

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 Tranter, Inc., 1900 Old Burk Highway, Wichita Falls, Texas, 76306, USA
(Name and address of Manufacturer)

2. Manufactured for EVONIK CYRO LLC, THEODORE, Alabama, 36590, USA
(Name and address of Purchaser)

3. Location of installation EVONIK CYRO LLC, THEODORE, Alabama, USA
(Name and address)

4. Type HORIZ. PLATE TYPE HEAT EXCHANGER 01SM0044
(Horizontal, vertical, or sphere) (Tank, separator, jkt. vessel, heat exch., etc.) (Manufacturer's serial number)

N/A D-5PW-154504-1 63563 2015
(CRN) (Drawing number) (National Board number) (Year built)

5. ASME Code, Section VIII, Div. 1 2013/ N/A N/A LETHAL-SHELL
[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 0' 4.5625"

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	24.8125" ID	4.5625"	SA-240SS316L	.25	0	1	FULL	100	N/A	N/A	N/A	N/A	N/A
2	N/A x	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3	N/A x	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4	N/A x	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 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) SA-240SS316L (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.
(a)	ENDS	1.5625"	0	N/A	N/A	N/A	N/A	N/A	25.303"			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

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

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

9. MAWP 150 PSI FV at max. temp. 410 °F 410 °F Min. design metal temp. -20 °F at 150 PSI
(Internal) (External) (Internal) (External)

10. Impact test NO, UHA51-(d)(1) 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 209 PSI Proof test N/A

Items 12 and 13 to be completed for tube sections.

12. Tubesheet N/A N/A N/A N/A N/A
[Stationary (material spec. no.)] [Diameter (subject to press.)] (Nominal thickness) (Corr. allow.) Attachment (welded or bolted)

N/A N/A N/A N/A N/A
[Floating (material spec. no.)] (Diameter) (Nominal thickness) (Corr. allow.) (Attachment)

13. Tubes N/A N/A N/A N/A N/A
(Material spec. no., grade or type) (O. D.) (Nominal thickness) (Number) [Type (Straight or U)]

FORM U1-(Cont'd)

NB Number 63563

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) 1 (b) Overall length 5.1875"

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	22.126" ID	5.1875"	SA-240SS316L	0.8MM	0	N/A	N/A	N/A	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

15. Heads: (a) SA240-316LSS (Material spec. number, grade or type) (H.T. - time and temp.) (b) N/A (Material spec. number, grade or type) (H.T. - time and temp.)

(a)	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.
	ENDS	0.375	0	N/A	N/A	N/A	N/A	N/A	22.126			N/A	N/A	N/A

Body Flanges on Heads

No.	Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	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

16. MAWP 150 PSI (Internal) FV (External) at max. temp. 410 °F (Internal) 410 °F (External) Min. design metal temp. -20 °F at 150 PSI

17. Impact test NO, UCS-66a & UHA51-(d)(1) 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 209 PSI Proof test 9600 PSI

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	
INLET/OUTLET	2	1.939	RFWN CI 150	SA312-TP316L-SMLS	SA-182F-316LSS	0.218	0		WLD	WLD	SHELL
VENT/DRAIN	2	0.957	RFWN CI 150	SA312-TP316L-SMLS	SA-182F-316LSS	0.179	0		WLD	WLD	SHELL
INLET/OUTLET	2	1.939	RFWN CI 150	SA312-TP316L-SMLS	SA-182F-316LSS	0.218	0		WLD	WLD	PLATE
VENT	2	0.957	RFWN CI 150	SA312-TP316L-SMLS	SA-182F-316LSS	0.179	0		WLD	WLD	PLATE

20. Supports: Skirt No (Yes or no) Lugs 2 (Number) Legs 4 (Number) Others N/A (Describe) Attached WLD TO END COVER (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

SHELL/PLATES TO CARRY:
COLD ACH/HOT ACH
#14 INTERNAL PLATES ARE 0.8MM SA240-316LSS, C/O (22) 22.126" OD PRESSED PLATES AND WELDED TO FORM FLOW CHANNELS
O.A.LENGTH = 5.1875"

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 8698 Expires December 14, 2015

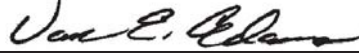
Date 01/23/2015 Name Tranter, Inc. Signed 
 (Manufacturer) (Representative)

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 January 23, 2015, 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 01/23/2015 Signed  Commissions: 12472A, TX1698
 (Authorized Inspector) [National Board (incl. endorsements)]

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 hydrostatic 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 (incl. endorsements)]