FORM U-1 MANUFACTURERS' DATA REPORT FOR PRESSURE VESSELS

S-5206-C

As required by the Provisions of the ASME Code Rules — SECTION VIII, DIVISION 1. 76168

1. Manufactured by INDUSTRIAL FABRICATING COMPANY 3159 SOUTH SHERIDAN ROAD TULSA, OKLAHOMA
(Name and address of Manufacturer)

2. Manufactured for M. W. Kellogg Company Houston, Texas 105-C
(Name and address of Purchaser)

3. Type VERT (Horiz. or Vert.) Kind Heat Exch (Tank, Jacketed, Heat Exch.) Vessel No. (Mfrs.' Serial) 5206-3 (State & State No.) La. Nat'l Bd. No. 2197 Yr. Built 1976

Items 4-9 incl. to be completed for single wall vessels (such as air tanks), jackets of jacketed vessels, or shells of Heat Exchangers

R&W Cyl.

4. SHELL: Material SA-515-70 (Kind and Spec. No.) T.S. 70,000 (Flg. or P. B. & Spec. Min. T.S.) Nominal Thickness 1" in. Corrosion Allowance 1/4"C.A. in. Diam. 4 ft 10 in. Length 11 ft 0 in.

5. SEAMS: Long Dbl. Butt (Welded, Dbl., Single, Lap, Butt) H.T. No (Yes or No)[1] R.T. Complete (Spot or Complete) Sectioned No (Yes or No) Efficiency 100 %
Girth Dbl. Butt H.T. No R.T. Complete Sectioned No No. of Courses 2
If riveted describe seams fully on reverse side of form

6. HEADS: (a) Material T.S. (b) Material SA-515-70 T.S. 70,000

	Location (Top, bottom, ends)	Thickness	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a)									
(b)	Shell Cover 1-1/8 (M)				2:1				Concave

If removable, bolts used Stl;SA-193-B7;125,0001-3/8;64 (Material, Spec. No., T.S., Size, Number) Other fastening (Describe or Attach Sketch)

7. STAYBOLTS: (Material) If hollow (Size of Hole) Attachment (Threaded, Welded) Pitch (Horiz.) X (Vert.) Diam. (Nominal)

8. JACKET CLOSURE: (Describe as ogee & weld, bar, etc. If bar give dimensions, if bolted, describe or sketch)

9. Constructed for max. allowable working press.[2] 440 psi. at max. temp. 380 °F Min. temp. (when less than — 20°) °F. Hydrostatic / Pneumatic or Combination Test Press. 660 psi.

Items 10 and 11 to be completed for tube sections.

10. TUBE SHEETS: Stationary. Material SA-240TP-316SS (Kind & Spec. No.) Diam. 55½ (Subject to Pressure) in. Thickness 4-7/8 in. Attachment Bolted (Welded, Bolted)

Floating. Material SA-240 TP-304SS (Kind & Spec. No.) Diam. 55¼ OD in. Thickness 4-7/8 in. Attachment Bolted

TP-304SS (SA-450) Dual Tested

11. TUBES: Material SA-249 (Kind & Spec. No.) O.D. 3/4 in. Thickness 16 AVG. inches or gage. Number 2790 Type Straight (Straight or U)

Items 12-15 incl. to be completed for inner chambers of jacketed vessels, or channels of heat exchangers.

Conc Cone

12. SHELL: Material SA-240TP-304SS (Kind and Spec. No.) T.S. 75,000 (Flg. or P. B. & Spec. Min. T. S.) Nominal Thickness 3/8 in. Corrosion Allowance 0 in. Diam. ft in. Length 1 ft 11-1/8 in.

13. SEAMS: Long Dbl. Butt (Welded, Dbl., Single, Lap, Butt) H.T. No (Yes or No)[1] R.T. Complete (Spot or Complete) Sectioned No (Yes or No) Efficiency 100 %
Girth Dbl. Butt H.T. No R.T. Complete Sectioned No No. of courses 1
If riveted describe seams fully on reverse side of form

14. Heads (a) Material T.S. (b) Material T.S. (c) Material SA-240 304SS 75,000 T.S.

	Location	Thickness	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a)	Top, bottom, ends								
(b)	Channel								
(c)	Floating	2-1/8 (M)						54" D.R.	Both

If removable, bolts used (a) (Material, Spec. No., T.S., Size, Number) (b)

(c) Stl;SA-193-B7;125,000;7/8;68 Other fastening (Describe or Attach Sketch)

15.[3] Constructed for max. allowable working press.[2] 75 psi. at max. temp. 270 °F Min. temp. (when less than — 20°) °F. Hydrostatic / Pneumatic or Combination Test Press. 145 psi.

Items below to be completed for all Vessels where applicable.

16. SAFETY VALVE OUTLETS: Number Size Location

17. NOZZLES:

Purpose (Inlet, Outlet, Drain)	Number	Diam. or Size	Type	Material	Thickness	Reinforcement Material	How Attached
Chan In	Split Flgs	to Mate 12"	150#	SA-312TP-304SS	.688	SA-240TP-304SS	Welded
Chan Out	1	30"	90° ELL	SA-403WP-304SS	STD Wt.	Weld	Welded
Shell In	1	16" Pipe	Seamless	SA-106-B	Sch. 80	SA-515-70	Welded
Shell Out	1	14" Pipe	Seamless	SA-106-B	Sch. 80	SA-515-70	Welded
Shell	1	4"	90° Ell	SA-234-WPB	Sch. 160	Weld	Welded
Aux Noz	2	1"	LWN	SA-182-F 304SS	--------	Weld	Welded

Chan WNS ARE 150# Shell WNS ARE 300#

[1] If Postweld Heat-Treated [2] List other internal or external pressures with coincident temperature when applicable.

CONT. 17. NOZZLES: S-5206-C

Purpose (Inlet, Outlet, Drain)	Number	Diam. or Size	Type	Material	Thickness	Reinforcement Material	How Attached
	* Conc Cone	56" I.D x 29¼" I.D.	x 1'11-1/8" Lg		3/8" Thk.		

18. INSPECTION OPENINGS: Manholes, No. ____ Size ____ Location ____
Handholes, No. ____ Size ____ Location ____
Threaded, No. ____ Size ____ Location ____

19. SUPPORTS: Skirt ____ (Yes or No) Lugs ____ (Number) Legs ____ (Number) Other Saddles (Describe) Attached Welded (Where & How)

20. REMARKS: Item: 105-CB Service: CO_2 Stripper Gas Reboiler
Shell Side: LTS Gas
Tube Side: MEA Solution 30 WT%)
M. W. Kellogg Company (Monsanto)
M.W. Kellogg P. O. 5058-P-C21-103(A)
Req# 5058-P-C21-103 Job# 5058P
Flgs: S-344-56 SA-182-F 304SS S-1644-60 SA-105 S-575-30 SA-182-F 304SS S-744-56 S-844-56
Full X-Ray Shell Cover Expansion joint located in shell cover Partial Data Serial# S-2944-15 SA-105 (Brief description of purpose of the vessel, as Air Tank, After Cooler, Jacketed Cooker, etc. State contents of each part.) W/Weld Pad SA-515-70 1" Thk.

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.

Date Dec. 31 19 75 Signed Industrial Fabricating Company By M. L. Plunk
Manufacturer

Certificate of Authorization NO. 10891 Expires Jan. 15, 1977

CERTIFICATE OF SHOP INSPECTION

VESSEL MADE BY INDUSTRIAL FABRICATING CO. at TULSA, OKLAHOMA

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of Ark. and employed by Commercial Union Ins. Company of Boston, Mass. have inspected the pressure vessel described in this manufacturer's data report on 1-16 76 19, and state that to the best of my knowledge and belief, the manufacturer has constructed this pressure vessel in accordance with the applicable sections of the ASME Boiler and Pressure Vessel Code.

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 1-16 19 76

M. L. Plunk
Inspectors Signature

Commissions N.B.# 7003
National Board, State, Province and N.

30" 90° Ell Partial Data Serial # H-4208

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 that to the best of my knowledge and belief the manufacurer has constructed and assembled this pressure vessel in accordance with the applicable sections of the ASME Boiler and Pressure Vessel Code. The described vessel was inspected and subjected to a hydrostatic test of ____ psi.

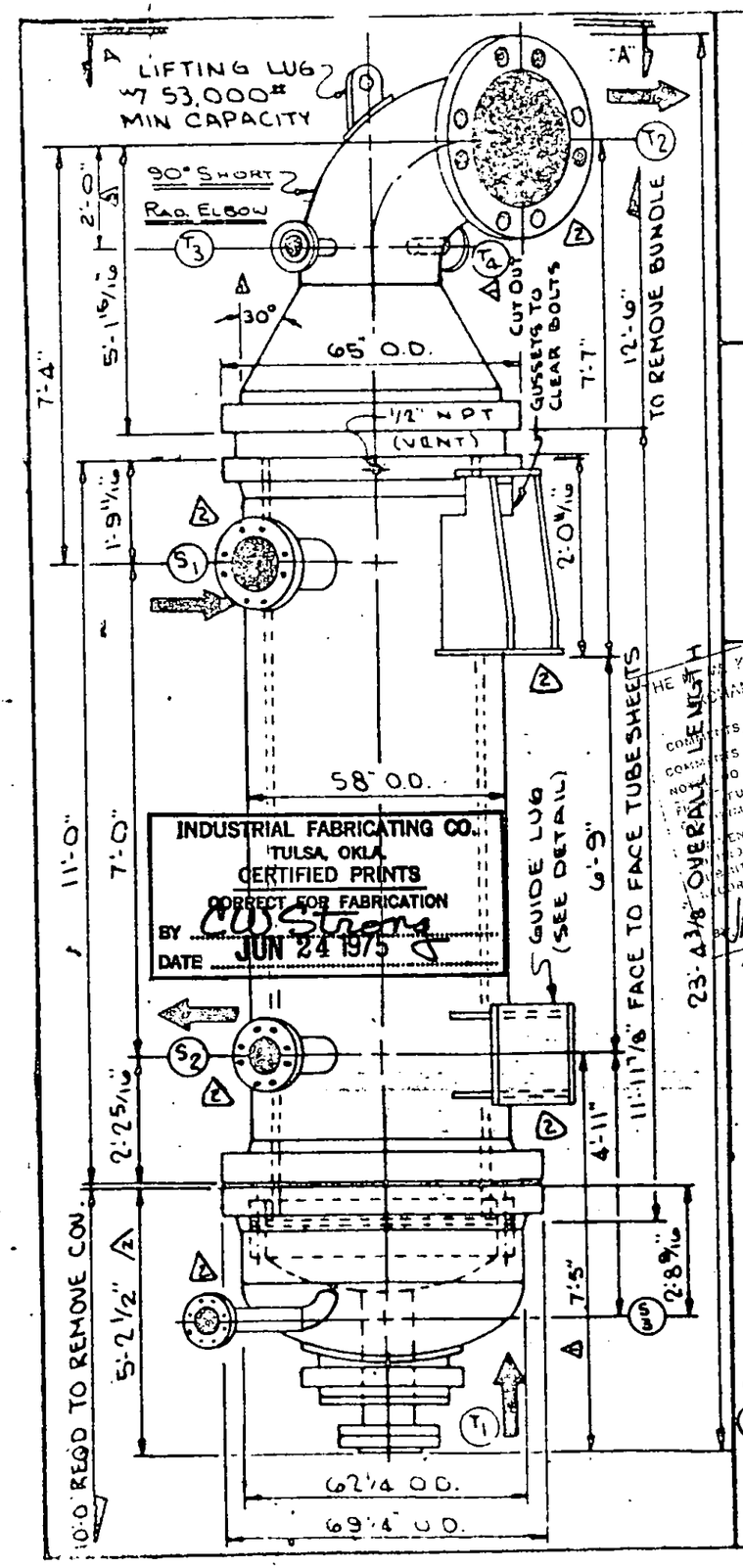
By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this manufacturer's data report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

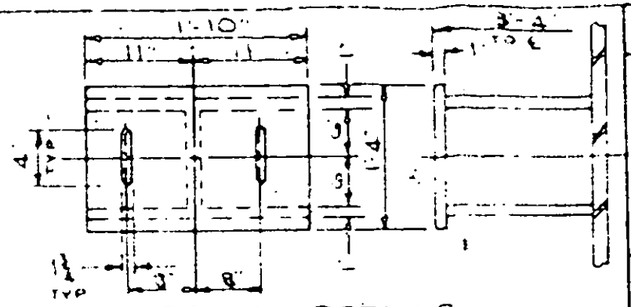
Date ____ 19 ____

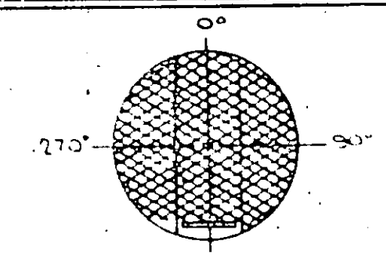
____
Inspectors Signature

Commissions ____
National Board, State, Province and No.

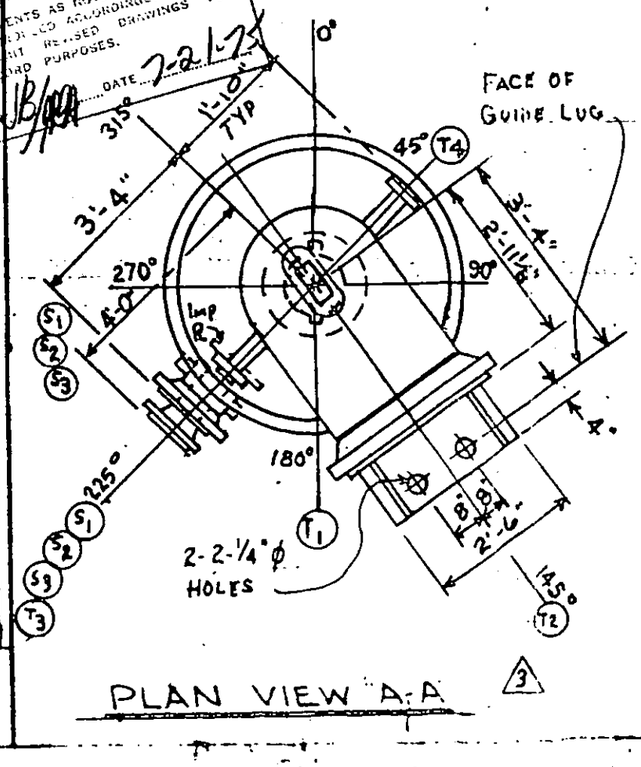
R-475-56 (BUR) S-575-56 FHCR SA-105
R-575-56 (FHCR SA-182-F-304SS







125 RMS FINISH ON NOZZLE FLG GSKT FACINGS



SPECIFICATIONS FOR ONE 76168

	SHELL SIDE	TUBE SIDE
DESIGN PRESSURE PSI.G.	440	75
TEST PRESSURE PSI.G	660	145
DESIGN TEMPERATURE °F.	380	270
NUMBER OF PASSES	1	1
CORROSION ALLOWANCE	1/4" ON C.S.	NONE

TUBE SURFACE: 6110 SQ FT. TUBE PITCH 15/16 Δ

NO OF TUBES: 2790 - ¾" OD x 16 B.W.G. (AWG) x 12'-0" LG.

ALL BOLT HOLES TO STRADDLE ℄'S.
BOLTING PROTECTED W/ HIGH-TEMP. THREAD LUBE.
LOCATE (2) -¾" - 6000# PIPE CPLG'S IN S1 & S2 NOZ'S.
FULL X-RAY CHANNEL, SHELL & SHELL COVER.
SANDBLAST SUPPORTS ONLY PER SP 6 & PAINT W/ 1 COAT OF CARBLINE CARBO ZINC #11 (3-MILS D.F.T.)
MAGNAFLUX OR DYECHECK ARC STRIKES, NOZ. & ATTACHMENT WELDS & TEMPORARY ATTACH. WELDS AFTER REMOVAL.
COAT NOZ. FLG. GSK'T SURFACES W/ RUST PREVENTATIVE
STENCIL PAINT ON SIDE OF SHELL ITEM NO.: 105-CB,
SHIPPING WT.: 52,800#, & P.O. NO.: 5058-P-C21-103(A)
☆ TUBES TO BE DUAL TESTED.

DESIGNED & CONSTRUCTED IN ACCORDANCE W/ TEMA "R", MWK SPEC. CA1-1E69, API-660, PURCH DATA SHEET; 1974 A.S.M.E. CODE (SECT. VIII, DIVISION 1) & SO STAMPED BY NAT'L. BD.

CUSTOMER: M.W. KELLOGG CO.
(MONSANTO)

P.O. NO.: 5058-P-C21-103(A)
ITEM NO.: 105-CB
M.W.K. REQN. NO.: 5058-P-C21-103
* PER TAYLOR FORGE CATALOG 571, PAGES 70 & 71

MATERIALS

CHANNEL - SOLID TP 304 STN. STL
TUBES - SA-249-TP 316 STN. STL. (SA-450) ☆
STATIONARY TUBE SHEET - SA-240-TP 316 STN. STL.
FLOATING TUBE SHEET - SA-240-TP 304 STN. STL.
BAFFLES, TIE RODS & SPACERS - TP-316 STN. STL.
EXPANSION JOINT BELLOWS - TP-321 STN. STL.
FLTG. HD. COV. - SOLID TP-304 STN. STL.
T1 NOZ. - TP-304 S.S.
REMAINDER - C. STL.

GASKET MAT'L.

CHAN. - 18-8 STN STL. JACKETED ASB. FILLED.
SHELL & SHELL COVER - ARMCO IRON JACKETED ASB. FILLED.
FLTG. HD. - SOLID 18-8 STN STL.

EST. WEIGHTS

DRY: 52,800#
WET: 70,900#
BUNDLE: 24,600#

REV	DATE	DESCRIPTION	BY
1	10/31	GEN. REV. / CUST.	DH
2	11/25	GEN. REV.	RW
3	12/20	ADD T3 & T4 NOZZLES / CUST	GS

NOZZLES

T1	SPLIT FLGS TO MATE 12"-150# RF
T2	30"-150# RF-WN
S1	16"-300# RF-WN
S2	14"-300# RF-WN
S3	4"-300# RF-WN W/ 90° SR ELBOW
T3 & T4	2-1"-150# RF-LWN

INDUSTRIAL FABRICATING COMPANY
TULSA, OKLAHOMA

ASSEMBLY & SPECIFICATIONS FOR ONE VERTICAL "YES-2"-56"x144"-6110

SERVICE: CO_2 STRIPPER GAS REBOILER

DRN Don	10-3-74	STEELE	S-5206 C-1
FILE: 74-765	W.O. S-5206-C		

NOTE: P.O. & W.O. DUPLICATE OF W.O. S-5205-C