

**FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS**  
**As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1**

**HEAT EXCHANGER**

1. Manufactured and certified by OHMSTEDE LTD., BEAUMONT PLANT, 895 NORTH MAIN STREET BEAUMONT, TEXAS 77701  
(Name and address of Manufacturer)
2. Manufactured for Matrix Engineering, Ltd. 1725 W. Cardinal Drive Beaumont Texas 77705-6415  
(Name and address of Purchaser)
3. Location of installation ChevronTexaco Latin America Products-Colon, Panama  
(Name and address)
4. Type: HORIZ. HEAT EXCHANGER 478286 - 478286 2668 2004  
(Horiz., vert., or sphere) (Tank, separator, jkt. vessel, heat exh., etc.) (Mfg's serial No.) (CRN) (Drawing No.) (Nat'l. Bd. No.) (Year built)
5. ASME Code, Section VIII, Div. 1 2001, 2003 2429 -  
Edition and Addenda (date) Code Case No. Special Service per UG-120(d)

Items 6 - 11 incl. to be completed for single wall vessels, jackets of jacketed vessels, shell of heat exchangers, or chamber of multi-chamber vessels.

6. Shell (a) No. of course(s): 2 (b) Overall length (ft & in.): 18'-8 1/4"

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment					
No.	Diameter, in.	Length (ft & in.)	Spec./Grade or Type	Nom.	Corr.	Type	Full.	Spot.	None	Eff.	Type	Full.	Spot.	None	Eff.	Temp.	Time
1	28" I.D.	9'-11"	SA-516-70	.500	.125	1	SPOT	.85			1	SPOT	.85			-	-
2	28" I.D.	8'-9 1/4"	SA-516-70	.500	.125	1	SPOT	.85			1	SPOT	.85			-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

7. Heads: (a) SA-516-70 NO HEAT TREAT (b) -  
(Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full.	Spot.
(a)	END	.4375	.125	-	-	2:1	-	-	-	-	YES	1	SEAMLESS	1.0
(b)	-	-	-	-	-	-	-	-	-	-	-	-	-	-

If removable, bolts used (describe other fastening) -  
(Mat'l Spec. No., Grade, size, No.)

8. Type of jacket - Jacket closure -  
(Describe as ogee & weld, bar, etc.)

If bar, give dimensions - If bolted, describe or sketch.

9. MAWP 167 FV psi at max. temp. 500 - °F Min. design metal temp. -20 °F at 167/FV psi.  
(internal) (external) (internal) (external)

10. Impact test UCS 66 (a) (c) (d) at test temperature of - °F  
(Indicate yes or no and the component(s) impact tested)

11. Hydro., ~~proof~~, ~~hydro~~ test press. 217 Proof test -

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: SA-516-70N 27 7/8" 1 7/8" .125 BOLTED  
Stationary (Mat'l Spec. No.) Dia., in. (subject to press.) Nom. thk., in. Corr. Allow., in. Attachment (welded or bolted)
- - - - -  
Floating (Mat'l Spec. No.) Dia., in. Nom. thk., in. Corr. Allow., in. Attachment

13. Tubes: SA-214 3/4" 0.0830" 226 U-TUBES  
Mat'l Spec. No., Grade or Type O.D., in. Nom. thk., in. or gauge Number Type (Straight or U)

Items 14 - 18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell (a) No. of course(s): 1 (b) Overall length (ft & in.): 1'-2 13/16"

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment					
No.	Diameter, in.	Length (ft & in.)	Spec./Grade or Type	Nom.	Corr.	Type	Full.	Spot.	None	Eff.	Type	Full.	Spot.	None	Eff.	Temp.	Time
1	28" I.D.	1'-2 13/16"	SA-516-70	.375	.125	1	SPOT	.85			1	SPOT	.85			1150	1HR
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

15. Heads: (a) SA-516-70N NO HEAT TREAT (b) -  
(Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full.	Spot.
(a)	END	2 3/8"	.125	-	-	-	-	-	32 7/8"	-	-	-	SEAMLESS	1.0
(b)	-	-	-	-	-	-	-	-	-	-	-	-	-	-

If removable, bolts used (describe other fastening) 44-3/4" studs 7"Lg. and 44-3/4" studs 9"Lg. SA-193B7 / 176-Heavy Hex Nuts SA-194-2H  
(Mat'l Spec. No., Grade, Size, No.)

16. MAWP 167 FV psi at max. temp. 500 - °F Min. design metal temp. -20 °F at 167/FV psi.  
(internal) (external) (internal) (external)

17. Impact test NO PER UCS 66 (a) (c) (d) at test temperature of - °F  
(Indicate yes or no and the component(s) impact tested)

18. Hydro., ~~PSWT, or other~~ test press. 217 Proof test -

19. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	How Attached		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
shell inlet	2	10"150#	RFWN	SA-106-B	SA-105	.500	.125	INTREGAL	WELDED	WELDED	-
shell outlet	2	8"150#	RFWN	SA-106-B	SA-105	.500	.125	INTREGAL	WELDED	WELDED	-
channel inlet	1	4"150#	RFWN	SA-106-B	SA-105	.3370	.125	INTREGAL	WELDED	WELDED	-
channel outlet	1	4"150#	RFWN	SA-106-B	SA-105	.3370	.125	INTREGAL	WELDED	WELDED	-
vent	1	1"150#	RFLWN	SA-105	-	0.50	.125	INTREGAL	WELDED	-	-
drain	1	1"150#	RFLWN	SA-105	-	0.50	.125	INTREGAL	WELDED	-	-
-	-	-	-	-	-	-	-	-	-	-	-

20. Supports: Skirt NO Lugs NONE Legs NONE Others 4-SADDLES Attached TO SHELL / WELDED  
(Yes or No) (No.) (No.) (Describe) (Where and How)

21. Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report:  
(List the name of part, item number, mfg's. name and identifying number)

22. Remarks: OUR JOB NO:478286 YOUR P.O. NO: 13351 ITEM NO: 50-X-101

1-Channel Flg. 32 7/8"o.d. X 28"i.d. X 4 1/16"Thk. and 1-Flg. 33 1/4" X 28" X 4 1/4"THK. SA-266-4N

1-Shell Flg. SA-266-4N 33 1/4"o.d. x 28"i.d. x 3 13/16" Thk.

2-10" 90 Deg. Ell's .500" Thk. / 2-8" 90 Deg. Ell's .500" Thk. / 2-4" 90 Deg. Ell's .3370" Thk. SA-234WPB

#### 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. 14,155 Expires 09/04/2004

Date 05/25/2004 Name OHMSTEDE LTD., BEAUMONT PLANT Signed [Signature]  
(Manufacturer) (Representative)

#### CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the State or Province of TEXAS and employed by HSB CT of HARTFORD, CT have inspected the pressure vessel described in this Manufacturer's Data Report on 05/25/2004, 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 makes 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 05/25/2004 Signed [Signature] Commissions NB12581A / TX 177  
(Authorized Inspector) (Nat'l Board incl. endorsement, State, Province and No.)

#### CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements on this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME Code, Section VIII, Division 1,

U Certificate of Authorization No. \_\_\_\_\_ Expires \_\_\_\_\_

Date \_\_\_\_\_ Name \_\_\_\_\_ Signed \_\_\_\_\_  
(Assembler) (Representative)

#### CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the State or Province of \_\_\_\_\_ and employed by \_\_\_\_\_ of \_\_\_\_\_ have compared the statements in this Manufacturer's Data Report with the described pressure vessel and state that parts referred to as data items \_\_\_\_\_, not included in the certificate of shop inspection, have been inspected by me and to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of \_\_\_\_\_ psi. By signing this certificate neither the Inspector nor his employer makes 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 \_\_\_\_\_ Signed \_\_\_\_\_ Commissions \_\_\_\_\_  
(Authorized Inspector) (Nat'l Board incl. endorsement, State, Province and No.)