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

1. Manufactured and certified by Heat Transfer Equipment Company, 1515 No. 93rd E. Ave., Tulsa, Okla. 74115
(Name and address of manufacturer)

2. Manufactured for Celanese Chemical Company, Inc., P. O. Box 937, Pampa, Texas 79066-0937
(Name and address of purchaser)

3. Location of installation Celanese Chemical Company, Inc., Hwy. 60 West, Pampa, Texas 79065
(Name and address)

4. Type Horiz. BEM | 86-1522-A (Mfgr's serial No.) | --- (CRN) | 86-1522-A-1 (Drawing) | --- (Nat'l Bd No.) | 1986 (Year built)

(Rev. 1)

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 1986 (Year)

--- (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, or sheets of heat exchangers

6. Shell: SA-53-B (Matl. Spec. No. Grade) | 3/8" (Nom. Thk. (in.)) | 1/8" (Corr. Allow. (in.)) | 1' 4" O.D. (Diam. I.D. (ft. & in.)) | 19' 8-1/4" (Length (Overall) (ft. & in.))

7. Seams: Smls. (Long. (Dbl. Sngl.)) | N/A (R.T. (Spot or Full)) | 85% (Eff. (%)) | N/A (H.T. Temp. (°F))

N/A (Type) | Welded Dbl. Butt (Girth (Dbl. Sngl.)) | Spot (R.T. (Spot, Partial, or Full)) | 1 (No. of Courses)

8. Heads: (a) Matl. SA-516-70 (Back Chan. Head) (Spec. No. Grade) (b) Matl. SA-105 (Back Chan. Flg.) (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)	End	5/16"	1/16"			2:1			16" O.D.	Concave
(b)		2-1/2"	1/16"						20-3/8" O.D.	

If removable, bolts used (describe other fastenings) SA-193-B7 (125,000) 3/4" - 20 (Matl. Spec. No., Gr., Size No.)

9. Type of Jacket --- Proof Test ---

10. Jacket Closure --- (Describe as ogee & weld bar, etc.) If bar, give dimensions --- If bolted, describe or sketch.

11. MAWP 150 psi at max. temp. 500 °F. Min. temp. (when less than -20° F) --- °F.
Hydro., pneu., or comb. tes press. 225 psi.

Items 12 and 13 to be completed for tube sections

12. Tubesheets: Fixed
SA-516-70 (Stationary Matl. (Spec. No. Gr.)) | 17-1/2" (Diam. (in.) (Subject to pressure)) | 1-13/16" (Nom. Thk. (in.)) | 3/16" (Corr. Allow. (in.)) | Welded (Attach. (Welded, Bolted))
SA-516-70 (Floating Matl. (Spec. No. Gr.)) | 17-1/2" (Diam. (in.)) | 1-13/16" (Nom. Thk. (in.)) | 3/16" (Corr. Allow. (in.)) | Welded (Attach.)

13. Tubes: SA-249-304 (Matl. (Spec. No. Gr.)) | 1" (O.D. (in.)) | 16 BWG Avg. (Nom. Thk. (in. or Gauge)) | 96 (Number) | Straight (Type (Straight or U))

Items 14-17 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers

14. Shell: SA-53-B (Matl. (Spec. No. Grade)) | 3/8" (Nom. Thk. (in.)) | 1/16" (Corr. Allow. (in.)) | 1' 4" O.D. (Diam. I.D. (ft. & in.)) | 10-1/2" (Length (Overall) (ft. & in.))

15. Seams: Smls. (Long. (Dbl. Sngl.)) | N/A (R.T. (Spot or Full)) | 85% (Eff. (%)) | N/A (H.T. Temp. (°F))

N/A (Type) | Welded Dbl. Butt (Girth (Dbl. Sngl.)) | Spot (R.T. (Spot, Partial, or Full)) | 1 (No. of Courses)

16. Heads: (a) Matl. SA-516-70 (Chan. Head) (Spec. No. Grade) (b) Matl. SA-105 (Chan. Flg.) (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)	End	5/16"	1/16"			2:1			16" O.D.	Concave
(b)		2-1/2"	1/16"						20-3/8" O.D.	

If removable, bolts used (describe other fastenings) SA-193-B7 (125,000) 3/4" - 20 (Matl. Spec. No., Gr., Size No.)

17. MAWP 150 psi at max. temp. 400 °F. Min. temp. (when less than -20° F) --- °F.
Hydro., pneu. or comb. test press. 225 psi.

9412

Form U-1 (Back)

* **

18. Nozzles, Inspection and Safety Valve Openings:

	Purpose (Inlet, Outlet, Drain, etc.)	No.	Diam. or Size	Type	Matl.	Nom. Thk.	Reinforcement Matl.	How Attached	Location
	Chan. In.	1	4"-150#	SA-105	SA-53-B	.337"	Weld	Welded	
*	Chan. Out.	1	4"-150#	SA-105	SA-53-B	.337"	Weld	Welded	
*	Shell In.	1	8"-150#	SA-105	SA-53-B	.500"	Weld	Welded	
	Shell Out.	1	8"-150#	SA-105	SA-53-B	.500"	Weld	Welded	
	V & D	2	1"-150#	RF LWN	SA-105		Weld	Welded	
	Blinds	2	1"-150#	Blinds	SA-105			Bolted	

19. Supports: Skirt ____ (Yes or no) Lugs ____ (No.) Legs 2 (No.) Other ____ (Describe) Attached Welded to shell (Where and how)

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

** UG-125 (c) (3) (h) "UG-46(a) - Shell"

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. 12,197 expires July 15, 19 89

Date 10-31-86 Co. name HEAT TRANSFER EQUIPMENT COMPANY (Manufacturer) Signed H. O. Flood (Representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by Heat Transfer Equipment Company at 1515 No. 93rd E. Ave., Tulsa, Okla. 74115

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 Oklahoma and employed by Commercial Union Insurance Company of Boston, Massachusetts have inspected the pressure vessel described in this Manufacturer's Data Report on 10 - 31, 19 86, 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 the 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 10-31-86 Signed Robert Enochs (Authorized Inspector) Commissions Ok 257 (Nat'l Board, State, Province and No.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the field assembly construction of all parts of this vessel conforms with the requirements of Section VIII, Division 1 of the ASME Boiler and Pressure Vessel Code.

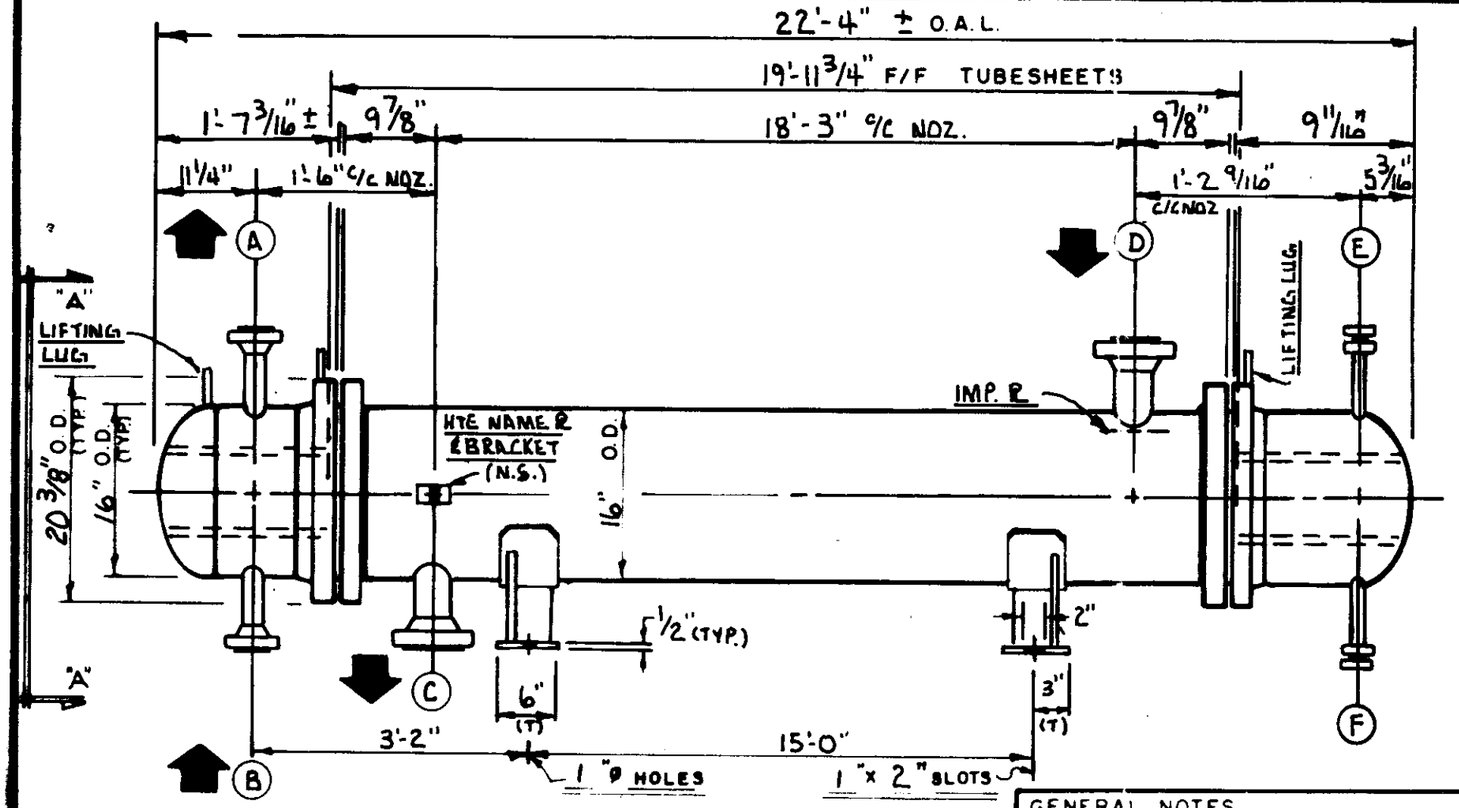
"U" Certificate of Authorization No. ____ expires ____, 19____.

Date ____ Co. name ____ (Assembler that certified and constructed field assembly) Signed ____ (By Representative)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

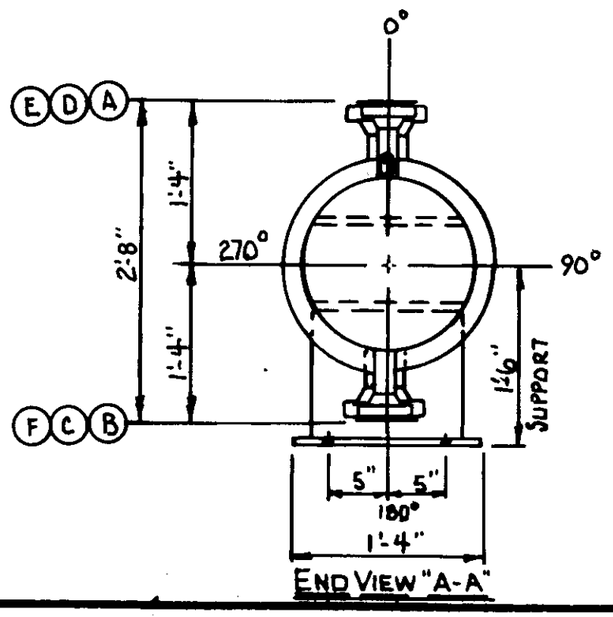
I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of ____ and employed by ____ of ____ have compared the statements in this Manufacturer's Data Report with the described pressure vessel and state that parts referred to as data items ____, not included in the certificate of shop inspection, have been inspected by me and that, 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 ____ (Authorized Inspector) Commissions ____ (Nat'l Board (incl. endorsements), State, Prov., and No.)



ELEVATION VIEW

NOTE: SHIP SUPPORTS LOOSE



END VIEW "A-A"

GENERAL NOTES

1. ALL BOLT HOLES TO STRADDLE ℄'S
2. COAT ALL STUDS AND NUTS W/ THREAD LUBE
3. ● AND FULL VAC. @ 300°F.
4. ⬢ AND FULL VAC @ 200°F.
5. ■ NONE SML'S. 4 CORNER JOINT

HCC W7-16017

DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH A S M E CODE SECTION VIII, DIV 1, 1986 EDITION,

TEMA CLASS B " & CELANESE ATTACHMENT "R", STANDARDS APPLY.

DESIGN DATA	SHELL	TUBE
DESIGN PRESSURE PSIG	150 ●	150 ●
TEST PRESSURE PSIG	225	225
DESIGN TEMPERATURE °F	500	400
CORROSION ALLOWANCE	1/8"	1/16"
NUMBER OF PASSES	ONE	FOUR
RADIOGRAPH TECHNIQUE	■	SPOT
POST WELD HEAT TREATMENT	NO	NO

TUBES 96 - 1 OD x 16BWG (AVG) WALL x 20'-0" LG.
MAT'L SA-249-TP304/H/DET
PITCH: 1 1/4" Δ
SURFACE 503 GROSS SQ FT
TUBE END ATTACHMENT DOUBLE GROOVED AND ROLLED

MATERIAL
SHELL: SA-53-B
CHAN. CYL.: SA-53-B; CHAN. HD'S.: SA-516-70
TUBE SHEETS: SA-516-70; BOLTING: SA-193-B7/SA-194-2H.
REMAINDER: C-STL. EXCEPT TUBES.

GASKETS
1/8" THK. GARLOCK 8748

SURFACE PREP AND PAINT
POWER TOOL CLEAN (OR SANDBLAST) EXTERIOR & APPLY ONE COAT OF RED OXIDE PRIMER.

SCHEDULE OF OPENINGS

MK	DESCRIPTION	SERVICE	F	1"-150# RF-LWN/BLD	CHAN DRAIN
A	4"-150# RF-WN	WATER OUT			
B	4"-150# RF-WN	WATER IN			
C	8"-150# RF-WN	PROCESS OUT			
D	8"-150# RF-WN	PROCESS IN			
E	1"-150# RF-LWN/BLD	CHAN. VENT			

CUSTOMER
CELANESE CHEMICAL COMPANY, INC.
PAMPA, TEXAS.

PO N° 42-42133-6
ITEM N° 1

HTE
HEAT TRANSFER EQUIPMENT CO.
TULSA, OKLAHOMA

ASSEMBLY AND SPECIFICATIONS
FOR ONE - 15-240 BEM

FST WEIGHTS
DRY 3,900#
WET 5,500#

SERVICE

DWN	CK	APP	DWG N°	
GP	Ross S	RAK	86-1522-A-1	
DT 9-16-86	DT 9-16-86	DT 9/16/86	FILE N° 86220	

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