Air-Cooled Heat Exchanger Specification Sheet

1	Client: AEC Denver											
2	Location: Douglas, WY											
3	Service of Unit: Cooling Water											
4	Item No.: 230928-9											
5	Date: 12/14/2023											
6	Size & Type	34	/	12	ft	Type	Forced		Number of Bays		1	
7	Surf/Unit-Finned Tube			40,517	ft²	Bare area/bundle		1,889	ft²	Ratio (Total	21.45	
8	Heat exchanged			6458928	BTU/h		MTD, Eff		51.95	°F		
9	Transfer rate		5.28	Bare, Service			65.82	Clean		149.79	BTU/(h-ft²-F)	
10	**PERFORMANCE DATA - TUBE SIDE**											
11	Fluid Circulated			Water						In/Out		
12	Total Fluid Entering	lb/h		161,419		Density, Liq	lb/ft³		60.677	/	61.533	
13		BPD		10,000		Density, Vap	lb/ft³		0	/	0	
14	Temperature	°F		180	/ 140	Specific Heat, Liq	BTU/(lb-F)		1.0003	/	0.9997	
15	Liquid	lb/h		161419	/ 161419	Specific Heat, Vap	BTU/(lb-F)		0	/	0	
16	Vapor	lb/h		0	/ 0	Therm. Cond, Liq	BTU/(ft-h-F)		0.384	/	0.372	
17	Noncondensable	lb/h		0	/ 0	Therm. Cond, Vap	BTU/(ft-h-F)		0	/	0	
18	Steam	lb/h			/	Freeze Point	°F		0			
19	Water	lb/h			/	Bubble / Dew point	°F		0	/	0	
20	Molecular wt, Vap				/	Latent heat	BTU/lb		0			
21	Molecular wt, NC					Inlet pressure (abs)		psi		114.7		
22	Viscosity, Liq	cp		0.3443	/ 0.4744	Pres Drop, Allow/Calc		psi	10	/	4.05	
23	Viscosity, Vap	cp		0.0000	/ 0.0000	Fouling resistance		ft²-h-F/BTU		0.001		
24	**PERFORMANCE DATA - AIR SIDE**											
25	Air Quantity, Total		1,050,500	lb/h		Altitude			4,836	ft		
26	Air Quantity/Fan		148,116	ft³/min		Temperature In			95	°F		
27	Static Pressure		0.66	inH2O		Temperature Out			120	°F		
28	Face Velocity	14.05	ft/s	Bundle velocity	2,990	lb/h/ft²	Design Ambient		95	°F		
29	**DESIGN-MATERIALS-CONSTRUCTION**											
30	Design/Vac./Test Pres	300	/ 0	/ 0	psi		Design temperature		300	°F		
31	**TUBE BUNDLE**			**Header**			**Tube**					
32	Size	34 ft		Type	Box		Material		Carbon Steel			
33	Number/bay	1		Material	Carbon Steel		Specifications					
34	Tube Rows	4		Passes	#6		OD	1	Min Thk.	0.065	in	
35	Arrangement			Plug Mat.			No./Bun	234	Lng	32	ft	
36	Bundles	1 par		Gasket Mat.			Pitch	2.313	/ 2.003	30	deg	
37	Bays	1 par		Corr. Allow.	0	in	**Fin**					
38	Bundle frame			Inlet Nozzle	2	3 in	Type		L-finned			
39	**MISCELLANEOUS**			Outlet nozzle	2	3 in	Material		Aluminum 1060			
40	Struct. Mount.			Special Nozzles			OD	2.25	Tks	0.011	in	
41	Surf.Prep			Rating	300 ANSI		No.	10	#/in	DesTemp	0	°F
42	Louvers			TI	PI		Code		ASME Code Sec VIII Div 1			
43	Vibration Switches			Chem Cleaning			Stamp	Yes	Specs			
44	**MECHANICAL EQUIPMENT**											
45	Fan,Mfr., Model			Driver, Type	V-belt		Speed Reducer, Type					
46	No./Bay	2	RPM	0	Mfr.		Mfr.&Model					
47	Dia.	10 ft	Blade(s)		No./Bay		No./Bay					
48	Pitch		Angle		RPM		Rating					
49	Blade(s)	0	Hub	0	Enclosure		Ratio					
50	hp/Fan	25 hp	MinAmb		V/Phase/Hz		Support					
51	Control Action on Air Failure-								Louvers			
52	Degree Control of Outlet Process Temperature											
53	Recirculation								Steam Coil		No	
54	Plot Area	0 ft²	Drawing No.			Wt.Bundle	17,426	Wt. Unit	17,426	lb		
55	Notes:											
56												
57												
58												

Chart Cooler Service Company

P.O. Box 581928 Tulsa, Ok 74158 Ph 918.834.0002 Fax 918.834.0128

AIR COOLED HEAT EXCHANGER SPECIFICATION SHEET

1						Date:	12/22/2015 Rev. 1
2	Customer	KP Engineering				Item No.	374-E-C100 / C200
3	Plant Location	Tulsa, OK		Job No. 30815		Ref. No.	30815
4	Service	Debutanizer Bottoms Air Cooler				P.O. No.	J1422-B-006
5	Size and Type	Model: H120	FORCED	No. Bays	2		
6	Surface/Unit - Finned Tube	82649 ft2		;Bare Tube	3920.7 ft2		
7	Heat Exchanged	19,378,400 Btu/h		MTD, Eff.	56.5 °F		
8	Transfer Rate-Finned Tube	4.171	;Bare Tube, Service 87.92	Clean	114.09 Btu/h.ft2.F		

PERFORMANCE DATA - TUBE SIDE

10	Fluid Name		DEBUTANIZER BTMS	**Vapor Ref. Temp.**	°F	-	
11	Total Fluid In	lb/h	227406	Specific Heat	Btu/lb.F	-	
12	Vapor	lb/h	0	Viscosity	cP	-	
13	Liquid	lb/h	227406	Conductivity	Btu/h.ft.F	-	
14	Noncond	lb/h		Molecular Weight		-	
15	Steam	lb/h		**Liquid Ref. Temp.**	°F	266.00 / 120.00	
16	Water	lb/h		Specific Heat	Btu/lb.F	0.6476 / 0.5256	
17	Fluid Cond./Vapzd.	lb/h	0	Viscosity	cP	0.1356 / 0.2696	
18	Temperature In/Out	°F	266.00 / 120.00	Conductivity	Btu/h.ft.F	0.0475 / 0.0613	
19	Pressure	psia	160.2	Density	lb/ft3	35.550 / 41.050	
20	Velocity In/Out	ft/s	6.37 / 6.37				
21	Press. Drop Allow/Cal	psi	15.000 / 13.386	Fouling resistance	h.ft2.F/Btu	0.002	

PERFORMANCE DATA - AIR SIDE (Air)

23	Air Quantity, Total	lb/h	2096366	Altitude above Sea Level	ft	670
24	Air Quantity/Fan	acfm	126711	Temperature In (Dry Bulb)	°F	102
25	Actual Static Press	in H2O	0.644	Temperature Out	°F	140.62
26	Face Velocity	sfm	637	Min. Design Ambient	°F	-20
27	Max Mass Velocity	lb/h.ft2	6040.8	Fan Air Temperature	°F	102

DESIGN - MATERIALS - CONSTRUCTION

29	Design Pressure	300.00 / 15 (ext) psig	Test Pressure	390	Design Temperature	425.00 / 300F (ext) / -20 F			
30	**TUBE BUNDLE**		**HEADER, Type**	Plug Box	**TUBE, Material**	SA-214			
31	Size	11.427 X 32.000	Material	SA-516 70		Welded			
32	No./Bay 2	No./Rows 4	No. Passes 6		OD	1 Thick	0.109		in
33	Arrangement		Slope	0 in/ft	No./Bundle	234			
34	Bundles	Parallel	Plug Material	SA-105	Length	32			ft
35	Bays	Parallel	Gasket Material	CS	Pitch	2.3125			in
36	MISCELLANEOUS		Corrosion Allow.	.125 in	**Fin, Type**	EMB			
37	Struct. Mount	Grade c/c	No. Size In Nozz.	2 - 3" 300# RF-WN	Material	Aluminum 1100-annealed			
38	Surf Prep	SSPC-2	No. Size Out Nozz.	2 - 3" 300# RF-WN	OD	2.25 Thk.	0.015		in
39	Surf Finish	Galvanize	Vent and Drain	1" 300# RF-WN	No./in	10	Fin Design Temp		425.00
40	Hail Guards	Integral	TI:	PI: 1" 300# RF-WN	Code -		Stamp	Yes	
41	Louvres / Actuators	Auto / Dura Stroke 1100	Header Prep	SSPC-SP-5	X-RAY	API Spot	PWHT	Yes	
42	Vibration Switches	Murphy VS2EX	Header Finish	Metalized	SPECS.		API-661	Yes	

MECHANICAL EQUIPMENT

44	**Fan Mfg**			**Driver**	Tag#: 374-M-6800/6801/6802/6803	**Speed Reducer**				
45	Model Class 10000	Series 36 SC VT		Type	NEMA-1.15SF-IEEE-841 Eff.	Type	V-Belt			
46	No./ Bay 2	Rev/Min 339		Mfg.	Seimens	Mfg.	Gates			
47	Dia. ft 10	No. Blades 6		No/Bay 2	Frame 284T	Model	4/5VX1000		QD4/5V23.60	
48	Pitch 19.39	Manual		hp /Driver	25	No/Bay	2		QD4/5V4.65	
49	Mat'l:Blade	AL	Hub AL	Rev/Min	1750	AGMA Rating, hp	1.4			
50	hp/Fan, Design	21.79		Enclosure	TEFC Ins F TR B	Ratio	5.162			
51	hp/Fan, Min Amb	27.83		Volt;Phase;Cycle	460/3/60	Support	Structure			
52	Plot Area	32 x 11.42708	ft2	Total Weight (per bay)	27720	Dry		Coil Vol	236	Gal
53	Walkways	Width	Type	Recirculation: None		Wind Load		31 PSF / 90 mph		
54	Inlet	30"	Serrated Grate			Seismic Zone		In Accordance with J-1422 Design Basis		
55	Outlet	30"	Serrated Grate							
56	Drive									
57										
58										
60										