

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

As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1 **Corrected Copy** Page 1 of 3

1. Manufactured and certified by **Fabsco Shell & Tube, LLC, Plant Two, 2410 Industrial Road, Sapulpa, Oklahoma, 74066, USA**

(Name and address of Manufacturer)

2. Manufactured for **AIR PRODUCTS MFG, LLC., 1940 AIR PRODUCTS BLVD, ALLENTOWN, Pennsylvania, 18195, USA**

(Name and address of Purchaser)

3. Location of installation **WORLD ENERGY, PARAMOUNT, California, USA**

(Name and address)

4. Type **HORIZ.**

(Horizontal, vertical, or sphere)

HEAT EXH.

(Tank, separator, jkt. vessel, heat exch., etc.)

S21-13258-6

(Manufacturer's serial number)

N/A

(CRN)

S21-13258-6-1 REV 4

(Drawing number)

11170

(National Board number)

2023

(Year built)

5. ASME Code, Section VIII, Div. 1

2021/ N/A

[Edition and Addenda, if applicable (date)]

N/A

(Code Case Number)

N/A

[Special Service per UG-120(d)]

Items 6-11 incl. to be completed for single wall vessels, jackets of jacketed vessels, shell of heat exchangers, or chamber of multichamber vessels.

6. Shell: (a) Number of course(s) **2** (b) Overall length **14' 0.5625"**

Course(s)			Material		Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No.	Diameter	Length	Spec./Grade or Type		Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	21" ID	8'	SA-516-70N		1/2"	3/16"	1	SPOT	1.00	1	SPOT	1.00	N/A	N/A
1	21" ID	6' 0.5625"	SA-516-70N		1/2"	3/16"	1	SPOT	1.00	1	SPUT	1.00	N/A	N/A

Body Flanges on Shells

No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
1	N/A	21"	26.5000"	4 5/16"	N/A	SA-350LF2CL1	WELDED	END	44 - 3/4"	SA-193-B7	3/4" O.D.	F-436-1

7. Heads: (a) **SA-516-70N**

(Material spec. number, grade or type) (H.T. - time and temp.)

(b) **N/A**

(Material spec. number, grade or type) (H.T. - time and temp.)

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)	END	3/8"	3/16"	N/A	N/A	2:1	N/A	N/A	N/A		X	S	None	1.00
(b)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A

Body Flanges on Heads

	Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
(a)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A

8. Type of jacket **N/A** Jacket closure **N/A**

(Describe as ogee & weld, bar, etc.)

If bar, give dimensions; if bolted, describe or sketch

N/A

9. MAWP **265 psi** **15 psi** at max. temp. **300 °F** **300 °F** Min. design metal temp. **32 °F** at **265 psi**

(Internal) (External) (Internal) (External)

10. Impact test **NO, EXEMPT PER UCS-66(a,c, g), FIG. UCS-66 GENERAL NOTE(c), UCS-67. TUBESHEET IMPACT TESTS @ -40°F** at test temperature of **N/A**

[Indicate yes or no and the component(s) impact tested]

11. Hydro, pneu., or comb. test pressure **HYDRO at 449/345** Proof test **N/A**

Items 12 and 13 to be completed for tube sections.

12. Tubesheet **SA-240S31803/32205** **23.5000"** **2"** **3/16"** **BOLTED**

[Stationary (material spec. no.)]

[Diameter (subject to press.)]

(Nominal thickness)

(Corr. allow.)

Attachment (welded or bolted)

N/A

[Floating (material spec. no.)]

N/A

(Diameter)

N/A

(Nominal thickness)

N/A

(Corr. allow.)

N/A

(Attachment)

13. Tubes **SA-789S31803/S32205**

(Material spec. no., grade or type)

3/4"
(O. D.)

0.065"
(Nominal thickness)

104
(Number)

U
(Type (Straight or U))

FORM U1

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Manufactured by **Fabsco Shell & Tube, LLC, Plant Two, 2410 Industrial Road, Sapulpa, Oklahoma, 74066, USA**Manufacturer's Serial No. **S21-13258-6**CRN **N/A**National Board No. **11170**

Items 14-18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell: (a) No. of course(s) **1** (b) Overall length **1' 11.3750"**

Course(s)			Material		Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No.	Diameter	Length	Spec./Grade or Type		Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	21" ID	1' 11.3750"	SA-516-70N		1/2"	1/8"	1	SPOT	1.00	1	SPOT	1.00	N/A	N/A

Body Flanges on Shells

No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
2	N/A	21"	26.5000"	4 1/8"	N/A	SA-350LF2CL1	WELDED	ENDS	44 - 3/4"	SA-193-B7	3/4" O.D.	F-436-1

15. Heads: (a) **SA-516-70N** (b) **N/A**
(Material spec. number, grade or type) (H.T. - time and temp.) (Material spec. number, grade or type) (H.T. - time and temp.)

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)	END	2 1/4"	1/8"	N/A	N/A	N/A	N/A	N/A	26 1/2"			S	None	1.00

Body Flanges on Heads

	Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

16. MAWP **150 psi** **N/A** at max. temp. **150 °F** **N/A** Min. design metal temp. **32 °F** at **150 psi**
(Internal) (External) (Internal) (External)17. Impact test **NO, EXEMPT PER UCS-66(a,c, g), FIG. UCS-66 GENERAL NOTE(c), UCS-67. TUBESHEET IMPACT TESTS @ -40°F** at test temperature of **N/A**
[Indicate yes or no and the component(s) impact tested]18. Hydro., pneu., or comb. test pressure **Hydro. at 206/195** Proof test **N/A**

19. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Type	Material		Nozzle Thickness		Reinforcement Material	Attachment Details		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
INLET	1	10"-300#	RF WN	SA-106B	SA-350LF2CL1	XH	3/16"	SA-516-70N	UW16.1	WELDED	SHELL
OUTLET	1	8"-300#	RF WN	SA-106B	SA-350LF2CL1	XH	3/16"	SA-516-70	UW16.1	WELDED	SHELL
AUX	2	2"-300#	RF LWN		SA-350LF2CL1	0.66"	3/16"		UW16.1	WELDED	SHELL
INLET/OUTLET	1/1	4"-300#	RF WN	SA-106B	SA-350LF2CL1	STD	1/8"	SA-516-70N	UW16.1	WELDED	CHANNEL
VENT/DRAIN	1/1	2"-300#	RF LWN		SA-350LF2CL1	0.66"	1/8"		UW16.1	WELDED	CHANNEL
AUX	2	2"-300#	RF LWN		SA-350LF2CL1	0.66"	1/8"		UW16.1	WELDED	CHANNEL

20. Supports: Skirt **NO** Lugs **NONE** Legs **NONE** Others **2 SADDLES** Attached **WELDED TO SHELL**
(Yes or no) (Number) (Number) (Describe) (Where and how)

21. Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report (list the name of part, item number, Manufacturer's name, and identifying number):

CYLINDER, ITEM #6, GREENS BAYOU PIPE MILL, SN: 9589-1
CYLINDER, ITEM #14, GREENS BAYOU PIPE MILL, SN: 9497-2

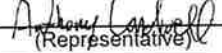
22. Remarks

SERVICE: PROPANE RECOVERY COMPRESSOR INTERSTAGE COOLER ITEM: 18-X-370A

Manufactured by **Fabsco Shell & Tube, LLC, Plant Two, 2410 Industrial Road, Sapulpa, Oklahoma, 74066, USA**
Manufacturer's Serial No. **S21-13258-6** CRN **N/A** National Board No. **11170**

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. U Certificate of Authorization Number **30112** Expires **December 30, 2024**

Date **11/30/2023** Name **Fabsco Shell & Tube, LLC, Plant Two** Signed 
(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 employed by

Bureau Veritas Inspection and Insurance Company, of Lynn, MA

have inspected the pressure vessel described in this Manufacturer's Data Report on **November 9, 2023**, and state that,

to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her 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 **11/30/2023** Signed 
(Authorized Inspector) Commissions: **16613**
(National Board Authorized Inspector Commission number)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements made in this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. U Certificate of Authorization Number _____ Expires _____

Date _____ Name _____ Signed _____
(Assembler) (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 employed by

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 to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. The described vessel was inspected and subjected to a pressure test of _____. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her 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 _____ Commission _____
(Authorized Inspector) (National Board Authorized Inspector Commission number)

FORM U-2A MANUFACTURER'S 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 Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

Page 1 of 2

1. Manufactured and certified by Greens Bayou Pipe Mill 13935 Industrial Road Houston, Texas 77015

(Name and address of Manufacturer)

2. Manufactured for Northshore Supply 13935 Industrial Road, Houston, Texas 77015

(Name and address of Purchaser)

3. Location of installation Unknown

(Name and address)

4. Type 1 Shell 9497-2

(Description of vessel part (shell, two-piece head, tube bundle))

(Manufacturer's serial number)

(CRN)

(National Board number)

(Drawing number)

(Drawing prepared by)

2022

(Year built)

5. ASME Code, Section VIII, Div. 1 2021

(Edition and Addenda, if applicable (date))

(Code Case number)

(Special service per UG-120(d))

6. Shell: (a) Number of course(s) 1 (b) Overall length 23.375"

Course(s)			Material		Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
No.	Diameter	Length	Spec./Grade or Type		Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	21"ID	23.375"	SA516-70N		0.5"	*	1	Full	*					

Body Flanges on Shells

No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material

7. Heads: (a) (Material spec. number, grade or type) (H.T. — time and temp.) (b) (Material spec. number, grade or type) (H.T. — time and temp.)

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemis. Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)														
(b)														

Body Flanges on Heads

	Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
(a)												
(b)												

8. MAWP (Internal) (External) at max. temp. (Internal) (External) Min. design metal temp. (Internal) (External) at (Internal) (External)

9. Impact test No at test temperature of (Indicate yes or no and the component(s) impact tested)

10. Hydro., pneu., or comb. test pressure None Proof test (Indicate yes or no and the component(s) impact tested)

11. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Type	Material		Nozzle Thickness		Reinforcement Material	Attachment Details		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	

12. Identification of part(s)

Name of Part	Quantity	Line No.	Mfr's. Identification No.	Mfr's. Drawing No.	CRN	National Board No.	Year Built

13. Supports: Skirt No Lugs (Number) Legs (Number) Other (Describe) Attached (Where and how)

14. Remarks
 *No Design Functions by GBPM: WPS qualified with/without PWHT. Formed In Accordance with UG 79, UG 80 and UCS 79.

FORM U-2A

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Manufactured by Greens Bayou Pipe Mill
Manufacturer's Serial No. 9497-2 CRN _____ National Board No. _____

CERTIFICATE OF SHOP/FIELD COMPLIANCE

We certify that the statements made in this report are correct and that all details of material, construction, and workmanship of this pressure vessel part conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1.

U or PRT Certificate of Authorization no. 59125 Expires 1/13/2024

Date 10/11/2022 Name Greens Bayou Pipe Mill Signed *Edmund N. King*
(Manufacturer) (Representative)

CERTIFICATE OF SHOP/FIELD INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by Authorized Inspection Associates, LLC of Houston, Texas

have inspected the pressure vessel part described in this Manufacturer's Data Report on 10/11/2022 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel part in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel part described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her 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 10/11/2022 Signed *[Signature]* Commissions *NP16686*
(Authorized Inspector) (National Board Authorized Inspector Commission number)

FORM U-2A MANUFACTURER'S 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 Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

Page 1 of 2

1. Manufactured and certified by Greens Bayou Pipe Mill 13935 Industrial Road Houston, Texas 77015

(Name and address of Manufacturer)

2. Manufactured for Northshore Supply 13935 Industrial Road, Houston, Texas 77015

(Name and address of Purchaser)

3. Location of installation Unknown

(Name and address)

4. Type 1 Shell 9589-1

(Description of vessel part (shell, two piece head, tube bundle))

(Manufacturer's serial number)

(CRN)

(National Board number)

9589-1

(Drawing number)

(Drawing prepared by)

2022

(Year built)

5. ASME Code, Section VIII, Div. 1 2021

(Edition and Addenda, if applicable (total))

(Code Case number)

(Special service per UG-120(d))

6. Shell: (a) Number of course(s) 2 (b) Overall length 168.562"

Course(s)			Material		Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
No.	Diameter	Length	Spec./Grade or Type		Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	21"ID	90"	SA516-70N		0.5"	*	1	Full	*	1	Full	*		
1	21"ID	72.5625"	SA516-70N		0.5"	*	1	Full	*					

Body Flanges on Shells

No.	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Location	Bolting			
									Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material

7. Heads: (a) (Material spec. number, grade or type) (H.T. — time and temp.) (b) (Material spec. number, grade or type) (H.T. — time and temp.)

Location (Top Bottom Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemis. Radius	Flat Diameter	Side to Pressure		Category A		
	Min	Corr	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)													
(b)													

Body Flanges on Heads

Location	Type	ID	OD	Flange Thk	Min Hub Thk	Material	How Attached	Bolting			
								Num & Size	Bolting Material	Washer (OD, ID, thk)	Washer Material
(a)											
(b)											

8. MAWP at max. temp. Min. design metal temp at

(Internal)

(External)

(Internal)

(External)

9. Impact test No at test temperature of

(Indicate yes or no and the component(s) impact tested)

10. Hydro., pneu., or comb. test pressure None Proof test

11. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Type	Material		Nozzle Thickness		Reinforcement Material	Attachment Details		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	

12. Identification of part(s)

Name of Part	Quantity	Line No.	Mfr's Identification No.	Mfr's Drawing No.	CRN	National Board No.	Year Built

13. Supports: Skirt No Lugs Legs Other Attached

(Yes or no)

(Number)

(Number)

(Describe)

(Where and how)

14. Remarks

*No Design Functions by GBPM: WPS qualified with/without PWHT. Formed in Accordance with UG 79, UG 80 and UCS 79.

FORM U-2A

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Manufactured by Greens Bayou Pipe Mill
Manufacturer's Serial No. 9589-1 CRN _____ National Board No. _____

CERTIFICATE OF SHOP/FIELD COMPLIANCE

We certify that the statements made in this report are correct and that all details of material, construction, and workmanship of this pressure vessel part conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1.

U or PRT Certificate of Authorization no. 59125 Expires 1/13/2024

Date 10/10/2022 Name Greens Bayou Pipe Mill
(Manufacturer)

Signed

Eduardo Muniz
(Representative)

CERTIFICATE OF SHOP/FIELD INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by Authorized Inspection Associates, LLC of Houston, Texas

have inspected the pressure vessel part described in this Manufacturer's Data Report on 10/10/2022 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel part in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel part described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her 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 10/10/2022

Signed

Lanny Harrison
(Inspector)

Commissions

WB15475RB
(National Board Authorized Inspector Commission number)