

**FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS**  
 (Alternative Form for Single Chamber, Completely Shop-Fabricated Vessels Only)  
 As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by FABSCO, INC., PLANT 3, 8100 NEW SAPULPA ROAD, SAPULPA, OK 74066  
 (Name and address of manufacturer)

2. Manufactured for C.C.I., 8100 NEW SAPULPA ROAD, SAPULPA, OK 74066  
 (Name and address of purchaser)

3. Location of installation DRESSER-RAND, ADDRESS NOT KNOWN  
 (Name and address)

4. Type HORIZONTAL A93-6697-3C A93-6697-3C 3262 1994  
 (Horiz. or vert. tank) (Mfg's serial No.) (CRN) (Drawing no.) (Nat'l Bd. No.) (Year built)

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 1992  
 Year

to NONE

BOX TYPE HEADER Addenda (Date) Code Case Nos. Special Service per UG 120(d)

6. Shell: SA-516-70N 2 3/4" 0" 9 1/2" X 5" 2' 4 5/8"

TUBE & PLUG Mat. (Spec. No., Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. I.D. (ft. & in.) Length (overall) (ft. & in.)

7. Seams: S.W.C.-J, \*NA - - - - - - -  
 Long. (Welded, Dbl., Sngl., Lap, Butt) R.T. (Spot or Full) Eff. (%) H.T. Temp (F) Time (hr) Girth (welded, Dbl., Sngl., Lap, Butt) R.T. (Spot, Partial, or Full) No. of Courses

8. Heads: (a) Mat. SA-516-70N (b) Mat. SA-516-70N  
 (Spec No., Grade) (Spec No., Grade)

Location (Top, Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a) T&B	1 1/4"	0"						5" X 2' 4 5/8"	FLAT
(b) END	1 1/8"	0"						5" X 9 1/4"	FLAT

If removable, bolts used (describe other fastenings) \_\_\_\_\_

9. MAWP 1650 psi at max. temp. 350 °F  
 Min. design metal temp. -20 °F at 1650 psi. Hydro., pneu., or comb. test pressure 2475 psi.

10. Nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Mat.	Nom. Thk.	Reinforcement Mat.	How Attached	Location
INLET/OUTLET	1EA	6"-900#	RFW	SA-106B	SCH-160		WELDED	FRT HDR
			RTJ					
			ACT					

11. Supports: Skirt \_\_\_\_\_ Legs \_\_\_\_\_ Legs \_\_\_\_\_ Other \_\_\_\_\_ Attached \_\_\_\_\_  
 (Yes or no) (No.) (No.) (Describe) (Where and how)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items c. . . report: \_\_\_\_\_

(Name of part, item number, Mfg's name and identifying stamp)

PO#: 6-9441-739 \*RT SPOT PER API-661

CCI JOB#: 93012-C-110 IMPACT EXEMPT PER UCS-66

ITEM: IC-1 TUBES: 1" X .083 SA-214 26' LONG

**CERTIFICATE OF SHOP COMPLIANCE**

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1. "U" Certificate of Authorization No. 21154 expires 4-14 1995  
 Date 3/1/94 Co. name FABSCO, INC., PLANT 3 Signed W. Martin Chandler  
 (Manufacturer) (Representative)

**CERTIFICATE OF SHOP INSPECTION**

Vessel constructed by FABSCO, INC., PLANT 3 at SAPULPA, OK

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the State or Province of OK and employed by COMMERCIAL UNION INSURANCE COMPANY have inspected the component described in this Manufacturer's Data Report on 2-26, 1994, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer make any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 3/1/94 Signed Mark Spindel Commissions OK657 NB 7935 "A"  
 (Authorized Inspector) (Nat'l Board, (incl. endorsements) State, Prov. and No.)

## Specification Sheet Air Cooled Heat Exchanger

Client Tiger		Service		Item No.	
Location		Manufacturer		Inq. No.	
Unit Water cooler air		Job No. Gas and Water cooler, Water Coil		P.O. No.	
1	Bay Size 32 ft x 7.125 ft	Type Forced	No. Bays 1		
2	Surface Area per Unit: Finned Tube 31513 ft <sup>2</sup>	Bare Tube 1491.21 ft <sup>2</sup>			
3	Duty 5.8282E+06 Btu/h	MTD Eff. (Cross) 39.848 °F			
4	Transfer Rate Btu/(h*ft <sup>2</sup> *°F)	Finned 5.01109	Bare 105.897	Service 4.64128	Clean 5.83847
<b>PERFORMANCE DATA - TUBE SIDE</b>					
6	Fluid Name (inlet stream name):	Physical Properties of Fluid		Inlet	Outlet
7	5			Liquid	Vapor
8	Total Flow 72950.5 lb/h	Mass Flow lb/h	72950.5	72950.5	
9	Vapor Condensed lb/h	Temperature °F	200	119	
10	Noncondensables lb/h	Density lb/ft <sup>3</sup>	60.1649	61.7071	
11	Inlet Pressure 400 psia	Viscosity cP	0.30315	0.579261	
12	Spec. Pressure Drop 5 psi	Mol. Wt. lb/lbmol	18.0153	18.0153	
13	Calc. Pressure Drop 0.266799 psi	Spec. Heat Btu/(lb*°F)	0.993755	0.981556	
14	Average h 402.123 Btu/(h*ft <sup>2</sup> *°F)	Th. Cond. Btu/(h*ft*°F)	0.388821	0.36725	
15	Fouling Resistance 0.001 (h*ft <sup>2</sup> *°F)/Btu	Bubble Point °F	Pour Point °F		
16	Avg. Latent Heat Btu/lb	Lethal Service	Yes / No		
<b>PERFORMANCE DATA - AIR SIDE</b>					
18	Mass Flow 878385 lb/h	Temperature In/Out (°F)	100 / 127.996	Pressure / Altitude	14.7 psia /
19	Average h 11.3415 Btu/(h*ft <sup>2</sup> *°F)	Fan Mass Velocity	1.21354 lb/(ft <sup>2</sup> *s)	Static Pressure Loss	0.0283921 psi
20	Flow per Fan 219596 lb/h	Fan Face Velocity	16.6987 ft/s	Velocity Press. Loss	0.00206813 psi
<b>DESIGN - MATERIALS - CONSTRUCTION</b>					
22	Design Pressure:	Test Pressure:	Design Temperature:		
23	<b>TUBE BUNDLE</b>		<b>HEADER</b>		<b>TUBE</b>
24	Size: 32 ft x 7.125 ft x 0.857004 ft	Material:	Material: Carbon Steel A214 Wld. Tube K01807 G24, T2, W6 BPVC		
25	No./Bay: 1	Type:	Type: Straight OD: 1 in		
26	No. Tube Rows: 5	No. Passes: 2	Corr. Allow.(In/Out) in 0 / 0		
27	<b>Arrangement Parallel Series</b>	Slope wrt Horizontal: 0 °	Min. Thick. in/BWG: 0.109 / 12		
28	Bundles 1	Plug Mat.:	No./Bundle 178 Length 32 ft		
29	Bays 1	Gasket Mat.:	Pitch 2.375 in 30 Triangle		
30	Bundle Frame:	Corrosion Allow:	<b>FIN</b>		
31	<b>MISCELLANEOUS</b>	In Nozzle No./Diam.: 1 / 8 in	Material: Aluminum 1060 B209 Plate, sheet A91060 O T3 BPVC		
32	Struct. Mount. Grade / Piperack	Out Nozzle No./Diam.: 1 / 8 in	OD: 2.25 in		
33	Surface Prep:	Special Nozzles:	Stock Thk. 0.018 in		
34	Louvers: Automatic / Manual	Rating and Facing:	No./in 10 1/in		
35	Vibration Switches: Yes / No	TI:	Fin Design Temp.:		
36	Bug Screen: Yes / No	PI:	Code: Stamp: Yes / No		
37	Hail Screen: Yes / No	Chem. Cleaning:	SPECS.		
<b>MECHANICAL EQUIPMENT</b>					
39	<b>FAN</b>		<b>DRIVER</b>		<b>SPEED REDUCER</b>
40	Mfr.:	Model	Type:	Type:	
41	No./Bay: 4	rpm:	Mfr.:	Mfr.:	
42	Diameter: 8 ft	No. Blades:	Model:	Model:	
43	Pitch Man. Adj. / Auto		No./Bay:	No./Bay:	
44	Angle:		Power/Driver:	AGMA Rating:	
45	Blade Material:		rpm:	Ratio:	
46	Hub Material:		Enclosure:	Support: Structure / Pedestal	
47	Power/Fan, Design: 9.73898 hp		Volt/Phase/Cycle: / /		
48	Power/Fan, Min. Amb.:				
49	Control Action on Air Failure:	Fan Pitch Min / Max / Lockup	Louvers Open / Close / Lockup		
50	Degree Control of Outlet Process Temp. (Max. Cooling):				
51	Recirculation: None / Internal / Ext. Over Side / Ext. Over End	Steam Coil: Yes / No			
52	Plot Area:	Proposal Drawing No.			
53	Bundle Weight:	Shipping Wt:			
54	Remarks: 8% excess area				
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