

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 N. 93RD EAST AVENUE, TULSA, OKLAHOMA 74115
(Name and address of Manufacturer)

2. Manufactured for SUNOCO, INC. (R&M) C/O FLUOR CANADA LTD, 55 SUNPARK PLAZA SE, CALGARY, AB T2X 3R4 CANADA
(Name and address of Purchaser)

3. Location of installation SUNOCO, INC. (R & M) EAGLE POINT, NJ
(Name and address)

4. Type: HORIZONTAL HEAT EXCHANGER 05-5659-F 05-5659-F-1 4424 2006
(Horiz., vert., or sphere) (Tank, separator, jkt. vessel, heat exch., etc.) (Mfg's serial No.) (CRN) (Drawing No.) (Nat'l. Bd. No.) (Year built)

5. ASME Code, Section VIII, Div. 1 2004 LOW TEMP PER UCS-66
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): 4 (b) Overall length (ft & in.): 23'-8 3/8"

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
3	45" ID	6'-10 1/4"	SA-387-11 CL2	1 3/4****	1/8"	1	FULL			100%	1	FULL			100%	1275°F	2 HRS
1	45" ID	3'-1 5/8"	SA-387-11 CL2	1 3/4****	1/8"	1	FULL			100%	1	FULL			100%	1275°F	2 HRS
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

7. Heads: (a) SA-387-11 CL2 HT - 2 HRS @ 1275°F (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
(a)	END	1 5/8" ***	1/8"	-	-	2:1	-	-	-	-	X	-	-	-	-
(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.
MAWP 1210 - psi at max. temp. 810 - °F Min. design metal temp. -10 °F at 1210 psi.
(internal) (external) (internal) (external)

10. Impact test YES-ALL 1 1/4Cr-1/2Mo COMPONENTS; EXCEPT NOZ FLANGES NO PER USC-66(c) at test temperature of -10 °F
(Indicate yes or no and the component(s) impact tested)

11. Hydro., ~~stress~~, ~~burst~~ test press. 1573 Proof test

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: SA-182-F11 CL2 45 3/8" 6 3/16" ** 9/16" ****
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-249-TP347 1" 16 BWG (AVG) 367 U
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.): 2'-9 1/16"

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	Temp.	Time
1	45" ID	2'-9 1/16"	SA-387-11 CL2	2 1/8****	1/8"	1	FULL			100%	1	FULL			1275°F	2 HRS
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

15. Heads: (a) SA-182-F11 CL2 HT - NONE (b)
(Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (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	9 7/16"	5/16"	-	-	-	-	-	47.668"	-	-	-	-	-
(b)														
removable, bolts used (describe other fastening) (a) SA-103 B16 2 1/2" 33 (QUANT TO OVERALL LENGTH)														

If removable, bolts used (describe other fastening) (a) SA-193-B16, 2 1/2", 32 (CHAN TO SHELL) SA-193-B16, 2 1/4", 32
(Mat'l Spec. No., Grade, Size, No.)

17. Impact test YES-ALL 1 1/4Cr-1/2Mo COMPONENTS; EXCEPT NOZ FLANGES NO PER USC-66(c) ; BOLTS EXEMPT PER UCS-66 (a) at test temperature of -10 °F at 1450 psi
(Indicate yes or no and the component(s) impact tested)

9. Nozzles, inspection, and safety valve openings: _____

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material	Accessories

INLET / OUTLET	Size	Type	Nozzle	Flange	Nozzle Thickness	Reinforcement Material	How Attached		Location (Insp. Open.)
							Nozzle	Flange	
CC *	1 1/2"	RF-LWN	SA-182-F11 CL2	SA-182-F11 CL2	2.719***	3/16"	-	-	-
TW *	1 1/2"	RF-LWN	SA-182-F11 CL2	-	.8125" **	3/16"	-	UW-16.1(e) CatC, Type 1	-
-	-	-	SA-182-F11 CL2	-	1.25 **	3/16"	-	UW-16.1(e)	-
-	-	-	-	-	-	-	-	UW-16.1(e)	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-

20. Supports: Skirt NO Lugs - Legs - Others 2 SADDLES
(Yes or No)

(No.)	(No.)	(No.)	2 SADDLES	Attached	WELDED TO SHELL
(Let the name of the manufacturer be known.)	(Let the name of the manufacturer be known.)	(Let the name of the manufacturer be known.)	(Describe)		
21. Manufacturer's Partial Data Reports properly identified and signed by Commissioned Officer					

(List the name of part, item number, mfg's. name and identifying number)

SAFETY VALVES LOCATED ELSEWHERE IN SYSTEM

fect and that all details of design, material, construction,

Date 2/25/06 Name HEAT TRANSFER EQUIPMENT Expires 07-15-2007

CERTIFICATE OF SHOP INSPECTION

National Board of Boiler and Pressure Vessel Ins
A INSURANCE COMPANY

the pressure vessel described in this Manufacturer's Data Report on _____ of _____ BOSTON, MA _____ OK
 Manufacturer has constructed _____ 3-36-76 _____ have inspected _____

(Authorized Inspector) _____ Commissions MR. 8432-A OK-266
(Not' Board) _____

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

and that the field assembly construction of all parts of this ve

Date _____ Name _____ Expires _____

CERTIFICATE OF FIELD ASSEMBLY INSPECTION (Representative)

by The National Board of Boiler and Pressure Vessel Inspector

_____ , not included in the certificate of _____

or implied, concerning the pressure vessel described in this Manufacturers Data Report, shall be null and void. By signing this certificate neither the Inspector nor his employees

(Authorized Inspector) _____ Commissions _____

(Nat'l Board incl. endorsement, State, Province and No.)

Manufactured and certified by HEAT TRANSFER EQUIPMENT COMPANY, 1515 N. 93RD EAST AVENUE, TULSA, OKLAHOMA 74115
(name and address of manufacturer)

3. Location of installation. SUNOCO, INC. (R & M) EAGLE POINT, NJ (name and address)

4. Type:	<u>HORIZONTAL</u> (horiz., vert., or sphere)	<u>HEAT EXCHANGER</u> (tank, separator, heat exch., etc.)	<u>05-5659-F</u> (mfg's serial no.)
	<u>-</u> (CRN)	<u>05-5659-F-1</u> (drawing no.)	<u>4424</u> (Nat'l. Bd. no.)
	<u>-</u>		<u>2006</u> (year built)

Data Report
Item Number

Remarks

* INCLUDES SA-182-F11 CL.2 BLD FLG W/ 347 OVERLAY PER UCL-23(a) BOLTED W/ SA-193-B16 STUDS
 ** INCLUDES 3/16" 347 STN STL OVERLAY PER UCL-23(a)
 *** INCLUDES 1/8" 347 STN STL CLAD PER UCL-23(a)
 **** WELDED TO CHANNEL, BOLTED TO SHELL
 • INCLUDES 5/16" 347 STN STL CLAD PER UCL-23(a)
 ** INCLUDES 3/16" (TUBE SIDE) & 3/8" (SHELL SIDE) 347 STN STL OVERLAY PER UCL-23(a)

CAUTION

TUBES AND TUBESHEET DESIGNED FOR 400 PSI DIFFERENTIAL PRESSURE AT 810°F FROM
TUBE SIDE. PRESSURE TESTING AND SERVICE MUST BE SIMULTANEOUS. TESTING
DIFFERENTIAL PRESSURE = 520 PSI (MAX)

Certificate of Authorization:

Type U No. 12197

Expires 07-15, 2007

Date 2/25/04

Name HEAT TRANSFER EQUIPMENT COMPANY
(manufacturer)

Signed Jeff [Signature]
(representative)

Date 2-26-06

Name A. G. Stent
(Authorized Inspector)

Commission NB-8432-14 OK-266
(Nat'l. Board incl. endorsement, state, province and no.)

18-4424



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HEAT
TULSA, OK

FER E ENT CO

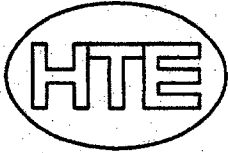
W
RT 1
HT

W.P. T 1450 AT 775 °F
W.P. 1210 AT 810 °F
DESIG TUBES 10 F AT 1450 P.S.I.
AL TE SELL 10 F AT 1210 P.S.I.
IAL NO 05-5659 - F YEAR
T TUBE 1885 SELL 1573 P.S.I.
E. SQ. 4473 EFF SIZE 45-288
NO. 2E-246 C TYPE CEU
NO. AOXF-44501-01/AOXF 400002

SERVICE CHARGE/REACTOR EFFLUENT EXCHANGER
DESIGNED & BUILT PER SUN 0601, 0801, 0903, 1101,
API-660, TEMA R4 ASME SECT VIII DIV 1, 2004ED
O XX-X-13001D-2. FAB M. 04.003
SHOP TEST: TUBES = 1885 PSI SHELL = 1573 PSI

CAUTION

TUBES & TUBE SHELL DESIGNED FOR 400 PSI
DIFFERENTIAL PRESSURE AT 610 °F FROM TUBE SIDE
PRESSURE TESTING AND SERVICE MUST BE
SIMULTANEOUS. TESTING DIFFERENTIAL PRESSURE
320 PSI (MAX)



HEAT TRANSFER EQUIPMENT COMPANY

1515 N. 93 East Avenue • P.O. Box 580638 • Tulsa, Oklahoma 74158 • 918/836-8721 • Fax 838-3570

CERTIFICATION OF POSITIVE MATERIAL IDENTIFICATION (PMI)

HTE PROCEDURE: QW101L REV. 0

HTE JOB NO.: 05-5659-F ITEM NO.: 2E-246C

HEAT TRANSFER EQUIPMENT COMPANY HEREBY CERTIFIES THAT ALL
REQUIRED PMI WAS PERFORMED

HTE QUALITY INSPECTION:

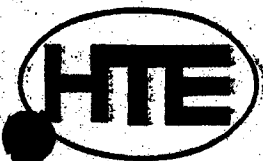
DATE:

2/25/06

CUSTOMER REPRESENTATIVE:

DATE:

FLUOR
SOS Reviewed



HEAT TRANSFER EQUIPMENT COMPANY

P.O. BOX 58063E
TULSA, OK 74158

TEL: (918) 836-8721
FAX: (918) 838-3570

1515 N. 93RD E. AVE.
TULSA, OK 74115

HTRI - TEMA - APT - ISO 9001



DRY POWDER MAGNETIC PARTICLE INSPECTION CERTIFICATION

in accordance with
ASME SECTION V & VIII, ARTICLE 25 & APPENDIX 6
HTE-QW 101F

METHOD

Dry Powder and Magnetic Contour Probe

HEAT TRANSFER EQUIPMENT COMPANY hereby certifies that the Magnetic Particle Inspection was performed in accordance with ASME Sections V and VIII, Article 25 and Appendix 6.

HTE Job No.: 05-5659-F Item No.: 2E-246C

REQUIRED

- ☐ Nozzle attachment welds (ID)
- ☐ Nozzle attachment welds at root pass
- ☒ Nozzle attachment welds (OD)
- ☐ Tubesheet and Cylinder edges prior to welding
- ☐ Tubesheet to Cylinder final welds
- ☒ All attachment welds
- ☐ Round seams and long seams (ID)
- ☒ Round seams and long seams (OD)
- ☐ Round seams and long seams (Back-gouged)
- ☐ Other (see comments)

Results: ☒ Satisfactory ☐ Unsatisfactory

Comments: ALL EXTERNAL CHANNEL AND SUEH WELLS
BEFORE AND AFTER PWHT

Jeff Hulse
Quality Inspection

Date: 2/24/06

FLUOR.
SOS Reviewed
[Signature]

QF101F1

"HEAT TRANSFER EQUIPMENT COMPANY IS DEDICATED TO QUALITY AND CUSTOMER SATISFACTION"