

**FORM U-2 MANUFACTURER'S PARTIAL DATA REPORT**  
**A Part of a Pressure Vessel Fabricated by One Manufacturer for Another Manufacturer**  
**As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1**

1. Manufactured and certified by Metalfoms, Inc., 160 Garth Road, Cheek, TX 77705  
(Name and address of Manufacturer)

2. Manufactured for Equistar Chemicals LP, 3510 Gulf States Road, Beaumont, TX 77704  
(Name and address of Purchaser)

3. Location of installation Equistar Chemicals LP, 3510 Gulf States Road, Beaumont, TX 77704  
(Name and address)

4. Type: FTS, Shell & Tube Bundle 17315 -----  
(Description of vessel part (shell, two-piece head, tube bundle)) (Mfr.'s serial No.) (CRN) *DP 12-31-07*  
2565 17315 Metalfoms, Inc. 2007 *On 12-31-07*  
(Mat'l. Bd. No.) (Drawing No.) (Drawing prepared by) (Year built)

5. ASME Code, Section VIII, Div. 1 2004 (A06) ----- -----  
(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 multichamber vessels.

6. Shell (a) No. of course(s): 2 (b) Overall length (ft & in.): 19'11.875" F/F

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	30 ID	9'7.75"	SA-516-70		0.500	0.062	1	SPOT	.85	1	SPOT	.85	-----	-----
1	30 ID	9'11.5"	SA-516-70		0.500	0.062	1	SPOT	.85	1	SPOT	.85	-----	-----
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7. Heads: (a) ----- (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, None	Eff.
(a)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
(b)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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

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

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

9. MAWP 320 ----- psi at max. temp. 470 ----- °F. Min. design metal temp. -20 °F at 320 psi.  
(internal) (external) (internal) (external)

10. Impact test No at test temperature of ----- °F.  
(Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press. Hydro @ 480 psi Proof test -----

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: SA-516-70N 35.125 2.562 0.187 Welded  
(Stationary (Mat'l Spec. No.)) (Dia., in. (subject to press.)) (Nom. thk., in.) (Corr. Allow., in.) (Attachment (welded or bolted))  
SA-516-70N 35.125 2.562 0.187 Welded  
(Floating (Mat'l Spec. No.)) (Dia., in.) (Nom. thk., in.) (Corr. Allow., in.) (Attachment)

13. Tubes: SA-179 0.75" OD x 20'0" SL 14(MW) 705 Straight  
(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) ----- (b) Overall length (ft & in.): -----

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
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#100270

# FORM U-2 (Back)

15. Heads: (a) \_\_\_\_\_ (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, None	Eff.
(a)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
(b)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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

(Mat'l Spec. No., Grade, Size, No.)

16. MAWP 133 (internal) ----- (external) psi at max. temp. 400 (internal) ----- (external) °F. Min. design metal temp. ----- °F at ----- psi.

17. Impact test No at test temperature of ----- °F.  
[Indicate yes or no and the component(s) impact tested]

18. Hydro., pneu., or comb. test press. ----- 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	
Inlet	1	8"300#	RFWN	SA106B	SA105	0.500	0.062	SA-516-70	d	Welded	Shell
Outlet	1	6"300#	RFWN	SA106B	SA105	0.432	0.062	SA-516-70	d	Welded	Shell
Chem Clean	1	1.5"300#	RFLWN	SA105	-----	0.625	0.062	Weld	d	-----	Shell
Inst. Con.	1	.75"6M	CPLG	SA105	-----	-----	-----	Weld	z-1	-----	Shell
Press	2	.75" 6M	CPLG	SA105	-----	-----	-----	Weld	a	-----	Nozzles
Temp	2	.75" 6M	CPLG	SA105	-----	-----	-----	Weld	a	-----	Nozzles
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20. Identification of part(s)

Name of Part	Quantity	Line No.	Mfr's. Identification No.	Mfr's. Drawing No.	CRN	National Board No.	Year Built
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21. Supports: Skirt No Lugs ----- Legs 2 Others ----- Saddles ----- Attached ----- Shell Welded -----  
(Yes or no) (No.) (No.) (Describe) (Where and how)

22. Remarks: Designed by others.

Forming in Accordance with UCS-79(d)

Inspection openings omitted per "UG-46(a)"

Customer Item No = E-1530, Equip Tag No. 2308021

## CERTIFICATE OF SHOP/FIELD COMPLIANCE

We certify that the statements made in this report are correct and that all details of material, construction, and workmanship of this pressure vessel part conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

U Certificate of Authorization No. 18405 Expires 06/04/2010

Date 12-31-07 Name Metalforms, Inc.  
(Manufacturer)

Signed *[Signature]*  
(Representative)

## CERTIFICATE OF SHOP/FIELD INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of Texas and employed by H.S.B.C.T. of Hartford, CT



have inspected the pressure vessel part described in this Manufacturer's Data Report on 12-31-07 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel part 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 part 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 12-31-07 Signed *[Signature]*  
(Authorized Inspector)

Commissions NB13113A TX1794  
(Nat'l Board Incl. endorsement, State, Province and No.)


#100270



 W PT-3S	2585			
			<b>METALFORMS, INC.</b> CHEEK, TEXAS	
CERTIFIED BY				
	SHELL SIDE		TUBE SIDE	
MAWP INTERNAL	320	PSI AT 470 °F	333	PSI AT 470 °F
MAWP EXTERNAL	—	PSI AT — °F	—	PSI AT — °F
MIN. DMT	-20	°F AT 320 PSI	—	°F AT — PSI
TEST	430	PSI NEW	—	PSI NEW
MFG S.N. 17315		YEAR BUILT 2007		
P.O. NO. 4400839977		ITEM NO. E-1530		
DO NOT START OR RUN T-SIDE W/O S-SIDE				
SHELL & BUNDLE: SAP/TAG: 10202806/2308021				

### CAUTION:

THE CODE REQUIRED PRESSURES AND TEMPERATURES MARKED ON THE HEAT EXCHANGER RELATE TO THE BASIC DESIGN CONDITIONS. THE HEAT EXCHANGER DESIGN HAS BEEN EVALUATED FOR SPECIFIC OPERATING CONDITIONS AND SHALL BE RE-EVALUATED BEFORE IT IS OPERATED AT DIFFERENT CONDITIONS.

  
Hsbct  
12-31-07