

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 ENERGY EXCHANGER COMPANY, 1844 NORTH GARNETT ROAD, TULSA, OK 74118
 (Name and address of Manufacturer)

Manufactured for D-COK LLC, 3657 BRIAR PARK DRIVE, HOUSTON, TEXAS 77042-5205
 (Name and address of Purchaser)

Location of installation GIANT INDUSTRIES, GRAFTON, VIRGINIA
 (Name and address)

4. Type: HORIZONTAL HEAT EXCHANGER X-7263 B X-7263-A2 REV. 2 5266 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 EDITION, 2005 ADDENDA 2519
 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): 3 (b) Overall length (ft & in.): 22'-6 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	Eff.	Temp.	Time
2	59" I.D.	8'-0"	SA-387-11,CL2	1 1/4"	1/8"	1	FULL	1.0	1	FULL	1.0	1275°F.	1 1/4-HR.
1	59" I.D.	6'-6 1/16"	SA-387-11,CL2	1 1/4"	1/8"	1	FULL	1.0	1	FULL	1.0	1275°F.	1 1/4-HR.

7. Heads: (a) SA-387-11,CL2; 1 1/4-HR. AT 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	Eff.
(a)	END	1 1/8"	1/8"			2:1					X	S		NONE		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.

MAWP 497 15 psi at max. temp. 875 366 °F Min. design metal temp. 0 °F at 497 psi.
 (internal) (external) (internal) (external)

Impact test YES; SHELLSIDE DESIGNED PER UG-84. at test temperature of 0 °F

(Indicate yes or no and the component(s) impact tested)

11. Hydro., ~~pressure~~, test press. 729 PSIG Proof test _____

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: SA-182-F11 CL.2 62 7 5/8" (x) 0'Lay 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-213-TP321 3/4 0.065 MIN 785 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.): 3'-4 3/16"

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	59" I.D.	3'-4 3/16"	SA-387-11,CL2	1 3/16"(y)	0"Lay	1	FULL			1.0	1	FULL			1.0	1275°F.	1-HR.

15. Heads: (a) SA-182-F11,CL2; 1-HR. AT 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	Eff.
(a)	END	7 7/16"(x)	0'Lay						60 7/16"					
(b)														

If removable, bolts used (describe other fastening) (a) SA-193-B16, 1 1/2", 64; CHANNEL-TO-SHELL: SA-193-B16, 1 3/4", 52

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

16. MAWP 625 15 psi at max. temp. 850 366 °F Min. design metal temp. 0 °F at 625 psi.
(internal) (external) (internal) (external)

17. Impact test YES; TUBESIDE DESIGNED PER UG-84. at test temperature of 0 °F

(Indicate yes or no and the component(s) impact tested)

18. Hydro., ~~###~~, test press. 813 PSIG 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/OUTLET	1/1	16"-600#	RFWN	SA-335-P11	SA-182-F11,CL2	1.2185"(y)	0"LAY	SA-387-11,CL2	WELDED	WELDED	CHANNEL
P.G./T.W.	2/2	1 1/2" 600#	RFLWN	SA-182-F11,CL2	---	.813"(y)	0"LAY	WELD	WELDED	---	CH. NOZS.
INLET/OUTLET	1/1	16"-600#	RFWN	SA-335-P11	SA-182-F11,CL2	1.031"	1/8"	SA-387-11,CL2	WELDED	WELDED	SHELL
P.G./T.W.	2/2	1 1/2" 600#	RFLWN	SA-182-F11,CL2	---	.630"	1/8"	WELD	WELDED	---	SH. NOZS.

20. Supports: Skirt NO Lugs --- Legs --- Others (2) BELLY BANDS Attached 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: SERVICE: REACTOR FEED/EFFLUENT EXCHANGER, P.O. NO: 56603-P-12-04, ITEM NO: E-641 D, SIZE: 59-264, TYPE: AFU

TUBES DESIGNED WITH 0" C.A.; PRESSURE RELIEF DEVICES PROVIDED BY OTHERS;

SEE ATTACHED U-4 FORM FOR ADDITIONAL INFORMATION

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. 12370

Expires

9/27/2007

Date 5-3-07 Name ENERGY EXCHANGER COMPANY

(Manufacturer)

Signed Edgar O. Owar
(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 OKLAHOMA and employed by OneBeacon America Insurance Company of BOSTON, MASS. have inspected the pressure vessel described in this Manufacturer's Data Report on 5-3-07, 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 5-3-07 Signed [Signature]
(Authorized Inspector)

Commissions N.B.# 11921 BA OKLA.# 823
(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 _____
(Assembler)

Signed _____
(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 _____
(Authorized Inspector)

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

FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by	ENERGY EXCHANGER COMPANY, 1844 NORTH GARNETT ROAD, TULSA, OK 74116		
	(name and address of manufacturer)		
Manufactured for	D-COK LLC 3657 BRIAR PARK DRIVE HOUSTON, TEXAS 77042-5205		
	(name and address of purchaser)		
3. Location of installation	GIANT INDUSTRIES GRAFTON, VIRGINIA		
	(name and address)		
4. Type:	HORIZONTAL	HEAT EXCHANGER	X-7263 B
	(horiz., vert., or sphere)	(tank, separator, heat exh., etc.)	(mfg's serial no.)
	X-7263-A2 REV. 2	5266	2007
	(CRN)	(drawing no.)	(Nat'l. Bd. no.) (year built)

Data Report
Item Number

Remarks

LINES 6-11 INCLUDE: (1) 70 5/8" O.D. x 59" I.D. x 9 15/16" THK. SA-182-F11, CL.2 RING

LINES 14-18 INCLUDE: (1) 69 3/8" O.D. x 59" I.D. (z) x 9 3/4" THK. SA-182-F11, CL.2 RING &

(1) 70 5/8" O.D. x 59" I.D. (z) x 9 15/16" THK. SA-182-F11, CL.2 RING

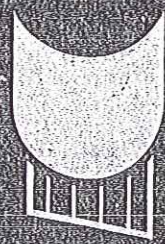
(x) INCLUDES 3/8" (MIN) 347/309L WELD OVERLAY

(y) INCLUDES 3/16" (MIN) 347/309L WELD OVERLAY


(2) INCLUDES 3/16" (MIN) 347/309L WELD OVERLAY ON I.D. AND AT GASKET SURFACE

Certificate of Authorization: Type U No. 12370 Expires 9/27 2007
Date 5-3-07 Name ENERGY EXCHANGER COMPANY Signed Egon O. Over
(manufacturer) (representative)
Date 5-3-07 Name [Signature] Commission N.B.# 11921 BA OKLA.# 823
(Authorized Inspector) (Nat'l. Board incl. endorsement, state, province and no.)

NB 5266



CERTIFIED BY
Energy Exchanger Company
TULSA, OKLAHOMA

 W RT-1 HT	MAWP SHELL	497 *	P.S.I.G. @	875 *	OF	729	TEST P.S.I.G.
	MAWP TUBE	625 *	P.S.I.G. @	850 *	OF	813	TEST P.S.I.G.
	MIN. DESIGN METAL TEMP.	SHELL		110	OF @	497 *	P.S.I.G.
		TUBE		0	OF @	625 *	P.S.I.G.
	SERIAL NO.	X-7263 B			YEAR BUILT	2007	

56603-P-12-04

REACTOR FEED/EFFLUENT EXCHANGER

ITEM E-641 D SIZE 59-264 TYPE AFU

*MAX. ALLOW. EXT. PRESS. = 15 PSIG @ 366° F.

FIELD TEST PRESS.: SHELL = 647 PSIG; TUBE = 813 PSIG

SSO
OA
Campbell