

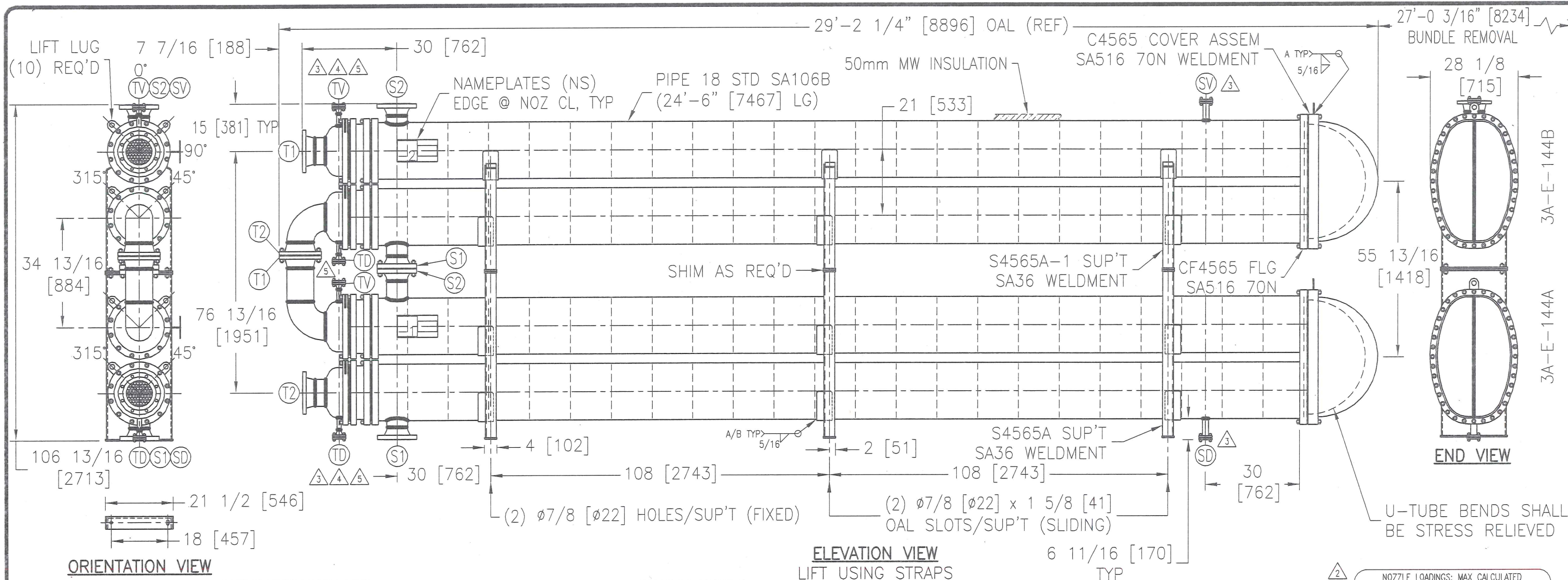
 MEG ENERGY	CHRISTINA LAKE REGIONAL PROJECT Phase 3A EPC for Central Plant Facilities SLI Project No. 511036	 SNC-LAVALIN

 SNC-LAVALIN	<table border="0"> <tr> <td><input type="checkbox"/> A1</td> <td>Not suitable to initiate fabrication, modify as noted, resubmit for review</td> </tr> <tr> <td><input type="checkbox"/> B1</td> <td>Suitable to initiate fabrication as noted, modify as noted, resubmit for review</td> </tr> <tr> <td><input type="checkbox"/> C1</td> <td>Suitable to fabricate to completion as noted, submit final documents including as-builts as required</td> </tr> <tr> <td><input checked="" type="checkbox"/> D1</td> <td>Suitable to fabricate to completion, submit final documents including as-built documents as required</td> </tr> <tr> <td><input type="checkbox"/> E1</td> <td>Not suitable as final documents as noted, modify as noted and resubmit.</td> </tr> <tr> <td><input type="checkbox"/> F1</td> <td>Suitable as final documents, no further resubmittal required (unless revised by vendor)</td> </tr> </table>	<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 checked="" 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 type="checkbox"/> F1	Suitable as final documents, no further resubmittal required (unless revised by vendor)
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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.													
<table border="0" style="width: 100%;"> <tr> <td>Vendor: Heat Exchanger Design, Inc. - 12427</td> <td>No.: 4565A Sht 1</td> <td>Rev: 5</td> <td>Date Rec'd</td> </tr> <tr> <td colspan="3">Doc. Title: B00.03,H00.01,H00.03,J00.01,J00.08 - General Arrangement Drawing - Tag: 3A-E-144</td> <td>2014/04/21</td> </tr> </table>		Vendor: Heat Exchanger Design, Inc. - 12427	No.: 4565A Sht 1	Rev: 5	Date Rec'd	Doc. Title: B00.03,H00.01,H00.03,J00.01,J00.08 - General Arrangement Drawing - Tag: 3A-E-144			2014/04/21				
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Client Code:	Project: MacKay River Central Plant Phase 1												
Reviewed by: <i>Aswade</i> Date: <i>April 29, 2014</i>	Document No P-5330-01-0002		Submittal 07										



ORIENTATION VIEW

ELEVATION VIEW
LIFT USING STRAPS

END VIEW

U-TUBE BENDS SHALL BE STRESS RELIEVED

W-RT1

Manufactured & Certified by
HEAT EXCHANGER DESIGN, INC.

Serial Number: 4565A1 or 2

Shell Side: 218 PSI @ 353 °F

Tube Side: 168 PSI @ 353 °F

Maximum Allowable Working Pressure

Hydro Test Pressure: 283 / 218

Shell Side / Tube Side

Minimum Design Metal Temperature

CUSTOMER: MEG ENERGY CORP.

P.O.#: P-5330-01

CRN#: TBD

SERVICE: DILUENT RECOVERY/GLYCOL EXCHANGER

ITEM: 3A-E-144A or B

Year Built: 2014

US NAMEPLATE FACSIMILE (SS316)
MTD ON 4" A36 STAND OFF BKT

Manufactured & Certified by
HEAT EXCHANGER DESIGN, INC.

Serial Number: 4565A1 or 2

Shell Side: 1503/FV kPa @ 178 °C

Tube Side: 1158/FV kPa @ 178 °C

Maximum Allowable Working Pressure

Hydro Test Pressure: 1951 / 1503

Shell Side / Tube Side

Minimum Design Metal Temperature

SI NAMEPLATE FACSIMILE (SS316)

MISC CONSTRUCTION NOTATION

- FOR MECHANICAL CALCULATIONS SEE CC4565A (& RELATED)
- DIMENSIONS ARE IN INCHES [mm] & SYMM UNLESS NOTED OTHERWISE
- BOLTING: SA193 B7/194 2H - CAD PLATED
- GASKETS: qv SHT 2
- TUBES SHALL BE DOUBLE GROOVED, SEAL WELDED & ROLL EXPANDED (60° TRI-PITCH)
- CORROSION ALLOWANCE SHALL NOT BE APPLIED TO TUBES
- 50mm MINERAL WOOL INSULATION REQ'D PER SPEC
- NITROGEN FILLED REQ'D FOR SHIPMENT
- TUBE SIDE WETTED MATERIALS ARE 'SOUR SERVICE' (NACE REQUIREMENTS)
- ALL SS MATERIALS SHALL BE DUAL RATED (316/316L)
- U-TUBE BENDS SHALL BE STRESS RELIEVED
- ITEM 3A-E-144A & ITEM 3A-E-144B SHALL BE SHIPPED SEPARATELY
- GLYCOL HEATING PADS SHALL BE PROVIDED FOR 10°C HOLD TEMPERATURE PER SPEC MEG-ENG-MEC-SP-1103
- ALL EDGES FOR WELDING SHALL BE PT EXAMINED FOR LAMINATION ON TUBESIDE
- DESIGN PRESSURE SET EQUAL TO MAWP & MAPWC AS TUBESHEET IS GOVERNING COMPONENT WITH NO CORROSION ALLOWANCE
- INTERCONNECTING NOZZLES S1/S2 & T1/T2 SHALL HAVE (1) SET OF GASKETS SUPPLIED LOOSE WITH THE EQUIPMENT

112363.27 N
(FORCE Q)

FOUNDATION LOADS

NOZZLE LOADINGS: MAX CALCULATED
TAKEN @ SHELL NOZZLE JUNCTURE

NOZ	P, VC, VL (N)	Mt, Mc, MI (N-m)
S1	-1000, -2500, -2500	500, 3000, -2000
S2	3000, 500, -1000	1000, 2500, 500
NOZ	P, VC, VL (N)	Mt, Mc, MI (N-m)
T1/T2	5690, 6980, 6980	7610, 5380, 5380

NOZZLE SCHEDULE			TUBE DATA/UNIT		DESIGN CONDITIONS		SPECIAL DATA		CUSTOMER DATA	
NOZ.	SIZE / RATING	SERVICE	(#) SIZE	(230) #3/4 x 16 BWG U-TUBES	SHELLSIDE	TUBESIDE	ASME SECTION VIII, DIV 1, 2010 ED., A11	TEMA CLASS	CUSTOMER: MEG ENERGY CORP.	P.O.#: P-5330-01
S1	6" 300# RFWN (S40)	SHELL IN (SA105/106B)		25'-6" (7772) ST LEGS	DESIGN PRESSURE PSI (kPa)	218 (1503)/FV168 (1158)/FV		NA	PROJECT: CLRP PHASE 3A CENTRAL PLANT FACILITY: EPC	ITEM: 3A-E-144A/B
S2	6" 300# RFWN (S40)	SHELL OUT (SA105/106B)		MATERIAL SA213 TP316/L	DESIGN TEMPERATURE °F (°C)	353 (178)	353 (178)	CLIENT INSP. AS REQUIRED	SERVICE: DILUENT RECOVERY/GLYCOL EXCHANGER	SIZE: (2) SH18B230-25-02-SS-6B8A
T1	8" 150# RFWN (S40s)*	TUBE IN (SA182 F316/L**)	BAFFLES	36% V-CUT, 13 [330] PITCH	CORROSION ALLOWANCE (mm)	1/8 (3.2)	0	WEIGHT/TOTAL (Kg)	12700# (5760)/25400# (11521)	
T2	8" 150# RFWN (S40s)*	TUBE OUT (SA182 F316/L**)		3/16 THK SS304	HYDROTEST PSI (kPa)	283 (1951)	218 (1503)	SQ' AREA/TOTAL (M²)	2404 (223)/4809 (447)	
SV	1" 300# RFLWN w/BLIND	SHELL VENT (SA105)	TUBESHEET	SA240 316/L/ 106B WELDMENT	RADIOGRAPHY	SPOT	100%	PREP/PAINT SPEC	MEG-ENG-MEC-SP-1101***	
SD	1" 300# RFLWN w/BLIND	SHELL DRAIN (SA105)		* S10s FOR NOZZLES w/ELBOWS	*F MINIMUM TEMPERATURE (°C)	-20 (-29)	-20 (-29)	INSULATION SPEC	MEG-ENG-MEC-SP-1102	
TV	1" 150# RFWN (S10s) w/BLIND	TUBE VENT (SA182 F316/L**)		** w/SA312 TP316/LW PIPE	POST WELD HEAT TREAT	NO	YES	REVISION LOG		
TD	1" 150# RFWN (S10s) w/BLIND	TUBE DRAIN (SA182 F316/L**)			IMPACT TEST EXEMPTION	UG-20(f), UCS-66	UHA-51	NO. DATE	COMMENT	
					*** PAINT SYSTEM D2 FOR EXTERNAL STAINLESS STEEL SURFACES		5	20-MAR	CHC'D LOCATION OF TS VENT/DRAIN	
					*** PAINT SYSTEM S2 FOR SUPPORT SADDLES		4	27-FEB	ADDED DRILLED/TAPPED VENT & DRAIN	

GENERAL ARRANGEMENT

DATE: 5-SEP-13
DRAWING NUMBER: 4565A
REV 5
SHT 1