DELTA TEE

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CRUDE OIL COOLER

1000 Commercial Blvd. South #100 Arlington, TX 76001
P.O. Box 172212 Arlington, TX 76003-2212
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FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by DELTA TEE INTERNATIONAL, INC. 1000 COMMERCIAL BLVD. SOUTH ARLINGTON, TEXAS 76001
(Name and address of Manufacturer)

2. Manufactured for INNOVATIVE REFRIGERATION SYSTEMS, INC., 373 MT. TORREY RD., LYNDHURST, VA 22952
(Name and address of Purchaser)

3. Location of installation UNKNOWN
(Name and address)

4. Type: HORIZ. (Horiz., vert., or sphere) | HEAT EXH. (Tank, separator, jkt. vessel, heat exh., etc.) | 13R1983A-001 (Mfg's serial No.)

- (CRN) | 13R1983A Rev C (Drawing No.) | 1856 (Nat'l. Bd. No.) | 2013 (Year Built)

5. ASME Code, Section VIII, Div. 1 2010 ED. 2011a [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): 4 (b) Overall length (ft & in.): 37' 3"

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	40" OD	10' 0"	SA-516-70N	1.50"	1/16"	1	FULL	100%	1	FULL	100%	-	-
1	40" OD	7' 3"	SA-516-70N	1.50"	1/16"	1	FULL	100%	1	FULL	100%	-	-
2	40" OD	10' 0"	SA-516-70N	1.50"	1/16"	1	FULL	100%	1,7	FULL	100%	-	-

7. Heads: (a) - (Mat'l Spec. No., Grade or Type) (H.T. – Time & Temp.) (b,c) - (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					Concave	Convex	Type	Full, Spot, None	Eff.
(a)														

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 1440 (internal) 15 (external) psi at max. temp. 158 (internal) 158 (external) °F Min. design metal temp. -14 °F at 1440 psi

10. Impact test NO. EXEMPT PER UCS-66(b). at test temperature of - °F
[Indicate *yes* or *no* and the component(s) impact tested]

11. **Hydro.**, pneu., or comb. test press. 2160 PSI (HYDRO.) Proof test -

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: SA-266 GR.2 [Stationary (Mat'l Spec. No.)] | 37.00" [Dia., in. (subject to press.)] | 4.750" (Nom. thk., in.) | 1/8" (Corr. Allow., in.) | WELDED [Attachment (welded or bolted)]

- [Floating (Mat'l Spec. No.)] | - (Dia., in.) | - (Nom. thk., in.) | - (Corr. Allow., in.) | - (Attachment)

13. Tubes: SA-214 (Mat'l Spec. No., Grade or Type) | 5/8" (O.D., in.) | 0.083" (Nom. thk., in. or gauge) | 1815 (Number) | STRAIGHT [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' 6-3/4"

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
1	42" OD	0' 8"	SA-516-70	.625"	1/16"	1	FULL	100%	1,7	FULL	100%	-	-
1	42" OD	2' 10-3/4"	SA-516-70	.625"	1/16"	1	FULL	100%	1,7	FULL	100%	-	-

15. Heads: (a) SA-516-70N NO H.T. (Mat'l Spec. No., Grade or Type) (H.T. – Time & Temp.) (b) SA-516-70N NO H.T. (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					Concave	Convex	Type	Full, Spot, None	Eff.
(a)	END	.563"	1/16"	-	-	2:1	-	-	-	XXXX	XXXX	SMLS	NONE	100%
(b)	END	.563"	1/16"	-	-	2:1	-	-	-	XXXX	XXXX	SMLS	NONE	100%

If removable, bolts used (describe other fastening) SA-193-B7, 1"X8 UNC X 11-1/2" LG., (104)
(Mat'l Spec. No., Grade, Size, No.)

FORM U-1 (Back)

16. MAWP 400 (internal) 15 (external) psi at max. temp. 158 (internal) 158 (external) °F Min. design metal temp. -14 °F at 400 psi.

17. Impact test NO. EXEMPT PER UCS-66(b). At test temperature of - °F
[Indicate yes or no and the component(s) impact tested]

18. Hydro., pneu., or comb. test press. 600 PSI (HYDRO.) Proof test -

19. Nozzles, inspection openings, 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	
AMMONIA/WATER IN	1	10"	300# RFWN	SA-106-B	SA-105N	.593"	1/16"	SA-516-70N	WLD	WLD	-
AMMONIA/WATER OUT	1	16"	300# RFWN	SA-106-B	SA-105N	.500"	1/16"	SA-516-70N	WLD	WLD	-
CRUDE OIL INLET	2	12"	600# RFWN	SA-106-C	SA-105N	.687"	1/16"	SA-516-70N	WLD	WLD	-
CRUDE OIL OUTLET	1	16"	600# RFWN	SA-106-C	SA-105N	.843"	1/16"	SA-516-70N	WLD	WLD	-
SS RELIEF/VENT	1	2"	600# RFWN	SA-106-B	SA-105N	.343"	1/16"	INHERENT	WLD	WLD	-
SS DRAIN	2	2"	600# RFWN	SA-106-B	SA-105N	.343"	1/16"	INHERENT	WLD	WLD	-
TS/SS VENT/DRAIN	2	3/4"	CPLG	SA-105	-	6000#	1/16"	INHERENT	WLD	-	-

20. Supports: Skirt - (Yes or no) Lugs - (No.) Legs - (No.) Others SADDLES (Describe) Attached WELDED TO SHELL (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)

SHELL, 6, WAGNER PLATE WORKS TEXAS LLC, 10860

22. Remarks: FOR NON-LETHAL, NON-CORROSIVE SERVICE. PRESSURE RELIEF DEVICES BY OTHERS.

(2) CHANNEL FLANGE: CUSTOM FLANGE 4.750" THK, MAT'L SA-105N.

NOTE: 600# RFWN FLANGES CALCULATED PER APPENDIX 2.

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1.

"U" Certificate of Authorization No. 34081 Expires 8/13/2015

Date 10/29/13 Name DELTA TEE INTERNATIONAL, INC. (Manufacturer) Signed (Representative)

CERTIFICATE OF SHOP 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 OneCIS Insurance Company of LYNN, MASSACHUSETTS have inspected the pressure vessel described in this Manufacturer's Data Report on 10-29-13, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the inspector nor his/her 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 matter for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 10-29-13 Signed (Authorized Inspector) Commissions 8414 AB TX 897 (Nat'l Board incl. Endorsements, 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 BOILER AND PRESSURE VESSEL 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/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 the 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 the ASME BOILER AND PRESSURE VESSEL 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/her 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 to this inspection.

Date _____ Signed _____ (Authorized Inspector) Commissions _____ (Nat'l Board incl. Endorsements, State, Province, and No.)

FORM U-2A MANUFACTURER'S PARTIAL DATA REPORT (ALTERNATIVE FORM)
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 WAGNER PLATE WORKS 6250 N. HOUSTON ROSSLYN RD. HOUSTON TEXAS 77091 USA
(Name and address of Manufacturer)

2. Manufactured for DELTA TEE INTERNATIONAL, INC. 1000 COMMERCIAL BLVD SOUTH, ARLINGTON, TX 76001
(Name and address of Purchaser)

3. Location of installation UNKNOWN
(Name and address)

4. Type: Three (3) cylinders (Description of vessel part (shell, two-piece head, tube bundle)) | 10860 thru 10862 (Mfg's serial No.) | - (CRN)

- (Nat'l. Bd. No.) | 10860 (Drawing No.) | WAGNER PLATE WORKS (Drawing prepared by) | 2013 (Year built)

5. ASME Code, Section VIII, Div. 1 | 2010 Edition, 2011 Addenda (Edition and Addenda (date)) | - (Code Case No.) | - (Special Service per UG-120(d))

6. Shell (a) No. of course(s): Four (4) each (b) Overall length (ft & in.): 37' 3" each

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
9	40" OD	10' 0"	SA 516-70 N	1 1/2"	-	1	Full	-	1	Full	-	-	-
3	40" OD	7'3"	SA 516 70 N	1 1/2"	-	1	Full	-	1	Full	-	-	-
					-			-			-	-	-

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	Conical	Hemispherical	Flat	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle	Ratio	Apex Angle	Radius	Diameter	Convex	Concave	Type	Full, Spot, None	Eff.
(a)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(b)	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

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

9. Impact test NO
(Indicate *yes* or *no* and the component(s) impact tested)

10. Hydro. ~~pneu. or comb.~~ test press. - Proof test -

11. 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	
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

12. Supports: Skirt - (Yes or No) Lugs - (No.) Legs - (No.) Others - (Describe) Attached - (Where and How)

13. Remarks: No design function performed by Wagner Plate Works. All material cold formed.
The Requirements of UG79, UG80 and UCS-79 (d) have been met. Item's have not been hydro tested.

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.

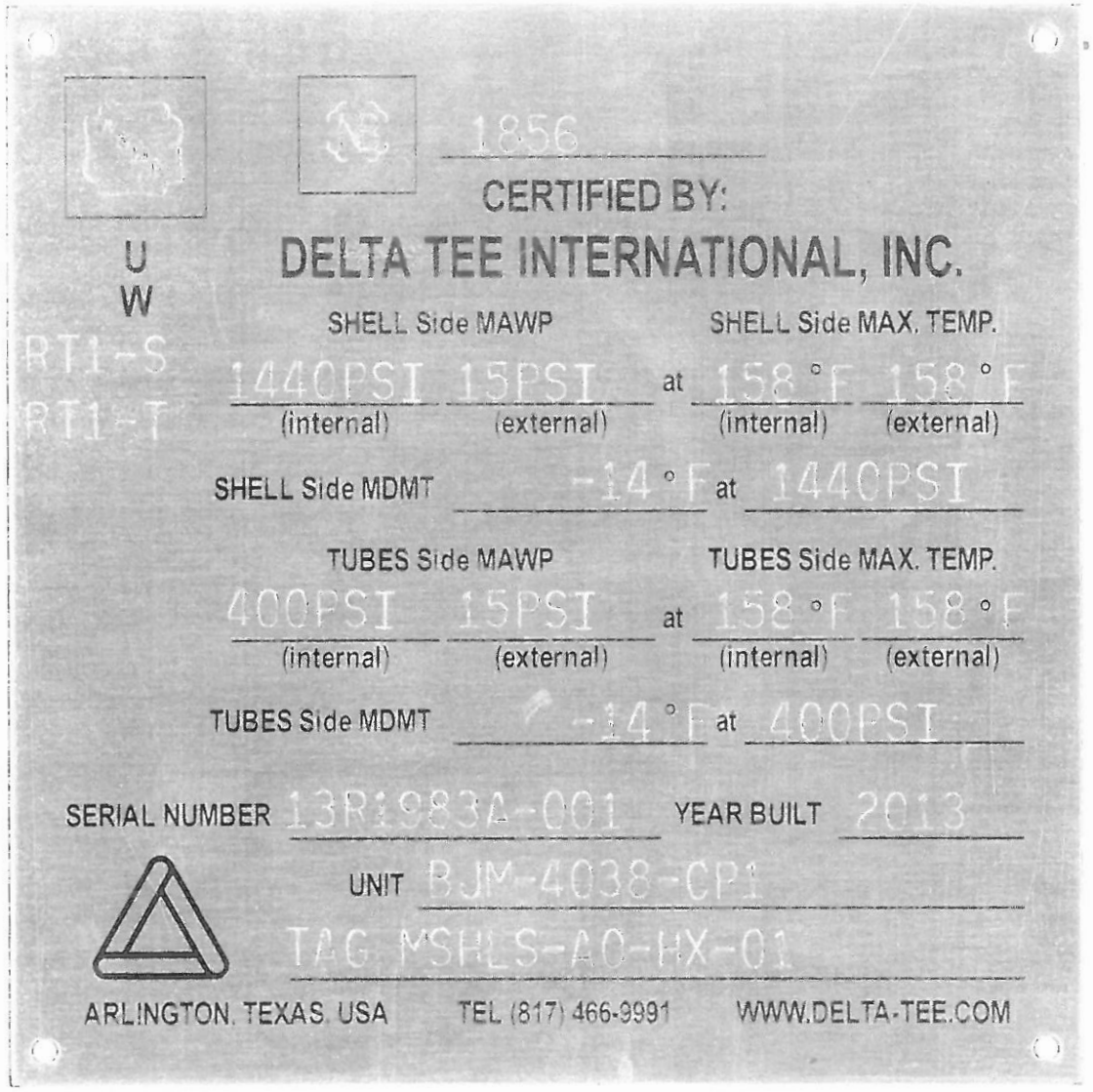
U Certificate of Authorization No. 31331 Expires 09/10/2014

Date 07/17/2013 Name WAGNER PLATE WORKS (Manufacturer) Signed (Representative)

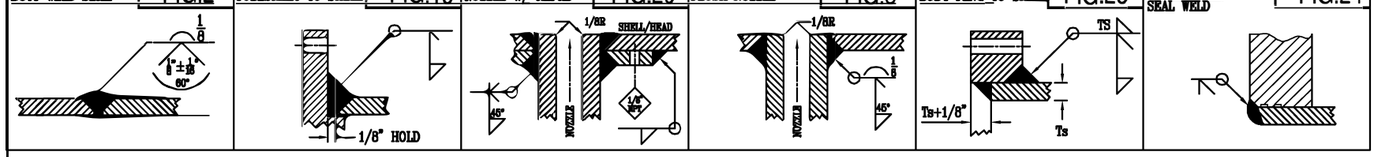
CERTIFICATE OF SHOP/FIELD INSPECTION

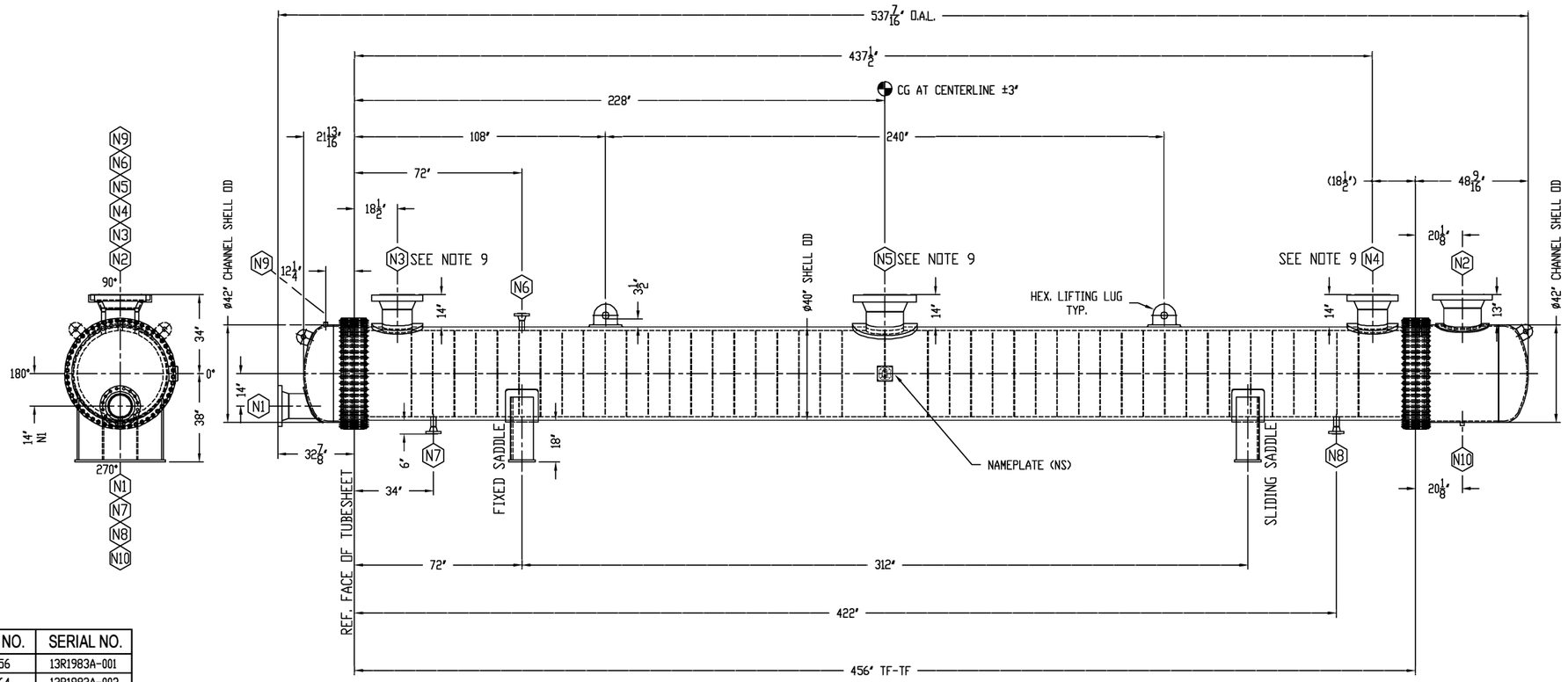
I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the State or Province of TX and employed by HSB CT of Hartford, CT have inspected the pressure vessel part described in this Manufacturer's Data Report on 07/17/2013, and state that, 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 07/17/2013 Signed (Authorized Inspector) Commissions 04301 (Nat'l Board incl. endorsement, State, Province and No.)


1856
CERTIFIED BY:
DELTA TEE INTERNATIONAL, INC.
U
W
RT1-S
RT1-T
SHELL Side MAWP
SHELL Side MAX. TEMP.
1440PSI 15PSI at 158 °F 158 °F
(internal) (external) (internal) (external)
SHELL Side MDMT -14 °F at 1440PSI
TUBES Side MAWP
TUBES Side MAX. TEMP.
400PSI 15PSI at 158 °F 158 °F
(internal) (external) (internal) (external)
TUBES Side MDMT -14 °F at 400PSI
SERIAL NUMBER 13R1983A-001
YEAR BUILT 2013
UNIT BJM-4038-CP1
TAG MSHLS-AC-HX-01
ARLINGTON, TEXAS, USA
TEL (817) 466-9991
WWW.DELTA-TEE.COM

BUTT WELD SEAM	FIG.2	TUBESHEET TO SHELL	FIG.19	NOZZLE w/ REPAD	FIG.20	FLUSH NOZZLE	FIG.3	BODY FLNG TO SHELL	FIG.28	TUBE TO T.S SEAL WELD	FIG.24

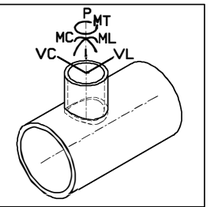


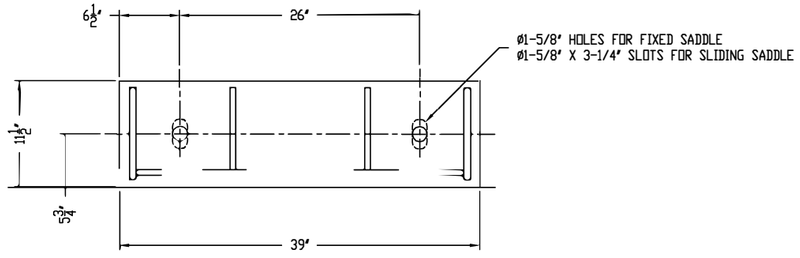


NB NO.	SERIAL NO.
1856	13R1983A-001
1864	13R1983A-002
1888	13R1983A-003
1903	13R1983A-004
1916	13R1983A-005
1917	13R1983A-006
1926	13R1983A-007
1969	13R1983A-008
1980	13R1983A-009
1981	13R1983A-010
2002	13R1983A-011
2019	13R1983A-012

ALLOWABLE EXTERNAL NOZZLE LOADS (REFER TO TEMA RGP-RCB-10.6 FOR INDUSTRY PRACTICE)

NOZZLE ID.	NOM. SIZE (INCH) RATING	P (LB)	VC (LB)	VL (LB)	MT (FT-LB)	MR (FT-LB) (SEE NOTE)
N3, N4	12"-600#	2520	1200	2160	4320	9600
N5	16"-600#	2400	3840	1440	5400	5400
NOTE: 'MR' REPRESENTS THE NET BENDING MOMENT, BASED ON 'MC' AND 'ML' COMPONENTS						





BASE PLATE DETAIL
1.0" THK.

THERMAL SPECIFICATIONS (US)

THERMAL CAPACITY (Btu/Hr): 13935591

	SHELL SIDE	TUBE SIDE
MEDUIM	CRUDE OIL	AMMONIA
FLOW	1984 GPM	106761 #/HR
T-Inlet (°F)	118	55
T-Outlet (°F)	84	55

MECH. DESIGN SPECIFICATIONS (US)

CODE / STD.	SHELL SIDE	TUBE SIDE
ASME: VIII-1	2010/11a E.D.	2010/11a E.D.
TEMA	NONE	NONE
OTHER	NONE	NONE

MECH. DESIGN DATA	SHELL SIDE	TUBE SIDE
PRESSURE (psi)	FV/1440	FV/400
TEMPERATURE (°F)	-14/158	-14/158
CORR. ALLOWANCE (in)	1/16	1/16
STRESS RELIEF	NONE	NONE
NDT	NOTE 12	NOTE 12
IMPACT TEST	NOTE 6	NOTE 6
TEST PRESSURE (psi)	2160	600
TEST FLUID	WATER	WATER
SURFACE FINISH	SSPC-SP10	SSPC-SP10
PAINT	NOTE 11	NOTE 11
ESTIMATED EMPTY WEIGHT (lbs) =	67500	

U — TBD — CERTIFIED BY: DELTA TEE INTERNATIONAL, INC.

	SHELL Side MAWP		SHELL Side MAX. TEMP.	
W	1440 PSI (internal)	15 PSI (external)	at 158 °F (internal)	158 °F (external)
RT1-S				
RT1-T	SHELL Side MDMT -14 °F	at 1440 PSI		

	TUBES Side MAWP		TUBES Side MAX. TEMP.	
	400 PSI (internal)	15 PSI (external)	at 158 °F (internal)	158 °F (external)
	TUBES Side MDMT -14 °F	at 400 PSI		

SERIAL NUMBER 13R1983A-001 TO 012 — YEAR BUILT 2014

UNIT BJM-4038-CP1

TAG MSHLS-A0-HX-01-12

CONSTRUCTION NOTES:

1. INSIDE OF VESSEL TO BE FREE OF SLAG, SCALE AND RUST.
2. ALL SHARP EDGES TO BE GROUND SMOOTH, UNLESS SPECIFIED OTHERWISE.
3. TUBE-TO-TUBESHEET JOINT: EXPANDED IN DOUBLE GROOVES AND SEAL WELD.
4. HEX. IS FOR NON-LETHAL, NON-CORROSIVE SERVICE.
5. PRESSURE RELIEF DEVICES BY OTHERS.
6. EXEMPT FROM MATERIAL IMPACT TEST PER UCS-66(b)/UG-20(f). (TUBESHEETS ONLY TO BE IMPACT TESTED AT -14°F).
7. RE-PADS TO BE PNEUMATICALLY TESTED PER UG-37(g).
8. SHELLSIDE NOZZLE FLANGES CALCULATED PER APPENDIX 2 FOR ACTUAL DESIGN CONDITIONS.
9. PIPING CONNECTED TO N3,N4,N5 SHOULD HAVE AT LEAST FIVE FEET OF STRAIGHT LENGTH BEFORE ANY RESTRICTIONS SUCH AS VALVE OR AN ELBOW
10. MIN. HOLDING TIME FOR TEST PRESSURE SHALL BE 4 HRS.
11. PAINT PER TRANSCANADA SPECIFICATION TES-COAT-P1, PAINT SYSTEM #PS-0-14:
    PRIMER: 3-4 mil DFT DIMETCOTE 9
    TOP COAT: 6-7 mil DFT PSX-700 (WHITE)
12. NDE PER TES-MATL-PV1-US AS FOLLOWS:
    100% RT ON ALL BUTT-WELDS, INCLUDING CATEGORY 'C' JOINTS ON NPS<12"
    100% UT ON ALL CATEGORY 'D' JOINTS
    100% MT ON ALL PRESSURE BOUNDARY FILLET WELDS

MATERIALS OF CONSTRUCTION

COMPONENT	TYPE	MATERIAL SPECIFICATION
HEX. SHELL	RDL'D PL.	SA-516 70N
SHELLSIDE NOZZLE NECKS	SMLS PIPE	SA-106 C
SHELLSIDE NOZZLE FLANGES	B16.5	SA-105N
SHELLSIDE NOZZLE REINF. PAD	PLATE	SA-516 70N
SHELLSIDE STD COUPLINGS	B16.11	SA-105N
CHANNEL SHELL	RDL'D PL	SA-516 70
CHANEL HEAD	ELL. 2:1	SA-516 70N
CHANNEL BODY FLANGE	OPT'L INTEGRAL	SA-105N
TUBESIDE NOZZLE NECKS	SMLS PIPE	SA-106B
TUBESIDE NOZZLE REINF. PAD	PLATE	SA-516 70
TUBESIDE STD COUPLINGS	B16.11	SA-105
TUBESHEET	FIXED	SA-266 GR. 2 (W/CVN @-14°F)
TUBES	WLD TUBE	SA-214
TIE RODS	ROUND BAR	SA-36
BAFFLES	DOUB. SEGMNT.	SA-36
SUPPORTS	SADDLE	SA-36
SADDLE WEAR PLATE	RDL'D PLATE	SA-516 70N
LIFTING LUG	PLATE	SA- 516 70
LIFTING LUG WEAR PLATE	PLATE	SA-516 70N
BODY FLANGE GASKET	CORR'TD METAL	SS-316 GRAPHITE COATED
BOLTS (104) 1",8-UNC X 11-1/2" LG.	STUDS	SA-193-B7 (ZINC PLATED)
NUTS (208) 1",8-UNC	H. HEXAGON	SA-194-2H (ZINC PLATED)
NAMEPLATE/BRACKET	PLATE	SS-304

SCHEDULE OF CONNECTIONS

I.D.	PURPOSE	QTY	SIZE	TYPE	NECK	FLANGE
N1	AMMONIA INLET	1	10"	FLNG	SCH.80	300# RFWN
N2	AMMONIA OUTLET	1	16"	FLNG	SCH.XH	300# RFWN
N3,N4	CRUDE OIL INLET	2	12"	FLNG	SCH.80	600# RFWN
N5	CRUDE OIL OUTLET	1	16"	FLNG	SCH.80	600# RFWN
N6	SHELLSIDE RELIEF/VENT	1	2"	FLNG	SCH160	600# RFWN
N7,N8	SHELLSIDE DRAIN	2	2"	FLNG	SCH160	600# RFWN
N9	TUBESIDE RELIEF/VENT	1	3/4"	FPT	6000#	-
N10	TUBESIDE DRAIN	1	3/4"	FPT	6000#	-

NO	REVISION	DATE	BY
C	AS BUILT	6/3/14	LN
B	REVISED NDE, ADDED CLARIFICATION NOTES	10/02/2013	AK
A	FOR FABRICATION	04/05/2013	MH

CUSTOMER: INNOVATIVE REFR. LYNDHURST, VA
CUST. PO#: 30769 DA

DELTA TEE INTERNATIONAL, INC.
1000 COMMERCIAL BLVD SOUTH #100, ARLINGTON, TX 76001
TEL: (817) 466-9991 FAX: (817) 466-9979

DWG. NO. 13R1983A | SHT. NO. 1 OF 1 | SCALE: NONE | REV. C
TITLE: CRUDE OIL COOLER
DRWN: MH | DATE: 04/01/13 | CHK'D: | DATE: | APP'D: | DATE:

TOLERANCES UNLESS OTHERWISE SPECIFIED:
DECIMAL: X.XX = ±0.030" X.XXX = ±0.010"
FRACTIONAL: ±1/8"
ANGULAR: ±1°

INSPECTION CHECK LIST

Job No: 13R1983A Serial No: 13R1983A-001 Nat'l Board No: 1856 Tag No: MSHLS-AO-HX-01

☐ Pressure Vessel ☒ Heat Exchanger

Shell MAWP: 1440 psi at Max Temp: 158 °F

Shell MDMT: -14 °F at 1440 psi

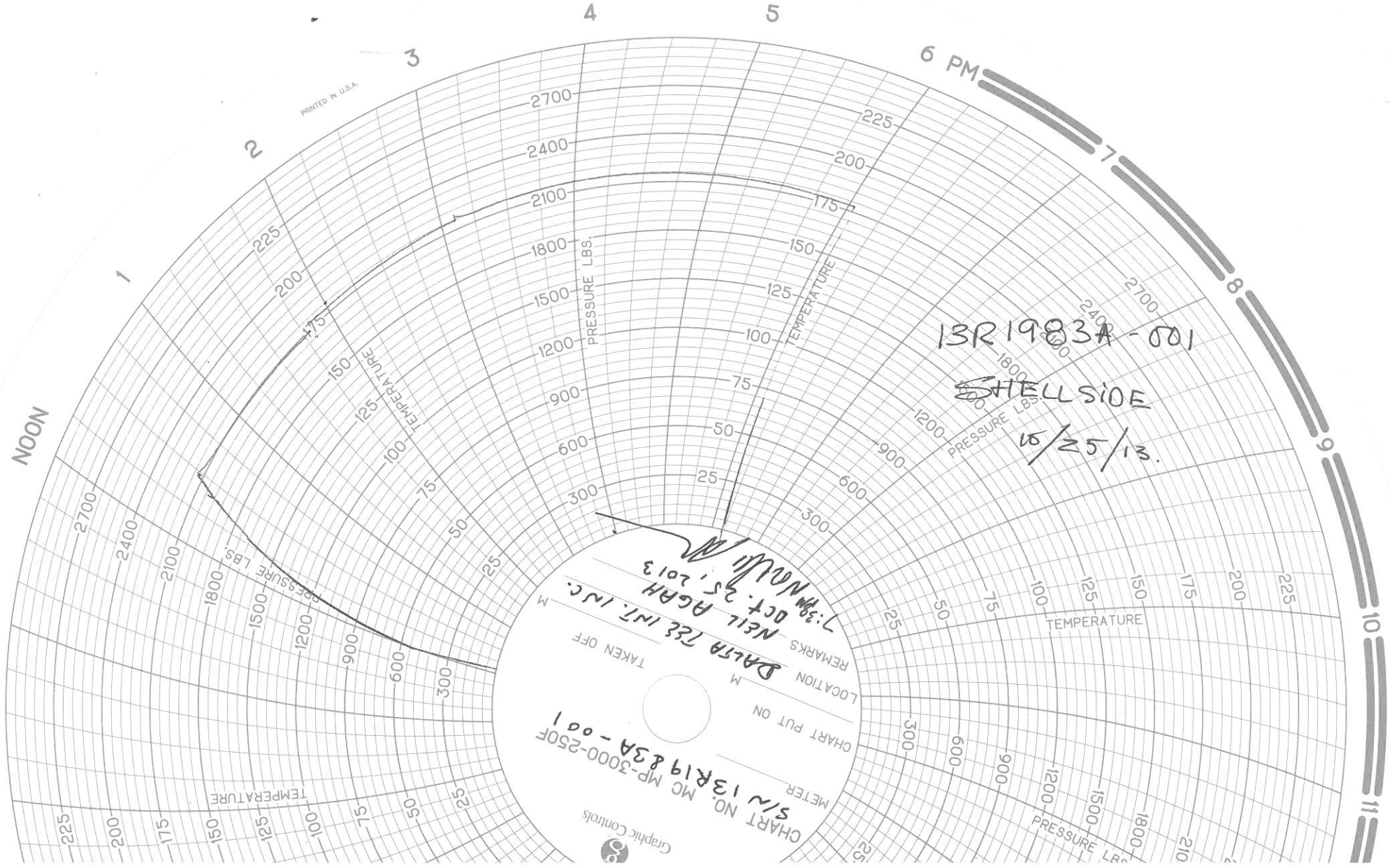
Shell Test Pressure: 2160 psi Test Media: WATER Min. Hold Time: 1 hrs

Tube / Jacket MAWP: 400 psi at Max Temp: 158 °F

Tube / Jacket MDMT: -14 °F at 400 psi

Tube / Jacket Test Pressure: 600 psi Test Media: WATER Min. Hold Time: 1 hrs

INSPECTION POINTS:				QC		A.I.
SHELL:	☐ Fit-Up	☐ Weld	☐ Marking	W	☐	I.E 10-29-13
HEADS:	☐ Fit-Up	☐ Weld	☐ Marking	W	☐	
OPENINGS:	☐ Fit-Up	☐ Weld	☐ Marking	W	☐	
FITTINGS:	☐ Fit-Up	☐ Weld	☐ Marking	W	☐	
FLANGES:	☐ Fit-Up	☐ Weld	☐ Marking	W	☐	
INTERNAL INSPECTION (A.I. HOLD POINT):				W	☐	I.E 10-18-13 R.O 9-3-13
PRESSURE TEST:				W	☐	I.E 10-29-13 I.E 10-25-13
DRAWINGS REVIEW:				W	☐	I.E 10-29-13
CALCULATIONS REVIEW:				W	☐	
MATERIAL TEST REPORTS REVIEW:				W	☐	
NAMEPLATE STAMPING:				W	☐	
NDE RECORDS: ☒RT- 1S, 1T, ☐UT, ☐MT, ☐PT				W	☐	I.E 10-8-13
PWHT RECORDS:				N/A	☐	
DATA REPORTS:				W	☐	I.E 10-29-13


NOON
1
2
3
4
5
6 PM
7
8
9
10
11
PRESSURE LBS.
TEMPERATURE
PRINTED IN U.S.A.
CHART NO. MC MP-3000-250F
SN 13R19 823A - 001
METER
CHART PUT ON
TAKEN OFF
LOCATION
REMARKS
Delta Fee Int. Inc.
Neil Agam
Oct. 25, 2013
7:38 AM Noon
Graphic Controls
13R19834-501
SHELLSIDE
10/25/13.

6 PM
7
8
5
4
3
2
1
NOON
11
10
9
8
7
PRESSURE LBS.
TEMPERATURE
2700
2400
2100
1800
1500
1200
900
600
300
225
200
175
150
125
100
75
50
25
PRINTED IN U.S.A.
13R19983A-001
TUBE SIDE
10/29/13
DELTA TEE INT. INC.
NEIL AGAH
OCT / 29, 2013
16:15PM
LOCATION
REMARKS
CHART PUT ON
TAKEN OFF
Graphic Controls
S/N 13R19983A-001
CHART NO. MC MP-3000-250F