

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

1/3 on Part

XXXXX

1. Manufactured and certified by Stock (Name and address of manufacturer)
 2. Manufactured for Not known - Built for stock (Name and address of purchaser)
 3. Location of installation COOSE1531A2 (Name and address) Rev. 8
 4. Type Horiz Ht Exch (Horiz or vert., tank) XXXXX (Mfg's serial No.) SHLSE1531A (CRN) XXXXX (Drawing) 1990 (Nat'l. Bd. No.) 1988 (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 Rules, Section VIII, Division 1
 1988 Addenda (date) N/A Code Case No. N/A Special service per UG-120(d)

Items 6-11 incl. to be completed for single wall vessels, jackets of jacketed vessels, or sheets of heat exchangers
 6. Shell: SA53B (Mat'l. Spec. No., Grade) .250 (Nom. Thk. (in.)) 0 (Corr. Allow. (in.)) 10 3/4 (Diam. I.D. (ft. & in.)) 8 Ft 10 1/16 (Length (Overall) (ft. & in.))
El. Res. Weld (Mat'l. Spec. No., Grade) N/A (Nom. Thk. (in.)) N/A (Corr. Allow. (in.)) 85 (Diam. I.D. (ft. & in.)) N/A (Length (Overall) (ft. & in.))
 7. Seams: N/A (Long (Dbl., Sngl.)) Welded per Fig. UW13.2 (1) (R.T. (Spot, or Full)) N/A (EH. (%)) 1 (H.T. Temp. (F))
N/A (Time) N/A (Girth (Dbl., Sngl.)) N/A (R.T. (Spot, Partial, or Full)) N/A (No. of Courses)

8. Heads: (a) Mat'l. N/A (Spec. No., Grade) (b) Mat'l. N/A (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)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(b)										

If removable, bolts used (describe other fastenings) N/A (Mat'l., Spec. No., Gr., Size, No.)

9. Type of Jacket N/A Proof Test N/A
 10. Jacket Closure 400 (Describe as ogee & weld bar, etc.) 200 (If bar, give dimensions) 18 (If bolted, describe or sketch) 400
 11. MAWP XXXXX (psi) at max. temp. 500 (°F) Min design metal temp. XXXXX (°F) at XXXXX (psi)
 Hydro., pneu., or comb. test press. XXXXX (psi)

Items 12 and 13 to be completed for tube sections
 12. Tubesheets: SA516-70 (Mat'l. Spec. No., Gr.) 10.250 (Diam. (in. Subject to pressure)) .94 (Nom. Thk. (in.)) 0 (Corr. Allow. (in.)) Welded (Attach (Welded, Bolted))
N/A (Floating Mat'l. (Spec. No., Gr.)) N/A (Diam. (in.)) N/A (Nom. Thk. (in.)) N/A (Corr. Allow. (in.)) N/A (Attach)
 13. Tubes: SA214 (Mat'l. (Spec. No., Gr.)) .500 (O.D. (in.)) .044 (Nom. Thk. (in. or Gauge)) Number (Type (Straight or "U"))

Items 14-17 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers
 14. Shell: N/A (Mat'l. Spec. No., Grade) N/A (Nom. Thk. (in.)) N/A (Corr. Allow. (in.)) N/A (Diam. I.D. (ft. & in.)) N/A (Length (Overall) (ft. & in.))
 15. Seams: N/A (Long (Dbl., Sngl.)) N/A (R.T. (Spot or Full)) N/A (EH. (%)) N/A (H.T. Temp. (F))
SA516-70 (Girth (Dbl., Sngl.)) SA516-70 (R.T. (Spot, Partial, or Full)) N/A (No. of Courses)

16. Heads: (a) Mat'l. N/A (Spec. No., Grade) (b) Mat'l. SA516-70 (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)	Ret. in	.312	0	N/A	N/A	2:1	N/A	N/A	N/A	Concave
(b)	In/Out	.312	0	N/A	N/A	2:1	N/A	N/A	N/A	Concave

If removable, bolts used (describe other fastenings) (A) SA449 1/2 X 13, 12 bolts (B) Same (Mat'l., Spec. No., Gr., Size, No.)

17. MAWP 250 (psi) at max. temp. 200 (°F) Min design metal temp. 18 (°F) at 250 (psi)
 Hydro., pneu., or comb. test press. XXXXX (psi)

Form U-1 (Back)

18. Nozzles, Inspection and Safety Valve Openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diam or Size	Type	Matl.	Nom Thk.	Reinforcement Matl.	How Attached	Location
Oil In	1	2.000	Pipe	SA106B	.154		Welded	Shell
Oil Out	1	2.000	Pipe	SA106B	.154		Welded	Shell
Drains	2	.250	Cplg	SA105	3000#		Welded	Head
Head In	1	2.000	Cplg	SA105	3000#		Welded	Head
Head Out	1	2.000	Cplg	SA105	3000#		Welded	Head

19. Supports: Skirt No Lugs 0 Legs 0 Other _____ Attached _____
(Yes or no) (No) (No) (Describe) (Where and how)

20. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: N/A

(Name of part, item number, mfg's name and identifying stamp)
Coded both sides. Designed for non-corrosive service. Flanges for heads are SA515-70, 13.875" O.D. X 10.875" I.D. X 1.13" min. thick. Impact exemption per UCS66-(b).

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. 14,778 expires September 21, 19 90
 Date 2-8-90 Co. name Dunham-Bush, Inc., Plant #2 Signed Harry Grim
(Manufacturer) (Representative)

Vessel constructed by Dunham-Bush, Inc., Plant #2 at 101 Burgess Rd., Harrisonburg, Va.

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of Virginia and employed by Hartford Steam Boiler Insp. & Ins. Co. of Hartford, Ct.

_____ have inspected the pressure vessel described in this Manufacturer's Data Report on 2/6, 19 90, 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 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 2/13/90 Signed Alfred M. Face Commissions NB 9531 VA 424
(Authorized Inspector) (Nat'l Board, State, Province 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 _____ Co. name _____ Signed _____
(Assembler that certified and constructed field assembly) (By 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/or 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 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 _____ Commissions _____
(Authorized Inspector) (Nat'l Board (incl. endorsements), State Prov. and No.)

FORM R-1, REPORT OF WELDED REPAIR OR ALTERATION
as required by the provisions of the National Board Inspection Code

0/3

1. Work performed by XXXXX 90-0031-0301-02
(P.O. no., job no., etc.)

2. Owner XXXXX
(name)

3. Location of installation XXXXX
(name)

XXXXX
(address)

4. Unit identification: 10" Oil Cooler Name of original manufacturer Dunham Bush
(boiler, pressure vessel)

5. Identifying nos.: 0197890 17354 1989
(mfr's serial no.) (original National Board no.) (jurisdiction no.) (other) (year built)

6. Description of work: Remove original heads (water boxes) and install FES fabricated thermosiphon heads.
(use back, separate sheet, or sketch if necessary)

Pneumatic Pressure test, if applied 313 psi

7. Replacement Parts: Attached are Manufacturers' Partial Data Reports properly identified and signed by Authorized Inspectors for the following items of this report:

See Item 6 above, FES Partial Data Report Form (U2-A) Serial No TS-236 for materials and nozzles on FES fabricated thermosiphon heads.

(name of part, item number, mfr's name and identifying stamp)

8. Remarks:

DESIGN CERTIFICATION

The undersigned certifies that the statements made in this report are correct and that the design changes described in this report conform to the requirements of the National Board Inspection Code.

ASME Certificate of Authorization no. 12,647 to use the U symbol expires 5/14, 1990

Date 2/20, 1990 FES Inc. Signed Scott E. Shambarger

CERTIFICATE OF REVIEW OF DESIGN CHANGE

The undersigned, holding a valid Commission issued by The National Board of Boiler and Pressure Vessel Inspectors and certificate of competency issued by the state or province of PA and employed by Commercial Union Insurance Co. Boston, MA of has examined the design change as described in this report and verifies that to the best of his knowledge and belief such change complies with the applicable requirements of the National Board Inspection Code.

Date 2-20, 1990 Signed Rudy H. Stelzer Commissions NB5593 PA1314

CONSTRUCTION CERTIFICATION

The undersigned certifies that the statements made in this report are correct and that all construction and workmanship on this Alteration conform to the National Board Inspection Code.

Certificate of Authorization no. 12,647 to use the U symbol expires 5/14, 1990

Date 2/20, 1990 FES Inc. Signed Scott E. Shambarger

CERTIFICATE OF INSPECTION

The undersigned, holding a valid Commission issued by The National Board of Boiler and Pressure Vessel Inspectors and certificate of competency issued by the state or province of PA and employed by Commercial Union Insurance Co. Boston, MA of has inspected the work described in this report on 2-20, 1990 and state that to the best of my knowledge and belief this work has been done in accordance with the National Board Inspection Code.

Date 2-20, 1990 Signed Rudy H. Stelzer Commissions NB5593 PA1314

NB# 17354

FORM U-2A MANUFACTURERS' PARTIAL DATA REPORT (ALTERNATIVE FORM)
 A Part of a Pressure Vessel Fabricated by One Manufacturer for Another Manufacturer
 as required by the provisions of the ASME Code rules, Section VIII, Division 1

3/2

1. Manufactured and certified by XXXXX
(name and address of manufacturer)
2. Manufactured for XXXXX
(name and address of purchaser)
3. Location of installation XXXXX
(name and address)
4. Type: Horizontal XXXXX --- 410-00022-C N/A 1990
(horiz or vert. tank) (mfr's serial no. of part) (CRN) (drawing no.) (Malt Bd no.) (year built)
REV "C"
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The construction, and workmanship conform to ASME Code, Section VIII, Division 1: 1989
(addenda (date)) (Code Case no.) (special service per UG 120(d)) (year)
6. (a) Drawing prepared by FES Inc. (b) Description of part inspected Heads for TS Oil Cooler
7. Postweld heat treatment: temperature N/A °F. Time ---
8. Shell: SA53-B .322 --- 8 5/8" 1'-7 1/2" 2
(mat'l spec no. grade) (nom. thickness (in.)) (corr allow (in.)) (dia ID (ft & in.)) (length overall (ft. & in.)) (no. of courses)
9. Seams: SMLS N/A 85 DBL N/A
(long) (RT) (eff. (%)) (grain) (RT)
10. Heads: (a) SA234 (b) SA234
(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	Hem spherical Radius	Flat Diameter	Side to Pressure (convex or concave)
(a)	End	.365	---	Ellip	---	2:1	---	---	---	Concave
(b)	End	.365	---	Ellip	---	2:1	---	---	---	Concave

If removable, bolts used (describe other fastenings): (24) 1/2"-13 SA193-B7 bolts, (24) 1/2"-13 SA193-B7 nuts
(mat'l spec no., gr., size no.)

11. MAWP 250 at max. temp. 200 Min. design metal temp.: -20 at 250 Test press.: 313 in the Horizontal
(psig) (°F) (°F) (psig) (hydro. pneu. or comb. xpsig) (position)

12. Nozzles and inspection openings:

Purpose (type, outlet, drain, etc.)	Number	Dia or Size	Type	Material	Nominal Thickness	Reinforcement Material	How Attached	Location
Gas Outlet, Liq Inlet	1-1	4"-2 1/2"	Pipe	SA53-B	SCH40	---	Welded	Top
In-Out Flgs	2	10"	SO Weld	SA516-70	300# Class	---	"	Ends
Drain, Vent	1-1	1/2"-3/8"	FPTCpl	SA105	3000#	---	"	End/Out Nozzle

13. Supports: Skirt No Lugs 0 Legs 0 Other N/A Attached N/A

14. Remarks: 10 3/4" O.D. Oil Cooler Thermosiphon Heads
(This vessel not designed for lethal, corrosive, or nuclear service.)
Exempt from impact testing per UG-20(F)

CERTIFICATE OF SHOP COMPLIANCE

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

"U" Certificate of Authorization no. 12,647 expires 5/14, 19 90
 Date 2/20/90 Name FES Inc. Signed Ruth E. Shanley
(manufacturer) (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 PA and employed by Commercial Union Insurance Co., Boston, MA of --- have inspected the pressure vessel part described in this Manufacturers' Data Report on 2-20, 19 90 and state that to the best of my knowledge and belief, the manufacturer has constructed this part of a pressure vessel in accordance with the 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 part 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 2-20, 19 90 Signed Randy H. Miller Commissions PA 1314
(Authorized Inspector) (Mat'l Bd (incl. endorsements) state prov. and no.)