



SURFACE CONDENSER SPECIFICATIONS

Customer : Dresser-Rand
Cust.Ref.: RRF Expansion
Location : Harrisonburg, VA
Quantity : one

Ref.No. : 81BAT95
Date : 10/09/95
Item : Peak design
Engineer : KGG/BAT81

PERFORMANCE

Absolute Pressure @ Steam Inlet (in.HgA).....	3.00
Steam Condensed (lb./hr.).....	43000.
Heat Rejected (Btu/hr.).....	38829000.
Circulating Water (gpm).....	3883.
Water Inlet / Outlet (deg.F).....	85.00 / 105.00
Water Pressure Loss : (ft.Water / psi).....	15.0 / 6.5
Percent Clean.....	85.
Tube Velocity (fps).....	7.63

DESIGN

Surface Area (sq.ft.) Total / Effective.....	MODEL : 38 51 / 17.00 TALTD
Number of Water Passes.....	3271. / 3208.
Number of Tubes.....	2.
Outside Tube Diameter (in.) - BWG.....	980.
Total Tube Length (ft.).....	0.7500 - 18 AW
Design / Test Pressure (psig) :	17.00
Shell.....	FV& 15.0 / Flooded
Tubes.....	125.0 / 187.5
Design Temperature (deg.F) :	250.0
Shell.....	125.0
Tubes.....	220.
Hotwell : cylindrical ...supply (gal.).....	40.
Steam Inlet Diameter (in.) (FF).....	2. - 20.
Water Connections (in.).....	1. - 6.0
Condensate Outlet (in.).....	

MATERIALS

Shell	(SA-516-70)	Carbon Steel
Water Boxes	(SA-516-70)	Carbon Steel
Water Box Covers	(SA-516-70)	Carbon Steel
Baffles	(SA-516-70)	Carbon Steel
Tube Support Plates	(SA-36)	Carbon Steel
Tubes	(SB-111-443)	Admiralty
Tube Sheets	(SB-171-464)	Naval Rolled Brass

Remarks : Design per HEI, Ninth Edition

Construction and Stamp per ASME Section VIII , Div. 1 , Tube Side Only
 Steam Inlet Impingement Protection Included
 Water Boxes and Covers to be Coal Tar Epoxy Coated
 Ejector Package Mounted on the Main Condenser



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STEAM JET EJECTOR PERFORMANCE:

Pressure maintained (inches HgA)*.....	1.0
Total Fluid Evacuated (lbs/hr).....	43.2
Dry air evacuated (lbs/hr).....	13.5
Motive steam required per element (lbs/hr).....	195.0
Operating steam pressure (psig).....	175.0
Operating steam temperature (deg.F).....	377.0
Inter condenser cooling water temp. (deg.F).....	85.0
Inter condenser cooling water required (gpm).....	59.3
Cooling water pressure drop thru I/A condenser (psi)...	0.7

STEAM JET EJECTOR DESIGN:

Model designation.....	1-32-088-2/2H
Number of stages.....	TWO
Number of elements for parallel operation.....	ONE
Material of diffuser and suction chamber.....	SA-278-35
Material of steam nozzles.....	416SS
Type of inter and after condenser.....	IN-LINE
Material of inter and after condenser shell.....	SA-53-B
Tube sheets.....	SA-516-70
Tubes	0.7500 - 18 BWG AW SB-111-443
M.A.W.P/ Test Pressure (psig) :	Shell..... 20 / 30
	Tubes..... 125 / 188
Design Temperature (deg.F) :	Shell..... 250
	Tubes..... 125

APPURTENANCES INCLUDED:

Steam strainer.....	Included
Interconnecting steam piping.....	Included
Air leakage meter.....	Included
Priming ejector - Size.....	2H(7C)
Steam consumption (lbs/hr).....	375.0
Drainers or traps.....	Included
Design per HEI Construction of I/AC per ASME Sec. VIII Div I.....	Included
Isolation valve(s) at 1st stage discharge.....	Included
Isolation valve at hogger suction.....	Included
Suction Manifold	Included
Hogging Ejector silencer.....	Included
Motive steam stop valve for each jet.....	Included
.....	
Measured at condenser inlet.	



LIQUID RING PUMP SPECIFICATION SHEET

1 CUSTOMER: Dresser-Rand EG NO : 81BAT95
 2 USER : Harrisonburg, VA JOB NO :
 3 PLANT LOCATION : CUST NO :
 4 SERVICE OF UNIT: DATE : 10/09/95
 Engineer: KGG

PERFORMANCE REQUIREMENTS

5 GAS HANDLED: AIR/WATER VAPOR
 6 SUCTION PRESSURE: 50.0 mmHgA SUCTION TEMPERATURE: 93.6 F
 7 SEALANT FLUID: WATER SEALANT TEMPERATURE: 80.0 F
 8 COOLING WATER TEMP: N.A. F SOURCE:
 9 ELECTRIC SUPPLY: VOLTS: 230/460 PHASE: 3 CYCLE: 60

PUMP SELECTION

10 MODEL NO: 1PV62160/12
 11 STAGES: two SHAFT SEAL: packing glands
 12 MAT'L OF CONSTR: cast iron case, ductile iron rotors, SS shaft
 13 SPEED: 1750 RPM DISCHARGE PRESS: 14.7 psia
 14 CAPACITY: 330.7 ACFM AT SUCTION PRESSURE OF: 50.0 mmHgA
 15 HORSEPOWER-AT OPERATING POINT: 26.4 bhp MAXIMUM:
 16 SEAL LIQUID: WATER QUANTITY: 20.0 GPM TEMP: 80.0 F
 17 FLOW: once through

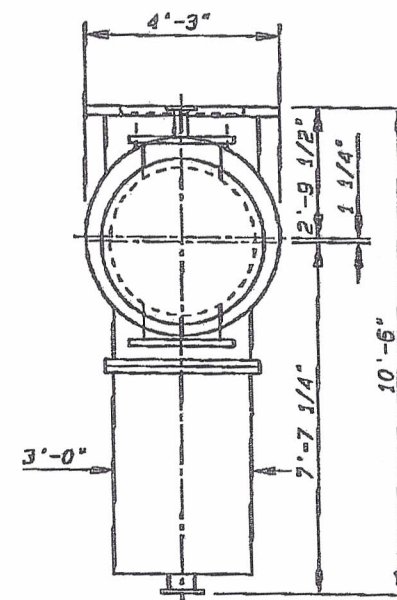
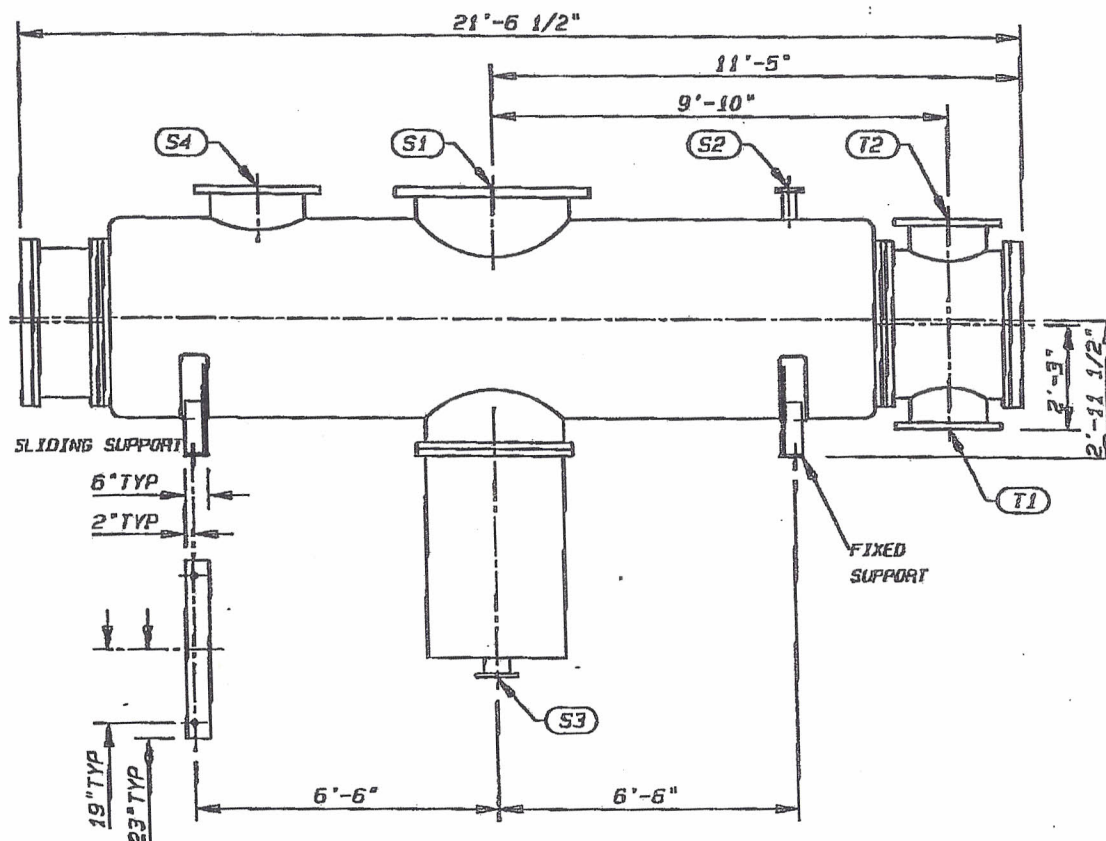
MOTOR DETAILS

18 HORSEPOWER: 40 hp SPEED: 1750 rpm
 19 ELECTRIC SUPPLY: VOLTS: 230/460 PHASE: 3 CYCLE: 60
 20 ENCLOSURE: ODF
 21 MAKE: Reliance or Equal
 22 SPECIAL FEATURES:

OPTIONAL ACCESSORIES

23 BASEPLATE: included for LRVP and motor only
 24 COUPLING & GUARD: included, T.B. Woods or equal
 25 DISCHARGE SEPARATOR: included, steel
 26 SEAL WATER REGULATING VALVE: included, bronze
 27 SEAL WATER PRESSURE GAUGE: included
 28 SEAL WATER SOLENOID VALVE: included, brass
 29 VACUUM GAUGE: included
 30 VACUUM RELIEF VALVE: included, aluminum
 31 SEAL WATER STRAINER: included, cast iron
 32 SEAL WATER SHUTOFF VALVE: included, brass
 33 INLET CHECK VALVE: included, bronze
 34 RECIRCULATION PUMP: none
 35 HEAT EXCHANGER: none
 36 INTERCONNECTING PIPING: included
 37 MANUAL DRAIN AND FILL VALVES: included
 38 GAUGE GLASS: included Bronze 3/4" glass diam
 39 COMMENTS: Performance tolerance per HEI.
 40
 41
 42
 43
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*** PRELIMINARY DRAWING NOT CERTIFIED FOR CONSTRUCTION ***



NOTE:

CONNECTION FLANGES ARE ANSI STANDARD DRILLING AND THICKNESS UNLESS OTHERWISE NOTED.

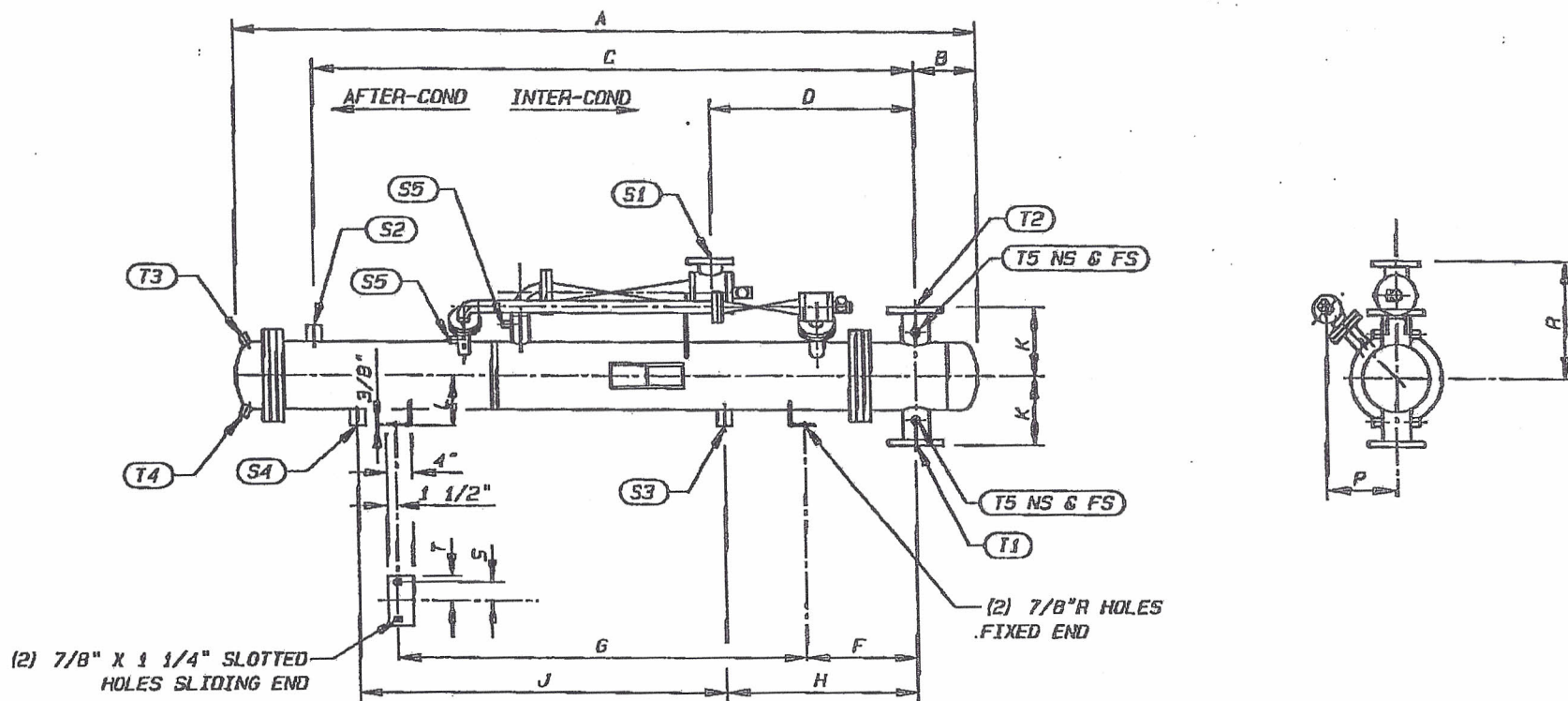
CUSTOMER TO SPECIFY COOLING WATER NOZZLE ARRANGEMENT. STEAM INLET FLANGE THICKNESS PER HEI.

SLIDING SUPPORT: (2) 1 1/8" x 1 1/2" SLOTTED HOLES.

FIXED SUPPORT: (2) 1-1/8" DIA. HOLES.

T1	20"	150# RF COOLING WATER INLET	CUSTOMER Dresser-Rand				GRAHAM MANUFACTURING CO., INC: 20 FLORENCE AVE, BATAVIA N.Y.						
T2	20"	150# RF COOLING WATER OUTLET	CUSTOMER REF. RRF Expansion										
S1	40"	FF STEAM INLET	MODEL 3B51/17.00TALTD										
S2	3"	150# RF AIR OFF TAKE		M.A.W.P.	TEST PRESS.	DESIGN TEMP	PRELIMINARY SURFACE CONDENSER DRAWING						
S3	6"	150# RF CONDENSATE OUTLET	SHELL SIDE	FV 15 PSIG	23 PSIG	250 F	SCALE	MADE	CHKD	APPD	DATE	DWG. NO.	REV.
S4	24"	150# RF RELIEF VALVE	TUBE SIDE	125 PSIG	188 PSIG	125 F	1/4B	KGG			10/9/95	AB18AT95-1	

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NOTE:
CONNECTION FLANGES ARE ANST STANDARD DRILLING AND
THICKNESS UNLESS OTHERWISE NOTED.

CUSTOMER Dresser-Rand
CUSTOMER REF. RRF Expansion
MODEL 1-32-080-2

CONNECTION SCHEDULE S-SHELL SIDE T-TUBE SIDE				DIMENSIONS							
SYMBOL	SIZE	TYPE	SERVICE	A	B	C	D	F	G	H	J
S1	3"	150# ANSI (FF)	VAPOR INLET	9'-8"	8 3/16"	8'-0"	2'-8"	17"	5'-6"	2'-6"	4'-11"
S2	1 1/2"	NPT	VAPOR OUTLET								
S3	1 1/2"	NPT	CONDENSATE OUTLET	K	L	P	O	R	S	T	
S4	1 1/2"	NPT	CONDENSATE OUTLET	10"	7"	10 5/16"		18 9/16"	2"	3"	
S5	1/2"	NPT	TEST CONN.								
T1	3"	150# ANSI (RF)	WATER INLET				SHELL SIDE	TUBE SIDE	GRAHAM MANUFACTURING CO., INC. 20 FLORENCE AVE. BATAVIA N.Y.		
T2	3"	150# ANSI (RF)	WATER OUTLET				20	125			
T3	3/4"	NPT	VENT	M.A.W.P (PSIG)			30	188	PRELIMINARY EJECTOR PACKAGE		
T4	3/4"	NPT	DRAIN	TEST PRESS (PSIG)			250	125			
T5	3/4"	NPT	TEST CONN.	DESIGN TEMP (°F)					SCALE	MADE	CHKD
									NONE	KGG	APPD
											DATE
											10/09/95
											DWG. NO.
											AB1BAT95-2
											REV.



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SCOPE OF SUPPLY

Vendors and model numbers are listed to illustrate construction features. Graham reserves the right to substitute equipment of an equal type and quality by other vendors. Any items omitted from this scope of supply list are excluded from this quotation at this time and will not be furnished.

SURFACE CONDENSER TUBED IN SHOP

(1) Model 38 51 / 17.00 TALTD

Drawing A81BAT95-1

STEAM JET AIR REMOVAL PACKAGE

(1) Model 1-32-088-2

Drawing A81BAT95-2

LIQUID RING VACUUM PUMP AIR REMOVAL PACKAGE

(1) Model 1PV62160/12

Drawing A81BAT95-3

ATMOSPHERIC RELIEF VALVE

(1) Viking 24" Vertical Carbon Steel

HOGGING EJECTOR

(1) Graham, 2H Cast Iron
Silencer, Maxim, Model 2" FP Crb.Stl, Internals, Flg./w F.G. Pack

HOTWELL GAUGE GLASS

(1) Consolidated #20-207, Bronze tubular

VACUUM GAUGE(S)

(1) U.S. Gauge #1981, 4-1/2", 316SS tube, PET case, 316SS Lower stem

PRESSURE GAUGE(S)

(1) U.S. Gauge #1981, 4-1/2", 316SS tube, PET case, 316SS Lower stem

(1) Pigtail Syphon, U.S. Gauge, 517H 1/2" Carbon Steel

TEMPERATURE INDICATORS

(2) U.S. Gauge 65300674 5" Dial Every angle 304SS case

(2) U.S. Gauge Thermowell No. 3/4"-2605-U4.5-304SS, 3/4" NPT, 304SS

AIR LEAKAGE METER

(1) Graham, Calibrated Orifice with gauge, 0 - 40 PPH

INTERCONDENSER CONDENSATE TRAP

(1) Sarco ASTM A126, Type-FA30, 1"

AFTERCONDENSER CONDENSATE TRAP

(1) Sarco ASTM A126, Type-FA30, 1"