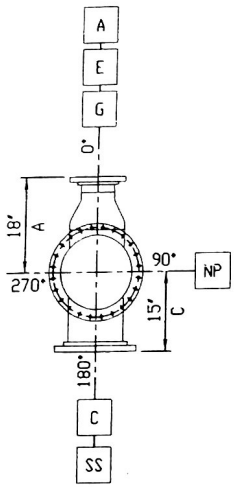
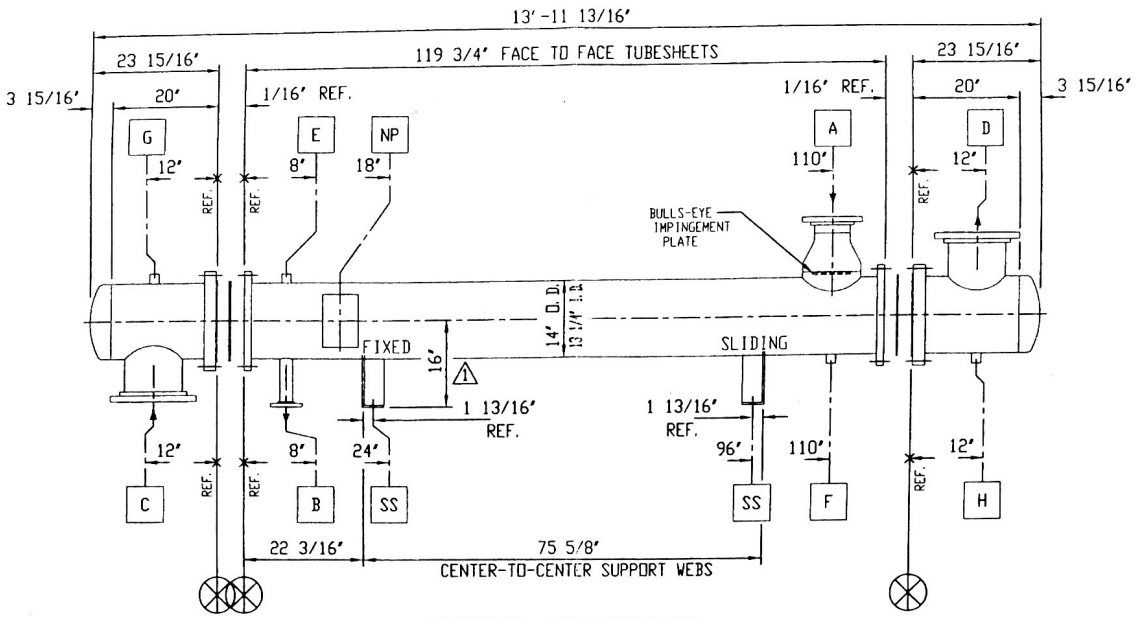
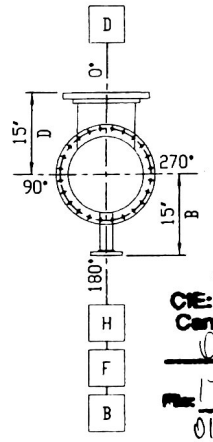


ORIENTATION
VIEWED FROM LEFT END



GENERAL ARRANGEMENT
NOT A TRUE ORIENTATION



ORIENTATION
VIEWED FROM RIGHT END

FIELD FILE

08018
CIE: ETHANOL
Canton, Illinois
04.17.07
File: 17.1ET9501
018002D002

CONNECTION SCHEDULE				
MARK	SIZE	RATING	TYPE	SERVICE
A	6"	150	RFSO	SHELLSIDE - INLET
B	2"	150	RFSO	SHELLSIDE - OUTLET
C	10"	150	LJFX	TUBESIDE - INLET
D	10"	150	LJFX	TUBESIDE - OUTLET
E	3/4"	6000	FC	VENT
F	3/4"	6000	FC	DRAIN
G	3/4"	6000	FC	VENT
H	3/4"	6000	FC	DRAIN

⚠ SURFACE PREP
1) COMMERCIAL BLAST CLEAN, CARBON STEEL (SSPC-SP-6)

PAINT SPEC
1) PRIME WITH ONE (1) COAT INTERNATIONAL INTERZINC 22 INORGANIC ZINC-RICH SILICATE, COLOR: GREENISH-GRAY (2-3 MILS DFT)

GENERAL NOTES
1) ALL BOLT HOLES TO STRADDLE NATURAL CENTERLINES.
2) ALL NOZZLES TO HAVE PROTECTIVE COVERS FOR SHIPMENT.
3) ALL THREADED OPENINGS FURNISHED WITH PLUGS.

MATERIALS:	SHELL SIDE	TUBE SIDE
TUBES (145) 3/4" O.D. x 16BWG (0.065) AVG, SA-249-TP316 WLD		
TUBESHEET	SA-240-316	SA-240-316
SHELL	SA-106-B SMLS	SA-240-316
BODY FLANGE		SA-516-70*
HEAD		SA-240-316
NOZZLE NECK	SA-106-B SMLS	SA-312-TP316 WLD
NOZZLE FLANGE	SA-105	SA-105*
BOLTING		SA-193-B7/SA-194-2H
GASKETS		316 S.S. SPRL-WND, NONASB FILL

* = WITH 316 S/S FACING OR OVERLAY

CERTIFIED 1/5/07

DESIGN DATA	SHELL SIDE	TUBE SIDE
DESIGN PRESSURE - INTERNAL	150 PSI	125 PSI
DESIGN PRESSURE - EXTERNAL	FV	FV
DESIGN TEMPERATURE	350°F	350°F
HYDRO TEST PRESSURE	195 PSI	163 PSI
CORROSION ALLOWANCE	0.0625"	0.0"
RADIOGRAPH	NONE	NONE
STRESS RELIEF	NONE	NONE
NO. OF PASSES	1	1
MIN. DESIGN METAL TEMP	-20°F AT 150 PSI	-20°F AT 125 PSI

TUBE SURFACE (EXTERNAL) 285 SQ. FT.

APPROX. WEIGHT EACH	EMPTY	FULL WATER	BUNDLE
	1979 LBS.	3170 LBS.	904 LBS.

DESIGN & CONSTRUCTION IN ACCORDANCE WITH:
ASME SECTION VIII, DIV. 1 STAMPED 2004 ED'A'05 'U'
T.E.M.A. CLASS B

NO.	DATE	DESCRIPTION	BY	CHK
⚠ 1	1-5	REVISED SADDLE PROJECTION PER CUSTOMER	D.L.L.	

FOR FURTHER INFORMATION PLEASE CONTACT:
PROTHERM CORPORATION
11108 SOUTH TOWNE SQUARE
ST. LOUIS, MO 63123
www.prothermcorp.com
phone: 314-894-6720
fax: 314-892-0107
PROTHERM FILE NO.: 206224

CUSTOMER: CENTRAL ILLINOIS ENERGY / LURGI

ONE UNITS REQUIRED
TAG: H.T.S. NO. 12910
ITEM NO: ET-9501
PO NO.: 70738

DIMENSIONAL OUTLINE

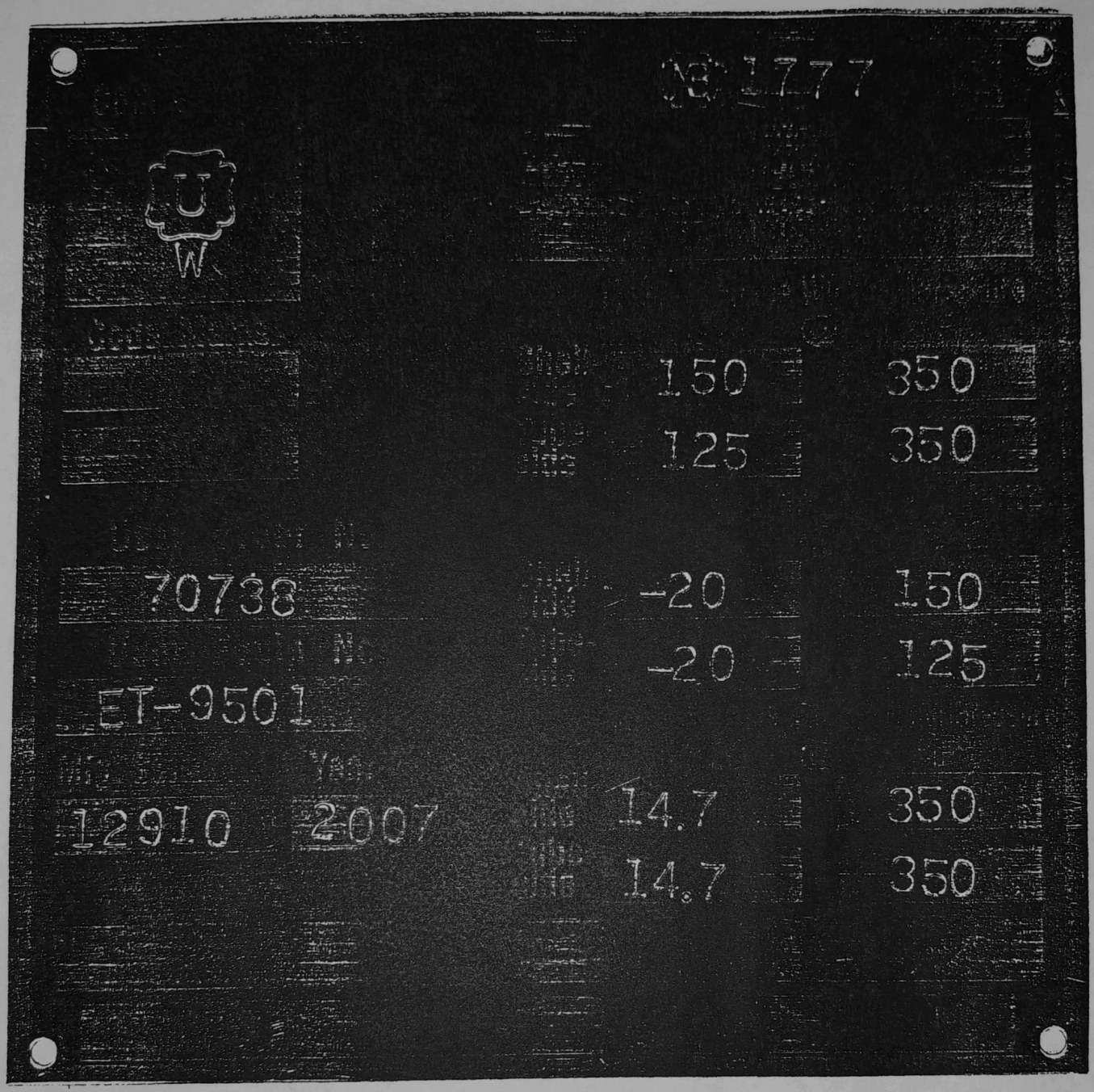
CIP HEATER

SIZE: 13 - 120 TYPE: BEM

HEAT TRANSFER SYSTEMS, INC
DESIGNER & MANUFACTURER
ST. LOUIS, MO 63111-3655

C: 12910.HEX

DR. BY	D.L.L.	HTS 12910	
DATE	11-22-2006	DWG. NO.	REV



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

0813
CIE: ETHANOL
Canton, Illinois

1. Manufactured and certified by HEAT TRANSFER SYSTEMS, INC., 8100 POLK, MO. 63111 04.17.07
(Name and address of Manufacturer)

2. Manufactured for PROTHERM CORPORATION ., 11108 SOUTH TOWNE SQUARE, ST. LOUIS, MO. 63123 ET-9501
(Name and address of Purchaser)

3. Location of installation UNKNOWN 018 00200 20
(Name and address)

4. Type							
HORIZ.	HEAT EXCHANGER	12910	N/A	B-012910-01	1777	2007
(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: 2004 Ad / A 2005 (Edition and Addenda (date)); N/A (Code Case No.); N/A (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): 1 (b) Overall length (ft & in.): 9' - 9"

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	14"	9' - 9"	SA-106-B SML	0.375"	0.0625"	S	NONE	85%	I	NONE	70%		

7. Heads: (a) _____ (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (b) _____ (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 ogee & weld, bar, etc.)

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

9. MAWP 150 (internal) 14.7 (external) psi at max. temp. 350 (internal) (external) • F Min. design metal temp. -20 • F at 150 psi.

10. Impact test NONE PER UG-20 (f), UCS-66, AND UHA-51 at test temperature of _____ • F
(indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press. HYDRO - 195 PSI Proof test _____

Items 12 and 13 to be completed for tube sections.

12. Tubesheet:

SA-240, TP316	18 3/8"	1 1/2"	0"	WELDED
Stationary (Mat'l Spec. No.)	Dia., in. (subject to press.)	Nom. thk., in.	Corr. Allow., in.	Attachment (welded or bolted)
SA-240, TP316	18 3/8"	1 1/2"	0"	WELDED
Floating (Mat'l Spec. No.)	Dia., in.	Nom. thk., in.	Corr. Allow., in.	Attachment

13. Tubes:

SA-249, TP316 WLD	3/4"	0.065" Avg.	145	STRAIGHT 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): 2 (b) Overall length (ft & in.): 3' - 4 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
2	14"	1' - 8 1/8"	SA-240, TP316	0.1875"	0"	I	NONE	70%	I	NONE	70%		

15. Heads: (a) SA-240, TP316 (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (b) SA-240, TP316 (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)	L - END	0.125"	0"			2:1			14"		X	S	NONE	70%
(b)	R - END	0.125"	0"			2:1			14"		X	S	NONE	70%

If removable, bolts used (describe other fastening) 5/8"- 48 PCS OF SA-193-B7 STUDS AND 5/8"- 96 PCS OF SA-194-2H NUTS
(Mat'l Spec. No., Grade, Size, No.)