



Date	8/28/2023	Rev.	1	By	ckha
Proposal	33454CKHA	Item No.	A		
Job No.	R-13065	Item No.	1		

1 Equip Owner	AIR PRODUCTS MANUFACTURING LLC	Cust. PO No.	SM00004854
2 Address	PARAMOUNT, CA	Plant Location	PARAMOUNT, CA

3	Service HGU CONDENSATE AIR COOLER							Weight/Bay	22,200 lbs		
4	1	Model		1-1022T096		Forced Draft		No. of Bays	1	No. of Fan Cells / Bay	2
5	Dimensions		L	23' 0"	W	9' 6"	H	11' 6"	Grade Mounted		Shop Assembled Unit(s)

PERFORMANCE

7 Customer Item	18-XF-1803
8 Fluid Circulated	PUMPED STEAM CONDENSATE
9 Heat Exchanged	Btu/hr 8,240,000.0
10 U External - Bare	Btu/hr·ft ² ·°F 6.505 - 139.9
11 CLMTD	°F 48.44
12 External Surface	ft ² 31,917.0
13 Bare Tube Surface	ft ² 1,484.0

TUBE SIDE

15	Total Flow	lbs/hr	80,529.00			
16			IN		OUT	
17	Vapor	"	0.00		0.00	
18	Liquid	"	80,529.00		80,529.00	
19	Steam	"	0.00		0.00	
20	Non-Condensable	"	0.00		0.00	
21	Temperature	°F	222.0		120.0	
22	Pressure	psia	80.0		77.9	
23	Pressure Drop	psi	Allowed: 3.0		Calculated: 2.1	
24	Density	L V lbs/ft³	59.6		62.0	
25	Viscosity	L V cP	0.266		0.761	
26	Vapor Molecular Weight					
27	Specific Heat	L V Btu/lb·°F	1.031		1.008	
28	Thermal Conductivity	L V Btu/hr·ft·°F	0.3930		0.3573	
29	Fouling Resistance IS	hr·ft²·°F/Btu	0.0005 / Airside fouling - 0.002		Face Velocity: 690 FPM	Tubeside vel: 2.32 ft/sec

AIR SIDE

31 Temperature In - Out	°F	90.0 - 147.3	(Min. Amb. = 35.0)
32 Elev 69 ft	Air Quantity	lbs/hr 599,300.0	

CONSTRUCTION

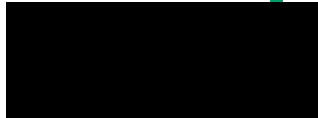
34 Design Press.	psig - Temp. °F	200 - 300 / FV - 300	(MDMT = 32.0)
35 Codes		ASME VIII/1, API 661 7th Ed., Code Stamp, NB Registration	
36 No. Bundles - Tubes / Bundle		1 - 264	
37 No. Rows - Passes / Bundle		6 - 6	
38 Header Type - Corrosion Allowance		PLUG BOX- 1/8"	
39 Header Material		SA-516 GR 70N - SPOT XR / PWHT	
40 Shoulder Plug /Gasket Material		SA-105N / A-1008	
41 Nozzles In - Out - Series / Bundle		4"(2) - 4"(2) - 300# RF WN, Vent 2"(1) - Drain 2"(1) - 300# LWNRF (2X API Nozzle Loads & per UG-44(b))	
42 Tube Material		SA-179 SMLS	
43 Tube O.D. - BWG - Length		1" -0.095" MIN (0.083" UNDER FIN) -22.000'	
44 Fin Material - Bond Type		ALUMINUM - EMBEDDED	
45 Fin Height - No. Fins / Inch	Tri Pitch	5/8" - 10.0 - 2-1/2" (0.016" Fin strip thickness)	

FAN

MECHANICAL EQUIPMENT

MISCELLANEOUS

48 Mfr.	MOORE-HD EC	SPEED REDUCER	DRIVER	1) Guards: Fan, Belt
49 Model	10K-24VE MAN ADJ	Type	HTD BELT	2) Vib Trms: Wilcoxon 786A-D2.
50 hp/fan	11.00 No. of Fans 2	Mfr.	Gates	3) StruPrep: Hot Dip Galv. per spec.
51 Dia.	8.0 No. of Blades 5	Model No.	2600-8MGT-20	4) PE Stamp- California
52 RPM	383 Pitch 4.8°	Ratio	4.57::1	5) Tube to TS: Rolled & Exp.
53 Tip Speed	9,626.0 ft/min	Service Factor	1.80	6) N2 Purge Dew Point -40f, Gr. Lugs
54 ACFM/Fan	69,320.0	No. of Belts	2	7) 10%hdr plugs&gask/2sets blnd gask
55 Blade Material	ALUMINUM	Support:	Suspended	8) Certified Weight, Noise Test
56 Static Pressure	0.664 inH2O	1) Run-in test per spec.	Cl. 1, Div. 2, Gr. B, C, D, T3C	9) Wikwys: Hdrs Only W/ 2 Ladders
57 SPL/Fan @ 3 ft =	80.0 dBA	2) Anti-rotation device / fan	Motor Tags: 18-XF-1803M1, 18-XF-1803M2	10) Paint Hdrs per spec, system 2



WORLD ENERGY RENEWABLE FUELS CONVERSION PROJECT

Project No: A8KM

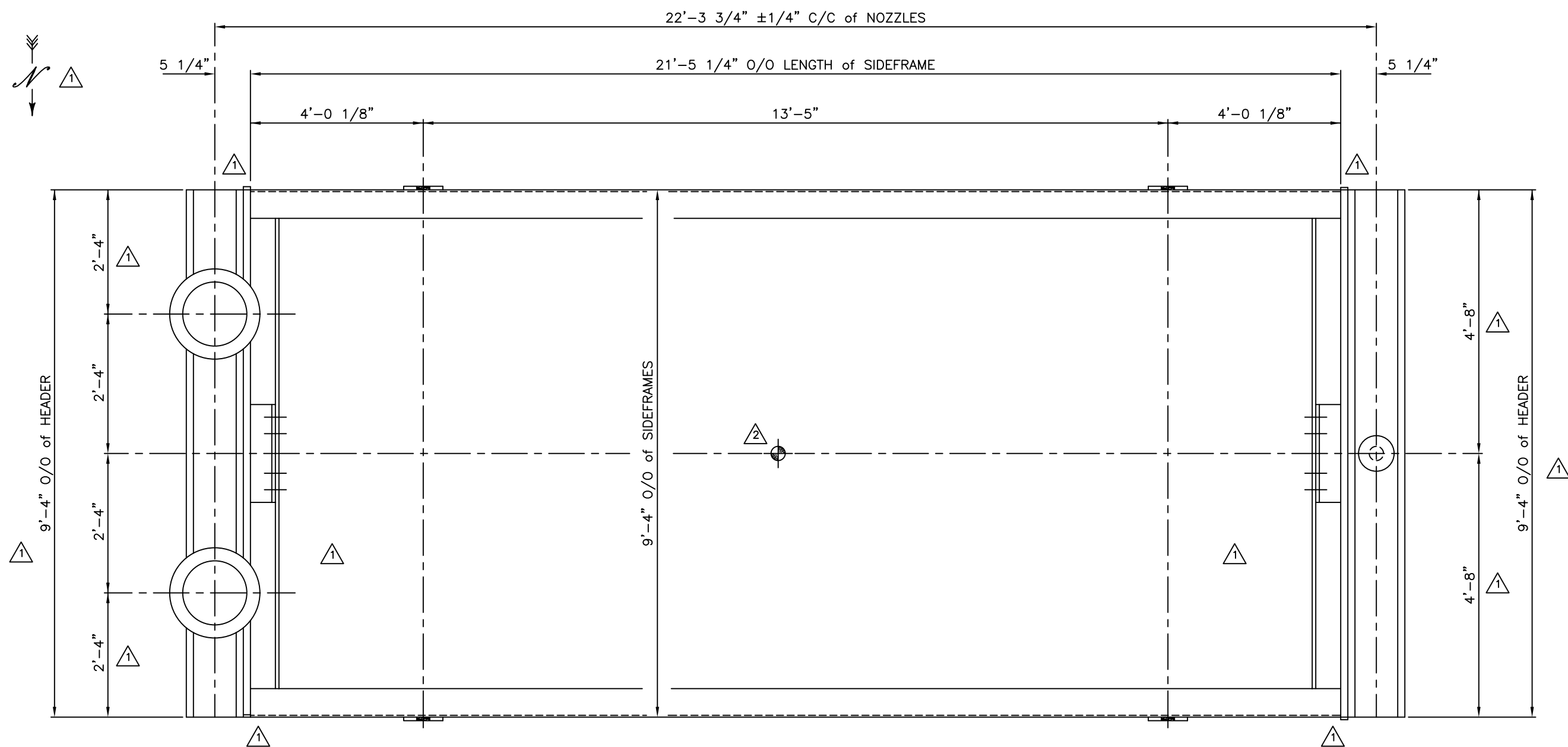
Vendor Input to PCMS

Doc number: A8KM-PCMS-001, Rev. 1

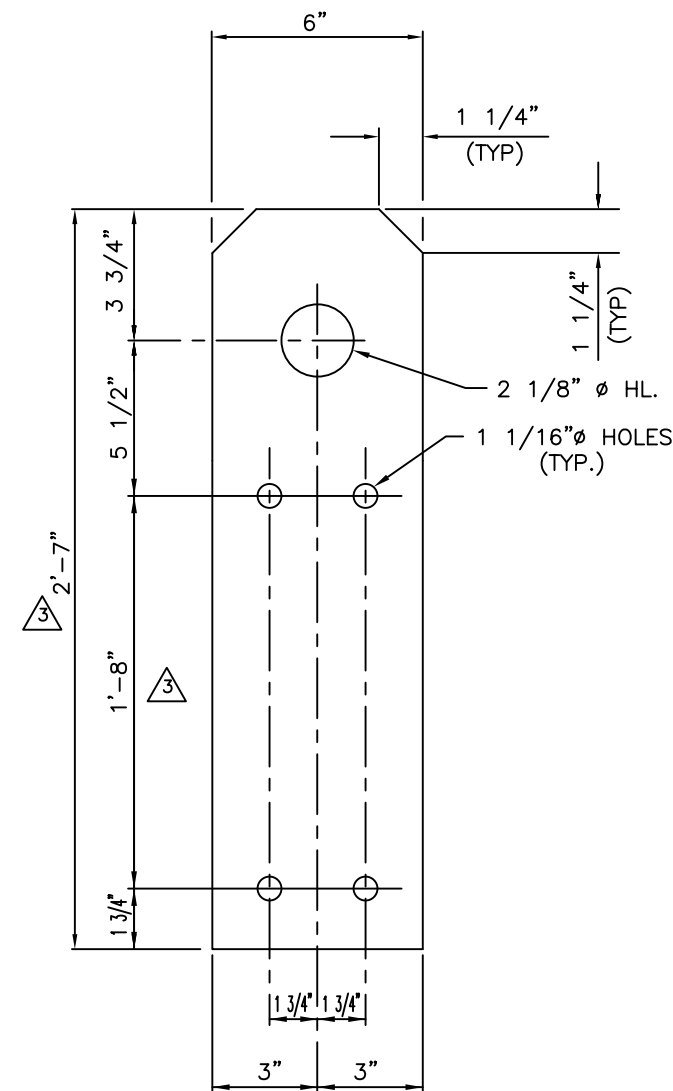
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Rev: 1

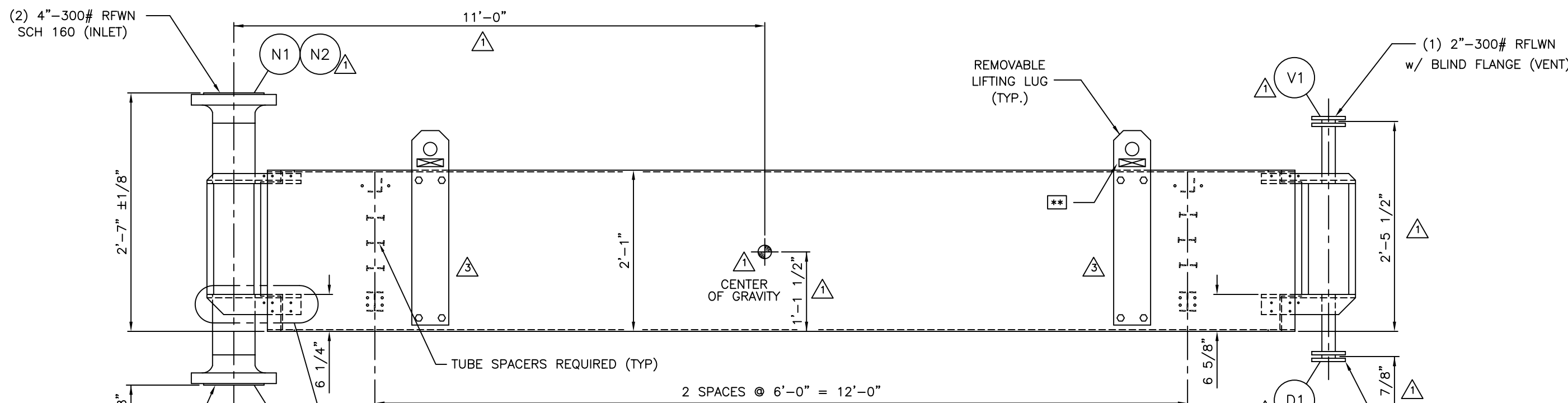
Identification					
1: Tag No.	18-XF-1803				
2: Model No.	FA.01-1022T096				
3: Serial No.	R-13065-1-A				
4: Registration No.	16696				Code Vessels Only
5: Code Stamped	yes				
General Design					
15: Build Date	2023				
17: Manufacturer	Kelvion, Inc. Thermal Solutions				
19: General Material	CS				
20: Insulation Type	None				
21: Support Type	Legs				
22: External Coating	Galvanized				Structural steel
23: MAWP (psig)	249				
24: MAWT (F)	N/A				
25: Design Pressure (psig)	200				
26: Full Vacuum	yes				
27: Design Temp (F)	300				
28: MDMT (F)	32				
29: Weight Empty (lbs)	22200				
30: Weight Full (lbs)	23900				
31: Equipment Length (inches)	374				including walkways
32: Orientation	Horizontal				
33: Equipment Width (inches)	113				
34: Equipment Height (inches)	199				Bottom of columns to top of header box
35: Storage Volume (bbls)	N/A				Vessels Only
36: Outer Diameter (inches)	N/A				
37: PWHT	yes				as noted on WIM drawing
38: Fire Proofing	no				
39: Heat Tracing	None				
40: Test Medium	Water				Pressure Testing



PLAN VIEW



LIFTING LUG DETAIL
MAT'L: 3/4" THICK A572-Gr50



ELEVATION

264 FINNED TUBES ~ SA-179 (UNS# K01200) ~ 1"Ø ~ 22'-0" LONG ~ 0.095" MW (0.083" U.F.)
EMBEDDED ~ 10 F.P.I. ~ 5/8" HIGH
6 ROWS ~ 6 PASSES ~ 2 1/2" PITCH
CUSTOMER ITEM NUMBER: 18-XF-1803

FIX INLET/OUTLET HEADER

CONNECTION TABLE		
TYPE	LABEL	DESIGNATION
INLET	N1 & N2	4"-300# RFLWN SCH 160
OUTLET	N3 & N4	4"-300# RFLWN SCH 160
VENT	V1	2"-300# RFLWN
DRAIN	D1	2"-300# RFLWN

** LIFT LUG'S SURFACES (EXCEPT PIN & BOLT HOLES) SHALL BE SANDBLASTED PER SSPC-SP6 AND GIVEN ONE COAT OF INORGANIC ZINC PRIMER AT 3.0 TO 4.0 MILS DFT. (REF. 13065000ATS FOR ADDITIONAL COATING REQUIREMENTS) THE FOLLOWING SHALL BE STAMPED ON EACH LUG:
ITEM NO.: 18-XF-1803
RATED LOAD PER LUG: 8,100 LBS.
MAX. UNIT LIFTING WT.: 22,200 LBS ±10%

NOTES:

- TUBES SHALL BE EXPANDED INTO TUBESHEET IN ACCORDANCE WITH API-661, 7th ED. 2013, PARA. 9.3.3.
- TUBE ACCESS PLUG THREADS TO BE COATED WITH A SUITABLE THREAD LUBRICANT.
- HEADER PLUG TORQUE: 142 ft-lbs (MIN.), 272 ft-lbs (MAX.).
- BUNDLE WEIGHT: 12,900 lbs (DRY) ±10% /BUNDLE
14,600 lbs (FULL OF WATER) ±10% /BUNDLE
- TOTAL QUANTITY REQUIRED FOR THE REFERENCED ITEM: 1 BUNDLE.

REFERENCE DRAWINGS

HEADERS: 13065010HDR
FINNED TUBES: 13065010FT
NAMEPLATE: 13065010NP

NO.	DESCRIPTION	DATE	DWN.	APPROVED
3	LIFT LUG	11/3/23	RPK	JRA
2	CG/LIFT LUG DETAIL	9/6/23	RPK	JRA
1	OWNER/CRIST, NOT THE EX-OR, SEAL TABS, HDR/SP LENGTHS & IT NO.	7/26/23	SRZ	RPK
0	ORIGINAL ISSUE	5/19/23	SRZ	RPK

Kelvion
Thermal Solutions
Tulsa Port of Catoosa
Catoosa, Oklahoma, USA



CUSTOMER: WORLD ENERGY PARAMOUNT
PROJ. NAME: WORLD ENERGY RENEWABLES PROJECT
AIR PRODUCTS PROJ. NO: EN-20-7123
FLUOR PROJ. NO: A8KM
APCI DOC. NO.: EN207123-KELV-9V3-00008

KELVION JOB NO: R-13065-1
OWNER P.O. NO: SM00004854
CUST. ITEM NO: 18-XF-1803
SERVICE: HGU CONDENSATE AIR COOLER

EQUIPMENT OWNER		PARAMOUNT, CA	
AIR PRODUCTS MANUFACTURING LLC			
BUNDLE OUTLINE	SCALE NONE	DWG. NO. 13065010BO	REV. 3

					Kelvion Thermal Solutions Tulsa Port of Catoosa Catoosa, Oklahoma, USA 	KELVION JOB NO: R-13065-1 OWNER P.O. NO: SM00004854  CUST. ITEM NO: 18XF1803 SERVICE: HGU CONDENSATE AIR COOLER			
3	SHOP ASSY WT WAS VERIFIED BY CAL SCALE/MAX LIFT WT WAS ADJUSTED	1/9/24	RPK	JRA					
2	RUN-IN & NOISE TEST NOTES/CERT FOR WT SCALE CALIB./SERVICE GASKETS	9/6/23	RPK	JRA					
1	SHOWER CUST. NOISE TEST FOR SHIPPING SPEC. SHOCK WRAP STRAPS VIB & EXPOSED THREAD LUBRICANT	7/26/23	SRZ	RPK		EQUIPMENT OWNER			
0	ORIGINAL ISSUE	5/19/23	SRZ	RPK	 AIR PRODUCTS MANUFACTURING LLC	PARAMOUNT, CA			
NO.	DESCRIPTION	DATE	DWN.	APPROVED	TITLE ASSEMBLY, TESTING & SHIPPING INSTRUCTIONS		SCALE NONE	DWG. NO. 13065000ATS	REV. 3
REVISIONS									