

MECHANICAL DRIVE TURBINE PRODUCTS DEPARTMENT FITCHBURG, MASS.

Requisition: _____ Customer: <u>ALLIS-CHALMERS</u> <u>TEST STAND TURBINE</u>	Model List No. DEV525152173 Turbine No: <u>152173</u> Shop Order: <u>152173</u> No. of Units: <u>1</u>
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Rating: <u>17241 MHP</u> Inlet Press: <u>810 PSIG</u> Inlet Size: <u>6"-900#ANSI RF</u> Condensing: <u>YES</u> Noncondensing: <u>- - - - -</u> Rotation: <u>CCW</u> Valve Gear: <u>E&D BAR LIFT</u> Oil System: Local <u>FURNISHED</u> Remote <u>BY CUST.</u>	<table border="1" style="margin: auto;"> <tr><td>Fueled</td></tr> <tr><td>Fossil</td></tr> <tr><td>Nuclear</td></tr> </table>	Fueled	Fossil	Nuclear	RPM: <u>7000 M</u> Inlet Temp: <u>720° FTT</u> Exhaust Size: <u>36" DN</u> Exhaust Press: <u>5" HgA</u> Rotor: Solid <u>YES</u> Built Up <u>- - -</u> Front End: <u>"J" DED</u> Governor: <u>WWD ELECT</u> Control Sys: <u>WWD ELECT</u> Base MTD: <u>- - - - -</u>
Fueled					
Fossil					
Nuclear					

MODEL LIST SECTION DESCRIPTION:

- A. Non-Ordering Drawings
- B. Controls
- C. Steam Valves
- D. Main Turbine Parts
- E. Steam Parts, Rotating
- F. Steam Parts, Stationary
- G. Piping and Related Components
- H. Ordering Specification Drawings
- J. Electrical
- K. Miscellaneous Ordering Drawings

Deviation Drawings Listed on Item A28.
 See Also "D" Indication Against Deviated
 Items on Model List in Column D

19K
1
Dist

Issued By <u>J.G. ST. HILAIRE</u>	Date <u>11-22-76</u>	Model List No: DEV525152173
Header Sheet	Cont on Sheet <u>1</u>	

GENERAL ELECTRIC

PITCHBURG, MASS.

*5 psia Unit
3 Stages*

MECHANICAL DRIVE STEAM TURBINE DATA SHEET

For: ALLIS CHALMERS CORPORATION

Date: 2-24-76

Destination: West Allis, Wisconsin

Reference: 091-1-30523

Prop. No. 460-45810

Service: Test Stand Turbine Driver

Item: 1

	BHP	RPM	Steam Rate lbs/hp-hr	Steam Conditions Inlet Psig	°F	Exhaust
Rated	_____	_____	_____	_____	_____	_____
Normal	SEE PERFORMANCE CURVE DATED 2-11-76					

Maximum Continuous Speed 6,000 RPM @ 17,060 HP Max.

TURBINE SPECIFICATIONS:

Turbine Type: DEV-M

Nozzle Control: Multivalve

Rotor: Solid (X) Built-up () w/Double ended drive

Valve Gear: Cam lift ()
Bar lift (X)

Radial Bearings - Type: Kingsbury Tilting Pad

No. of Control Valves: 5

Active Thrust Bearing - Type: Kingsbury Tilting Pad

Shaft Seal Packing-

Governor: Woodward Electric

Type: Metallic Labyrinth

Interstage Diaphragm

Packing Type: Metallic Labyrinth

MATERIALS: See accompanying form 091-3403B

FEATURES & ACCESSORIES will be furnished as shown on accompanying form: 091-1-3128

GENERAL ELECTRIC

Prop. No. 091-1-30523
Item 1

MECHANICAL DRIVE STEAM TURBINE DATA SHEET - PART II

OIL REQUIREMENTS (Estimated, subject to final design calculations):

Bearings: 67 GPM @ 20 Psig to be provided to turbine

@ 120 °F. Heat Removal 5,190 BTU/Min.

Hydraulic - Steady State: 15 GPM @ 100 Psig

Total (steady state plus transient) 30 GPM @ 100 Psig

Above requirements are based upon using turbine oil having a Saybolt
Viscosity of 140-170 SSU @ 100 °F

APPROXIMATE DIMENSIONS: *

Length: 9 Ft. 2 in.

Inlet Diameter: 6 in.

Width: 8 Ft. 0 in.
Dismantling

Exhaust Diameter: 36 in. ←
(Sizes 36" & above are rectangular,
having area equivalent to diameter
shown.)

Height: 8 Ft. 4 in.

Net Weight: 27,000 lbs.

Add 10% for shipping weight

Extraction/Admission Diam: -- in.

* NOTE: Typical proposition outlines (enclosed) show turbine with 6" TTV
diameter and 36" exhaust diameter.

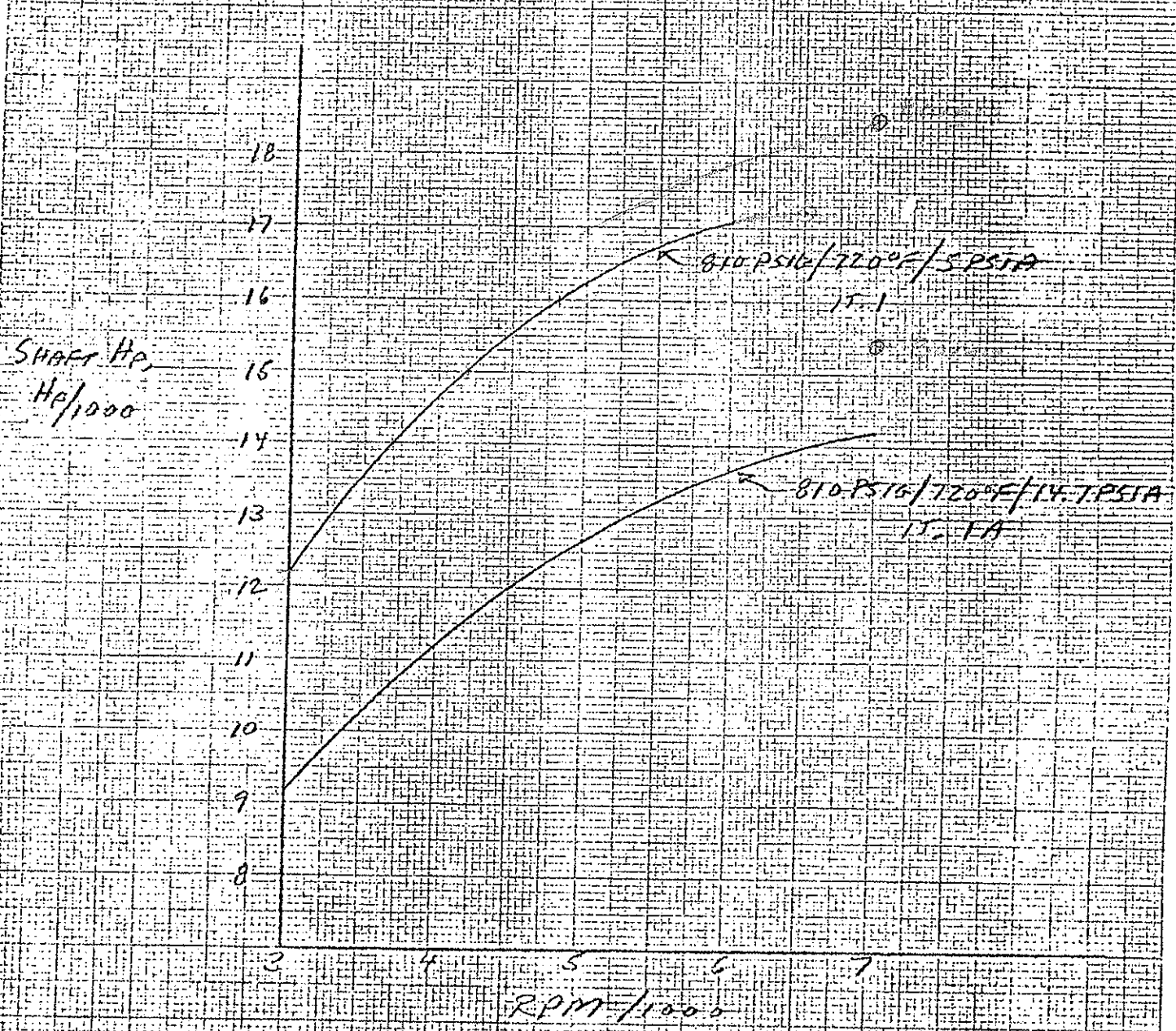
FITCHBURG PROP 091-1-3052
ISD PROP 460-45810

A-C TEST STAND TURBINE

TURBINE OUTPUT vs RPM

Fuel Rate Throttle Full - 150,000#/hr

(CLOSE ESTIMATED DATA)



7/25/50
2/11/51

SPECIFICATIONS

For: ALLIS CHALMERS CORPORATION

Spec. No. 091-1-30523

Prop. No. 460-45810

Items: All

PERFORMANCE SPECIFICATIONS FOR STEAM TURBINE

BASIS OF CALCULATIONS

Steam performance data in this proposal are based on ASME Steam Tables.

ALLOWABLE PRESSURE AND TEMPERATURE VARIATIONS - GENERAL

The following allowable pressure and temperature variations are intended to provide for operating exigencies, and it is expected that steps will be taken to minimize their occurrence, and especially their occurrence simultaneously.

ALLOWABLE PRESSURE VARIATION

The steam pressure at the turbine main steam valve shall average not more than 851 PSIG over any 12 month operating period. This permissible variation from rated pressure of 810 PSIG merely recognizes the increase in pressure with decrease in steam flow encountered in operation, and is not to be interpreted as permitting operation above rated pressure to obtain more than rated output. In maintaining this 12 month average, the pressure shall not exceed 891 PSIG, except during abnormal conditions when the pressure may swing momentarily to 972 PSIG, but the aggregate duration of such swings shall not exceed 12 hours per 12 month operating period.

ALLOWABLE TEMPERATURE VARIATIONS

The steam temperature at the turbine main steam valve shall average not more than 720 °F over any 12 month operating period. In maintaining this average, the temperature shall not exceed 735 °F, except during abnormal conditions resulting in temperatures not in excess of 745 °F for operating periods not more than 400 hours per 12 month operating period nor 770 °F for swings of 15 minutes duration or less, aggregating not more than 80 hours per 12 month operating period.



SPECIFICATIONS

Spec. No. 091-1-30523

Prop. No. 460-45810

Items: All

For: ALLIS CHALMERS CORPORATION

SPECIAL ACCESSORIES MULTI-VALVE, MULTI-STAGE, STEAM TURBINES

Double ended shaft drive.

Bently-Nevada system (*) consisting of seven (7) probes and proximeters including:

- Two (2) vibration per radial bearing, four (4) total
- Two (2) rotor axial position
- One (1) keyphasor
- Two (2) terminal boxes

Turbine soleplates

→ (*) NOTE: Power supply, rack and monitoring equipment not included in scope of supply.

GENERAL  **ELECTRIC**
COMPANY

SPECIFICATIONS

Spec. No. 091-1-30523
Prop. No. 460-45810
Items: All

**MATERIALS USED IN MULTI-STAGE, MULTI-VALVE
CONDENSING TURBINES**

<u>Turbine Part</u>	<u>Material</u>
Inlet emergency valve	
Body	Cast steel
Valve and seat	Stainless steel
Steam strainer	Monel
Governing valves	
Body	Cast
Valve and seat	Stainless steel
Stem and bushing	Nitrided nitralloy
Wheel casing	Cast steel
Exhaust casing	
Under 30" diameter	Cast iron
Over 30" equivalent diameter	Fabricated steel
Steam path	
Nozzles	Stainless steel
Buckets	12 chrome
Rotor	Alloy steel
Packing	Bronze labyrinth
Thrust bearing	Segmented type, babbitted, metal backed
Shaft bearings	Babbitt lined, metal backed

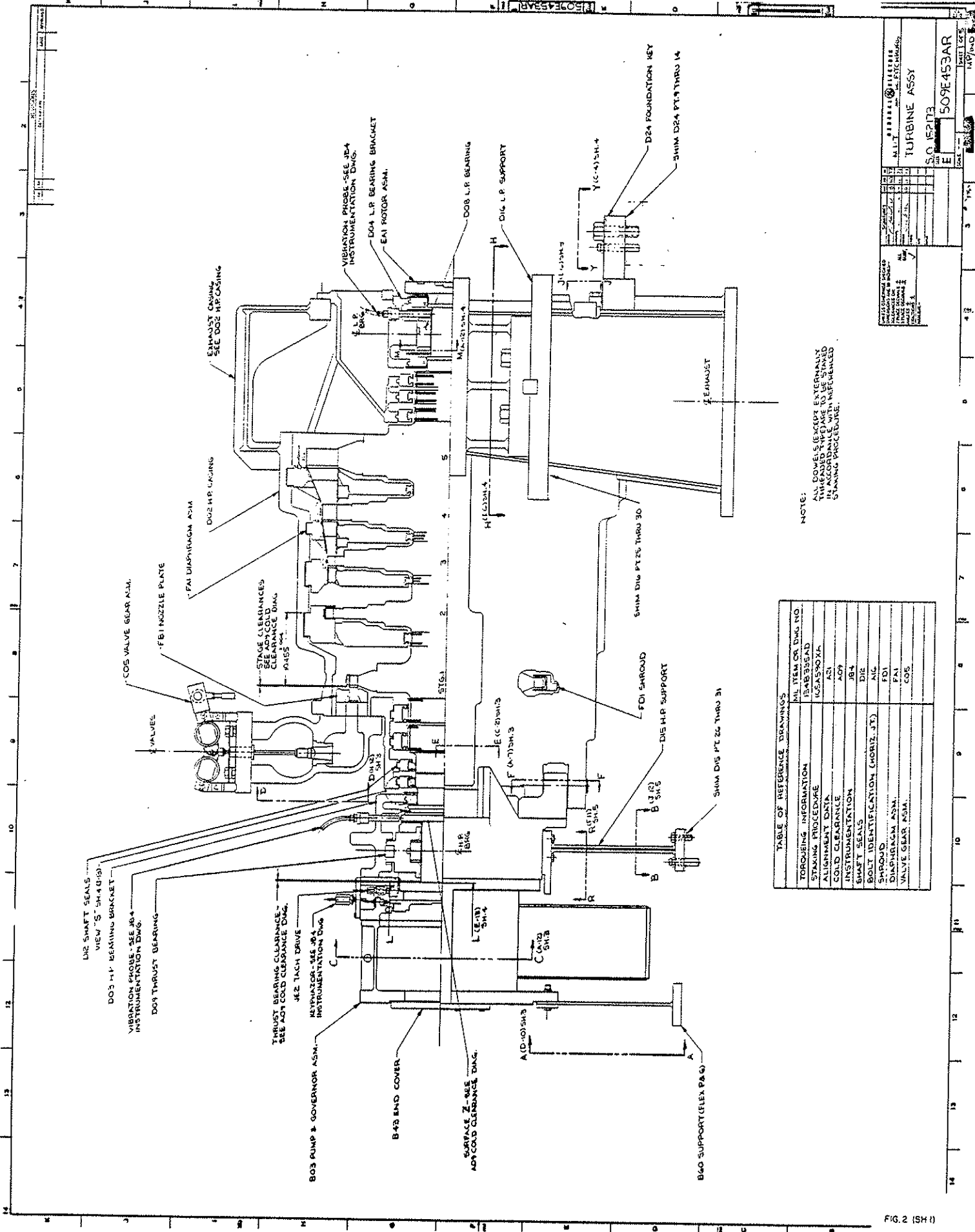


TABLE OF REFERENCE DRAWINGS	
TORQUEING INFORMATION	18AB055AD
ALIGNMENT DATA	106AS000A
COLD CLEARANCE	AD9
INSTRUMENTATION	1B4
SHAFT SEALS	1B4
BOLT IDENTIFICATION (HORIZ. JT)	1B4
SHROUD	1A1C
DISAPPROPRIATE ASM.	1P01
VALVE GEAR ASM.	1C05

NOTE:
ALL DIMENSIONS EXCEPT EXTERNALLY DIMENSIONED DIMENSIONS TO BE STAMPED IN ACCORDANCE WITH THE STAMPING PROCEDURE.

REVISIONS

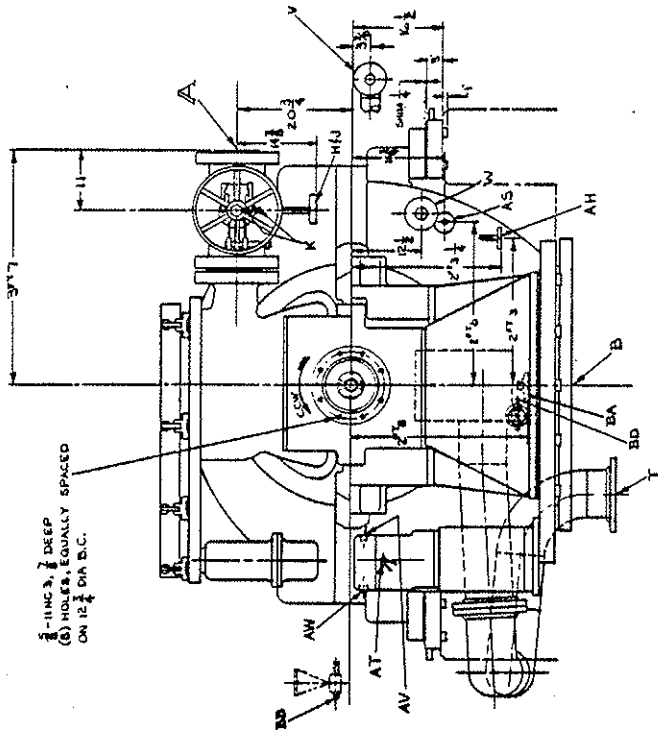
NO.	DATE	DESCRIPTION

MIL ITEM OR DWG NO.
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106AS000A
AD9
1B4
1B4
1A1C
1P01
1C05

DATE: 12/15/63
DRAWN BY: J. B. ...
CHECKED BY: ...
APPROVED BY: ...

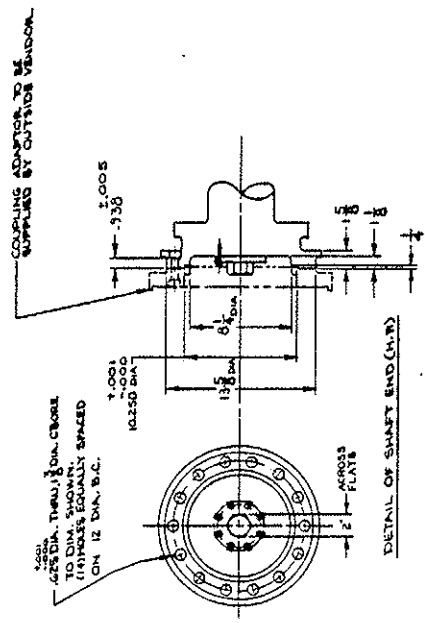
TURBINE ASSY
50152P13
501E453AR

FIG. 2 (SH 1)



8 HOLES, 1/2" DEEP
ON 12 1/4" DIA. D.C.

VIEW IN DIRECTION OF STEAM FLOW



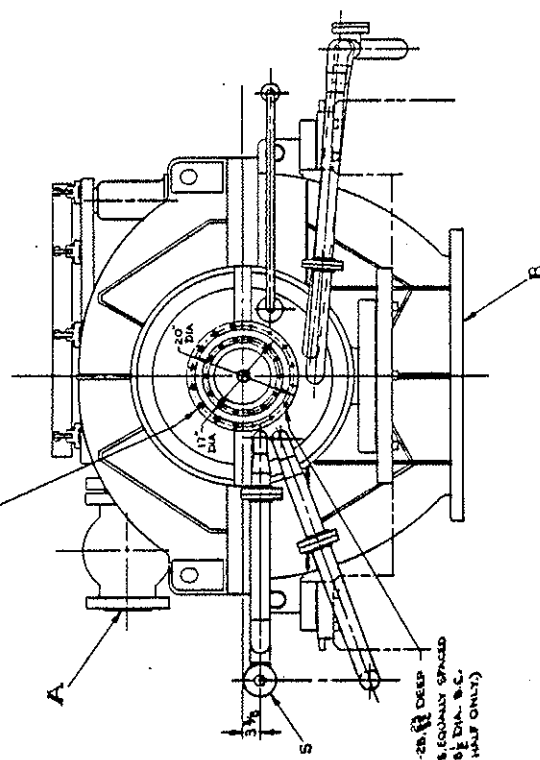
8 HOLES, 1/2" DIA. DEEP
ON 12 1/4" DIA. D.C.

DETAIL OF SHAFT END (H/R)

ALL'S CHAMBERS
TEST STAND TURBINE

DATE	2/27/57	BY	W. J. H. / J. H. H.
DESIGNED BY	W. J. H. / J. H. H.		
CHECKED BY	W. J. H. / J. H. H.		
APPROVED BY	W. J. H. / J. H. H.		
PROJECT NO.	50152173		
REV.	E 509E278YC		
SCALE	1:1		

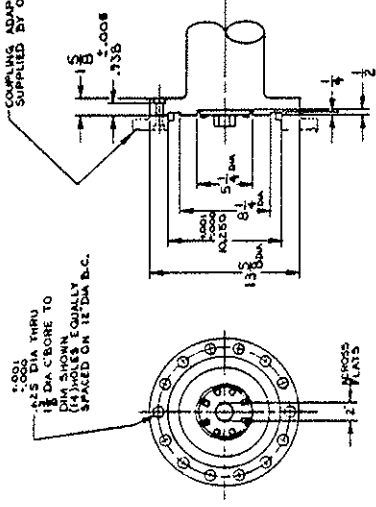
9 DIA. THRU. 1/2 DIA. CORE. 1/2 DEEP
 (8) HOLES EQUALLY SPACED ON 12 DIA. B.C.
 (UPPER HALF ONLY)



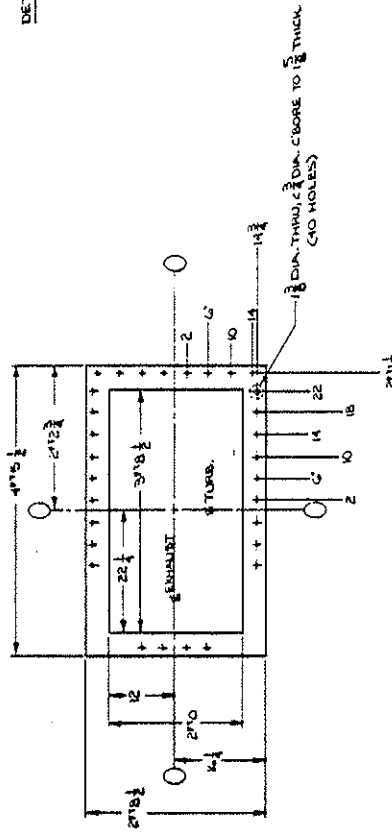
1/2 INCH DIA. 1/2 DEEP
 (8) HOLES EQUALLY SPACED
 ON A 12 DIA. B.C.
 (LOWER HALF ONLY)

VIEW FROM EXHAUST END

COUPLING ADAPTOR TO BE
 SUPPLIED BY OUTSIDE VENDOR.



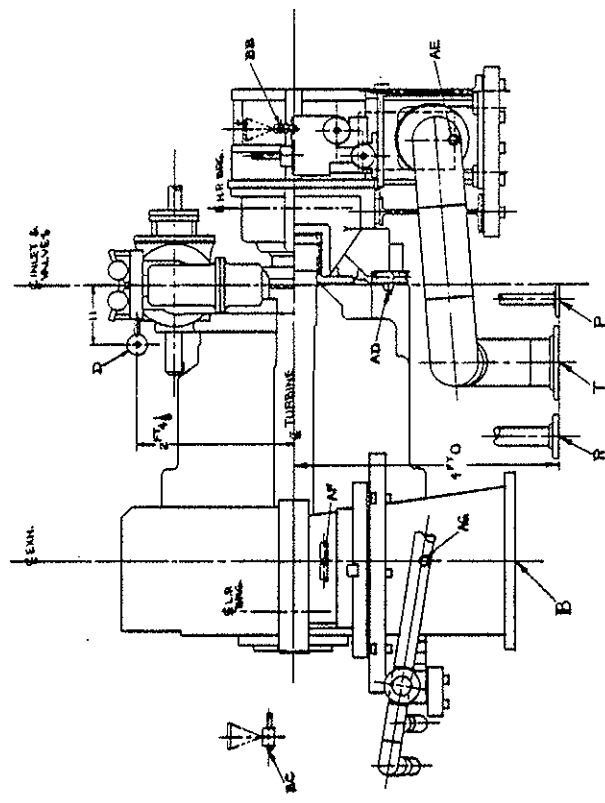
DETAIL OF SHAFT END (L-R)



DETAIL OF EXHAUST FLANGE B

ALL DIMENSIONS UNLESS
 TEST STAND TURBINE

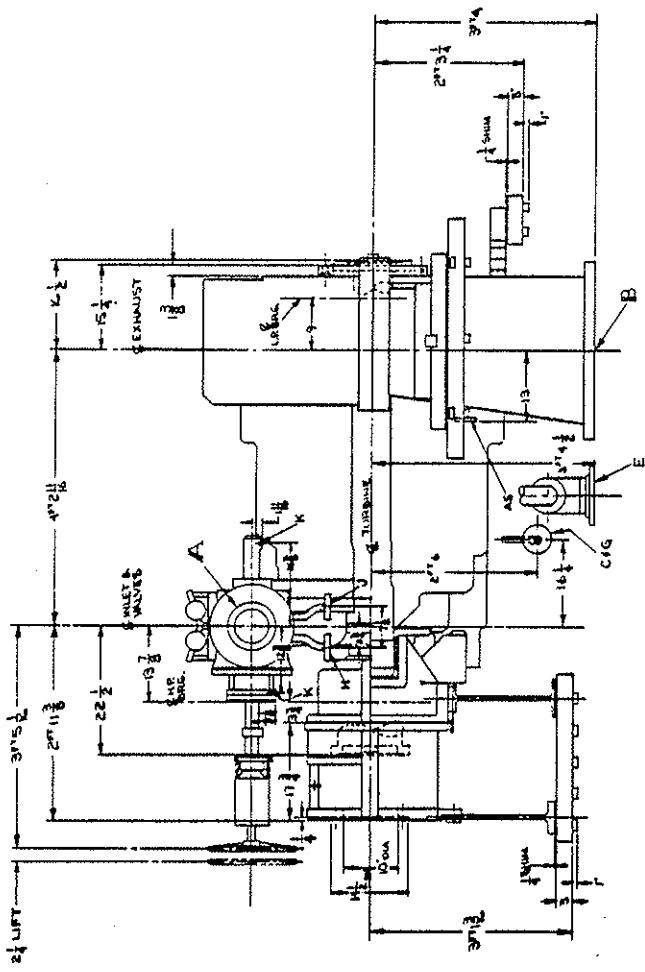
GEORGE EASTMAN PHOTO COMPANY INC. 100 N. 3RD ST. RICHMOND, VA. 23262		PROJECT NO. 509278YC DRAWING NO. 509278YC SHEET NO. 1 OF 1
TITLE OUTLINE		DATE 509278YC
DRAWN BY E. J. ...		CHECKED BY ...
APPROVED BY ...		DATE ...



LEFT SIDE ELEVATION

ALLIS-CHALMERS
TEST STAND TURBINE

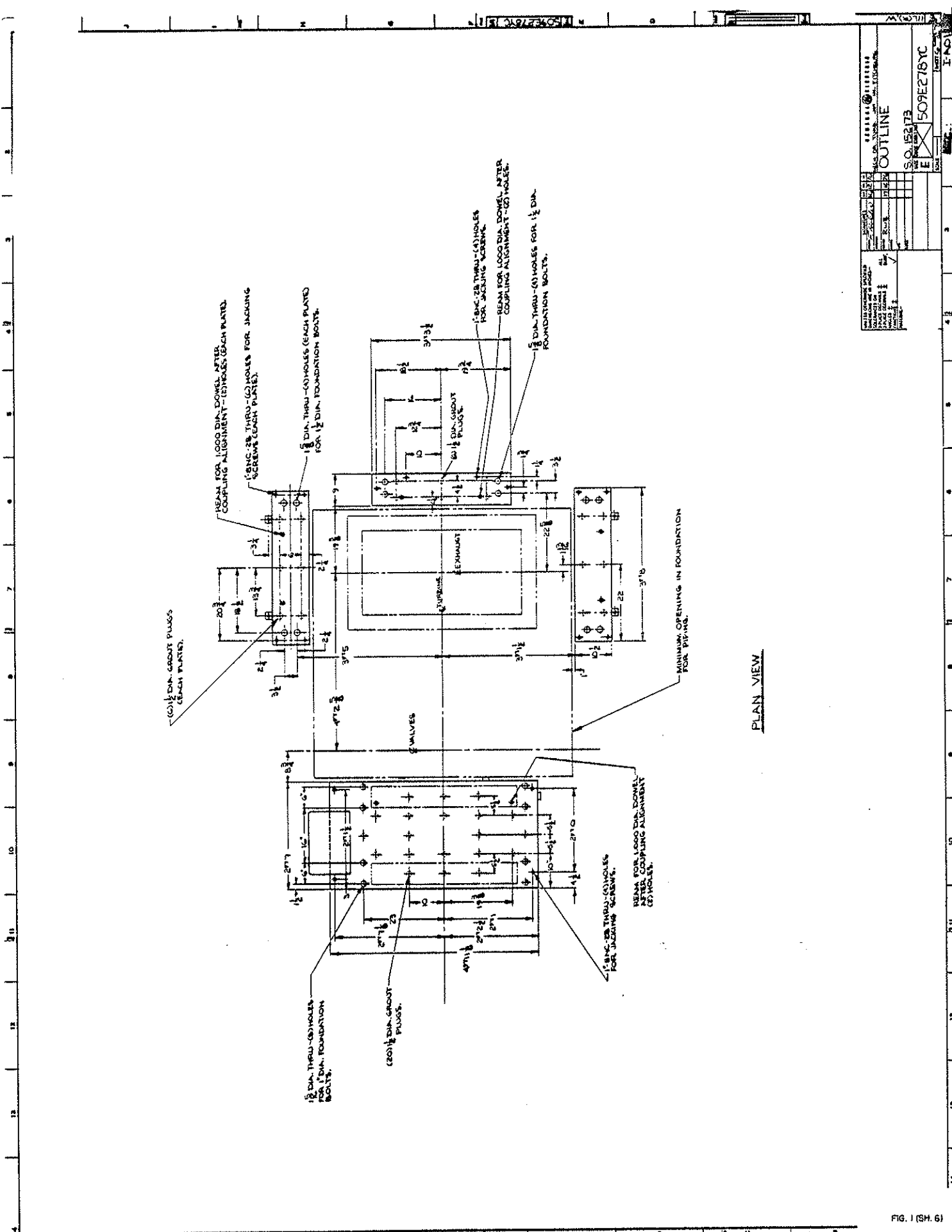
DESIGNED BY	DATE	SCALE	PROJECT NO.
CHECKED BY	APPROVED BY	REVISED BY	REVISED DATE
OUTLINE			
S.O. 152173		509E278YC	
E		EAO	



RIGHT SIDE ELEVATION

ALLIS-CHALMERS
TEST WIND TURBINE

ALLIS-CHALMERS ENGINEERING MILWAUKEE, WIS. MADE IN U.S.A.	OUTLINE SO. 15247B EX 509E278YC
TITLE CHANGE DISCARD FOR PARTS OR REPAIR THIS DRAWING IS TO BE USED AS A REFERENCE ONLY	DATE DRAWN BY CHECKED BY APPROVED BY



PLAN VIEW

PROJECT NO. 509E278YC DATE 10/2/83 DRAWN BY E	
CHECKED BY APPROVED BY	
TITLE OUTLINE	
SHEET NO. 1 OF 1	