FORM U-1 MANUFACTURER'S DATA REPORT FOR UNFIRED PRESSURE VESSELS

#104061

E-412-2

As Required by the Provisions of the ASME Code Rules

1. Manufactured by STRUTHERS WELLS GULFPORT, INC. Gulfport, Mississippi 94-6223
(Name and address of Manufacturer)

2. Manufactured for HERCULES, INC. WILMINGTON, DEL. P.O. 336-026-01090-11000-FCD EQP. #412-2
(Name and address of Purchaser)

3. Type VERT. (Horiz or Vert.) Kind HEAT EXCH. (Tank, Jacketed, Heat Exch.) Vessel No. (4-6223) (Mfrs' Serial) ( ) (State & State No.) Nat'l Bd. No. 516 Yr. Built 1967

Items 4-9 incl. to be completed for ~~single wall vessels such as air tanks, jackets of jacketed vessels,~~ or shells of heat exchangers.

4. Shell: Material SA-285-C (Kind and Spec. No.) T. S. FBX 55,000 (Fig or P. B. & lowest T. S.) Nominal Thickness 7/16 Corrosion Allowance 1/16 in. Diam. 3 ft. 5-7/8 in. Length 15 ft. 8-3/16 in.

5. Seams: Long DBL. BUTTWELD (Welded, Dbl., Single, Lap, Butt) H. T. No (Yes or No) X. R. SPOT (Spot or Complete) Sectioned No (Yes or No) Efficiency 85 %
Girth SNGL. BUTTWELD H. T. No X. R. SPOT Sectioned No No. of Courses 3

If divided describe seams fully on reverse side of form.

6. Heads: (a) Material ... T. S. ... (b) Material ... T. S. ...

	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)	ENDS - SEE TUBE SHEETS								
(b)									

If removable, bolts used ... (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 {Int. / ~~Ext.~~} pressure of 200 psi. Max. Temp. 600 °F. Subzero °F. Hydrostatic Test 300 psi.

Items 10 and 11 to be completed for tube sections.

10. Tube Sheets: Stationary. Material ** (Kind & Spec. No.) Diam. 42½ (Subject to Pressure) in. Thickness 2 in. Attachment WELDED (Welded, Bolted)
Floating. Material ... Diam. ... in. Thickness ... in. Attachment ...

11. Tubes: Material TP-316 SA-249 (Kind & Spec. No.) O. D. 1 in. Thickness .16 inches or gage. Number 869 Type STRAIGHT (Straight or U)

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

12. Shell: Material SA-240 TP-316 (Kind and Spec. No.) T. S. 75,000 (Fig or P. B. & lowest T. S.) Nominal Thickness ½ Corrosion Allowance -- in. Diam. 3 ft. 5½ in. Length 2-EACH LENGTH 3 FT. 2-IN. 1 10⅞ in.

13. Seams: Long SING. BUTTWELD (Welded, Dbl., Single, Lap, Butt) H. T. No (Yes or No) X. R. SPOT (Spot or Complete) Sectioned NO (Yes or No) Efficiency 85 %
Girth SING. LAPWELD H. T. NO X. R. NO Sectioned NO No. of Courses 1 EA.

If divided describe seams fully on reverse side of form.

14. Heads: (a) Material ... T. S. ... (b) Material ... T. S. ... (c) Material ... 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~~	COVER SIDE FLG'D.		SA-105-II	2-15/16" THK. x 46" O.D. x 41-5/8" I.D. WITH				
(b)	~~Channel~~							TP-316 T & B RING 3/8" THK.	
(c)	~~Floating~~ TOP & BOTT. COVERS	2½" FBX SA-212-B WITH ⅛" THK. LINER TP-316 S.S.						42"	

If removable, bolts used (a) (48) 3/4" x 7-7/8" STUDS SA-193-B7 (b) (48) 3/4" x 7-7/8" STUDS SA-193-B7
(Material, Spec. No., T. S., Size, Number)
(c) W/2-HEX NUTS EA. SA-194-2H Other fastening ... (Describe or Attach Sketch)

15. Constructed for {Int. / ~~Ext.~~} pressure of & FULL VAC. 50# psi. Max. Temp. 500 °F. Subzero °F. Hydrostic Test 75 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
1-EA. SHELL INLET	2	8"-300# RFSO	FLG.	SA-181-I		SA-285-C	WELDED
& OUTLET		8" X-HVY (.500") PIPE		SA-106-B			WELDED

18. Inspection Openings: Manholes, No. ... Size ... Location ...
Handholes, No. ... Size ... Location ...
Threaded, No. ... Size ... Location ...

19. Supports: Skirt No (Yes or No) Lugs 2 (Number) Legs (Number) Other (Describe) Attached WELDED TO SHELL (Where & How)

20. Remarks: * SHELL INCLUDES TP-304 S.S. BELLOW EXPANSION JOINT.
** TP-316 S.S. CLAD ON FBX SA-212-B BACKING (THK. INCLUDES 3/8" THK. CLAD)
(Brief description of purpose of the vessel, as Air Tank, After Cooler, Jacketed Cooler, etc. State contents of each part.)

(Over)

Form No. 511E PURE DMT STILL REBOILER

/KZ FLUID SHELL SIDE - 15# STEAM FLUID TUBESIDE-"C" MOTHER LIQUOR

1 Ea. Shell	2	3/4" 3000# Coupg.	SA-105	Welded
Vent & Drain				
Chan. Inlet	1	10"-150# Lap Jt. Flg.	SA-181-1	
		T & B Ring 3/8" Thk.	SA-240-316	Welded
		10" Sch. 10 (.165") Pipe	SA-312-316	Welded
Chan. Outlet	1	24"-150# Lap Jt. Flg.	SA-181-1	
		T & B Ring 3/8" Thk.	SA-240-316	Welded
		24" Sch. 10 (.250") Pipe	SA-240-316	Welded
Chan. Vent	1	1"-150# R.F.W.N. Flg.	SA-182-F-316	Welded
		1" Sch. 40 (.133") Pipe	SA-312-316	Welded
Chan. Drain	1	2"-150# R.F.W.N. Flg.	SA-182-F-316	Welded
		2" Sch. 40 (.154") Pipe	SA-182-F-316	Welded
Chan. Spare Conn.	2	3/4" 3000# Coupling	SA-182-F-316	Welded

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this unfired pressure vessel conform to the ASME Code for Unfired Pressure Vessels.

Date 9-26- , 19 67 Signed STRUTHERS WELLS GULFPORT, INC. (Manufacturer) By Edward W. Miller

Certificate of Authorization Expires December 31st 19 (7847)

CERTIFICATE OF SHOP INSPECTION

VESSEL MADE BY STRUTHERS WELLS GULFPORT, INC. at Gulfport, Mississippi

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State of _____ and employed by HARTFORD STEAM BOILER INSP. & INS. CO. of HARTFORD, CONN. have inspected the pressure vessel described in this manufacturer's data report on _____ 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 9-26 19 67

V. Devall
Inspectors Signature

Commissions NB#907
Nat'l Board or State and No.

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State 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 manufacturer 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 _____
Nat'l Board or State and No.

1 22'-4 3/8" OVERALL

24"-150# ASA LAP JT. (OUTLET) 23 9/16"

6" 2'-8 1/4" 2 4 2'-5 3/4" 14'-3" 2 19 1/4" 4 15 5/16" 6"

8"-300# ASA-RF (OUTLET) 2 4

EXPANSION JOINT (BELLOWS TYPE)

2"

10"-150# ASA LAP JT. (INLET)

POSITION "X"

2"x150# ASA R.F. (DRAIN)

3/4" P.C. DRAIN

316 LINER PLATE ON CHAN. COVER

316 CLAD T. SHTS.

41 7/8" O.D.

2'-5 1/2"

SHELL

IMP

46" O.D.

2'-5"

1"x150# ASA R.F. VENT

3/4" P.C. SPARE

3/4" P.C. VENT

CHANNEL 1

CHANNEL 2

3/4" P.C. SPARE

3'-7 11/16"

3" 4

8"-300# ASA-RF (LIQUID CYMENE INLET) 4 2

(2) 7/8" ϕ HOLES EA. SUPPT.

BOTTOM VIEW

GENERAL NOTES

ALL NOZZ BOLT HOLES TO STR. ℄'s.
ALL P.C. ARE 3000# SCREWED.

DRY WT. = 23000#
FLOODED WT = 34600#

	SHELL SIDE	TUBE SIDE	
DESIGN PRESS	200#	FULL VAC & 50#	2 4
TEST PRESS	300#	75#	2 4
MAX. TEMP.	600°F	500°F	2 4
CORR. ALLOW.	1/16 ON C.S.	—	

HERCULES INC.

CUST. ORD. Nº 336-026-01090-11-000-FCD
EQUIP. Nº E-412-2
3 PURE DMT STILL REBOILER (ITEM F)
S.W. ORD. Nº 66-94-6223
ONE UNIT REQ'D.

REV 3 CKD:	REV 4 CKD: 1-27
CHANGED TITLE & EQUIP Nº PER CUST BOSKO 4-10-67	REV. PER CUST MKD. PRINT DTD. 4-18-67 H.R.B. 4-27-67
REV. 1 CKD: 2-8	REV. 2 CKD 3-15
REV PER CUST. MKD. PRINT T.C.B. 2-8.	REV. PER CUST. T.C.B. 3-15

SETTING PLAN of HEAT EXCHANGER 41-16NX11-8V

DRAWN: H.R.B. 12/15
CHECKED: 12-27
APPROVED:
SCALE DATE

66-94-6223B1
GULFPORT MISS.

STRUTHERS WELLS CORPORATION · WARREN, PENNSYLVANIA

#104061