

FORM U-1 MANUFACTURERS' DATA REPORT FOR PRESSURE VESSELS

as required by the provisions of the ASME Code rules, Section VIII, Division 1

1/2
ITEM NO. *see cot*
S111-7053-1S-1

89-027A

- Manufactured and certified by SOUTHERN HEAT EXCHANGER CORP 400 65th St. E. TUSCALOOSA, AL.
(name and address of manufacturer)
- Manufactured for E. I. duPont de Nemours & Co., Inc. Wilmington, De.
(name and address of purchaser)
- Location of installation E. I. duPont de Nemours & Co., Inc. BEAUMONT, TX.
(name and address)
- Type: HT. EXCH. 89-027A - SP-2089-4 5738 1990
(horiz or vert. tank) (mfr's serial no) (CRN) (drawing no) (Nat'l. Bd. no.) (year built)
- The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction and workmanship conform to ASME Code, Section VIII, Division 1: 1986
(year)

A87 - LETWIN BOTH SIDES
(addenda (Date)) (Code Case no) (special service per UG-120(d))

Items 6-11 inclusive to be completed for single wall vessels, jackets of jacketed vessels, or shells of heat exchangers.

- Shell: SA-312-304L .250" 0 1'-3.50" 15'-11.875"
(mat'l (spec. no. grade)) (nom. thickness (in.)) (corr. allow. (in.)) (dia. ID (ft. & in.)) (length (overall) (ft. & in.))
- Seams: SNGL. BUTT Full 100% - - SNGL. BUTT Full 2
(long (dbl. sngl.)) (RT (spot or full)) (eff. (%)) (HT temp. (°F)) (time) (girth (dbl. sngl.)) (RT (spot, partial, or full)) (no. of courses)
- Heads: (a) SA-240-304L (b) _____
(mat'l (spec. no. grade)) (mat'l (spec. no. grade))

	Location (top bottom ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (convex or concave)
(a)	<u>CENTER</u>	<u>.1875"</u>	<u>0</u>	<u>(2) 26" O.D. FLANGED & FLUED HEADS</u>						<u>FLAT</u>
(b)										

If removable, bolts used (describe other fastenings): LINE 7.
(mat'l. spec. no., gr. size, no.)

- Type of jacket: NONE Proof test: _____
- Jacket closure: _____ If bar, give dimensions: _____ If bolted, describe or sketch.
(describe as ogee & weld, bar, etc.)
- MAWP: 75/PV at max. temp. 302 Min design metal temp.: 32 at 75/PV Hydro. press. or comb. test pressure 115
(psi) (°F) (°F) (psi) (psi)

Items 12 and 13 to be completed for tube sections

- Tubesheets: SA-182F 304L 22.125" 1.875" 0 WELDED
(stationary mat'l (spec. no. gr.)) (dia. (in.) (subject to pressure)) (nom. thickness (in.)) (corr. allow. (in.)) (attachment (welded, bolted))
(floating mat'l (spec. no. gr.)) (dia. (in.)) (nom. thickness (in.)) (corr. allow. (in.)) (attachment)
- Tubes: SA-213-304L 1" 16 88 STRAIGHT
(mat'l (spec. no. gr.)) (OD (in.)) (nom. thickness (in.)) (no.) (type (straight or U))

Items 14-17 inclusive to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

- Shell: SA-240-304L .250" 0 1'-3.50" 1'-9" 3'-0"
(mat'l (spec. no. grade)) (nom. thickness (in.)) (corr. allow. (in.)) (dia. ID (ft. & in.)) (length (overall) (ft. & in.))
- Seams: SNGL. BUTT Full 100% - - SNGL. BUTT Full 2
(long (dbl. sngl.)) (RT (spot or full)) (eff. (%)) (HT temp. (°F)) (time) (girth (dbl. sngl.)) (RT (spot, partial, or full)) (no. of courses)
- Heads: (a) 1.875" SA-516-70 LINED W/ (b) SA-240-304L
1/2" SA-240-304L (mat'l (spec. no. grade)) (mat'l (spec. no. grade))

	Location (top bottom ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (convex or concave)
(a)	<u>TOP</u>	<u>SEE ABOVE</u>	<u>0</u>						<u>22.125"</u>	<u>FLAT</u>
(b)	<u>BOTTOM</u>	<u>.1875"</u>	<u>0</u>			<u>2:1</u>				<u>CONCAVE</u>

If removable, bolts used (describe other fastenings): SA-193-BBM 2 (20) EA. 1"-8.
(mat'l. spec. no., gr. size, no.)

- MAWP: 75/PV at max. temp. 302 Min design metal temp.: 32 at 75/PV Hydro. press. or comb. test pressure 115
(psi) (°F) (°F) (psi) (psi)

FORM U-1 (back)

18. Nozzles, inspection and safety valve openings:

Purpose (inlet, outlet, drain, etc)	Number	Dia. or Size	Type	Mat'l.	Nom. Thickness	Reinforcement Material	How Attached	Location
IN - DRAIN	1-1	4" - 150*	RFW	SA-312-304	.337"	INHERENT	WELDED	SHELL
OUT	1	3" - "	"	"	.216"	"	"	"
VENT	1	2" - "	"	"	.154"	"	"	"
VENT - DRAIN	1-1	1" - "	"	"	.133"	"	"	"
IN. OUT	1-1	3" - "	"	"	.216"	"	"	CHANNEL
VENT-DRAIN	4-3	1" - "	"	"	.133"	"	"	"

19. Supports: Skirt NO Lugs 4 Legs _____ Other _____ Attached SHELL, WELDED.
(yes or no) (no) (no) (describe) (where and how)

20. Remarks: Manufacturers' Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: _____
(name of part, item number, mfr's name and identifying stamp)

"UG-46 (a)"

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 FEB. 28, 1991
 Date 03-19-90 Name SOUTHERN HEAT EXCHANGER CORP. Signed [Signature]
(manufacturer) (representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by SOUTHERN HEAT EXCHANGER CORP. at TUSCALOOSA, AL.

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 COMMERCIAL UNION INS. CO.

of BOSTON, MA. have inspected the pressure vessel described in this Manufacturers' Data Report on 03-26, 1990 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 the Manufacturers' 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 03-26-90 Signed [Signature] Commissions NB 5446 NY 2182
(Authorized Inspector) (Nat'l Bd (incl. endorsements) state, prov. and no.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the field assembly construction of all parts of this vessel conforms with the requirements of Section VIII, Division 1 of the ASME BOILER AND PRESSURE VESSEL CODE.

"U" Certificate of Authorization no. _____ expires _____, 19____
 Date _____ Name _____ Signed _____
(assembler that certified and constructed field assembly) (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 Manufacturers' 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 that 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 the Manufacturers' 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 _____ Commissions _____
(Authorized inspector) (Nat'l Bd (incl. endorsements) state, prov. and no.)

2/2

FORM R-2 REPORT OF ALTERATION
in accordance with provisions of the National Board Inspection Code

1. Work performed by: Southern Heat Exchanger Corporation 97-846 A
(name of repair organization) (Form R No.)
6100 Old Montgomery Highway Tuscaloosa, Al
(address)

2. Owner: duPont (name)
Wilmington, DE (address)

3. Location of installation: duPont (name)
Beaumont, TX (address)

4. Unit identification: Heat exchanger Name of original manufacturer So. Heat Exch. Corp.
(boiler, pressure vessel)

5. Identifying nos.: 89-027 A 5738 - - 1990
(mfg serial no.) (National Board no.) (jurisdiction no.) (other) (year built)

6. NBIC Edition/Addenda: 1995 A95 910 Original Construction Code: 1986 A87
8-15-97 (incl. edition and addenda)
1990 8-15-97

7. Description of work: _____
(use supplemental sheet, Form R-4, if necessary)

- 1. Increase shell side design pressure from 75 psig to 100 psig.
- 2. Increase tube side design pressure from 75 psig to 100 psig.

_____ Pressure test, if applied Sh-150 Tu-150 psi.

8. Replacement Parts. Attached are Manufacturer's Partial Data Reports or Form R-3s properly completed for the following items of this report.

(name of part, item number, data report type, mfr's. name and identifying stamp)

9. Remarks: _____

DESIGN CERTIFICATION

I, Daniel H. Noland certify that to the best of my knowledge and belief the statements in this report are correct and that the Design Change described in this report conforms to the National Board Inspection Code.

National Board "R" Certificate of Authorization No. 44 expires on Feb. 28 20 00
Date 08/15 19 97 Southern Heat Exchanger Corporation Signed Daniel H. Noland
(name of design organization) (authorized representative)

CERTIFICATE OF DESIGN CHANGE REVIEW

I, Palmer B. Dent, holding a valid Commission issued by The National Board of Boiler and Pressure Vessel Inspectors and certificate of competency issued by the jurisdiction of GA and employed by Commercial Union Insurance Company of Boston, MA have reviewed the design change as described in this report and state that to the best of my knowledge and belief such change complies the applicable requirements of the National Board inspection Code. By signing this certificate, neither the undersigned nor my employer makes any warranty, expressed or implied, concerning the work described in this report. Furthermore, neither the undersigned nor my employer shall be liable in any manner for any personal injury, property damage or loss of any kind arising from or connected with this inspection.

Date 08/15 19 97 Signed Palmer B. Dent Commissions NB 11599 A GA 419
148 (Inspector) (National Board (incl. endorsements), state, prov., and no.)

CONSTRUCTION CERTIFICATION

I, Rich Moore certify that to the best of my knowledge and belief the statements in this report are correct and that all material, construction, and workmanship on this Alteration conforms to the National Board Insp. Code.

National Board "R" Certificate of Authorization No. 44 expires on Feb. 28 20 00
Date 9-22 19 97 Southern Heat Exchanger Co. Signed Rich Moore
(name of alteration organization) (authorized representative)

CERTIFICATE OF INSPECTION

I, EROX ROBBINS holding a valid Commission issued by The National Board of Boiler and Pressure Vessel Inspectors and certificate of competency issued by the jurisdiction of TEXAS and employed by Commercial Union Insurance Company of Boston, MA have inspected the work described in this report on 09-22 1997 and state that to the best of my knowledge and belief this work complies with the applicable requirements of the National Board Inspection Code. By signing this certificate, neither the undersigned nor my employer makes any warranty, expressed or implied, concerning the work described in this report. Furthermore, neither the undersigned nor my employer shall be liable in any manner for any personal injury, property damage or loss of any kind arising from or connected with this inspection.

Date 09-22 19 97 Signed Erox Robbins Commissions NB55826A-TX 985
(Inspector) (National Board (incl. endorsements), state, prov., and no.)

FORM R-2 REPORT OF ALTERATION

in accordance with provisions of the National Board Inspection Code

1639

1. Work performed by: Southern Heat Exchanger Corporation (name of repair organization) 97-846 A (Form R No.)
6100 Old Montgomery Highway Tuscaloosa, Al (address)

2. Owner: duPont (name)
Wilmington, DE (address)

3. Location of installation: duPont (name)
Beaumont, TX (address)

4. Unit identification: Heat exchanger (boiler, pressure vessel) Name of original manufacturer So. Heat Exch. Corp.

5. Identifying nos.: 89-027 A (mfg serial no.) 5738 (National Board no.) (jurisdiction no.) (other) 1990 (year built)

6. NBIC Edition/Addenda: 1995 A95 916 Original Construction Code: 1986 A87 (incl. edition and addenda)

7. Description of work: (use supplemental sheet, Form R-4, if necessary)

- 1. Increase shell side design pressure from 75 psig to 100 psig.
2. Increase tube side design pressure from 75 psig to 100 psig.

Pressure test, if applied Sh-150 Tu-150 psi.

8. Replacement Parts. Attached are Manufacturer's Partial Data Reports or Form R-3s properly completed for the following items of this report.

(name of part, item number, data report type, mfr's. name and identifying stamp)

9. Remarks:

DESIGN CERTIFICATION

I, Daniel H. Noland certify that to the best of my knowledge and belief the statements in this report are correct and that the Design Change described in this report conforms to the National Board Inspection Code.

National Board "R" Certificate of Authorization No. 44 expires on Feb. 28 20 00

Date 08/15 19 97 Southern Heat Exchanger Corporation Signed Daniel H. Noland
(name of design organization) (authorized representative)

CERTIFICATE OF DESIGN CHANGE REVIEW

I, Palmer B. Dent, holding a valid Commission issued by The National Board of Boiler and Pressure Vessel Inspectors and certificate of competency issued by the jurisdiction of GA and employed by Commercial Union Insurance Company of Boston, MA have reviewed the design change as described in this report and state that to the best of my knowledge and belief such change complies the applicable requirements of the National Board Inspection Code. By signing this certificate, neither the undersigned nor my employer makes any warranty, expressed or implied, concerning the work described in this report. Furthermore, neither the undersigned nor my employer shall be liable in any manner for any personal injury, property damage or loss of any kind arising from or connected with this inspection.

Date 08/15 19 97 Signed Palmer B. Dent Commissions NB 11599 A GA 419
148 (Inspector) (National Board (incl. endorsements), state, prov., and no.)

CONSTRUCTION CERTIFICATION

I, Rick Moore certify that to the best of my knowledge and belief the statements in this report are correct and that all material, construction, and workmanship on this Alteration conforms to the National Board Insp. Code.

National Board "R" Certificate of Authorization No. 44 expires on Feb. 28 20 00

Date 9-22 19 97 Southern Heat Exchanger Co. Signed Rick Moore
(name of alteration organization) (authorized representative)

CERTIFICATE OF INSPECTION

I, LEROY ROBBINS holding a valid Commission issued by The National Board of Boiler and Pressure Vessel Inspectors and certificate of competency issued by the jurisdiction of TEXAS and employed by Commercial Union Insurance Company of Boston, MA have inspected the work described in this report on 09-22 1997 and state that to the best of my knowledge and belief this work complies with the applicable requirements of the National Board Inspection Code. By signing this certificate, neither the undersigned nor my employer makes any warranty, expressed or implied, concerning the work described in this report. Furthermore, neither the undersigned nor my employer shall be liable in any manner for any personal injury, property damage or loss of any kind arising from or connected with this inspection.

Date 09-22 19 97 Signed Leroy Robbins Commissions NB 8826A-14985
(Inspector) (National Board (incl. endorsements), state, prov., and no.)