

Heat Exchanger Specification Sheet

1	Company: DELTA-T CORPORATION									
2	Location: WILLIAMSBURG, VIRGINIA									
3	Service of Unit: STRIPPER COLUMN REBOILER									
4	Item No.: E4202					Your Reference: AGRA - Plymouth				
5	Date: September 15, 2006					Rev No.: 0		Job No.: 61611		
6	Size		25 / 144 in		Type	BEM	vert	Connected in	1 parallel	1 series
7	Surf/unit (eff.)		1276 ft ²		Shells/unit	1	Surf/shell (eff.)		1276	ft ²
8	PERFORMANCE OF ONE UNIT									
9	Fluid allocation									
10	Fluid name					Shell Side		Tube Side		
11	Fluid quantity, Total					SATURATED STEAM		ETHANOL/WATER		
12	Vapor (In/Out)					25365		211188		
13	Liquid					25365		211188		24254
14	Noncondensable							186934		
15										
16	Temperature (In/Out)					F		298.16		238.6
17	Dew / Bubble point					F		298.16		238.6
18	Density					lb/ft ³		0.147		59.115
19	Viscosity					cp		0.014		0.013
20	Molecular wt, Vap							0.199		0.252
21	Molecular wt, NC									
22	Specific heat					BTU/(lb*F)		0.5618		1.0042
23	Thermal conductivity					BTU/(ft*h*F)		0.017		0.398
24	Latent heat					BTU/lb		908.3		949.9
25	Pressure					psi		65		24
26	Velocity					ft/s		35.61		101.91
27	Pressure drop, allow./calc.					psi		2		1.948
28	Fouling resist. (min)					ft ² *h*F/BTU		0.0005		0.0005
29	Heat exchanged					23039750 BTU/h				
30	Transfer rate, Service					315.89		MTD corrected		57.17 F
31						Dirty		368.71		Clean
32	CONSTRUCTION OF ONE SHELL									
33	Design/Test pressure					psi		150 / Code		75 / Code
34	Design temperature					F		400		400
35	Number passes per shell							1		1
36	Corrosion allowance					in		0.0625		
37	Connections					In		10 / 150 ANSI		6 / 150 ANSI
38	Size/rating					Out		3 / 150 ANSI		12 / 150 ANSI
39	in					Intermediate		/ 150 ANSI		/ 150 ANSI
40	Tube No.					551		OD 0.75		0.049 in
41	Tube type					Plain		Material		SS304
42	Shell					CS		ID		OD 26 in
43	Channel or bonnet					SS304		Shell cover		
44	Tubesheet-stationary					SS304L		Channel cover		
45	Floating head cover							Tubesheet-floating		
46	Baffle-crossing					CS		Type		single seg
47	Baffle-long							Cut(%d)		43 hor
48	Supports-tube							Seal type		Inlet
49	Bypass seal							U-bend		15.625 in
50	Expansion joint							Tube-tubesheet joint		groove/expand
51	RhoV2-Inlet nozzle					1134		Bundle entrance		2623
52	Gaskets - Shell side							Tube Side		
53	Floating head									
54	Code requirements					ASME Code Sec VIII Div 1		TEMA class		C
55	Weight/Shell					5289.2		Filled with water		8444.7
56	Remarks					Design is based on 150% nominal heat duty.		Bundle		3324.4 lb
57	Tube support required at shell inlet nozzle & between baffles.									
58										

ID		Task Name	Start	Finish	% Complete	December 2007 January 2008 February 2008 March 2008																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
						27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
1		Delta-T Fabrication Project	Tue 12/4/07	Thu 4/10/08	0%																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

EXHIBIT 11

PRESSURE TEST REPORT

Utility/Plant Plymouth Energy Inc. Job No. 7794-E-4202

Material Specification SA-516 Grade 70 Plate/SA-53 Grade E/B Welded Pipe/SA-105 150# SORF Flanges
SA-249 Grade TP 304 Welded Tubes

Pipe Size Range 26" OD Head Cylinders/12"-6"-3" Nozzles Wall Thickness Range 0.25"/0.280"/0.216"/
0.75" Tubes 0.049"

Design Pressure 75/FV PSI Test Pressure 98

Decrease the test pressure to the design pressure during examination unless the procedure requires a lower pressure.

Pressure Gauges Serial No. W125-07 Max. Range 0-300 PSI ☆ Calibration Date 4/5/2007

Pressure Gauges Serial No. W128-07 Max. Range 0-300 PSI ☆ Calibration Date 4/5/2007

☆ The calibration date must be less than twelve (12) months prior to the test date.

Testing Medium ☐ Plant Water ☐ Condensate ☐ Treated Water
☐ Demineralized Water ☒ Other City Water

Duration at Test Pressure 10 MINUTES MINIMUM START: 17:03 PM
FINISH: 17:15 PM Hours Minutes

Remarks TUBE SIDE HYDRO VESSEL 7794-E-4202 STRIPPER COLUMN REBOILER

Test Results Acceptable

Project Manager/Superintendent Michael J. [Signature] Date 12/15/2007

Q.C. Inspector [Signature] Date 12-15-07

Authorized Inspector Logan [Signature] Date 12-15-07

Customer Inspector Date

EXHIBIT 11

PRESSURE TEST REPORT

Utility/Plant Plymouth Energy Inc. Job No. 7794-E-4202

Material Specification SA-516 Grade 70 Plate/SA-53 Grade E/B Welded Pipe/SA-105 150# SORF Flanges

Pipe Size Range 26" OD SHELL/10"-3"-2"-1" Nozzles Wall Thickness Range 0.3125"/0.365"/0.216"/
0.218"/0.25"

Design Pressure 150/FV PSI Test Pressure 195

Decrease the test pressure to the design pressure during examination unless the procedure requires a lower pressure.

Pressure Gauges Serial No. W124-07 Max. Range 0-600 PSI ☆ Calibration Date 4/5/2007

Pressure Gauges Serial No. W129-07 Max. Range 0-600 PSI ☆ Calibration Date 4/5/2007

☆ The calibration date must be less than twelve (12) months prior to the test date.

Testing Medium ☐ Plant Water ☐ Condensate ☐ Treated Water
☐ Demineralized Water ☒ Other City Water

Duration at Test Pressure 10 MINUTES MINIMUM START @ 10:37 AM
Hours FINISH @ 10:49 AM Minutes

Remarks SHELL SIDE HYDRO VESSEL 7794-E-4202 STRIPPER COLUMN REBOILER

Test Results Acceptable

Project Manager/Superintendent Michael J. [Signature] Date 12/15/2007

Q.C. Inspector [Signature] Date 12-15-07

Authorized Inspector Roger [Signature] Date 12-15-07

Customer Inspector Date

This document is the confidential property of DCR Construction, Inc. and shall not be duplicated without specific written approval.