



MEG ENERGY

CHRISTINA LAKE REGIONAL PROJECT
Phase 3A EPC for Central Plant Facilities

SLI Project No. 511036



SNC-LAVALIN



SNC-LAVALIN

Vendor's drawing review for
conformity with specifications
and design drawing.

This review does not relieve
the vendor of his responsibility
for errors in design and detailing
as detailed in his contract.

- | | |
|--|--|
| <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 |
| <input type="checkbox"/> C1 | Suitable to fabricate to completion as noted. submit final documents including as-builts as required |
| <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.: TSS4565B

Rev: 1

Date Rec'd

Doc. Title: D00.01 - Thermal Data Sheet - Tag: 3A-E-397

2013/10/30

Client Code:

Project: MEG Phase 3A EPC

Reviewed by:

[Signature]

Document No

Submittal

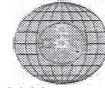
Date:

Nov. 13, 2013

P-5330-01-0013

03

Heat Exchanger Design, Inc.



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HEAT EXCHANGER SPECIFICATION SHEET										Page 1
Customer MEG Energy					Job No. 4565B-1, 2, & 3					
Address					Reference No. PO# P-5330-01					
Plant Location Christina Lake, AB					Proposal No. 111-13					
Service of Unit HP BFW Minimum Flow Recycle Cooler					Date 4/10/2013					Rev 2a
Size 400 x 25.4 x 1219.2mm Type SH 16D92-04-00-TV-6B8B					Item No. 3A-E-397 A-B-C					
Surf/Unit (Gross/Eff) 24.63 / 24.09 m2					Shell/Unit 1					Surf/Shell (Gross/Eff) 24.63 / 24.09 m2
PERFORMANCE OF ONE UNIT										
Fluid Allocation			Shell Side				Tube Side			
Fluid Name			TEG / H2O (60/40 wt%)				BFW			
Fluid Quantity, Total kg/hr			49402.2				258583			
Vapor (In/Out)										
Liquid			49402.2				258583			
Steam										
Water										
Noncondensables										
Temperature (In/Out) C			40.00				105.00			
Specific Gravity			1.0789				1.0268			
Viscosity mN-s/m2			4.6610				1.3460			
Molecular Weight, Vapor										
Molecular Weight, Noncondensables										
Specific Heat kJ/kg-C			3.2230				3.4560			
Thermal Conductivity W/m-C			0.3280				0.3400			
Latent Heat kJ/kg										
Inlet Pressure kPa			994.002				2294.00			
Velocity m/s			0.41				2.55			
Pressure Drop, Allow/Calc kPa			100.000				4.507			
Fouling Resistance (min) m2-K/W			NOTE 5				NOTE 5			
Heat Exchanged MegaWatts 2.9789					MTD (Corrected) 119.4 C					
Transfer Rate, Service 1035.79 W/m2-K					Clean 1706.81 W/m2-K					Actual 1706.81 W/m2-K
CONSTRUCTION OF ONE SHELL										Sketch (Bundle/Nozzle Orientation)
		Shell Side			Tube Side					
Design/Test Pressure kPaG		3339/FV / Code			4340/FV / Code					
Design Temperature C		-28.9 / 210			-28.9 / 210					
No Passes per Shell		1			1					
Corrosion Allowance mm		3.2			3.2 (Except tubes)					
Connections		In inch 6" 300# RFWN			8" 300# RFWN					
Size & Rating		Out inch 6" 300# RFWN			8" 300# RFWN					
Rating		Intermediate								
Tube No. 92		OD 25.400 mm		Thk(Avg) 2.108 mm		Length 1.2192 m		Pitch 31.750 mm		Layout 60
Tube Type Plain						Material		SA-179 (smls)		
Shell SA-106B		406.4mm OD				Shell Cover		SA-516-70N		
Channel or Bonnet SA-516-70N						Channel Cover		N/A		
Tubesheet-Stationary SA-516-70N						Tubesheet-Floating		N/A		
Floating Head Cover N/A						Impingement Plate		None		
Baffles-Cross A-36		Type SINGLE-SEG. (Vert.)		%Cut (Diam) 33.00		Spacing(c/c) 304.801				
Baffles-Long N/A				Seal Type						
Supports-Tube A-36				U-Bend		Type				
Bypass Seal Arrangement				Tube-Tubesheet Joint		Strength Welded				
Expansion Joint N/R				Type						
Rho-V2-Inlet Nozzle 617.43 kg/m-s2				Bundle Entrance 0.00		Bundle Exit 0.00		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 1626.07		Filled with Water 2089.82		Bundle 425.59		kg				
Remarks: 1. This is HED's standard separated head Hairpin Exchanger with independent bolting. 2. Three (3) identical exchangers are required. 3. 50mm thick mineral wool insulation is included per specification. 4. 15% overdesign has been considered to account for potential fouling. 5. U-bends are stress relieved.										
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