

MAX. OUTPUT: 35,355 KWe

RATED SPEED 3600 RPM

GOVERNING SYSTEM: WOODWARD 501 DIGITAL CONTROL SYSTEM

STEAM CONDITIONS:

INLET PRESSURE.....1500 PSIG / 925°F
1ST UNCONTROLLED EXTRACTION/ADMISSION PRESSURE..... 197.3 PSIG
2ND CONTROLLED EXTRACTION PRESSURE 25.0 PSIG
EXHAUST PRESSURE.....1.5" HGA

1200 PSIG now Running

Remove

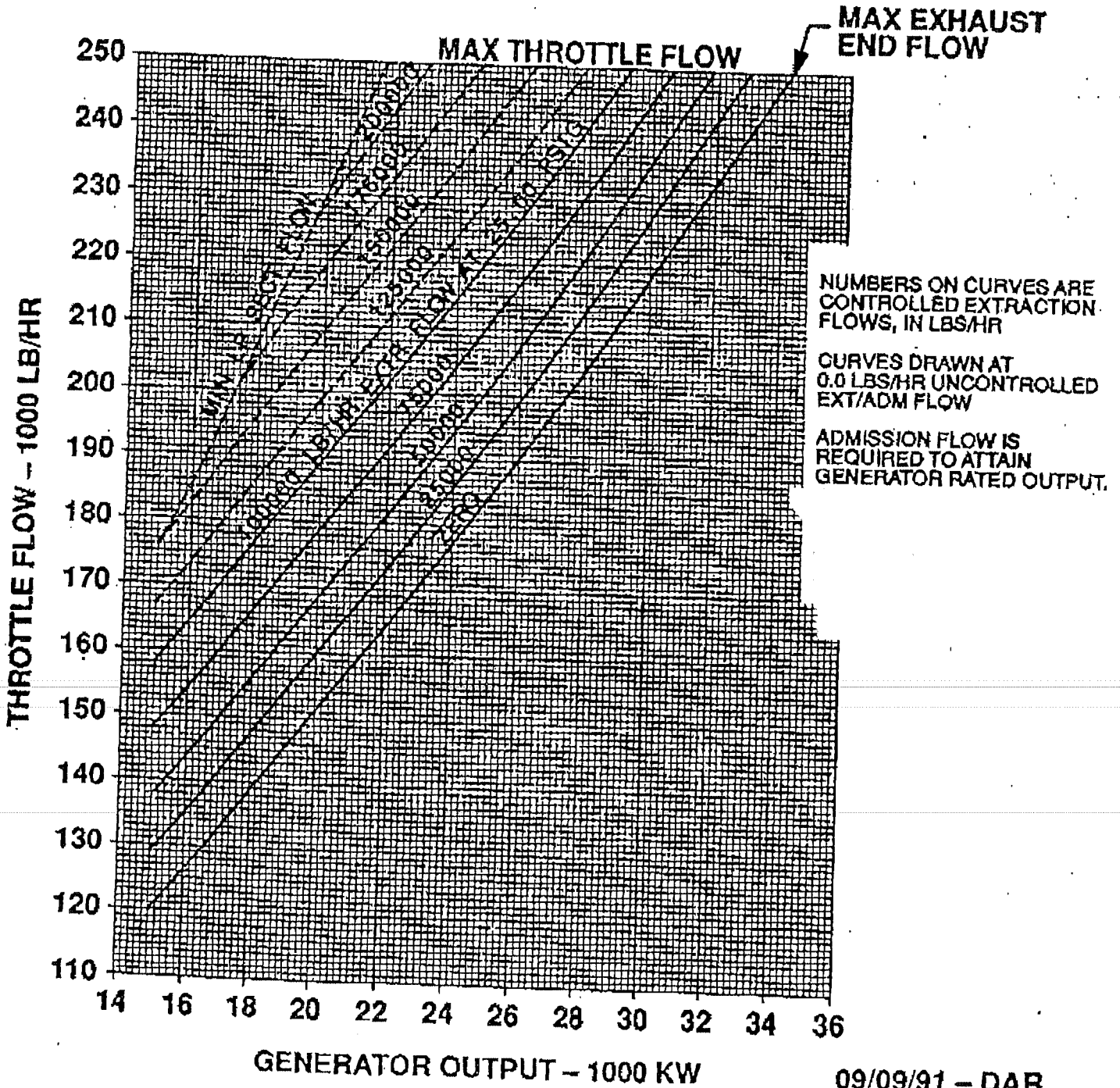
ALARM & TRIP CONDITIONS

(See Bill Of Material, Fig. A23, for complete setting information)

ITEM	ALARM SETTING	TRIP SETTING
HIGH VIBRATION	3.0 MILS	6.0 MILS
ROTOR AXIAL POSITION	10 MILS	20 MILS
LOW LUBE OIL PRESSURE	5-7 PSIG BELOW NORMAL	13 PSIG BELOW NORMAL
DIFF. PRESS. ACROSS LUBE FILTER	35 PSIG INCR Δ P	---
HIGH OIL COOLER OUTLET	135°F INCR TEMP	---
LOW HYDRAULIC OIL PRESSURE	930 PSIG DECR PRESS	800 PSIG DECR PRESS
DIFF. PRESS. ACROSS HYDRAULIC OIL FILTER	35 PSI INCR Δ P	---
HIGH - LOW TANK OIL LEVEL	SEE BOM (FIG. A23)	---
HIGH BACK PRESSURE	6.0" HG(A) INCR PRESS	8.5" HG(A) INCR PRESS
EXHAUST HIGH TEMPERATURE	175°F INCR TEMP	---
PRIMARY OVERSPEED		3940 - 3980 RPM
EMERGENCY OVERSPEED		4012 - 4052 RPM
FOR RTD ALARM & TRIP SETTINGS, SEE BILL OF MATERIAL (Fig. A23)		
MANUAL TRIP BUTTON (Located at Turbine Gage Board)		

APPLICATION — DIRECT DRIVE I. G. SET

THROTTLE PRESSURE — 1500.0 PSIG
THROTTLE TEMPERATURE — 900.0 F
EXTRACTION PRESSURE — 25.0 PSIG
EXHAUST PRESSURE — 1.5 IN HG ABS
TURBINE RATED OUTPUT — 48344 HP
TURBINE RATED SPEED — 3600 RPM
GENERATOR RATED OUTPUT — 35355 KWE
PREDICTED DATA





Vacuum and Heat Transfer
SURFACE CONDENSER SPECIFICATIONS

Customer: _____ Ref.No. : _____
Cust.Ref.. _____ Date : 03/16/00
Location : _____ Item : Cond. Exhauster
Quantity : _____ one _____ Engineer : JDL

PERFORMANCE

Absolute Pressure @ Steam Inlet (in.HgA)..... 1.75
Steam Condensed (lb./hr.)..... 246,230
Heat Rejected (Btu/hr.)..... 225,916,000
Circulating Water (gpm)..... 30,000
Water Inlet / Outlet (deg.F)..... 76/91.06
Water Pressure Loss : (ft.Water / psi)..... 18.8/8.1
Percent Clean..... 85
Tube Velocity (fps)..... 6.99

DESIGN

MODEL : Dual - 98120
Surface Area (sq.ft.) Total / Effective..... 38,345/38,011
Number of Water Passes..... Two
Number of Tubes..... 7584
Outside Tube Diameter (in.) - BWG..... 3/4 - 20
Total Tube Length (ft.)..... 25.75
Design / Test Pressure (psig) : Shell.....FV. 15
Tubes..... 60
Design Temperature (deg.F) : Shell..... 250
Tubes..... 150
Hotwell : bathtubsupply (gal.)..... 1500
Steam Inlet (rectangular) (in.) (FF)..... 80.76 x 125.76
Water Connections (in.)..... 42
Condensate Outlet (in.)..... 12

MATERIALS

Shell _____ Welded Steel Plate
Water Boxes _____ Welded Steel Plate
Baffles _____ Steel Plate
Tube Support Plates _____ Steel Plate
Tubes _____ 304SS
Tube Sheets _____ 304SS

Remarks : _____
_____ Magnesium Anodes included in Waterbox _____



STEAM JET EJECTOR SPECIFICATION SHEET

1 Customer:
2 Item: Condenser Exhauster Package Date: 03/16/00
3 Two Stage Ejector Perf. Engineer: JDL

6 Absolute pressure maintained at ejector suction inlet 25.4 mmHgA
7 Temp @ Suction Inlet 91 degF Steam Press 120 psig
8 Non-condensibles 45 #/hr 29 MW Steam Temp D&S degF
9 Condensible Vapors #/hr MW Water Temp Condensate
10 Steam 98.9 #/hr Disch Press 760 mmHgA

13 Stage Ejector Size
14 Stage Ejector Size
15 Stage Ejector Size
16 Stage Ejector Size

19 Surface Intercondenser, Size Surface sqft
20 Water gpm In/Out / degF Pressure Drop psi

23 (2) 100% 1st Stage Ejector Size 40B

25 (1) 100% Inline Inter/After Condenser
26 Surface Intercondenser, Size 10x8 Comb. Surface 102.1 sqft
27 Water 492.5 gpm

30 (2) 100% 2nd Stage Ejector Size 5C

33 (1) 100% Hogger Ejector Size 26C

*** CONDENSER MATERIALS & DESIGN ***

38 Process Side Steel Design Press FV& 20 150
39 Tube Sheets 304L SS Hydro Test Press 30 225
40 Coolant Side Steel Design Temperature 350 150
41 Tubes (weld) 304L SS O.D. 0.75 in BWG 20 ave wall

*** EJECTOR MATERIALS ***

43 Suction Chamber and Diffuser Cast Iron w/ 316L SS Diffuser
44 Steam Nozzle 304SS
45 Steam Chest Forged Steel lined with 304SS
46 Nozzle Plate Steel

48 Graham Designation :
49 40B - 10x8 Inline - 5C - 26C Hogger
50 Total Steam 500 + 1500 #/hr (100%) Total Water 492.5 gpm (100%)
51 Construction Code Ejectors HEI
52 Construction Code Condensers ASME Section VIII, Div.I

53 Remarks:
54 Complete package including steam and water piping and nec. valves.

GRAHAM CORPORATION

APPROXIMATED CONDENSER PERFORMANCE

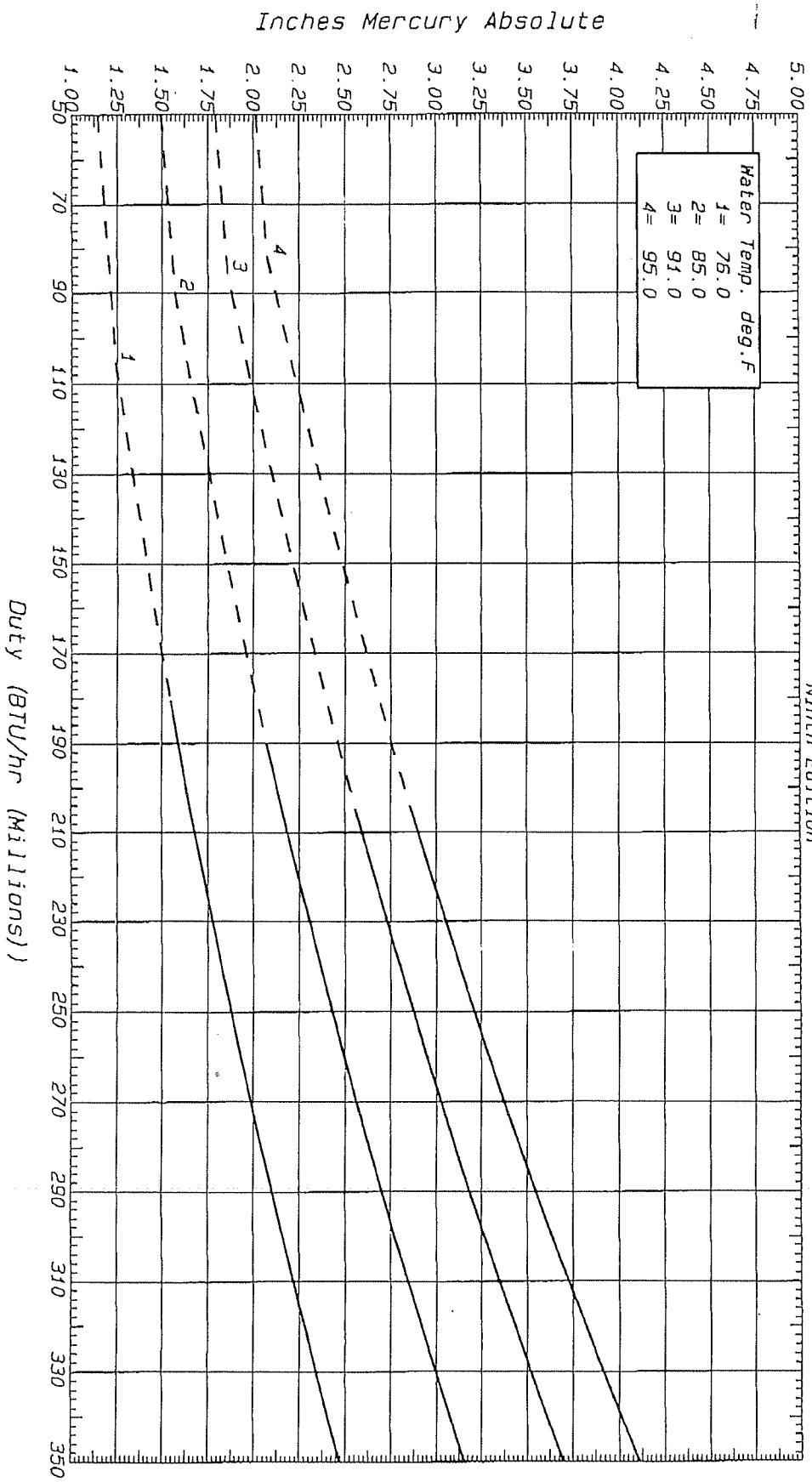
05/02/00

Engineer: JDL/90584

Model 98 120 / 25.75 TBID
Surface Area (sq. ft.) 38050.0
Water Flow Rate (gpm) 30000.0

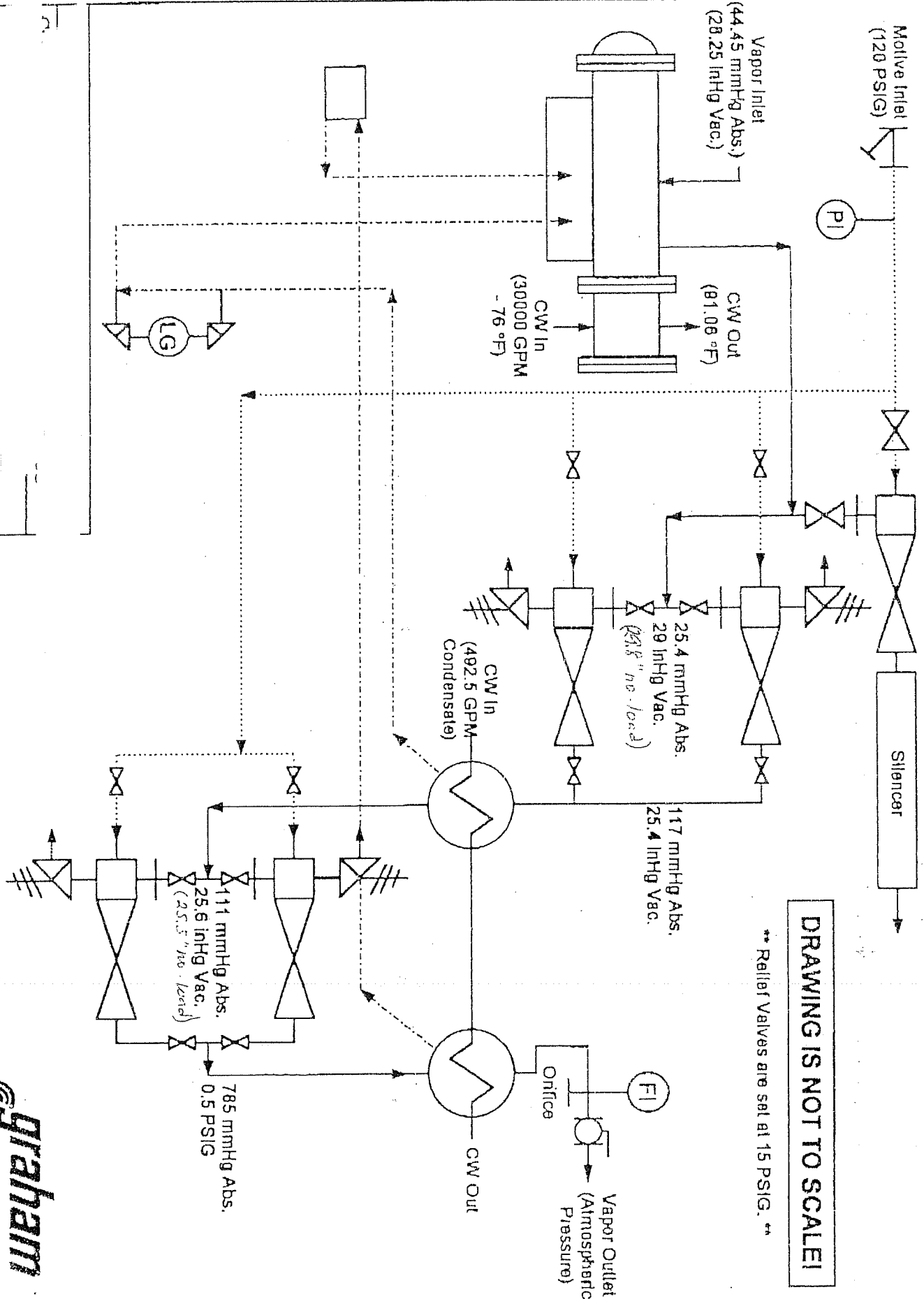
SEE HEI STANDARDS FOR STEAM SURFACE CONDENSERS

Dashed lines indicate less than HEI requirement of a 5 deg. F approach.



Water Temp. deg. F	
1 =	76.0
2 =	85.0
3 =	91.0
4 =	95.0

LBC 05/02/00 > CN144130.CDR



DRAWING IS NOT TO SCALE!

** Relief Valves are set at 15 PSIG. **

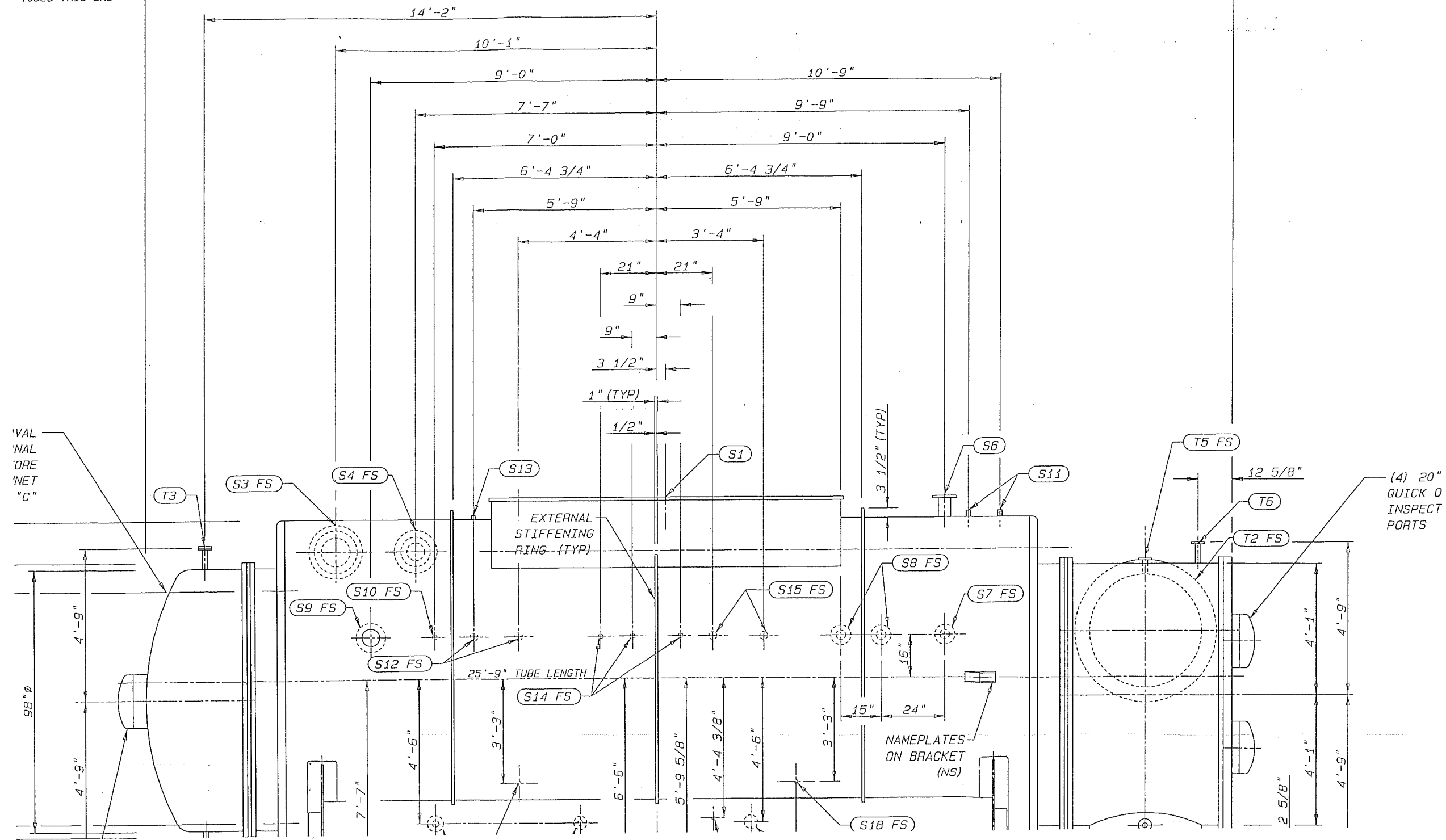
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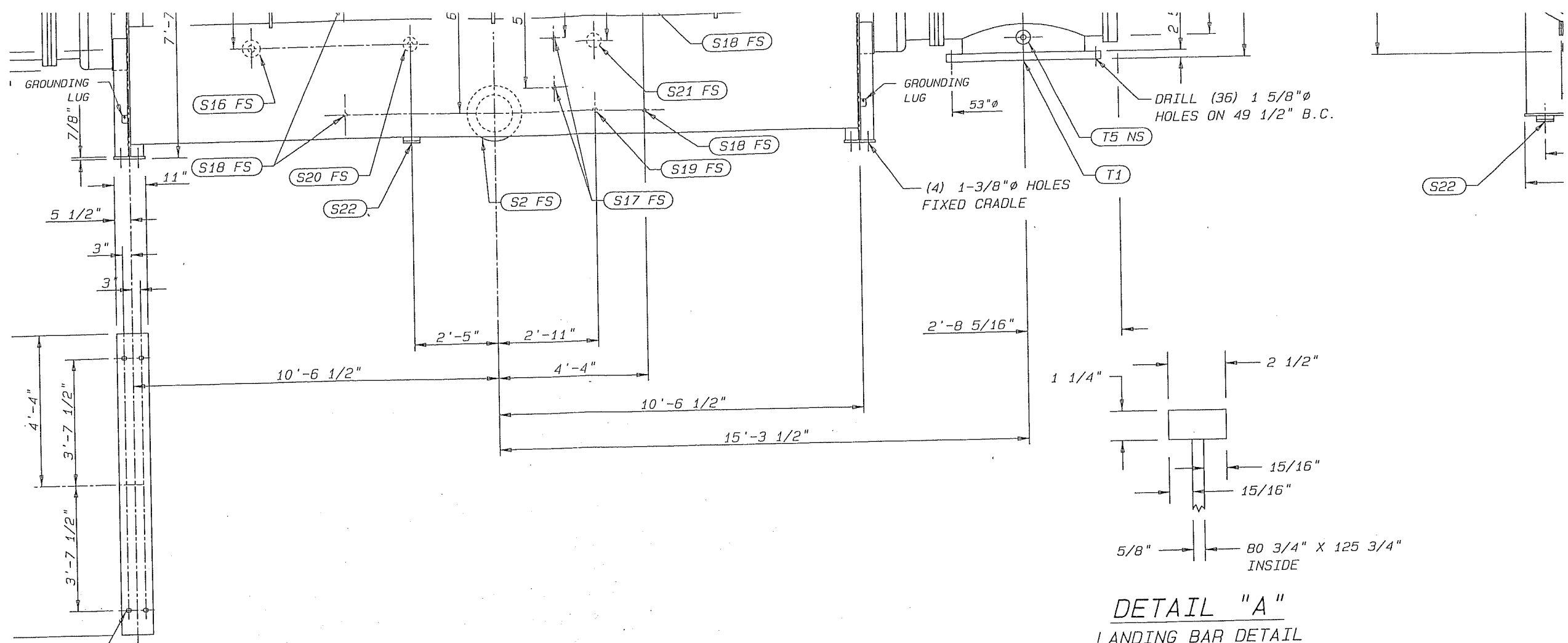
"REQD TO REMOVE TUBES THIS END

34'-0"

20'-11" REQD TO REMOVE TUBES THIS END



(4) 20" QUICK O INSPECT PORTS



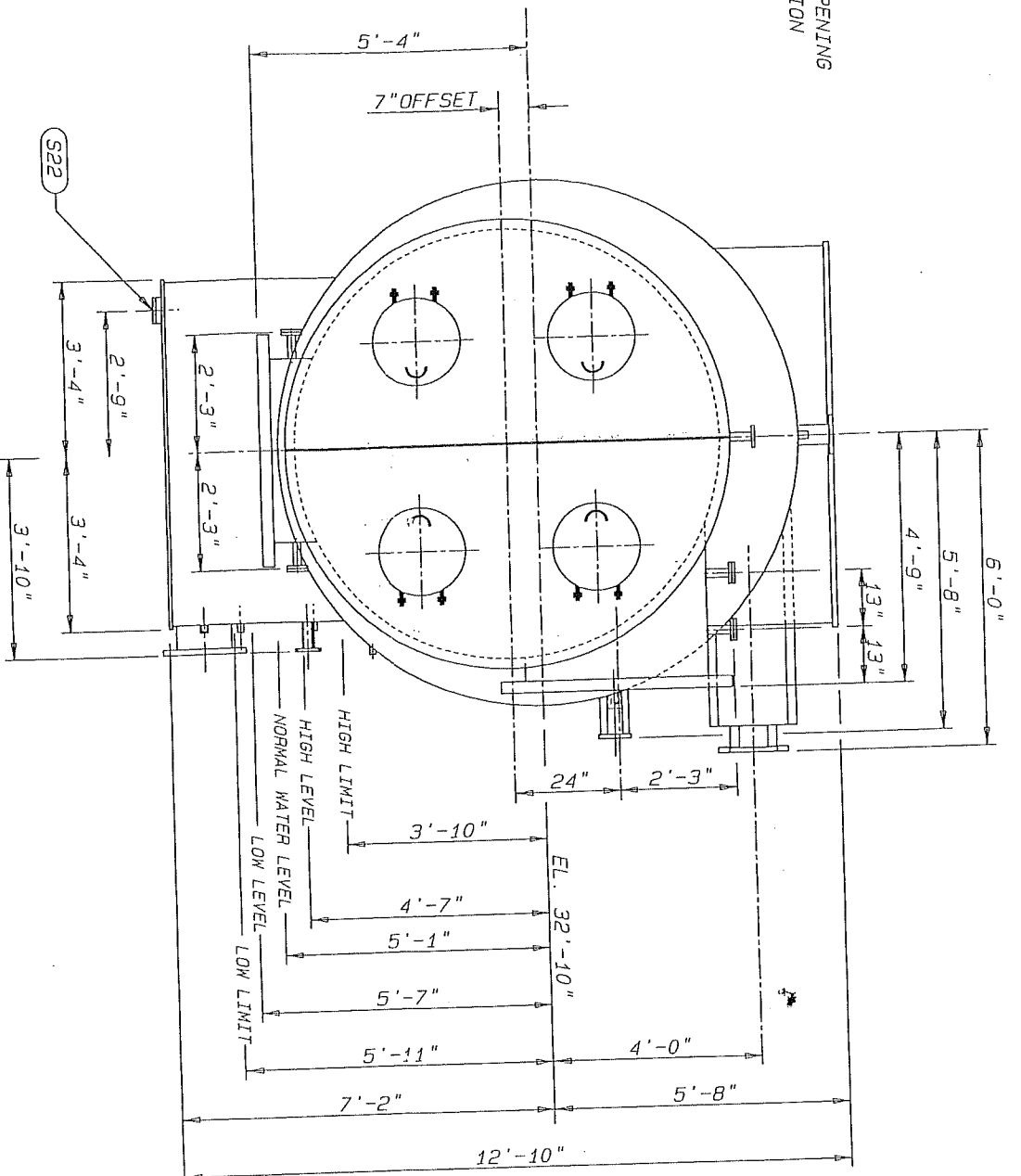
SLOTTED
3 CRADLE

IST:
 PACKAGE ----- D-41312-11
 QY LIST ----- A-41312-21

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EST'D. WGTs. (LBS.)		M.A.W.P. (P.S.I.G.)	DESIGN TEMP (°F)	HYDRO TEST PRESS. (P.S.I.G.)	CORR. ALLOW. (INCHES)	
EMPTY-----	140000					
FLOODED---	303600					
OPERATING-	211400					
		SHELL SIDE	FV & 15	250	FLOODED	1/16
		TUBE SIDE	60	150	90	1/16
① CARBON STEEL PRESSURE PARTS.						0 ORIGINAL ISSUE
						REV. DESCRIPTI

S3	1	10"	150# ANSI (FF)	HR/IP STEAM DUMP	
S4	1	6"	150# ANSI (FF)	SPARE	
S5	1	4"	150# ANSI (FF)	VAPOR OUTLET	
S6	1	3"	150# ANSI (FF)	CONDENSATE RECIRCULATION	SPARE-BLIND FLANGED
S7	2	3"	150# ANSI (FF)	PUMP RECYCLE	SPARE-BLIND FLANGED
S8	1	6"	150# ANSI (FF)	DEAERATOR DRAIN	
S9	1	1"	S.W. (3000#)	VACUUM BREAKER	
S10	2	1"	S.W. (3000#)	PUMP VENT	
S11	2	2"	S.W. (3000#)	MISC START-UP DRAIN	
S12	2	1/2"	NPT (3000#)	VACUUM GAUGE	
S13	1	1"	S.W. (3000#)	MISC. CONN.'S	
S14	3	2"	S.W. (3000#)	MISC. CONN.'S	
S15	2	2"	150# ANSI (FF)	HOTWELL MAKE-UP	
S16	1	3/4"	NPT (3000#)	GAUGE GLASS	
S17	2	3/4"	NPT (3000#)	LEVEL TRANSMITTER	
S18	4	1 1/2"	NPT (3000#)	THERMOWELL CONN	
S19	1	1 1/2"	150# ANSI (FF)	CONDENSATE INLET	FROM I.C. LOOP SEAL
S20	1	1 1/2"	150# ANSI (FF)	CONDENSATE INLET	FROM A.C. TRAP
S21	1	2"	150# (FF)	DRAIN	BLIND FLANGED
S22	1	42"	150# ANSI (FF)	WATER INLET	
T1	1	42"	150# ANSI (FF)	WATER OUTLET	BLIND FLANGED
T2	1	42"	150# ANSI (FF)	VENT	BLIND FLANGED
T3	1	1 1/2"	150# ANSI (FF)	DRAIN	BLIND FLANGED
T4	1	1 1/2"	150# ANSI (FF)	TEST CONN.	BLIND FLANGED
T5	4	1 1/2"	150# ANSI (FF)	VENT	
T6	1	1 1/2"	150# ANSI (FF)	VENT	



6
DESIGN - HEI & TUBE SIDE ONLY: ASME SECTION VIII DIV 1
CONSTRUCTION - 1989 EDITION A-89 ADDENDA
INSPECTION - CUSTOMER & ASME (TUBE SIDE)
STAMPING - ASME (TUBE SIDE)
TAG -
PAINTING: (EXTERNAL CARBON STEEL SURFACES)
SURFACE PREPARATION - GRITBLAST SSPC-SP6
PAINT-1 COAT DIMECOTE 9 INORGANIC ZINC PRIMER 2-4 MILS DFT
WATERBOX INTERIORS:
SURFACE PREPARATION - GRITBLAST SSPC-SP10

125 3/4"