment.

Installing water lines to Exh. Hood spray

Tuesday
10-5-65

Lifted H.P. outer covers and set on base. Put in and tightened dangles and started putting in the Hor. joint bolts.

H000798

ENGINEER'S SIGNATURE

Kiki McElroy

CUSTOMER <i>City of Austin</i> <i>054 32800</i>	STATION <i>Holly Plant</i> SERIAL NUMBER <i>13 - 2 - 2835</i>	RATING OR SIZE <i>16.5000</i> FRAME <i>2236-RT-2</i>
---	--	---

Tuesday
10-5-65
Cont'd

Continued putting heaters in both sections.
Installing air piping and hangers.
Installing water lines to each hood spray.

Wednesday
10-6-65
6

Completed putting in No. 1 and both in auto casing.
Put water line bolts and tightened to 200 lbs per inch.
Started measuring bolts in preparation for heating.
Marked nuts for degrees to be tightened.
Put clean out covers and drain valves for
air receiver. Cans filled.

Installing air piping and hangers.
Installing water lines to each hood spray.
Meggers Readings taken with 500V crank megger.
Motor shaft to frame 2.5 meg.
Winding 16.0 meg.
Working on Bus duct after.

Thursday
10-7-65
7

Set steady rest bearing in pedestal and raised shaft
to .015" from unsupported position. Put the
top cover on bearing and set bearing clearance
to .010". This bearing jammed and bearing
scored all the way around, which occurred
and the score was changed.

CUSTOMER	CITY of Austin	STATION	Holly Plant	RATING OR SIZE	16.5,000
	SA 32800	SERIAL NUMBER	13-A-2835	FRAME	2236-RT-2

Thursday
10-7-65
cont'd.

Cleaned rust and corrosion from the intake valves. Cleaned the seal rings and shoulders and assembled them over the valves.

Check the H.P. spindle and travel after assembly.

"L" Dimension 2.647

Spindle moved FWD to 2.764 FWD Travel .117

Spindle moved AFT to 2.513 AFT " .134

Total Travel .251 .251

Taking cold readings of outer casing horizontal joint bolts before stretching. Started heating bolts.

Installing oil piping

Installing water lines to Exhaust Hood spray.

Friday
10-8-65

Heating Hor. joint bolts

Setting throat to position spindle, had to remove .150" shims from front wedge plate and put .125" shims under rear wedge plate. This was done on both sides.

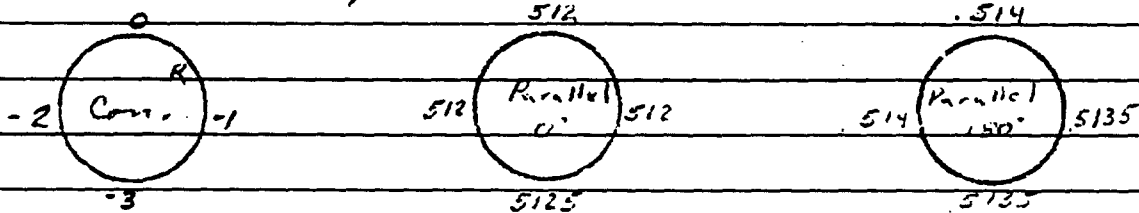
Installing Oil Piping

Installing pressure switches as shown on alteration Png. 678-T-403 on left side of pedestal

LOCATION ty of Austin SA-38500 - P.R.	STATION FLOREY STREET SERIAL NUMBER 12-A-2821	RATING OR SIZE 16.5" D.U. RW FRAME 2236-KT-2
---	--	---

10-23-65
Completed power wiring including connections to the generator bearing lubrication.
Set the right hand throttle cable in its correct position.
Continued installing the return drains & glanded piping around the H.P. turbine.
Began re-running control oil piping to the P.H. throttle cable actuator & return to the turbine.

10-26-65
Trenching
Rerouted off on the P.P. jacket connection to the HP-LP connecting frame placed along as it was



installed & tightened the connecting bolts.
Continued installing the control oil piping around the return drains & glanded piping.
Set the 4 return wires in the correct position to the H.P. turbine.

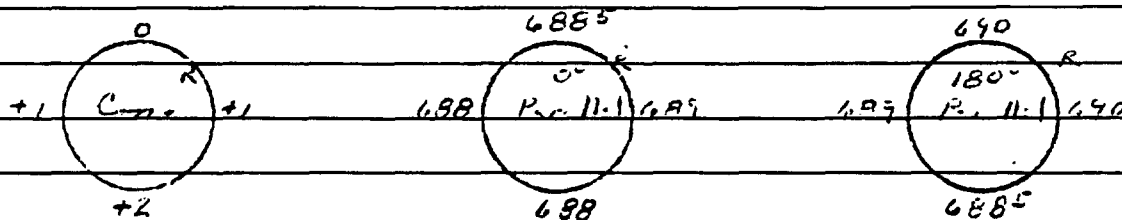
10-27-65
Worked on the right hand throttle cable & return.
Set the return cable in its correct position.

Continued installing the return drains & glanded piping to the H.P. turbine.
Continued re-running the control oil piping to the return return K.H. side.

Nº 0012C36

CUSTOMER City of Canton	STATION HOLLY STREET #3	RATING OR SIZE 11,500 KW
SA-32800	SERIAL NUMBER 13A 2831	FRAME 2276 RT 2

Wednesday
10-27-65
Worked off on the generator seating plate joint bolts & checked final alignment of the L.P./G.C. coupling. Results were as follows:



Removed the lifting transmission for the generator.

Thursday
10-28-65
Completed making up the L.P.-G.C. coupling. Regrased and aligned the generator foundation bolt sleeves.

Continued installing the exhaust oil and the steam valves & glanded piping. Began aligning the hot exhaust lines to the exhaust stacks and valves.

Friday
10-29-65
Continued installing the exhaust valves & glanded piping valves with the exhaust oil piping. The hot exhaust lines (R.H. 4.11) aligned to the stack valves with the foundation being secured to the stack. Set the top bearing pad shoes over the 4 rings and set the turning gear in position. Continued connecting the gas foundation bolt sleeves.

CUSTOMER	City of Austin	STATION	Holly Street	RATING OR SIZE	165 M W
	SA-32800 - F.K.	SERIAL NUMBER	13-A-2835	FRAME	2236-RT-2

3-28-66
Monday
Removed bonnet ~~off~~ or cover of No 1 Control valve of the steam chest and visually inspected main weld of the main steam inlet pipe. The E.B. ring has not appear to have been completely consumed.

3-29-66
Tuesday
a meeting was held to discuss the main steam inlet welds and meeting was attended by: M. Petty, Summers, Kellman, Scoggins, Roberts, and Mr. Elroy of W, Don Boyd of Crawford Prot, Foster and Ace Farnale of E.E. Farnale, Maynard of Odum, Kitchney, Blankenship, Pokorny, Pollard, and Storm for the City of Austin. It was decided to remove all the steam chest control valves and grind off the E.B. Rings and take another set of X-Rays.

3-30-66
City has a grinder coming from New York.

3-31-66
Started grinding on the E.B. Rings.

4-1-66
Completed Disassembly of #4 & #5 valves.

H000795

ENGINEER'S SIGNATURE

K.K. Mr. Elroy

CUSTOMER <i>City of Austin</i>	STATION <i>Holly Street No 3</i>	RATING OR SIZE <i>165 MW</i>
<i>SA 32800</i>	SERIAL NUMBER <i>13-A-2835</i>	FRAME <i>2236-RT-2</i>

8-22-66 Turbine and liquid detectors indicated
 7:11-p liquid in generator. Found gaskets leaking on ^{case}
 8-28-66 of both top water boxes and going into generator
 thru the diaphragm equalizing line.

Started unit rolling with steam at 7:53 AM
 8-24-66 on the line at 1:52 pm and
 loaded with 8 MW.

Checked the O.S. on 8-25-66 twice at 3920 rpm

8-25-66 picked up to 46 MW but due to
 boiler sub water supply backed off to 40 MW.

8-26-66 Carried 38-40 MW all night.

Maximum vibration on any journal
 is 1.8 mils at #2 brg.

K.K. McCrory

H000794

CUSTOMER City of Austin	STATION Holly Street No 3	RATING OR SIZE 165 MW
SA 32800	SERIAL NUMBER 13-A-2835	FRAME 2236-RT-2

8-24-66 The start up run was prolonged because
 of high silica in the feed water.

9-2-66 The maximum load obtained was 100 MW
 and the steam pressure had to be maintained
 between 1000# to 1400# depending on the silica
 content of the water.

When the load was being picked up each
 morning from 40 MW to 50 MW the
 deaerator level control valve and the condenser
 level control valve would not work together
 and they would be either wide open or closed.
 The Fisher valve service man was called
 in Thursday 9-1-66 and said the valve on
 the deaerator would have to be turned around
 in the line, and a larger control installed
 in place of the present one. The unit was
 shut down and put on the T.G. at approx
 3:30 pm. All automatic equipment including
 the T.G. engagement performed perfectly.

The present plant was to start up again
 Monday 9-12-66.

Final minor adjustments are being made
 to the instrumentation.

K.K. McCoy

H000793

CUSTOMER	CITY of Austin	STATION	Holly Street No. 3	RATING OR SIZE	165 MW
	(SA 32800) - FR	SERIAL NUMBER	13-A-2835	FRAME	12136-RT-2

7-3-66

Thru

7-9-66

Monday Holiday - Labor Day

Spent the week stopping miscellaneous oil leaks.

The worst leak was where the pinion shaft supports came out of the Turning gear case. When the equalizing bar was removed, it was found that the factory had omitted the packing and packing plates for the support shafts. Made two plates and packed the glands.

The Unit has been down all week due to valve trouble mentioned in the Report of Page 57.

The boiler feed Pump on the front of the unit was opened on both ends and there has been excessive rub, requiring the replacement of many parts.

H. K. McCoy

No 0012C89

CUSTOMER

City of Austin
SA 32800

STATION

Holly Street

1123

RATING OR SIZE

165 MW

SERIAL NUMBER

13-A-2835

FRAME

2236-RT-2

DATE

9-12-66

TJ

Waiting for DeLoval to get parts
for Boiler Feed Pump.

9-18-66

ENGINEER'S SIGNATURE

H000791

R.K. McElroy

CUSTOMER	STATION	RATING OR SIZE
City of Austin	Holly Street No 3	165 MW
SA 32200	SERIAL NUMBER 13-A-2835	FRAME 2236-RT-2
DATE		
7-19-66	9-20-66 Started rolling unit at 8:30am	
THRU	on the line at 10:25 AM cut in heater at	
10-2-66	38 MW and ran all night 35-40 MW. 9-21-66 to available load could not pick up but 100 MW.	
	7-22-66 load up to 152 MW at 2:30pm	
	control until 9:10 PM with control valve wide open.	
	Dropped back to 40 MW.	
	9-23-66 Boiler tripped off due to short in centrifugal switch for force draft fans, tripped turbine.	
	9-26-66 Unit on the line at 10:39am ran all day and night at 40 MW.	
	9-27-66 Unit on the line with new oil pumps. A new one has been ordered. Load up to 165 MW at 2:30pm full admission dropped back to 100 MW at 7:00 PM due to electrical storm until 9:30, then down to 50 MW thru the night.	
	9-28-66 up to 100 MW by 11:30 up to 165 MW by 12:30pm. Started off at 4:30pm due to bad leak in weld of drain valve on boiler feed pump discharge.	
	9-29-66 Purged generator with CO ₂	
	9-30-66 Removed insulation from throttle valves and reheat valves.	
	K. K. M. S. Elroy	

CUSTOMER	CITY of Austin	STATION	Holly Street No 3	RATING OR SIZE	165 MW
O.	SA 32800	SERIAL NUMBER	13-A-2835	FRAME	2236-RT-2

DATE 10-3-66

Disassembled R.H. Throttle valve, removed temporary strainer, and removed screw holes. Found six small pieces of welding slot in screens.

10-4-66

Assembled R.H. Throttle valve and disassembled L.H. throttle valve. Removed screen from L.H. Throttle and removed the screw holes. Drained the oil reservoir.

10-5-66

Completed the assembly of both throttle valves.

10-6-66

Disassembled the Left Hand Interrupter valve and removed the screen and removed the screw holes. Found 5 - bee-bee size slot in the screen. The

pin 40 is frozen in the bell crank lever fulcrum link item 42, but is free in bell crank

lever support plate item 38 (all shown in Fig 1 I.L. 1250 + 2862.) It was decided to leave

HUE 90271

until first inspection and then drill out.

Order new Pin Item 40.

Installed new hydrogen side seal oil pump motor.

10-7-66

Assembled L.H. Interrupter valve and tested the valve.

H.K. McCoy

CUSTOMER <i>CITY OF AUSTIN</i>	STATION <i>Holly Street #3</i>	RATING OR SIZE <i>165 MW</i>
NO. <i>SA32800</i>	SERIAL NUMBER <i>13-A-2835</i>	FRAME <i>2236 KT-2</i>

DATE <i>10-10-66</i>	<i>Completed intercatcher valve linkage assembly and completed hunting contact bolting.</i>
<i>10-16-66</i>	<i>Removed & cleaned all curve filling in the lubrication system, cleaned oil reservoir & began centrifuging oil back into the oil reservoir.</i>
	<i>Completed installation of all platforms and turbine enclosures.</i>
	<i>Completed minor adjustments to control system.</i>

Initial Start-up INFORMATION. The following is a summation of the turbine operation at load/line during the initial start-up.

<i>MW</i>	<i>Hours</i>	<i>Remarks</i>
<i>16</i>	<i>17</i>	<i>1 continuous run</i>
<i>40</i>	<i>181</i>	<i>1 96 hr. continuous run & 7 8 hr runs.</i>
<i>50</i>	<i>21</i>	
<i>60</i>	<i>3</i>	
<i>80</i>	<i>2</i>	
<i>90 *</i>	<i>10</i>	
<i>100 *</i>	<i>22</i>	<i>1 12 hr run</i>
<i>120 *</i>	<i>3</i>	
<i>142 *</i>	<i>3</i>	
<i>152 *</i>	<i>12</i>	<i>1 8 hr & 1 4 hr runs</i>
<i>165 *</i>	<i>16</i>	<i>2 8 hr runs</i>

** At these loads the governing valves were 100% open due to operating at reserve pressure.*

H000788

ENGINEER'S SIGNATURE

K. K. McCreary