

S.H.E. Order #
10-0033A

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

Item no.
102067

1. Manufactured and certified by Southern Heat Exchanger Corporation 6100 Old Montgomery Highway Tuscaloosa, AL
(Name and address of Manufacturer)
2. Manufactured for HEMLOCK SEMICONDUCTOR, L.L.C., CLARKSVILLE, TN
(Name and address of Purchaser)
3. Location of installation HEMLOCK SEMICONDUCTOR, L.L.C., CLARKSVILLE, TN
(Name and address)
4. Type Horizontal Heat Exchanger 10-0033A None SB- 7159-2 13501 2010
(Horiz,vert, or sphere) (Tank,separator,jkt. vessel,heat exh,etc.) (mfg. serial no.) (CRN) (Drawing No.) (Nat'l. Bd. No.) (Year built)
5. ASME Code, Section VIII, Div. 1 2007, A09 None None
Edition and Addenda(date) Code Case No. 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 multi-chamber vessels
6. Shell (a) No. of course(s): 1 (b) Overall length (ft & in): 9'-11 7/8"

Course(s)			Material		Thickness		Long Joint (Cat. A)			Circum. Joint (Cat. A,B,&C)			Heat Treatment	
No.	Diameter, in.	Length (ft & in)	Spec/Grade or Type		Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	39 1/2"	9'-5"	SA-516 GR. 70(N)		3/4"	1/16"	1	Full	100%	N/A	None	-	-	-
													-	-
													-	-

7. Heads: (a) None (b) None
(Mat'l Spec. No., Grade or Type) H.T.- Time & Temp (Mat'l Spec. No., Grade or Type) H.T.- Time & 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)														-
(b)														-

- If removable, bolts used (describe other fastening) N/A
(Mat'l. Spec. No., Grade, size, no.)

8. Type of jacket None Jacket closure None
(Describe as ogee & weld, bar, etc.)

If bar, give dimensions None If bolted, describe or sketch.

9. MAWP 602 15 psi at max. temp. 500 300 ° F. Min. design metal temp. -20 ° F. at 602 psi
(internal) (external) (internal) (external)

10. Impact test No per UCS-66, UHA-51
(Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press. 785 psig hydro Proof test None

Items 12 and 13 to be completed for tube sections

12. Tubesheet: SA-516 GR. 70 46 1/2" 3" 1/16" Welded
Base (Mat'l. Spec. No.) Dia., in. (subject to pressure) Nom. thk., in. Corr. Allow., in. Attachment (welded or bolted)
SA-240 AL. 2205 46 1/2" 1/2" 0" Explosion Bonded
Clad (Mat'l. Spec. No.) Dia., in. Nom. thk., in. Corr. Allow., in. Attachment
13. Tubes SA-789 AL. 2205 3/4" 14 BWG. 1296 Straight
Mat'l. Spec. No., Grade or Type O.D., in. Nom. thk., in. or gauge Number Type (Straight or U)

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 (ft & in): 5'-5 5/8"

Course(s)			Material		Thickness		Long Joint (Cat. A)			Circum. Joint (Cat. A,B,&C)			Heat Treatment	
No.	Diameter, in.	Length (ft & in)	Spec/Grade or Type		Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	39 1/4"	1'-9 5/16"	SA-516 GR. 70(N)		5/8"	1/16"	1	Spot	85%	1	Spot	-	-	-
1	39 1/4"	0'-6 7/16"	SA-516 GR. 70(N)		5/8"	1/16"	1	Spot	85%	1	Spot	-	-	-
													-	-

15. Heads: (a) SA-516 GR. 70 (N) (b) SA-516 GR. 70 (N)
(Mat'l Spec. No., Grade or Type) H.T.- Time & Temp (Mat'l Spec. No., Grade or Type) H.T.- Time & 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	.505"	1/16"			2:1					X	N/A	None	-
(b)	End	.505"	1/16"			2:1					X	N/A	None	-

- If removable, bolts used (describe other fastening) SA-193-B7(44) ea 1 3/8" dia.
(Mat'l. Spec. No., Grade, size, no.)

16. MAWP 460 15 psi at max. temp. 375 300 ° F. Min. design metal temp. -20 ° F. at 460 psi
(internal) (external) (internal) (external)

17. Impact test No per UCS-66, UHA-51

(Indicate yes or no and the component(s) impact tested)

18. Hydro., pneu., or comb. test press. 600 psig hydro Proof test _____

19. Nozzles, inspection, and safety valve openings:

(UW-16.1)

Purpose (inlet, Outlet, Drain, etc.)	No.	Diameter or size	Flange Type	Material		Nozzle Thk.		Reinforcement Material	How Attached		Location (Insp. Opn.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
Inlet/Outlet	2	10 "	300#	SA-106 GR. B	SA-105	0.5"	1/16"	SA-516 GR. 70	e	RFWN	
Vent/Drain	4	2 "	300#	SA-106 GR. B	SA-105	0.343"	1/16"	Inherent	e	RFWN	
Inlet/Outlet	2	6 "	300#	SA-106 GR. B	SA-105	0.432"	1/16"	SA-516 GR. 70	e	RFWN	

20. Supports: Skirt No Lugs N/A Legs N/A Others (2) Saddles Attached Shell, Welded
(Yes or No) (No.) (No.) (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, mfg's. name and identifying number)

22. Remarks: UG-46(a)

(2) SA-105 (N) RFWN body flanges, 46 1/2" OD x 38" ID x 6 13/16" thk.

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1,

U Certificate of Authorization No. 7037 Expires 11/29, 2011

Date 08/05/2010 Name Southern Heat Exchanger Corporation

(Manufacturer)

Signed

(Representative)

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the State or Province of AL and employed by One Beacon America of Lynn, Ma have inspected the pressure vessel described in this Manufacturer's Data Report on 08/05, 20 10, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the inspector nor his 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 8-5-10

Signed

(Authorized Inspector)

Commissions NB11166ABN AL10537BL

(Nat'l Board incl. endorsement, State, Province and No.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements on this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME Code, Section VIII, Division 1,

U Certificate of Authorization No. _____ Expires _____, 20 _____

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 the State or Province of _____ and employed by _____ of _____ 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 ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of _____ psi. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his 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 _____

(Authorized Inspector)

Commissions _____

(Nat'l Board incl. endorsement, State, Province and No.)