

DUPPS

CONFIGURATION SHEET
DUPPS DEWATERING PRESS

QTY "3"

DATE: February 8, 1998**SERIAL #:** ① C80-252086 ② C80-251719,
③ C80-252589

SOLD TO: ANDRITZ-RUTHNER, INC.
FOR TRIGEN-BIOWPOWER
 GILLMAN PAPER CO.
 ST. MARYS, GA

P/N: ① OE-63875-001

② OE-56946-001

③ OE-56950-001

MODEL #: 4224C**APPLICATION:****DRY WEIGHT:** 58,700 LBS.**MATERIALS OF CONSTRUCTION:**

Feed Hopper: 316L

Belt Guard: Fiberglass

Shaft: 316L

Cplg Guard: Fiberglass

Cags: 316L

Choke: 316L

Disch Box: 316L

Liquid Pan: 316L

PRESS SHAFT:

Serial #97-1011

CRN # N/A

Compr Ratio: 1.75:1

Max Speed: 1.6 RPM

Wear Shoes Material: 440C

National Board #2337

Shaft Wgt: 9,800 lbs.

Replacement Disch Flight

P/N: 138276

Min Wall: 3/8"

Plug Length: 12

P/N: 131807

CAGES:

Primary

Intermed

Backup Screen:

Discharge

Backup Screen:

Qty: 3 Matl: 316L

Qty: 1 Matl: 316L

Matl: 316L

Qty: 1 Matl: 316L

Matl: 316L

P/N: 129171

P/N: 129185

P/N: 126771

P/N: 129212

P/N: 126775

CAGE SCREENS (Inner):

Primary

Hole dia: 1/8"

Intermed

Hole dia: 1/8"

Discharge

Hole dia: 1/8"

Matl: 316L

Matl: 316L

Matl: 316L

Open Area: 13%

Open Area: 13%

Open Area: 13%

P/N: 126773

P/N: 126773

P/N: 126773

DUPPS

CONFIGURATION SHEET
DUPPS DEWATERING PRESS
PAGE 2

FEED HOPPER:

Hole dia: 1/8"

Mat'l: 316L

Open Area: 13%

P/N: 126773

Mat'l: 316L

Open Area: 13%

P/N: 129253

CHOKE:

Choke Plat P/N: 135446

MOTOR:

HP: 50

SPEED: 1800

FRAME SIZE: 324T/326T

DRIVE SHEAVES:

Driver: 3R5V85 3GRV P/N: 121382

Bushing: R1 2-1/8" P/N: 110519

Driven: 3R5V118 3GRV P/N: 121384

Bushing: R1 2" P/N: 107695

Belts: 3-5VX1320 P/N: 121383

DRIVE COUPLING:

Mfr: ZURN

Model: FA210

P/N: 136764

COVER CONSTRUCTION: 316L**NOTES:**

TBS:mmw

**EQUIPMENT TECHNICAL SPECIFICATIONS
ANDRITZ-DUPPS 4224C SCREW PRESS**

GENERAL SPECIFICATIONS

OVERALL LENGTH	38'10-11/16"
OVERALL WIDTH (W/O REDUCER)	84"
OVERALL WIDTH (W/REDUCER)	113"
OVERALL HEIGHT (W/O REDUCER)	77-1/2"
OVERALL HEIGHT (W/REDUCER)	100"
DRY WEIGHT	58,700 LBS
OPERATING WEIGHT	64,400 LBS
ELECTRICAL REQUIREMENTS	50 HP (38 KW)
AIR REQUIREMENTS START-UP	40 SCFM (100 PSI)
OPERATING	5 SCFM (100 PSI)
STEAM REQUIREMENTS	100 PSIG MAX 1700 LBS/HR

SCREW	Diameter	42"
	Length	31'4-11/16"
	Wetted Length	24'10"
	Weight	9,800 lbs
FILTRATE PAN	No. of Flanges	1
	Size of ANSI Flange	12"
CAGE ASSEMBLIES	Length	49" each
	Primary Cages	3
	(No Outer Screens)	
	Intermediate Cages	1
	(1/4" Outer Screens)	
	Discharge Cages	1
	(3/8" Outer Screens)	

MAJOR COMPONENTS SPECIFICATIONS

FEED HOPPER	MATERIAL OF CONSTRUCTION	316L SS
	Provides head pressure to aid drainage. Top of hopper flanged for attachment to feed chute.	
SCREW	MATERIAL OF CONSTRUCTION	316L SS
	WETTED PARTS	
	Unique machined tapered shaft design with constant diameter flighting. Final two pitches provided with wear resistant flighting. Shaft designed and constructed in accordance with section VIII of the ASME Pressure Vessel Code for 100 psig operating pressure, and bears the appropriate Code stamp. Steam heating of the shaft allows for improved dewatering. Replaceable screen for through-the-shaft dewatering equalizes cake dryness. Shaft filtrate is collected in the filtrate pan from the discharge box.	

SHAFT SCREEN	MATERIAL OF CONSTRUCTION	316L SS
	MESH OPENING	1/16"
	WALL THICKNESS	0.197"
	LENGTH OF SCREENS	7½"
	WEIGHT OF SCREEN HALF	45 LBS.
	BACK-UP THICKNESS	¾"
UNDERFRAME	MATERIAL OF CONSTRUCTION	Carbon Steel
	One piece, heavy structural steel support frame with integral rectangular mechanical tubing frame rails.	
FILTRATE PAN	MATERIAL OF CONSTRUCTION	316L SS
	Integral in underframe; for collection of all filtrate from feed hopper through discharge end.	
INNER SCREENS	MATERIAL OF CONSTRUCTION	316L SS
	SCREEN MESH OPENING	1/8"
	SCREEN WALL THICKNESS	1/8"
	LENGTH OF SCREENS	48"
	WEIGHT OF SCREENS HALF	110 LBS.
	Perforated (hole size selected for each application) inner screens allow drainage while maintaining slurry/cake in press. Inner screens are welded in place.	
OUTER SCREENS	MATERIAL OF CONSTRUCTION	316L SS
	SCREEN MESH OPENING	¾"
	SCREEN WALL THICKNESS	
	INTERMEDIATE SECTION	1/4"
	DISCHARGE SECTION	3/8"
	LENGTH OF SCREENS	48"
	WEIGHT OF SCREEN HALF	
	1/4" SCREEN	150 LBS.
CAGES	3/8" SCREEN	220 LBS.
	Perforated outer screen provides additional screen support in intermediate and discharge sections of the press (not required in primary and feed hopper sections); inner screens are welded to the outer screens.	
	MATERIAL OF CONSTRUCTION	316L SS
	OVERALL LENGTH	49"
	WEIGHT OF CAGE HALF (W/O SCREENS)	880 LBS.
SHIMS	Cages are provided as support for the inner and outer screens; each cage section is bolted to previous assembly.	
	<u>Special Note:</u> Cage / screen assembly can be removed by unbolting. Cage halves are separated and removed by overhead crane.	

SHIMS

SPEC4224-c

MATERIAL OF CONSTRUCTION 316L SS

	SHIM THICKNESS	1/16" each
	Shims provided to maintain design clearance, compensate for wear and misalignment between inner screen and screw flighting.	
CHOKE	MATERIAL OF CONSTRUCTION	316L SS
	TOTAL AIR CONSUMPTION	
	START-UP (@ 100 PSI)	40 SCFM
	OPERATION (@ 100 PSI)	5 SCFM
	# OF AIR CYLINDERS	3
	SIZE OF CYLINDERS	8" PISTON
	Choke applies force to aid in the formation of the plug for dewatering in discharge section. Choke pressure is pneumatically controlled from remote location and can be easily removed by monitoring motor load.	
STEAM JOINT	MATERIAL OF CONSTRUCTION	CARBON STEEL
	STEAM REQUIREMENTS	100 PSI
	Steam can be used to reduce motor load and promote dewatering of high loads of secondary sludge; feed and discharge from same end through use of a Johnson Rotary Steam Joint.	
DRIVE	<u>GEAR REDUCER</u>	
	MANUFACTURER	FALK
	MODEL	2177YZ4-S
	RATIO	772:1
	POWER RATING	70 HP @ 1750 RPM
	OUTPUT SPEED	2.27 RPM @ 1750 RPM IN
	TORQUE RATING	2,626,000 IN. LBS.
	<u>COUPLING</u>	
	MANUFACTURER	ZURN-AMERIGEAR
	MODEL	GEAR COUPLING F/1210
	TORQUE RATING	2,080,000 IN. LBS.
	<u>BELTS</u>	
	RATIO	1.4:1 Reduction
	SIZE	5VX1320
	NUMBER	3
	SHEAVE DIAS.	8.5" PD, 11.8" PD
	HP RATING	75
DRIVE END BEARING	TYPE	SPHERICAL ROLLER
	BEARING #	23056
	DYNAMIC LOAD RATING	345,000 LBS.
	STATIC LOAD RATING	670,000 LBS.
	L10 LIFE @ 1 RPM	>100,000 HRS.
	LUBRICANT TYPE	MOBILITH SHC1500
	FREQUENCY	ONCE/6 MONTHS

FEED END THRUST BRG.	TYPE	SPHERICAL ROLLER
	BEARING #	29332E
	DYNAMIC LOAD RATING	216,000 LBS.
	STATIC LOAD RATING	735,000 LBS.
	L10 LIFE @ 1 RPM	>100,000 HRS
	LUBRICANT TYPE	MOBILITH SCH1500
FEED END RADIAL BRG.	FREQUENCY	TWICE/WEEK
	TYPE	SPHERICAL ROLLER
	BEARING #	23940
	DYNAMIC LOAD RATING	125,000 LBS
	STATIC LOAD RATING	240,000 LBS
	L10 LIFE @ 1 RPM	>100,000 HRS.
SPLASH SHIELDS	LUBRICANT TYPE	MOBILITH SHC1500
	FREQUENCY	TWICE/WEEK
	MATERIAL OF CONSTRUCTION	316 SS
	THICKNESS	18 GAUGE
	SECTION WIDTH	42"
	Splash shields provide access to cage and feed hopper sections of press.	

STANDARD PAINT SPECIFICATION

SURFACE PREPARATION	Commercial Blast, SSPC-SP-10
PRIMER (1st coat)	"Porter" M.C.R. - 4335 HB Epoxy Primer, 4 mil DFT.
SECOND COAT	"Porter" M.C.R. - 4361 HB Epoxy 3-4 mil DFT.
TOP COAT	"Porter" 990 Interthane, 2 mil DFT.
COLOR	OSHA "Safety Blue"
DATA	Excellent abrasion and chemical resistance.
SERVICE	Severe industrial environments subject to acids, alkalis, solvents and salts.



OPERATION & MAINTENANCE MANUAL

1.0 MACHINE SPECIFICATIONS

3.0 meter GRAVITY TABLE MACHINE SPECIFICATIONS

General Machine Technical Data

Overall Length as Installed w/ Headbox	241"
Overall Width	162.6"
Overall Height	44"
Overall Belt Width	126"
Actual Belt Working Width	117"
Dry Weight	9,000 lbs

Effective Filtration Areas

Gravity Zone	156 sq.ft.
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Utilities

Total Connected Load	7.5 HP @ 120 fpm Belt Speed
Washwater Requirement	69 gpm @ 120 psig cont.
Air Requirement	4.0 cfm @ 60 psig (start-up)
	1.0 cfm @ 60 psig (normal)

MAJOR COMPONENTS

Main Structural Frame	shall be carbon steel & galvanized per ASTM A123 and constructed of members designed to minimize deflection. The main structural frame shall be constructed of members having a min. thickness of 1/4". The GBT frame shall provide a minimum safety factor under max. load of three times the design yield strength of any member. Moment of inertia is 158 in ⁴ in the major axis.
Rolls	A-106 B pipe or A-519 steel tubing with 1045 steel double end-plate journals; Buna-N or Rilsan covered.
Bearings	Spherical roller type, L-10 rated for a minimum 300,000 operating hours @ 40 pli & 70 fpm.
Belt Tracking and Tensioning	Pneumatically controlled for automatic operations.
Belt	Polyester mono-filament, seamed design; chosen for the application.
Belt Shower	Pipe with recessed nozzles, manually cleaned with handwheel operated wire brush.
Belt Doctor Blade	UHMW polyethylene; rubber tensioned holding mechanism.
Motor/Drive Type	AC variable speed type, motor & VFD by Others!
Control Panel	NEMA 4X

316L STAINLESS STEEL COMPONENTS

Headbox Assembly
Gravity Zone Side Walls & Plow Assemblies
Inline Mixer & Retention Tank
Filtrate Pan
Thrust Rods, Pinion & Gear Assembly
Shower Housing, Pipe, Nozzle & Wire Brush
All Nuts, Bolts & Fasteners



OPERATION & MAINTENANCE MANUAL**BELT SPECIFICATIONS****3.0m Gravity Table Thickener Fabric**

Belt Ordering Dimensions: 124" Wide X 431" Long

1. Belt: IFC 6308

Material:	Polyester
Weave:	Twill
Weight:	53.4 oz/sq yd
Mesh Count:	38 x 14.5 per inch square
Air permeability:	480 CFM
Heat Set:	Yes, under tension

- * Seams to be sealed with proprietary
- * Belts to have heat cut and sealed edges.
- * Belt to be provided with clipper seam, potted both sides.

2. Clipper Seam: 2.32

- * Seams to be sealed with proprietary type sealant.
- * Seam width: 3/4"; full penetration; applied from both sides.
- * Hook and splice material: ASTM A320, 316 stainless steel, 8 clips/inch.
- * Tensile strength of seam: 4500 lbs/inch.



OPERATION & MAINTENANCE MANUAL

Andritz
Purchase Proposal #PS-1186-96-034B
to
Power Source, Inc.
Charlotte, NC
for
Gilman Paper
St. Mary's, GA
March 10, 1998

A. Design Criteria

1. Type of Sludge	Kraft
2. Design Throughput	250 - 275 BDTPD
3. Hydraulic Loading	3,800 GPM
4. Ash Content	48% (minimum)
5. pH	6 - 8
6. Temperature	80 - 100°F
7. Fiber Content	43% (minimum)
(% retained on 150 mesh screen)	

***B. Equipment Recommendation and Guaranteed Performance**

1. Number and Type of Prethickener	Three (3) 3.0m Gravity Belt Thickeners
2. Number and Type of Screw Press	Three (3) 4224 Screw Presses
3. Cake Consistency	50% BD (minimum)
4. Solids Capture Efficiency	95%
5. Polymer Consumption	4.5 - 5 lbs/ton TS

* Performance Guarantees based on on-site testwork conducted in 1991.

FORM U-2 MANUFACTURER'S PARTIAL DATA REPORT
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

1. Manufactured and certified by Halvorsen Boiler & Engineering Co. 7500 Grand Division Ave., Cleveland, OH 44125
 (Name and address of Manufacturer)
 2. Manufactured for The Dupps Co., 548 N. Cherry Street, Germantown, Ohio 45327
 (Name and address of Purchaser)

3. Location of installation Un-known

4. Type: Rolled & welded cylinder (Name and address)
1694B-2
 (Description of vessel part (shell, two-piece head, tube bundle)) (Mfg's serial No.) (CRN)
A-94391 The Dupps Co. 1998
 (Nat'l. Bd. No.) (Drawing No.) (Drawing prepared by) (Year built)
 5. ASME Code, Section VIII, Div. 1 1995 1996 Addenda
 Edition and Addenda (date) Code Case No. Special Service per U-13-120(d)

Items 6 - 11 incl. to be completed for single wall vessels, jackets of jacketed vessels, shell of heat exchangers, or chamber of multi-chamber vessels.
 6. Shell (a) No. of course(s): 1 (b) Overall length ft & in.: 1'0"

Course(s)			Material	Thickness		Long Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment					
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Norm.	Corr.	Type	Full	Spot	None	ER.	Type	Full	Spot	None	ER.	Temp.	Time
1	32.13"	1'0"	SA-240Tp.316L	1 1/4"	---	1	None	---	---	---	---	---	---	---	---	---	---
---	OD	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

7. Heads: (a) (Mat'l Spec. No., Grade or Type) H.T.-Time & Temp										(b) (Mat'l Spec. No., Grade or Type) H.T.-Time & Temp									
Location (Top, Bottom, End)		Thickness		Radius		Elliptical		Conical		Hemispherical		Flat		Side to Pressure		Category A			
		Min.	Corr.	Crown	Knuckle	Ratio	Ratio	Apex Angle	Radius	Radius	Diameter	Convex	Concave	Type	Full	Spot	None	Eff.	Temp.
(a)																			
(b)																			

movable, bolts used (describe other fastening) _____
 (Mat'l Spec. No., Grade, Size, No.)

8. Type of jacket None Jacket closure _____
 (Describe as gages & weld, bar, etc.)

If bar, give dimensions _____ If bolted, describe or sketch.
 9. MAWP _____ psi at max. temp. _____ °F Min. design metal temp. _____ °F at _____ psi
 (internal) (external) (internal) (external)

10. Impact test _____
 (Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press. _____ Proof test _____
 Items 12 and 13 to be completed for tube section.

12. Tubesheet: _____
 Stationary (Mat'l Spec. No.) Dia., in. (subject to press.) Norm. thk., in. Corr. Allow., in. Attachment (welded or bolted)
 Floating (Mat'l Spec. No.) Dia., in. Norm. thk., in. Corr. Allow., in. Attachment

13. Tubes: _____
 Mat'l Spec. No., Grade or Type O.D., in. Norm. thk., in. or gauge Number Type (straight or U)

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): _____ (b) Overall length ft & in.: _____

Course(s)			Material	Thickness		Long Joint (Cat. A)				Circum. Joint (Cat. A, B & C)				Heat Treatment			
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Norm.	Corr.	Type	Full	Spot	None	Eff.	Type	Full	Spot	None	Eff.	Temp.	Time
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

FORM U-2 MANUFACTURER'S PARTIAL DATA REPORT
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As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by Halvorsen Boiler & Engineering Co. 7500 Grand Division Ave., Cleveland, OH 44125

(Name and address of Manufacturer)

2. Manufactured for The Dupps Co., 548 N. Cherry Street, Germantown, Ohio 45327

(Name and address of Purchaser)

3. Location of installation Un-known

(Name and address)

4. Type: Roller & welded cone
 (Description of vessel part (shell, two-piece head, tube bundle))

1694B-4
 (Mfg's serial No.)

(CRN)

A-94351
 (Nat'l. Bd. No.)

The Dupps Co.
 (Drawing No.)

1998
 (Drawing prepared by)

1998
 (Year built)

5. ASME Code, Section VIII, Div. 1

1995 1996 Addenda
 Edition and Addenda (date)

Code Case No.

Special Service per (3-120(d))

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

6. Shell (a) No. of course(s): 1

(b) Overall length ft & in.: 5'11.63"

Course(s)			Material	Thickness		Long Joint (Cat. A)				Circum. Joint (Cat. A, B & C)				Heat Treatment		
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Nom.	Corr.	Type	Full	Spot	None	Eff.	Type	Full	Spot	None	Temp.	Time
1	28.49OD	5'11.63"	SA-240Tp 316L	.750"	—	1	None	—	—	—	—	—	—	—	—	—
—	25.41OD	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

7. Heads: (a)

(Mat'l Spec. No., Grade or Type) H.T.: Time & Temp

(b)

(Mat'l Spec. No., Grade or Type) H.T.: Time & 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)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(B)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

movable, bolts used (describe other fastening)

(Mat'l Spec. No., Grade, Size, No.)

8. Type of jacket

Jacket closure

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

If bar, give dimensions

If bolted, describe or sketch.

9. MAWP

psi at max. temp.

°F

Min. design metal temp.

°F

at psi

(internal)

(external)

(internal)

(external)

10. Impact test

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

11. Hydro., pneu., or comb. test press.

Proof test

Items 12 and 13 to be completed for tube section.

12. Tubesheet:

Stationary (Mat'l Spec. No.)

Dia., in. (subject to press.)

Nom. thk., in.

Corr. Allow., in.

Attachment (welded or bolted)

Floating (Mat'l Spec. No.)

Dia., in.

Nom. thk., in.

Corr. Allow., in.

Attachment

13. Tubes:

Mat'l Spec. No., Grade or Type

O.D., in.

Nom. thk., in. or gauge

Number

Type (straight or U)

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):

(b) Overall length (ft & in.):

Course(s)			Material	Thickness		Long Joint (Cat. A)				Circum. Joint (Cat. A, B & C)				Heat Treatment			
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Nom.	Corr.	Type	Full	Spot	None	Eff.	Type	Full	Spot	None	Eff.	Temp.	Time
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

RR 1032 9

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1. Manufactured and certified by Halvorsen Boiler & Engineering Co. 7500 Grand Division Ave., Cleveland, OH 44125
 (Name and address of Manufacturer)
 2. Manufactured for The Dupps Co., 548 N. Cherry Street, Germantown, Ohio 45327
 (Name and address of Purchaser)
 3. Location of Installation Un-known
 (Name and address)
 4. Type: Rolled & welded cylinder 1694B-6
 (Description of vessel part (shell, two-piece head, tube bundle)) (Mfg's serial No.) (CRN)
A-94357 The Dupps Co. 1998
 (Natl. Bd. No.) (Drawing No.) (Drawing prepared by) (Year built)
 5. ASME Code, Section VIII, Div. 1 1995 1996 Addenda Code Case No. Special Services per JG-120(d)
 Edition and Addenda (date)

Items 6 - 11 incl. to be completed for single wall vessels, jackets of jacketed vessels, shell or heat exchangers, or chamber of multi-chamber vessels.
 6. Shell (a) No. of course(s): 1 (b) Overall length ft & in.: 4'0.63"

Course(s)			Material	Thickness		Long Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment					
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Nom.	Corr.	Type	Full	Spot	None	Eff.	Type	Full	Spot	None	Eff.	Temp.	Time
1	22.0"	4'0.63"	SA-240Tp.316L	625"	—	1	None	—	—	—	—	—	—	—	—	—	—
—	OD	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

(a)										(b)									
(Mat'l Spec. No., Grade or Type) H.T. Time & Temp										(Mat'l Spec. No., Grade or Type) H.T. Time & Temp									
Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical	Conical	Hemispherical	Flat	Side to Pressure		Category A								
	Min.	Corr.	Crown	Knuckle	Ratio	Apex Angle	Radius	Diameter	Convex	Concave	Type	Full	Spot	None	Eff.				
(a)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
(b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				

movable, bolts used (describe other fastening) _____
 (Mat'l Spec. No., Grade, Size, No.)
 8. Type of jacket — Jacket closure —
 (Describe as ages & weld, bar, etc.)
 If bar, give dimensions _____ If bolted, describe or sketch.
 9. MAWP _____ psi at max. temp. _____ °F Min. design metal temp. _____ °F at _____ psi
 (Internal) (external) (Internal) (external)
 10. Impact test _____
 (Indicate yes or no and the component(s) impact tested)
 11. Hydro., press., or comb. test press. _____ Proof test _____
 Items 12 and 13 to be completed for tube section.

12. Tubesheet: Stationary (Mat'l Spec. No.) _____ Dia., in. (subject to press.) _____ Nom. thk., in. _____ Corr. Allow., in. _____ Attachment (welded or bolted) _____
 Floating (Mat'l Spec. No.) _____ Dia., in. _____ Nom. thk., in. _____ Corr. Allow., in. _____ Attachment _____
 13. Tubes: Mat'l Spec. No., Grade or Type _____ O.D., in. _____ Nom. thk., in. or gauge _____ Number _____ Type (Straight or U)

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): _____ (b) Overall length (ft & in.): _____

Course(s)			Material	Thickness		Long Joint (Cat. A)				Circum. Joint (Cat. A, B & C)				Heat Treatment			
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Nom.	Corr.	Type	Full	Spot	None	Eff.	Type	Full	Spot	None	Eff.	Temp.	Time
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1 (3/01 63875-2)

1. Manufactured and certified by The DUPPS Company, 548 N. Cherry St., Germantown, OH 45327
(Name and address of Manufacturer)

2. Manufactured for Arus-Andritz, 1010 Commercial Blvd. S., Arlington, TX 76017
(Name and address of Purchaser)

3. Location of installation Trigen - Biopower, c/o Gilman Paper Co., Osborne Street, St. Marys, Georgia 31558
(Name and address)

4. Type: HORIZONTAL ROTATING SCREW PRESS SHAFT 97-1012 SEE ITEM 22.3 234 1998
(Horiz., vert., or sphere) (Tank, separator, jet vessel, heat exch., etc.) (Wg's serial No.) (CRN) (Drawing No.) (Mtl. Br. No.) (Year built)

5. ASME Code, Section VIII, Div. 1 1995, A96
Edition and Addenda (date) Code Case No. Special Service per UG-1.1(d)

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

6. Shell (a) No. of course(s): 5 (b) Overall length (ft & in.): 22 FT. 11-1/8 IN.

Course(s)			Material		Thickness		Long Joint (Col. A)				Crown, Joint (Col. A, B & C)				Heat Treatment			
No.	Diameter, in.	Length (ft & in.)	Spec./Grade or Type	Weld	Min.	Corr.	Type	Full	Spot	None	Eff.	Type	Full	Spot	None	Eff.	Temp.	Time
1	22 O.D.	4 FT 0-5/8 IN	SA-240-316L	5/8"	5/8"	5/8"	1	NONE	70%	70%	2	NONE	65%	SEI	ITEM 21			
5	32-1/8 O.D.	1 FT 0 IN	SA-240-316L	1-1/4"	1-1/4"	1-1/4"	1	NONE	70%	70%	2	NONE	65%	SEI	ITEM 21			
(Continued, See Remarks, Section 22.1)																		

7. Heads: (a) SA-105 (FEED END) (b) SA-105 (DRIVE END)
(Mtl. Spec. No., Grade or Type) M.T. - Time & Temp (Mtl. Spec. No., Grade or Type) M.T. - Time & 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
(a)	END	3.44 ³⁸							21"			SEAMLESS		85%
(b)	END	2.56 ³⁸							29-1/4"			SEAMLESS		85%

8. If removable, bolts used (describe other fastening) _____
(Mtl. Spec. No., Grade, size, No.)

9. Type of jacket _____ Jacket Closure _____
(describe as open & weld, bar, etc.)

10. If bar, give dimensions _____ If bolted, describe or sketch.

11. MAMP 100 N/A psi at max. temp. 340 N/A °F. Min. design metal temp. 35 °F. at 100 psi.
(internal) (external)

12. Impact test NONE, IMPACT TEST EXEMPT PER UCS-66(A)(1) & UHA-51(A)
(Indicate yes or no and the component(s) impact tested)

13. Hydro. press. or comp. test press. 160 Proof test _____

Items 12 and 13 to be completed for tube sections

12. Tubesheet:	Stationary (Mtl. Spec. No.)		Dia., in. (subject to press.)		Nom. thk., in.		Corr. Allow., in.		Attachment (sided or bolted)	
	Floating (Mtl. Spec. No.)	Dia., in.	Nom. thk., in.	Corr. allow., in.	Attachment					
13. Tubes:	Mtl. Spec. No., Grade or Type	O.D., in.	Nom. thk., in. or gauge	Number	Type (Straight or U)					

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

14. Shell (a) No. of course(s): _____ (b) Overall length (ft & in.): _____

Course(s)			Material	Thickness		Long Joint (Col. A)					Crown, Joint (Col. A, B & C)				Heat Treatment	
No.	Diameter, in.	Length (ft & in.)	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time			

15. Heads: (a) _____ (b) _____
(Mtl. Spec. No., Grade or Type) M.T. - Time & Temp (Mtl. Spec. No., Grade or Type) M.T. - Time & 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)																
(b)																

16. If removable, bolts used (describe other fastening) _____
(Mtl. Spec. No., Grade, size, No.)

This form is The DUPPS Co. Drawing Number A-89375-6, similar in format to National Board form NB-26, Rev.10

16. NAME: (internal) (external) psi at max. temp. (internal) (external) F. Min. design metal temp. F. et. psi.

17. Impact test (Indicate yes or no and the component(s) impact tested)

18. Hydro., pneum., or comb. test press. Proof test

19. Max. ins. inspection, and safety valve opening:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	How Attached		Location (i.e., Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
STEP 1 INLET	1	3-1/2" NPTM	---	SA-106-B	---	5/8"	---	INHERENT	WELDED.	---	HEAD 7(b)
STEP 1 OUTLET	1	1-1/2" NPTF	---	SA-105	---	3MCPLG	---	---	THR'D.	---	THRU HEAD 7(b)
SAFETY VALVE	1	1-1/4"	---	---	---	---	---	---	---	---	OUTSIDE PIPING

20. Support: Shaft NO (Yes or No) Legs (No.) Others (Describe) Attached END JOURNALS, TEMS 7(a)/7(b)

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, mfg's name and identifying number)

21.1) SHELL COURSE NO. 1: S/N 1694B-6, COURSE NO. 2: S/N 9199A-10, COURSE NO. 3: S/N 1694B-4, SHELL COURSE NO. 4: S/N 9199A-6, COURSE NO. 5: S/N 1694B-2. MFG. BY HALVORSEN BOILER & ENGINEERING CO.

22. Remarks: 22.1) ITEM 6 (CONT.):

22.1.1) NO. 2, 25.36 IN. TO 22.10 IN O.D., 6 FT 3.88 IN LG., SA-240-316L, 3/4" NOM., ** IN. CA, 1, NONE, 70%, 2, NONE, 65%, SEE ITEM 21.

22.1.2) NO. 3, 28.49 IN TO 25.41 IN O.D., 5 FT 11-5/8 IN LG., SA-240-316L, 3/4" NOM., ** IN. CA, 1, NONE, 70%, 2, NONE, 65%, SEE ITEM 21.

22.1.3) NO. 4, 31.56 IN TO 28.79 IN O.D., 5 FT 5-1/2 IN LG., SA-240-316L, 7/8" NOM., ** IN. CA, 1, NONE, 70%, 2, NONE, 65%, SEE ITEM 21.

22.2) ** MIN. WALL TH. .375 IN., TYP. ALL SHELL SECTIONS ITEM 6.

22.3) FINAL ASSY PER DRAWING NO. C-93833-7. SHAFT BODY WELDMENT PER DRAWING NO. D-94338-1.

FINAL MACHINING PER DRAWING NO. D-93783-10.

22.4) FAB. UNDER UW-12(c) 22.5) SAFETY VALVE BY OTHERS; .27 SQ. IN. MIN. ORIFICE AREA (Ø 1500 LBS/HR MAX STEAM)

22.6) DUPPS 4224C SCREW PRESS SHAFT

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. 2,733

Expires December 28 19 98

Date: Nov. 5, 1998 Name: The DUPPS Company

(Manufacturer)

Signed: John P. Simmons

(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 CHIO and employed by The Hartford Steam Boiler Inspection and Insurance Co. of Hartford, Connecticut have inspected the pressure vessel described in this Manufacturer's Data Report on 10-28, 1998, 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 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: 11-5-98 Signed: (Authorized Inspector)

Commission: 1101090000-00000000 (Nat'l. Board incl. endorsement, State, Province and No.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements made in this report are correct and that the field assembly construction of this vessel conforms with the requirements of ASME Code, Section VIII, Division 1.

U Certificate of Authorization No.

Expires 19

Date: Name: (Assembler)

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 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 are believed, 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: (Authorized Inspector)

Commission: (Nat'l. Board incl. endorsement, State, Province and N)

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1 (S/O# 63875-1)

1. Manufactured and certified by The DUPPS Company, 548 N. Cherry St., Germantown, OH 45327
(Name and address of Manufacturer)
2. Manufactured for Arus-Andritz, 1010 Commercial Blvd, S., Arlington, TX 76017
(Name and address of Purchaser)
3. Location of installation Trigen - Biopower, c/o Gilman Paper Co., Osborne Street, St. Marys, Georgia 31558
(Name and address)
4. Type HORIZONTAL ROTATING SCREW PRESS SHAFT 97-1011 SEE ITEM 22.3 23:17 1998
(Hertz, vert., or sphere) (Tank, separator, fit vessel, heat exch., etc.) (Mfg's serial No.) (CRN) (Drawing No.) (Mat'l B.I. No.) (Year built)
5. ASME Code, Section VIII, Div.1 1995, A96
Edition and Addenda (date) Code Case No. Special Service per UC-150(d)

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

6. Shell (a) No. of course(s): 5 (b) Overall length (ft & in.): 22 FT. 11-1/8 IN.

Course(s)			Material		Thickness		Long Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
No.	Diameter, in.	Length (ft & in.)	Spec./Grade or Type		Nom.	Corr.	Type	Full, Spot, None	EF.	Type	Full, Spot, None	EF.	Temp.	Time
1	22 O.D.	4 FT 0-5/8 IN	SA-240-316L		5/8"	as	1	NONE	70%	2	NONE	65%	SE	ITEM 21
5	32-1/8 O.D.	1 FT 0 IN	SA-240-316L		1-1/8"	as	1	NONE	70%	2	NONE	65%	SE	ITEM 21
(Continued, See Remarks, Section 22.1)														

7. Heads: (a) SA-105 (FEED END) (b) SA-105 (DRIVE END)
(Mat'l. Spec. No., Grade or Type) H.T. - Time & Temp (Mat'l. Spec. No., Grade or Type) H.T. - Time & Temp

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckles					Convex	Concave	Type	Full, Spot, None	EF.
(a)	END	3.44"	---	---	---	---	---	---	21"	---	---	SEAMLESS	---	85%
(b)	END	2.56"	---	---	---	---	---	---	29-1/4"	---	---	SEAMLESS	---	85%

If removable, bolts used (describe other fastening) _____

(Mat'l. Spec. No., Grade, size, No.)

8. Type of jacket _____ Jacket Closure _____
(describe as spec & weld, bar, etc)

- If bar, give dimensions _____
9. MAWP 100 N/A psi at max. temp. 340 N/A °F. Min. design metal temp. 35 °F. at 100 psi.
(internal) (external) (internal) (external)

10. Impact test NONE, IMPACT TEST EXEMPT PER UCS-66(A)(1) & UHA-51(A)
(Indicate yes or no and the component(s) impact tested)

11. Hydra. pres. or comb. test press. 160 Proof test _____

Items 12 and 13 to be completed for tube sections

12. Tubesheet: _____
Stationary (Mat'l. Spec. No.) Dia. in. (subject to press.) Nom. thk. in. Corr. Allow. in. Attachment (welded or bolted)
Floating (Mat'l. Spec. No.) Dia. in. Nom. thk. in. Corr. allow. in. Attachment
13. Tubes: _____
Mat'l. Spec. No., Grade or Type O.D. in. Nom. thk. in. or gauge Number Type (Straight or U)

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

14. Shell (a) No. of course(s): _____ (b) Overall length (ft & in.): _____

Course(s)			Material		Thickness		Long Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
No.	Diameter, in.	Length (ft & in.)	Spec./Grade or Type		Nom.	Corr.	Type	Full, Spot, None	EF.	Type	Full, Spot, None	EF.	Temp.	Time

15. Heads: (a) _____ (b) _____
(Mat'l. Spec. No., Grade or Type) H.T. - Time & Temp (Mat'l. Spec. No., Grade or Type) H.T. - Time & Temp

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

If removable, bolts used (describe other fastening) _____

(Mat'l. Spec. No., Grade, size, No.)

This form is The DUPPS Co. Drawing Number A-89375-0, similar in format to National Board form NB-26, Rev.10

16. MAWP (internal) (external) psi at max. temp. (internal) (external) F. Min. design metal temp. (internal) (external) F. at (internal) (external) psi.

17. Impact test (Indicate yes or no and the component(s) impact tested)

18. Hydro, pneu., or comb. test press. (Indicate yes or no and the component(s) impact tested) Proof test

19. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, D, in, etc.)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	How Attached		Location (Inlet, Outlet, etc.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
STEAM INLET	1	3-1/2" NPTM	---	SA-106-B	---	5/8"	---	INHERENT	WELDED	---	HEAD 7(b)
STEAM OUTLET	1	1-1/2" NPTF	---	SA-105	---	3MCPG	---	---	THR'D.	---	TOP HEAD 7(b)
SAFETY VALVE	1	1-1/4"	---	---	---	---	---	---	---	---	ON SIDE PIPING

20. Supports: Skirt (Yes or No) Lugs (No.) Logs (No.) Others (Describe) ROLLER BEARINGS Attached END JOURNALS, TEMS 7(a)/7(b) (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, mfg's name and identifying number)

21.1) SHELL COURSE NO. 1: S/N 9199A-11, COURSE NO. 2: S/N 9199A-9, COURSE NO. 3: S/N 9199A-7, SHELL COURSE NO. 4: S/N 9199A-5, COURSE NO. 5: S/N 9199A-3. MFG. BY HALVORSEN BOILER & ENGINEERING CO.

22. Remarks: 22.1) ITEM 6 (CONT.):

22.1.1) NO. 2, 25.36 IN. TO 22.10 IN O.D., 6 FT 3.88 IN LG., SA-240-316L, 3/4" NOM., ** IN. CA, 1, NONE, 70%, 2, NONE, 65%, SEE ITEM 21.

22.1.2) NO. 3, 28.49 IN TO 25.41 IN O.D., 5 FT 11-5/8 IN LG., SA-240-316L, 3/4" NOM., ** IN. CA, 1, NONE, 70%, 2, NONE, 65%, SEE ITEM 21.

22.1.3) NO. 4, 31.56 IN TO 28.79 IN O.D., 5 FT 5-1/2 IN LG., SA-240-316L, 7/8" NOM., ** IN. CA, 1, NONE, 70%, 2, NONE, 65%, SEE ITEM 21.

22.2) ** MIN. WALL TH. .375 IN., TYP. ALL SHELL SECTIONS ITEM 6.

22.3) FINAL ASSY PER DRAWING NO. C-93833-7. SHAFT BODY WELDMENT PER DRAWING NO. D-94338-1.

FINAL MACHINING PER DRAWING NO. D-93783-10.

22.4) F13. UNDER UW-12(c) 22.5) SAFETY VALVE BY OTHERS: .27 SQ. IN. MIN. ORIFICE AREA (@ 1500 LBS/HR MAX STEAM)

22.6) D. PPS 4224C SCREW PRESS SHAFT

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. 2,733

Expires December 28

Date 12/25/98 Name The DUPPS Company

(Manufacturer)

Signed

(Representative) John P. Simmons

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 OHIO and employed by The Hartford Steam Boiler Inspection and Insurance Co., of Hartford, Connecticut have inspected the pressure vessel described in this Manufacturer's Data Report on 12/25/98, 1998, 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 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 12-25-98

Signed

(Authorized Inspector)

Commissions

UBIOTHA, OHIO

(Not). Board incl. endorsement, State, Province and No.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements made in this report are correct and that the field assembly construction of this vessel conforms with the requirements of ASME Code, Section VIII, Division 1.

U Certificate of Authorization No.

Expires

, 19

Date

Name

(Assembler)

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 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 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

(Authorized Inspector)

Commissions

(Not). Board incl. endorsement, State, Province and No.)

FORM U-2 MANUFACTURER'S PARTIAL DATA REPORT
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

1. Manufactured and certified by Halvorsen Boiler & Engineering Co. 7500 Grand Division Ave., Cleveland, OH 44125

(Name and address of Manufacturer)

2. Manufactured for The Dupps Co., 548 N. Cherry Street, Germantown, Ohio 45327

(Name and address of Purchaser)

3. Location of installation Un-known

4. Type: Rolled & welded cylinder (Name and address)

9199A-3 & 4

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

(Mfg's serial No.)

(CRN)

(Mat'l Bd. No.)

(Drawing No.)

(Drawing prepared by)

(Year built)

5. ASME Code, Section VIII, Div. 1

1995 1995 Addenda

Edition and Addenda (date)

Code Case No.

Special Service per U-120(d)

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

6. Shell (a) No. of course(s):

1

(b) Overall length ft & in.:

1'0"

Course(s)			Material	Thickness		Long Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment					
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Nom.	Corr.	Type	Full	Spot	None	ER	Type	Full	Spot	None	ER	Temp.	Time
1	32.13"	1'0"	SA-240Tp316L	1 1/4"	—	1	None	—	—	—	—	—	—	—	—	—	—
—	OD	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

7. Heads: (a)

(Mat'l Spec. No., Grade or Type) H.T. Time & Temp

(b)

(Mat'l Spec. No., Grade or Type) H.T. Time & Temp

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

movable, bolts used (describe other fastening)

(Mat'l Spec. No., Grade, Size, No.)

8. Type of jacket

Jacket closure

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

If bar, give dimensions

If bolted, describe or sketch.

9. MAWP

(internal)

psi at max. temp.

(internal)

(external)

°F Min. design metal temp.

°F at

psi

10. Impact test

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

11. Hydro., pneum. or comb. test press.

Proof test

Items 12 and 13 to be completed for tube section.

12. Tubesheet:

Stationary (Mat'l Spec. No.)

Dia., in. (subject to press.)

Nom. thk., in.

Corr. Allow., in.

Attachment (welded or bolted)

Floating (Mat'l Spec. No.)

Dia., in.

Nom. thk., in.

Corr. Allow., in.

Attachment

13. Tubes:

Mat'l Spec. No., Grade or Type

O.D., in.

Nom. thk., in. or gauge

Number

Type (Straight or U)

Items 14 - 16 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell (a) No. of course(s):

(b) Overall length (ft & in.):

Course(s)			Material	Thickness		Long Joint (Cat. A)				Circum. Joint (Cat. A, B & C)				Heat Treatment			
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Nom.	Corr.	Type	Full	Spot	None	ER	Type	Full	Spot	None	ER	Temp.	Time
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

RR 1032.9

FORM U-2 MANUFACTURER'S PARTIAL DATA REPORT
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

1. Manufactured and certified by Halvorsen Boiler & Engineering Co. 7500 Grand Division Ave., Cleveland, OH 44125

(Name and address of Manufacturer)

2. Manufactured for The Dupps Co., 548 N. Cherry Street, Germantown, Ohio 45327

(Name and address of Purchaser)

3. Location of installation Un-known

4. Type: Rolled & welded cylinder

(Name and address)
9199A-11 & 12

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

(Mfg's serial No.)

(CRN)

(Nat'l Bld. No.)

(Drawing No.)

The Dupps Co.

1197

(Drawing prepared by)

(Year built)

5. ASME Code, Section VIII, Div. 1

1995 1995 Addenda

Edition and Addenda (date)

Code Case No.

Special Service per U-120(d)

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

6. Shell (a) No. of course(s): 1

(b) Overall length ft & in.:

4'0.63"

Course(s)			Material	Thickness		Long Joint (Cat. A)				Circum. Joint (Cat. A, B & C)				Heat Treatment			
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Nom.	Corr.	Type	Full	Spot	None	Eff.	Type	Full	Spot	None	Eff.	Temp.	Time
1	22.0"	4'0.63"	SA-240Tp.316L	.625"	---	1			None	---					---		
-	OD	---	---	---	---	-				---					---		
-	---	---	---	---	---	-				---					---		

7. Heads: (a)

(Mat'l Spec. No., Grade or Type) H.T.-Time & Temp

(b)

(Mat'l Spec. No., Grade or Type) H.T.-Time & Temp

Location (Top, Bottom, Ends)	(MMT Spec. No., Grade or Type) H.T. - Time & Temp.										(MMT Spec. No., Grade or Type) H.T. - Time & Temp.				
	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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

ovable, bolts used (describe other fastening)

(Mat'l Spec. No., Grade, Size, No.)

8. Type of jacket

Jacket closure

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

If bar, give dimensions

9. MAWP

(Internal)

(external)

psi at max. temp.

(Internal)

(external)

°F Min. design metal temp.

If bolted, describe or sketch.

°F at _____ psi

10. Impact test

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

11. Hydro., pneum., or comb. test press.

Proof test

Items 12 and 13 to be completed for tube section.

12. Tubesheet:

Stationary (Mat'l Spec. No.)

Dia., in. (subject to press.)

Nom. thk., in.

Corr. Allow., in.

Attachment (welded or bolted)

Floating (Mat'l Spec. No.)

Dia., in.

Nom. thk., in.

Corr. Allow., in.

Attachment

13. Tubes:

Mat'l Spec. No., Grade or Type

O.D., in.

Nom. thk., in. or gauge

Number

Type (Straight or U)

Items 14 - 15 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell (a) No. of course(s):

(b) Overall length ft & in.:

Course(s)			Material	Thickness		Long Joint (Cat. A)				Circum. Joint (Cat. A, B & C)				Heat Treatment			
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Nom.	Corr.	Type	Full	Spot	None	EH	Type	Full	Spot	None	EH	Temp.	Time
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

RR 1032.9

FORM U-2 MANUFACTURER'S PARTIAL DATA REPORT
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

1. Manufactured and certified by Halvorsen Boiler & Engineering Co. 7500 Grand Division Ave., Cleveland, OH 44125

(Name and address of Manufacturer)

2. Manufactured for The Dupps Co., 548 N. Cherry Street, Germantown, Ohio 45327

(Name and address of Purchaser)

3. Location of installation Un-known

4. Type: Rolled & welded cone
(Description of vessel part (shell, two-piece head, tube bundle))

(Name and address)
9199A-9 & 10

(Mfg's serial No.)

(CAN)

(Natl. Bd. No.)

(Drawing No.)

The Dupps Co.

1997

5. ASME Code, Section VIII, Div. 1

1995 1995 Addenda

(Drawing prepared by)

(Year built)

Edition and Addenda (date)

Code Case No.

Special Service per UG-120(d)

Items 5 - 11 incl. to be completed for single wall vessels, jackets of jacketed vessels, shell of heat exchangers, or chamber of multi-chamber vessels.

6. Shell (a) No. of course(s): 1

(b) Overall length ft & in.: 6'3.88"

Course(s)			Material	Thickness		Long Joint (Cat. A)				Circum. Joint (Cat. A, B & C)				Heat Treatment			
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Nom.	Corr.	Type	Full	Spot	None	ER	Type	Full	Spot	None	ER	Temp.	Time
1	25.36OD	6'3.88"	SA-240Tp316L	.750"	---	1		None		---	---					---	---
---	22.10OD	---	---	---	---	---				---	---					---	---
---	---	---	---	---	---	---				---	---					---	---

7. Heads: (a)

(Mat'l Spec. No., Grade or Type) H.T.-Time & Temp

(b)

(Mat'l Spec. No., Grade or Type) H.T.-Time & 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
(a)	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(b)	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Weldable, bolts used (describe other fastening)

(Mat'l Spec. No., Grade, Size, No.)

8. Type of jacket

Jacket closure

(Describe an open & weld, bar, etc.)

If bar, give dimensions

9. MAWP

(Internal)

(external)

psi at max. temp.

(Internal)

(external)

°F Min. design metal temp.

If bolted, describe or sketch.

°F at

psi.

10. Impact test

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

11. Hydro., pneu., or comb. test press.

Proof test

Items 12 and 13 to be completed for tube section.

12. Tubesheet:

Stationary (Mat'l Spec. No.)

Dia., in. (subject to press.)

Nom. thk., in.

Corr. Allow., in.

Attachment (Welded or Bolted)

Floating (Mat'l Spec. No.)

Dia., in.

Nom. thk., in.

Corr. Allow., in.

Attachment

13. Tubes:

Mat'l Spec. No., Grade or Type

O.D., in.

Nom. thk., in. or gauge

Number

Type (Straight or U)

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):

(b) Overall length ft & in.:

Course(s)			Material	Thickness		Long Joint (Cat. A)				Circum. Joint (Cat. A, B & C)				Heat Treatment			
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Nom.	Corr.	Type	Full	Spot	None	Eff.	Type	Full	Spot	None	Eff.	Temp.	Time
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

RR 1032.1

FORM U-2 MANUFACTURER'S PARTIAL DATA REPORT
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

1. Manufactured and certified by Halvorsen Boiler & Engineering Co. 7500 Grand Division Ave., Cleveland, OH 44125

(Name and address of Manufacturer)

2. Manufactured for The Dupps Co., 548 N. Cherry Street, Germantown, Ohio 45327

(Name and address of Purchaser)

3. Location of installation Un-known

4. Type: Rolled & welded cone
(Description of vessel part (shell, two-piece head, tube bundle))

(Name and address)
9199A-7 & 8

(Mfg's serial No.)

(CRN)

(Mat'l. Bd. No.)

A-94351

(Drawing No.)

The Dupps Co.

(Drawing prepared by)

1997

(Year built)

5. ASME Code, Section VIII, Div. 1

1995 1995 Addenda

(Edition and Addenda (date))

Code Case No.

Special Service per U-210(d)

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

6. Shell (a) No. of course(s): 1

(b) Overall length ft & in.: 5'11.63"

Course(s)			Material	Thickness		Long Joint (Cat. A)				Circum. Joint (Cat. A, B & C)				Heat Treatment			
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Nom.	Corr.	Type	Full	Spot	None	Eff.	Type	Full	Spot	None	Eff.	Temp.	Time
1	28.49OD	5'11.63"	SA-240Tp316L	.750"	—	1	None	—	—	—	—	—	—	—	—	—	—
—	25.41OD	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

7. Heads: (a)

(Mat'l Spec. No., Grade or Type) H.T.-Time & Temp

(b)

(Mat'l Spec. No., Grade or Type) H.T.-Time & Temp

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

8. Bolts, nuts used (describe other fastening)

(Mat'l Spec. No., Grade, Size, No.)

9. Type of jacket

Jacket closure

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

If bar, give dimensions

If bolted, describe or sketch.

9. MAWP

(internal)

(external)

psi at max. temp.

(internal)

(external)

°F Min. design metal temp.

°F at _____ psi

10. Impact test

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

11. Hydro, pneu., or comb. test press.

Proof test

Items 12 and 13 to be completed for tube section.

12. Tubesheet:

Stationary (Mat'l Spec. No.)

Dis., in. (subject to press.)

Nom. thk., in.

Corr. Allow., in.

Attachment (welded or bolted)

Floating (Mat'l Spec. No.)

Dis., in.

Nom. thk., in.

Corr. Allow., in.

Attachment

13. Tubes:

Mat'l Spec. No., Grade or Type

O.D., in.

Nom. thk., in. or gauge

Number

Type (S right or U)

Items 14 - 16 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell (a) No. of course(s):

(b) Overall length (ft & in.):

Course(s)			Material	Thickness		Long Joint (Cat. A)				Circum. Joint (Cat. A, B & C)				Heat Treatment			
No.	Diameter, in.	Length ft. & in.	Spec. Grade or Type	Nom.	Corr.	Type	Full	Spot	None	Eff.	Type	Full	Spot	None	Eff.	Temp.	Time
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

RR 1032.3

FORM U-2 MANUFACTURER'S PARTIAL DATA REPORT
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

1. Manufactured and certified by Halvorsen Boiler & Engineering Co. 7500 Grand Division Ave., Cleveland, OH 44125

(Name and address of Manufacturer)

2. Manufactured for The Dupps Co., 548 N. Cherry Street, Germantown, Ohio 45327

(Name and address of Purchaser)

3. Location of Installation Un-known

4. Type: Rolled & welded cone

(Name and address)

9199A-5 & 6

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

(Mfg's serial No.)

(GRN)

(Nat'l. Bd. No.)

(Drawing No.)

(Drawing prepared by)

(Year built)

5. ASME Code, Section VIII, Div. 1

1995 1995 Addenda

Code Case No.

Special Service per 11G-120(d)

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

6. Shell (a) No. of course(s): 1

(b) Overall length ft & in.:

5'5.5"

Course(s)			Material	Thickness		Long Joint (Cat. A)				Circum. Joint (Cat. A, B & C)				Heat Treatment			
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Nom.	Corr.	Type	Full	Spot	None	ER	Type	Full	Spot	None	ER	Temp.	Time
1	31.56OD	5'5.5"	SA-240Tp316L	.875"	—	1	None			—	—	—	—	—	—	—	—
—	28.79OD	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

7. Heads: (a)

(b)

(Mat'l Spec. No., Grade or Type) H.T.-Time & Temp

(Mat'l Spec. No., Grade or Type) H.T.-Time & Temp

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

movable, bolts used (describe other fastening)

(Mat'l Spec. No., Grade, Size, No.)

8. Type of jacket

Jacket closure

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

If bar, give dimensions

If bolted, describe or sketch.

9. MAWP

(internal)

(external)

psi at max. temp.

(internal)

(external)

°F Min. design metal temp.

°F at _____ psi

10. Impact test

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

11. Hydro., pres., or comb. test press.

Proof test

Items 12 and 13 to be completed for tube section.

12. Tubesheet:

Stationary (Mat'l Spec. No.)

Dia., in. (subject to press.)

Nom. thk., in.

Corr. Allow., in.

Attachment (welded or bolted)

Floating (Mat'l Spec. No.)

Dia., in.

Nom. thk., in.

Corr. Allow., in.

Attachment

13. Tubes:

Mat'l Spec. No., Grade or Type

O.D., in.

Nom. thk., in. or gauge

Number

Type (straight or U)

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):

(b) Overall length (ft & in.):

Course(s)			Material	Thickness		Long Joint (Cat. A)				Circum. Joint (Cat. A, B & C)				Heat Treatment			
No.	Diameter, in.	Length ft. & in.	Spec./Grade or Type	Nom.	Corr.	Type	Full	Spot	None	EH	Type	Full	Spot	None	EH	Temp.	Time
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

RR 1032.9