

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form for Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by: AXH air-coolers, LLC 401 E. Lowry Road Claremore Oklahoma 74017 USA
(Name and address of manufacturer)

2. Manufactured for: VAPORTECH ENERGY SERVICES INC. 20711-107TH AVENUE, EDMONTON, ALBERTA, CANADA T5S 1W5
(Name and address of purchaser)

3. Location of installation: UNKNOWN
(Name and address)

4. Type HORIZ.H.EXCHANGER 68007C.3 U0711.23 68007 PC R0 6199 2007
(Horiz. or vert. tank) (Mfr's serial No.) (CRN) (Drawing no.) (Nat'l Bd. No.) (Year built)

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 2004
Year

6. Shell: Addenda (Date) Code Case Nos. Special Service per UG-120(d)
TUBE&PLUG SA-516 70N FR 7/8", BK 7/8" .1250 FR & BK 0' 5 11/16" 2' 7 3/8"

7. Seams: Mat'l. (Spec. No., Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. I. D. (ft. & in.) Length (overall) (ft. & in.)
CORNER JOINT SEE REMARKS 1.0 1150 1 SEE REMARKS *2

8. Heads: (a) Mat'l. WRAPPERS: SA-516 70N (b) Mat'l. ENDS: SA-516 70N
(Spec. No., Grade) (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)	WRAPPERS	1/2"	.1250						**	FLAT
(b)	ENDS	1/2"	.1250						***	FLAT

If removable, bolts used (describe other fastenings)

9. MAWP 215 psi. at max. temp. 350 °F
Min. design metal temp. -40 °F at 215 psi. Hydro., ~~max. or min.~~ test pressure 280 psi.

10. Nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Mat'l.	Nom. Thk.	Reinforcement Mat'l.	How Attached	Location
INLET/OUTLET	2	6"	PIPE	SA-333-GR6	S/80	NONE	UW-16(a)	HEADER
INSTRUMENT	1	1"	CPLG	SA-350-LF2	6000#	NONE	UW-16(a)	HEADER
PLUGS	88	7/8-14	UNF 3A	SA-350-LF2				HEADER

11. Supports: Skirt NO Lugs (No.) Legs (No.) Other STRUCTURE Attached BOLTED
(Yes or no) (No.) (No.) (Describe) (Where and how)

12. 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, Mfr's name and identifying stamp)
*2 HEADERS ONE AT EACH END. **WRAPPERS FLAT DIA. 5 3/4" X 31 3/8". ***ENDS FLAT DIA. 5 3/4" X 4 11/16".

44 TUBES SA-179-STL 3/4" O.D. .065 MW 6' 0" LG. CONSTRUCTED IN ACCORDANCE WITH APPENDIX 28.

IMPACTS EXEMPT PER UCS-66(a) CURVE D. RADIOGRAPH PER CUSTOMER SPECIFICATIONS.

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. <u>34,950</u> expires <u>2/7/2008</u>	
Date <u>5/3/07</u>	Co. name <u>AXH air-coolers, LLC</u> Signed <u>James A. [Signature]</u> (Manufacturer) (Representative)
CERTIFICATE OF SHOP INSPECTION	
Vessel constructed by <u>AXH air-coolers, LLC</u> at <u>401 E. Lowry Road Claremore, Oklahoma 74017</u>	
I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the State or Province of <u>OKLAHOMA</u> and employed by <u>SENECA INSURANCE COMPANY OF TEXAS</u> have inspected the component described in this Manufacturer's Data Report on <u>4-30-07</u> 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 <u>5-4-07</u> Signed <u>[Signature]</u> Commissions <u>NBB2401P [Signature]</u> (Authorized Inspector) (Nat'l Board, (incl. endorsements) State, Prov. and No.)	

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(Name and address of manufacturer)
2. Manufactured for: VAPORTECH ENERGY SERVICES INC. 20711-107TH AVENUE, EDMONTON, ALBERTA, CANADA T5S 1W5
(Name and address of purchaser)

3. Location of installation: UNKNOWN

4. Type HORIZ.H.EXCHANGER 68007C.4 U0712.23 68007 AC R0 6200 2007
(Horiz. or vert. tank) (Mfr's serial No.) (CRN) (Drawing no.) (Nat'l Ed. No.) (Year built)
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 2004
to 2006 Year

6. Shell: TUBE&PLUG SA-516 70N FR 7/8", BK 7/8" .1250 FR & BK 0' 5 7/16" 1' 8 1/8"
Addenda (Date) Code Case Nos. Special Service per UG-120(d)
7. Seams: CORNER JOINT SEE REMARKS 1.0 1150 1 SEE REMARKS "2
Mat'l. (Spec. No., Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. I. D. (ft. & in.) Length (overall) (ft. & in.)
Long. (Welded, Dbl., Sngl., Lap, Butt) R. T. (Spot or Full) Eff. (%) H. T. Temp (°F) Time (hr) Girth (welded, Dbl., Sngl., Lap, Butt) R. T. (Spot, Partial, or Full) No. of Courses

8. Heads: (a) Mat'l. WRAPPERS: SA-516 70N (b) Mat'l. ENDS: SA-516 70N
(Spec. No., Grade) (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) WRAPPERS	3/8"	.1250						**	FLAT
(b) ENDS	3/8"	.1250						***	FLAT

If removable, bolts used (describe other fastenings)

9. MAWP 215 psi. at max. temp. 350 °F
Min. design metal temp. -40 °F at 215 psi. Hydro., 280 psi. test pressure
(Mat'l., Spec. No., Gr., Size, No.)

10. Nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Mat'l.	Nom. Thk.	Reinforcement Mat'l.	How Attached	Location
INLET/OUTLET	2	3"	PIPE	SA-333-GR6	s/160	NONE	UW-16(a)	HEADER
INSTRUMENT	1	1"	CPLG	SA-350-LF2	6000#	NONE	UW-16(a)	HEADER
PLUGS	70	7/8-14	UNF 3A	SA-350-LF2				HEADER

11. Supports: Skirt NO Lugs NO Legs NO Other STRUCTURE Attached BOLTED
(Yes or no) (No.) (No.) (Describe) (Where and how)

12. 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, Mfr's name and identifying stamp)
*2 HEADERS ONE AT EACH END. **WRAPPERS FLAT DIA. 3 1/2" X 20 1/8". ***ENDS FLAT DIA. 3 1/2" X 4 11/16".

35 TUBES SA-179-STL 3/4" O.D. .065 MW 6' 0" LG. CONSTRUCTED IN ACCORDANCE WITH APPENDIX 28.

IMPACTS EXEMPT PER UCS-66(a) CURVE D. RADIOGRAPH PER CUSTOMER SPECIFICATIONS.

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. 34,950 expires 2/7/2008

Date 5/3/07 Co name AXH air-coolers, LLC

(Manufacturer)

(Representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by AXH air-coolers, LLC at 401 E. Lowry Road Claremore, Oklahoma 74017

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 SENECA INSURANCE COMPANY OF TEXAS have inspected the component described in this Manufacturer's Data Report on 4/30/07 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 of any kind arising from or connected with this inspection.

Date 5-4-07 Signed [Signature]

Commissions [Signature]

(Authorized Inspector)

(Nat'l Board, (incl. endorsements) State, Prov and No.)

 AXH air-coolers air-x-limited		401 E. Lowry Road Claremore, OK 74017 info@axh.com	Phone (918) 283-9200 Fax (918) 283-9229 www.axh.com	Proposal / Job No. 68007C Date 3/12/2007 Page 1 OF 1
1	Purchaser VAPORTECH		Ultimate User	
2	Inquiry / PO# 05252-T1		Destination SASKATCHEWAN	
3	# Units 1	Model 54EF	Reference	
4	Assembly PACKAGED	Draft FORCED	Overall Size (WxL), Ft	Est Wt 3900 LBS
THERMAL & MECHANICAL DESIGN				
5	Service	JW	CCW	PC
6	Flow	41GPM	5GPM	0.42MMSCFD
7	Fluid	50%GLY	50%GLY	1.517SPGR
8	Temp. In / Out, °F	180.0 / 168.4	146.5 / 122.0	176.0 / 122.0
9	Pressure, PSI			14.2PSIA
10	Pressure Drop, PSI	2.5	0.5	0.3
11	Heat Load, BTU/HR	220000	54350	30951
12	True LMTD	52.6	28.8	42.4
13	Overall Rate, U	166.2	70.4	14.7
14	Fouling Factor	.0005	.0005	.0020
15	Surface, Tube / Total, Sq Ft	27 / 434	27 / 434	50 / 740
16	Sections, #	(1) - COMBINED	(1) - COMBINED	(1)
17	Design Temp, °F Max / Min	300 / -20	300 / -20	350 / -40
18	MWP / Test Press, PSIG	* 14 / 75	* 14 / 75	215 / 280
19	Pass Arrangement	CROSSFLOW	CROSSFLOW	CROSSFLOW
20	# Tube Rows	3	3	3
21	# Tube Passes	2	4	1
22	Tubes, OD x BWG	5/8X16	5/8X16	3/4X16
23	Material	SA214 STEEL	SA214 STEEL	SA179 STEEL
24	# Per Section / Length, Ft	29 / 6	29 / 6	44 / 6
25	Turbulators			
26	Accelerators			
27	Fins, Type	HI-EFF	HI-EFF	HI-EFF
28	Material	AL	AL	AL
29	Nozzles, Rating / Type	150RF	CPLG	150RF
30	Material	SA105		SA350LF2
31	#-Inlets / Size In	(1) 2	(1) 1	(1) 6
32	#-Outlets / Size In	(1) 2	(1) 1	(1) 6
33	Headers, Type	REC TUBE	REC TUBE	BOX
34	Material	A500	A500	SA516-70
35	Corrosion Allow, In			.1250
36	Grooved Tubesheet	SGL	SGL	DBL
37	Plugs, Type	TAPER	TAPER	SHOULDER
38	Plugs Material	STEEL	STEEL	SA350LF2
39	PWHT			YES
40	ASME Code & Nat'l Board			YES
41	CRN			AB, SK
42	Add'l Specs & Options			
43	API			
44	Louvers / Hail Screen	MAN /	MAN /	AUTO /
45	Inspection / NDT			SX
FX= 100% X-Ray of all header seam, attachment & nozzle butt welds. SX= Spot X-Ray of 1 long seam & 1 end closure, per header BX= 100% X-Ray of all nozzle butt welds. UT = 100% UT of all header seam, attachment & nozzle butt welds. H = Hardness testing.				
AIR-SIDE PERFORMANCE		FAN DATA		DRIVER DATA
46	Ambient Air Temp, In °F	100	Fan(s) (1) MOORE-10K-24VT	Type
47	Elevation, Ft	1968	Blade Material ALUMINUM	Guards FAN
48	Air Flow, SCFM	24,701	HP / Fan 6	AUTOMATIC WARM AIR
49	Outlet Air Temp, °F	114.9	Dia, In / # Blades 54 / 4	RECIRCULATION SYSTEM
50	Min Air Temp, °F	-20	RPM 650	SOFT BUGSCREENS
51			Tipspeed, FPM 9189	
52	Est. Noise Data:	81 dBA @1m, 58 dBA @ 15m	Pitch, Deg 13	
53	Additional Info. *-BUILT TO STANDARD 150# DESIGN BUT DESIGNATED 14# TO AVOID THE NEED FOR PROVINCIAL REGISTRATION			
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