FORM U-1 MANUFACTURERS' DATA REPORT FOR PRESSURE VESSELS

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

PV 1854

220634 NB

1. Manufactured and certified by Process Industries, Inc. 801 Dawson Drive Newark, DE 19713
(name and address of manufacturer)

2. Manufactured for Arco Chemical Newtown Square, PA
(name and address of purchaser)

3. Location of installation _____
(name and address)

4. Type: Vert (horiz. or vert., tank) | 8840-B (mfr's. serial no.) | --- (CRN) | 8840-1 (drawing no.) | 22 (Nat'l. Bd. no.) | 1989 (year built)

5. 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)

thru 1987 (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.

6. Shell: SA-240 TP304 (mat'l. (spec. no., grade)) | 3/16" (nom. thickness (in.)) | None (corr. allow. (in.)) | 24" (dia. ID (ft. & in.)) | 1' 8 1/8" (length (overall) (ft. & in.))

7. Seams: long (long. (dbl., sngl.)) | N/A (RT (spot or full)) | 70 (eff. (%)) | --- (HT temp. (°F)) | --- (time) | dbl (girth (dbl., sngl.)) | N/A (RT(spot, partial, or full)) | 1 (no. of courses)

8. Heads: (a) SA 240 TP304 (mat'l. (spec. no., grade)) (b) SA 240 TP304 (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)	Top	3/16"	None	---	---	2:1	---	----	---	Concave
(b)	Bottom	3/16"	None	---	---	2:1	---	----	---	Concave

If removable, bolts used (describe other fastenings): 16 - SA193 B-7 Bolts/32 - SA194 2H Nuts (mat'l., spec. no., gr., size, no.)

9. Type of jacket: _____ Proof test: _____

10. Jacket closure: _____ (describe as ogee & weld, bar, etc.) If bar, give dimensions: _____ If bolted, describe or sketch.

11. MAWP: 60FV (psi) at max. temp. 100 (°F). Min design metal temp.: -20 (°F) at 60FV (psi). Hydro., [redacted] test pressure 90 (psi).

Items 12 and 13 to be completed for tube sections.

12. Tubesheets: _____ (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)

13. Tubes: _____ (mat'l. (spec. no., gr.)) | _____ (OD (in.)) | _____ (nom. thickness (in. or gauge)) | _____ (no.) | _____ (type (straight or U))

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

14. Shell: _____ (mat'l. (spec. no., gr.)) | _____ (nom. thickness (in.)) | _____ (corr. allow. (in.)) | _____ (dia. ID (ft. & in.)) | _____ (length (overall) (ft. & in.))

15. Seams: _____ (long (dbl., sngl.)) | _____ (RT (spot or full)) | _____ (eff. (%)) | _____ (HT temp. (°F)) | _____ (time) | _____ (girth (dbl., sngl.)) | _____ (RT (spot, partial, or full)) | _____ (no. of courses)

16. Heads: (a) _____ (mat'l. (spec. no., grade)) (b) _____ (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)										
(b)										

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

17. MAWP: _____ (psi) at max. temp. _____ (°F). Min design metal temp.: _____ (°F) at _____ (psi). Hydro., pneu. or comb. test pressure _____ (psi).

PV #1854

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
Inlet	2	6"	Pipe	SA312	Sch 80	N/A	Welded	TP Hd
	2	6"	Flg	SA182	150#	N/A	Welded	Pipe
View Port	1	4"	Pipe	SA312	Sch 80	N/A	Welded	Tp Hd
	1	4"	S/Oflg	SA182	150#	N/A	Welded	Pipe
SRV	1	3"	Pipe	SA312	Sch 80	N/A	Welded	TP Hd
	1	3"	Flg	SA182	150#	N/A	Welded	Pipe
Drain Vlave	1	2"	Disc	304S/S	----	N/A	Welded	BtHd
Vent & Cage	1	1½"	Pipe	SA312	Sch 80	N/A	Welded	Tp Hd
	1	1½"	Flg	SA182	150#	N/A	Welded	Pipe
Inlets	2	1½"	Pipe	SA312	Sch 40	N/A	Welded	Shell
	2	1½"	Flg	SA182	150#	N/A	Welded	Pipe

19. Supports: Skirt NO (yes or no) Lugs NO (no.) Legs 3 (no.) Other ---- (describe) Attached Shell Welded (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)

*This Head has a 2" St. Flg. plus an additional 2" of SA 479 gr. 304 1/4" 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. 18182 expires 1/6, 1992.

Date 1/12/89 Name Process Industries, Inc. (manufacturer) Signed _____ (representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by Process Industries, Inc. at Newark, DE.

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the state or province of PA/DE and employed by HSBI & I Company of Hartford CT have inspected the pressure vessel described in this Manufacturers' Data Report on Jan 12, 1989, 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 1/12/89 Signed _____ (Authorized Inspector) Commissions NB4438 Pa1786 DE1426 (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 _____ (assembler that certified and constructed field assembly) Signed _____ (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 _____ (Nat'l. Bd. (incl. endorsements) state, prov. and no.)