

HEAT EXCHANGER SPECIFICATION						CLIENT: _____	
				JOB NO. _____		LOCATION: _____	
Rev	Description	Date	By	Chk	App'd	TAG NO.	P.O. NO.
A	ISSUED FOR BID	10-Jan-08	CA	KJK		E-5908	9971-4002
0	ISSUED FOR PURCHASE	13-May-08	CA	DB		AGE Reboiler	
1	ISSUED FOR PURCHASE	18-Jul-08	SJ				
2	ISSUED FOR PURCHASE	12-Aug-08	SJ				
3	ISSUED FOR PURCHASE	1-Oct-08	FI				
4	ISSUED FOR PURCHASE	24-Nov-08	FI				
	AS BUILT	31-Jul-09	SJ				
NO. UNITS: ONE (1)		TEMA TYPE: BKU		SIZE: 28 / 42 - 270 / 718 / 1054 - 6860			
SQ. m PER UNIT (TOT/EFF): 111.1 / 110.2		SHELLS PER UNIT: 1		SQ. m PER SHELL (TOT/EFF): 111.1 / 110.2			
MANUFACTURER: Exchanger Industries				MODEL:			
PERFORMANCE OF ONE UNIT							
OPERATING CONDITIONS:		SHELL SIDE			TUBE SIDE		
FLUID CIRCULATED:		AMINE			60 wt% TEG/H <sub>2</sub> O		
TOTAL FLOW kg/h:		38,897			71,913		
		INLET		OUTLET		INLET	
VAPOUR - kg/h		-		4,040		-	
LIQUID - kg/h		38,897		34,857		71,913	
GLYCOL/WATER - kg/h		-		-		-	
MOL. WT. HC (VAP/LIQ)		/		18.127 /		38.17	
LATENT HEAT - kJ/kg		-		-		-	
DENSITY. HC (VAP/LIQ) - kg/m <sup>3</sup>		/ 989.0		1.041 / 988.7		-	
DENSITY GLYCOL/WATER - kg/m <sup>3</sup>		-		-		961.1	
THERM.COND. HC(VAP/LIQ) - W/m C		/ 0.473		0.035 / 0.459		-	
THERM. COND. GLY./WATER - W/m C		-		-		0.308	
VISCOSITY HC (VAP / LIQ) - cP		/ 1.000		0.014 / 0.960		-	
VISCOSITY GLY./WATER - cP		-		-		0.250	
SPEC. HEAT HC (VAP/LIQ) - kJ/kg C		/ 4.000		1.896 / 4.015		-	
SPEC. HEAT GLY./WATER - kJ/kg C		-		-		3.855	
OPERATING TEMP. - deg C		121.0		121.8		177.0	
OPERATING PRESSURE - kPa (ga)		89.6		88.9		978	
FLUID VELOCITY - m/s		1.50		1.60		-	
PRESSURE DROP - kPa		ALLOW. 21.029		CALC. 0.760		ALLOW. 68.948	
ATMOS. PRESSURE - kPa (abs)		93		93		66.608	
FILMING FACTOR (TEMA) - C m <sup>2</sup> /W		0.00035		0.00035		-	
W/ ARRANGEMENT		-		-		-	
NUMBER PASSES PER SHELL		1		4		-	
HEAT EXCHANGED - kW		2,525		TRANSFER RATE (W/m <sup>2</sup> C)		-	
LMTD (CORR. / UNCORR.) - deg C		35.8		/		CLEAN - 1557.30 SERVICE - 639.87	
HEAT RELEASE CURVE		ATTACHED		DIRTY -		-	
CONSTRUCTION							
DESIGN PRESSURE - kPa (ga)		345 / FULL VAC @ 149 deg C / -45 deg C		2300 @		204 deg C / -45 deg C	
TEST PRESSURE - kPa (ga)		PER CODE		PER CODE		-	
CORROSION ALLOWANCE - mm		0		3.175		-	
PER ASME VIII DIV. 1		PROV. OF ALBERTA		MATERIALS (1)		-	
CODE SYMBOL REQ'D NO		TEMA CLASS R		SHELL SA-240-316LSS		SHELL COVER SA-240-316LSS	
OTHER SPECS NOTE 6		API 660		TUBES SA-789-UNS31803		CHANNEL COVER SA-516-70N	
SOUR SERVICE YES		CORR/EROS DUE TO HOT CO <sub>2</sub> /H <sub>2</sub> S		CHANNELS SA-516-70N		FIXED TUBESHT SA-240-316LSS	
SHELL DIA., mm		THK., mm		GASKETS		FLOAT TUBESHT	
OVERALL LENGTH, mm		EXPANSION JOINT		SS PIPE SA-312-316LSS		FLOAT HEAD	
BAFFLE FACING - NO. OF BAFFLES		% CUT 0		SS FLG/CPLGS SA182-316LSS		BAFFLES - CROSS	
TUBE OD, mm		BWG 16		TS PIPE SA-333-6		- LONG	
NO. 262		LENGTH, mm 6860		TS FLG/CPLGS SA-350-LF2		TUBE SUPPORTS	
PITCH 25.40		FINS NO		SURF.PREP SSPC SP10		BOLTS/NUTS B7M/2HM	
SS INLET RhoV2, kg/m s2 417		IMPINGEMENT PROTECTION Y		PRIMER 400B		EXT. SUPPORTS Saddles	
WTS., SHIP - HYDRO		BUNDLE -		FINISH NONE		INT. COATING None	
MARK	CONNECTION	NO./SIZE	RATING	FACING	PROJECT	INSUL'N TYP/THK., mm	64 H BY Vendor
N1	AMINE IN	1 / 6"	150#	RFWN		FIREPROOFING	
N2A/B	VAPOUR OUT	2 / 8"	150#	RFWN		NOTES:	
N3	AMINE OUT	1 / 4"	150#	RFWN		1. Allow for 10% excess area in design, by increasing tube length not number of tubes.	
N4	PG IN	1 / 6"	300#	RFWN		2. Provide 2 lifting lugs and 1 grounding lug	
N5	PG OUT	1 / 6"	300#	RFWN		3. To avoid fouling and minimize hot spots, 203mm liquid spacing shall be provided above and below the tube bundle. A minimum 229mm disengaging height is required above the liquid level.	
N6/N7	S/S VENT/DRAIN	2 / 2"	150#	RFWN		4. Provide a minimum of two (2) minutes of retention time on outlet side of weir.	
N8/N9	PG (ON N1&N2)	2 / 2"	150#	RFWN		5. Welded tube to tubesheet joint.	
N10/N11	TG (ON N1&N2)	2 / 2"	150#	RFWN		6. The following specs shall apply:	
N12A/B	LEVEL BRIDLE	2 / 2"	150#	RFWN		TR-43-SPC-00-001-01	
N13/N14	PG (ON N4&N5)	2 / 2"	300#	RFWN		TR-43-SPC-00-019-01	
N15/N16	TG (ON N4&N5)	2 / 2"	300#	RFWN		TR-43-SPC-00-021-01	