

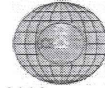
 MEG ENERGY	CHRISTINA LAKE REGIONAL PROJECT Phase 3A EPC for Central Plant Facilities SLI Project No. 511036	 SNC-LAVALIN

 SNC-LAVALIN	<input type="checkbox"/> A1 Not suitable to initiate fabrication. modify as noted, resubmit for review
	<input type="checkbox"/> B1 Suitable to initiate fabrication as noted. modify as noted, resubmit for review
Vendor's drawing review for conformity with specifications and design drawing.	<input type="checkbox"/> C1 Suitable to fabricate to completion as noted. submit final documents including as-builts as required
This review does not relieve the vendor of his responsibility for errors in design and detailing as detailed in his contract.	<input type="checkbox"/> D1 Suitable to fabricate to completion. submit final documents including as-built documents as required
	<input type="checkbox"/> E1 Not suitable as final documents as noted. modify as noted and resubmit.
	<input checked="" type="checkbox"/> F1 Suitable as final documents, no further resubmittal required (unless revised by vendor)
Vendor: Heat Exchanger Design, Inc. - 12427 No.: TSS4565A (Case 3) Rev: 1 Date Rec'd 2013/10/30	
Doc. Title: D00.01 - Thermal Data Sheet - Tag: 3A-E-144	
Client Code:	Project: MEG Phase 3A EPC
Reviewed by: <i>Aside</i>	Document No
Date: <i>Nov. 13, 2013</i>	P-5330-01-0017
	Submittal 03

Heat Exchanger Design, Inc.



P.O.Box 524
Indianapolis, IN., 46205

Tel: (317) 686-9000
Fax: (317) 686-9100

HEAT EXCHANGER SPECIFICATION SHEET										Page 1
Customer MEG Energy Corp.					Job No. 4565A					
Address					Reference No. PO# P-5330-01					
Plant Location Christina Lake, AB					Proposal No. 111-13					
Service of Unit DILUENT RECOVERY / GLYCOL EXCHANGER					Date 8/19/2013					Rev 3
Size 460 x 19 x 7620mm					Type SH18B230-25-02-SS-6B8A					Item No. 3A-E-144 (Maximum Flow Case)
Surf/Unit (Gross/Eff) 448.14 / 446.75 m2					Shell/Unit 2					Surf/Shell (Gross/Eff) 224.07 / 223.38 m2
PERFORMANCE OF ONE UNIT										
Fluid Allocation			Shell Side				Tube Side			
Fluid Name			TEG / H2O (60/40 wt%)				Diluent Vapour			
Fluid Quantity, Total kg/hr			50547.9				15640.1			
Vapor (In/Out)							15640.1			
Liquid			50547.9				50547.9			
Steam										
Water										
Noncondensables										
Temperature (In/Out) C			40.00				99.70			
Specific Gravity			1.0789				1.0316			
Viscosity mN-s/m2			4.6610				1.4430			
Molecular Weight, Vapor										
Molecular Weight, Noncondensables										
Specific Heat kJ/kg-C			3.2230				3.4370			
Thermal Conductivity W/m-C			0.3276				0.3392			
Latent Heat kJ/kg							5883.86			
Inlet Pressure kPa			994.002				534.000			
Velocity m/s			0.34				5.66			
Pressure Drop, Allow/Calc kPa			70.000				55.945			
Fouling Resistance (min) m2-K/W			0.000180				0.000350			
Heat Exchanged MegaWatts 2.7911			MTD (Corrected)				18.4 C			
Transfer Rate, Service 339.71 W/m2-K			Clean				698.16 W/m2-K			
							Actual 482.20 W/m2-K			
CONSTRUCTION OF ONE SHELL										Sketch (Bundle/Nozzle Orientation)
Design/Test Pressure kPaG			1500/FV / Code				1155/FV / Code			
Design Temperature C			-28.9 / 178				-28.9 / 178			
No Passes per Shell			1				1			
Corrosion Allowance mm			3.2				6.4 (CS components)			
Connections			In inch 6" 300# RFWN				8" 150# RFWN			
Size & Rating			Out inch 6" 300# RFWN				8" 150# RFWN			
Intermediate										
Tube No. 230			OD 19.050 mm			Thk(Avg) 1.651 mm			Length 7.620 m	
Tube Type Plain						Material			SA-213-316L	
Shell SA-106 B			457.2mm OD			Shell Cover			SA-516-70N	
Channel or Bonnet SA-240-316L			(Note 6)			Channel Cover			N/A	
Tubesheet-Stationary SA-240-316L						Tubesheet-Floating			N/A	
Floating Head Cover N/A						Impingement Plate			None	
Baffles-Cross SS304			Type SINGLE-SEG. (Vert.)			%Cut (Diam) 36.00			Spacing(c/c) 304.801	
Baffles-Long N/A						Seal Type				
Supports-Tube SS304						U-Bend			Type	
Bypass Seal Arrangement						Tube-Tubesheet Joint			Seal Welded & Expanded (two grooves)	
Expansion Joint						Type				
Rho-V2-Inlet Nozzle kg/m-s2						Bundle Entrance			Bundle Exit kg/m-s2	
Gaskets-Shell Side Kammpro Type						Tube Side			Kammpro Type	
-Floating Head N/A										
Code Requirements ASME Section VIII, Div. I						TEMA Class				
Weight/Shell 5760.4			Filled with Water 7950.25			Bundle 2889.14			kg	
Remarks: 1. This is HED's standard separated head Hairpin Exchanger with independent bolting. 2. 50mm thick mineral wool insulation is included. 3. Glycol heat tracing for 10°C hold temperature is included. 4. 10% overdesign in surface has been provided. 5. Tube-to-tubesheet welding procedures shall be qualified and tested in accordance with ASME Section IX, QW-193. 6. Tubesheet is in sour service, and 100% RT and NACE materials are required. 7. Channel changed to 316L SS to avoid PWHT requirements. 8. U-bends are solution annealed.										
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