

**FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS**

As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by Cataract Steel Industries, 3774 Lakeshore Road, Hamburg, New York, 14219  
(Name and address of Manufacturer)

2. Manufactured for Valerus Field Solutions LP, 919 Milam Suite 1000, Houston, Texas, 77002  
(Name and address of Purchaser)

3. Location of installation NOT KNOWN  
(Name and address)

4. Type Vertical Heat Exchanger 38022-1 to 38022-5  
(Horizontal, vertical, or sphere) (Tank, separator, jkt. vessel, heat exch., etc.) (Manufacturer's serial number)

N/A VA-38022-SETT Rev.0 257-261 2018  
(CRN) (Drawing number) (National Board number) (Year built)

5. ASME Code, Section VIII, Div. 1 2017/ 0 N/A N/A  
[Edition and Addenda, if applicable (date)] (Code Case Number) [Special Service per UG-120(d)]

*Items 6-11 incl. to be completed for single wall vessels, jackets of jacketed vessels, shell of heat exchangers, or chamber of multichamber vessels.*

6. Shell: (a) Number of course(s) 1 (b) Overall length 7' 8.500"

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No.	Diameter	Length	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	14" OD	7' 8.500"	SA-106 gr B	.750"	.0625"	S	none	100%	N/A	N/A	N/A	N/A	N/A

**Body Flanges on Shells**

No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location	Bolting				
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

7. Heads: (a) N/A (b) N/A  
(Material spec. number, grade or type) (H.T. - time and temp.) (Material spec. number, grade or type) (H.T. - time and temp.)

Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A			
	Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**Body Flanges on Heads**

Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Bolting					
								Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material		
(a) N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

8. Type of jacket N/A Jacket closure N/A  
(Describe as ogee & weld, bar, etc.)

If bar, give dimensions; if bolted, describe or sketch N/A

9. MAWP 1440 psi Amos. at max. temp. 350 °F Ambient Min. design metal temp. -20 °F at 1440 psi  
(Internal) (External) (Internal) (External)

10. Impact test EXEMPT PER UCS-66 at test temperature of N/A  
[Indicate yes or no and the component(s) impact tested]

11. Hydro., pneu., or comb. test pressure Hydro. at 1872 psi Proof test N/A

*Items 12 and 13 to be completed for tube sections.*

12. Tubesheet	<u>SA-516-70</u> <small>[Stationary (material spec. no.)]</small>	<u>16"</u> <small>[Diameter (subject to press.)]</small>	<u>1.9375"</u> <small>(Nominal thickness)</small>	<u>.125"</u> <small>(Corr. allow.)</small>	<u>WELDED</u> <small>Attachment (welded or bolted)</small>
	<u>SA-516-70</u> <small>[Floating (material spec. no.)]</small>	<u>16"</u> <small>(Diameter)</small>	<u>1.9375"</u> <small>(Nominal thickness)</small>	<u>.125"</u> <small>(Corr. allow.)</small>	<u>WELDED</u> <small>(Attachment)</small>
13. Tubes	<u>SA-214 WELDED</u> <small>(Material spec. no., grade or type)</small>	<u>.750"</u> <small>(O. D.)</small>	<u>.065"</u> <small>(Nominal thickness)</small>	<u>126</u> <small>(Number)</small>	<u>Straight</u> <small>[Type (Straight or U)]</small>

Manufactured by **Cataract Steel Industries, 3774 Lakeshore Road, Hamburg, New York, 14219**  
 Manufacturer's Serial No. **38022-1 to 38022-5** CRN **N/A** National Board No. **257-261**

Items 14-18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell: (a) No. of course(s) **2** (b) Overall length **1' 8"**

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No.	Diameter	Length	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	10.750" ID	10"	SA-106 gr B	.844"	.0625"	S	none	100%	7	none	70%	N/A	N/A
1	10.750" ID	10"	SA-106 gr B	.844"	.0625"	S	none	100%	7	none	70%	N/A	N/A

**Body Flanges on Shells**

No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
1	2-4 (6)	9.062"	20"	2.50"	.844"	SA-105	App. 2 (6)	END	16 - 1.250"	SA-193 B7	N/A	N/A
1	2-4 (6)	9.062"	20"	2.50"	.844"	SA-105	App. 2 (6)	END	16 - 1.250"	SA-193 B7	N/A	N/A

15. Heads: (a) **SA-516 gr 70** (Material spec. number, grade or type) (H.T. - time and temp.) (b) **SA-516 gr 70** (Material spec. number, grade or type) (H.T. - time and temp.)

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)	END	.6134"	.0625"	N/A	N/A	2:1	N/A	N/A	N/A		X	N/A	N/A	N/A
(b)	END	.6134"	.0625"	N/A	N/A	2:1	N/A	N/A	N/A		X	N/A	N/A	N/A

**Body Flanges on Heads**

	Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
(a)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	App. 2 (6)	24 - .875"	SA-197 B7	N/A	N/A
(b)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	App. 2 (6)	24 - .875"	SA-193 B7	N/A	N/A

16. MAWP **1440 psi** (Internal) **Atmos.** (External) at max. temp. **133 °F** (Internal) **Ambient** (External) Min. design metal temp. **-20 °F** at **1440 psi**

17. Impact test **EXEMPT PER UCS-66** at test temperature of **N/A**  
 [Indicate yes or no and the component(s) impact tested]

18. Hydro., pneu., or comb. test pressure **Hydro. at 1872 psi** Proof test **N/A**

19. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Type	Material		Nozzle Thickness		Reinforcement Material	Attachment Details		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
Tubeside Inlet	1	10"	600# rfwn	SA-106 gr B	SA-105	.844"	.0625"		UW-16.1 (c)	Appendix 2 (6)	
Tubeside Outlet	1	10"	600# rfwn	SA-106 gr B	SA-105	.844"	.0625"		UW-16.1 (c)	Appendix 2 (6)	
Shellside Inlet	1	2"	900# rfwn	SA-106 gr B	SA-105	.343"	.0625"		UW-16.1 (c)	Appendix 2 (6)	
Shellside Outlet	1	2"	900# rfwn	SA-106 gr B	SA-105	.343"	.0625"		UW-16.1 (c)	Appendix 2 (6)	side
Shellside vent	1	.750"	thread-o-let		SA-105	6000#	.0625"			UW-16.1(a)	
Shellside Drain	1	.750"	thread-o-let		SA-105	6000#	.0625"			UW-16.1 (a)	

20. Supports: Skirt **No** Lugs **N/A** Legs **2** Others **N/A** Attached **side-welded**  
 (Yes or no) (Number) (Number) (Describe) (Where and how)

21. Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report (list the name of part, item number, Manufacturer's name, and identifying number):

**N/A**

22. Remarks

**Length of tubes: 8'**  
**It is the responsibility of the end user to provide overpressure protection in accordance with UG-125 through UG-140. This unit was hydro tested in the horizontal position.**

Manufactured by **Cataract Steel Industries, 3774 Lakeshore Road, Hamburg, New York, 14219**  
 Manufacturer's Serial No. **38022-1 to 38022-5** CRN **N/A** National Board No. **257-261**

**CERTIFICATE OF SHOP COMPLIANCE**

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. U Certificate of Authorization Number **48920** Expires **February 18, 2021**

Date 07/31/2018 Name Cataract Steel Industries Signed *Patrick Jutrell*  
 (Manufacturer) (Representative)

**CERTIFICATE OF SHOP INSPECTION**

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by **OneCIS Insurance Company, of Lynn, MA**

have inspected the pressure vessel described in this Manufacturer's Data Report on **August 14, 2018**, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 08/14/2018 Signed *Robert Chyganowski* Commissions: 11535  
 (Authorized Inspector) (National Board Authorized Inspector Commission number)

**CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE**

We certify that the statements made in this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. U Certificate of Authorization Number \_\_\_\_\_ Expires \_\_\_\_\_

Date \_\_\_\_\_ Name \_\_\_\_\_ Signed \_\_\_\_\_  
 (Assembler) (Representative)

**CERTIFICATE OF FIELD ASSEMBLY INSPECTION**

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and employed by \_\_\_\_\_,

have compared the statements in this Manufacturer's Data Report with the described pressure vessel and state that parts referred to as data items \_\_\_\_\_, not included in the certificate of shop inspection, have been inspected by me and to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. The described vessel was inspected and subjected to a pressure test of \_\_\_\_\_. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date \_\_\_\_\_ Signed \_\_\_\_\_ Commission \_\_\_\_\_  
 (Authorized Inspector) (National Board Authorized Inspector Commission number)

**FORM U-5 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET**  
**SHELL-AND-TUBE HEAT EXCHANGERS**  
 As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by Cataract Steel Industries, 3774 Lakeshore Road, Hamburg, New York, 14219  
(Name and address of Manufacturer)

2. Manufactured for Valerus Field Solutions LP, 919 Milam Suite 1000, Houston, Texas, 77002  
(Name and address of Purchaser)

3. Location of Installation NOT KNOWN  
(Name and address)

4. Type Vertical 38022-1 to 38022-5 N/A  
(Horizontal, vertical, or sphere) (Manufacturer's serial number) (CRN)

VA-38022-SETT Rev.0 257-261 2018  
(drawing no.) (National Board number) (Year built)

FIXED TUBESHEET HEAT EXCHANGERS										
Name of Condition	Design/Operating Pressure Ranges				Design/Operating Metal Temperature				Allowable Axial Differential Thermal Expansion Range	
	Shell Side		Tube Side		Shell	Channel	Tubes	Tubesheet		
	Min.	Max.	Min.	Max.					Min.	Max.
	(psi)	(psi)	(psi)	(psi)	(°F)	(°F)	(°F)	(°F)	(in)	(in)
<b>Design</b>	<b>1440</b>	<b>1440</b>	<b>1440</b>	<b>1440</b>	<b>350</b>	<b>133</b>	<b>133</b>	<b>350</b>	<b>0.00</b>	<b>0.0168</b>
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Data Report Item Number \_\_\_\_\_ Remarks \_\_\_\_\_

Certificate of Authorization: Type "U" No. 48920

Expires February 18, 2021

Date 07/31/2018 Name Cataract Steel Industries  
(Manufacturer)

Signed *Brick Jutrell*  
(Representative)

Date 08/14/2018 Name *Robert Chrganowski*  
(Authorized Inspector)

Commissions: 11535  
(National Board Authorized Inspector Commission number)