

97-1691

EXCHANGER INDUSTRIES

SHELL AND TUBE EXCHANGER THERMAL SPECIFICATION SHEET

1 TASC3 1-1 Imperial Units
 2 Customer Titan Projects Ltd.
 3 Address Calgary Alberta
 4 Plant Location Cactus Lake Saskatchewan
 Date Oct 07/97 RKH
 Cust Ref Job.97010
 EIL Ref 97-1691
 Item No. E-301
 Revision C
 6 Service of Unit Thermal Emulsion/BFW Exchanger
 7 Size 33-240 TEMA Type BEU class R Horizontal 2 shells, 2 in series
 8 Unit has 5486.86 Sqft (2743.43 Sqft per shell) Effective heat transfer surface

PERFORMANCE

		in SHELLSIDE out		in TUBESIDE out	
		Thermal Emulsion		Boiler Feed Water	
12	Fluid Circulated				
13	Total Fluid Entering Lb/hr	239,955		150,945	
14	Gas / Vapour Lb/hr	15,865	1,800		
15	Liquid Lb/hr	224,090	238,155	150,945	150,945
16	Steam / Water Lb/hr			150,945	
17	Non-Condensables Lb/hr				
18	Fluid Vap./ Cond. Lb/hr				
		14,065			
20	Density Lb/cuft	in LIQ out	in VAP out	in LIQ out	in VAP out
21	Viscosity cP	53.31 56.69	.5470 .5380	61.67 55.70	
22	Specific Heat BTU/Lb/F	.2030 .2860	.0130 .0150	.5440 .1530	
23	Thermal Conductivity BTU/hr/ft/F	1.039 .9670	.5160 .5590	1.029 1.113	
24	Molecular Wt	.2950 .3050	.0220 .0266	.3720 .3920	
25	Latent Heat (ave) BTU/Lb	729.8		18.02	
27	Temperature in 'F	392		122	
28	out 'F	289.40		347.00	
29	Inlet Pressure (abs) psi	249.6		1950	
30	Pass Arrangement	E-Shell		4-Pass	
31	Bundle Velocity X/W ft/s	7.054 / 6.144		2.886	
32	Maximum Rho-V-Sqd Lb/ft/secsq	272.8		463.8	
33	Pressure drop (max/calc) psi	20.31 / 3.329		20.31 / 6.600	
34	Fouling Resistance hr sqft F/BTU	.0100		.0010	
37	Total Duty	35,552,712 BTU/hr		LMTD (integrated)	94.62 'F
38	Transfer rate service	71.3	(Clean 381.0)	BTU/hr/sqft/'F	

*Numbers correct
 multiply by 100 please
 correct or explain*

37 MMBtu/h = UADT

CONSTRUCTION

39	Design Pressure (g) psi	348.0		2167
40	Test pressure	Per UG-99		Per UG-99
41	Design Temperature 'F	428		428
42	Min Metal Design Temp 'F	32		32
43	Corrosion Allowance in	.1250		.0625

44 Nozzles: Inlet (1) 10"-300# RFWN (1) 4"-1500# RFWN
 45 Intermediate (1) 6"-300# RFWN (1) 4"-1500# RFWN
 46 Outlet (1) 6"-300# RFWN (1) 4"-1500# RFWN

48 (338) U-Tubes SA-179 .75" OD Bwg 12min 20' 0" Long on 1" Sq 90 Pitch

50 Shell SA-516-70N Inside Dia 33"
 51 Shell Cover SA-516-70N
 52 Channel SA-516-70N Channel Cover SA-516-70N
 53 Fixed Tubesheet SA-516-70N

55 Vert Dbl Seg Baffles SA-283-C 9.75" x 25% Pitch and Cut SA-36 oe Supports
 56 Gaskets SS DJ NonAsbestos Impingement Plate No Seals Bundle Code 31 175 22

NOTES:

59 See Mechanical Specification Sheet for complete mechanical details
 60 Exchanger designed for 110% flows and duties.

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APPROVED OCT 07 1997
 RRH
 FOR CONSTRUCTION