41-V-180

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form for Single Chamber, Completely Shop or Field Fabricated Vessels Only)
As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by PRECISION PIPE AND VESSEL, LLC 6535 N. WASHINGTON ST. DENVER CO 80229 USA
(Name and address of Manufacturer)

2. Manufactured for Range Fuels Soperton Plant, LLC. Soperton, GA.
(Name and address of Purchaser)

3. Location of installation Soperton, GA.
(Name and address)

4. Type: Vertical (Horizontal or vertical, tank) | CV-0885 (Manufacturer's serial number) | N/A (CRN) | D-1496 (Drawing number) | 877 (National Board number) | 2009 (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 2007 Edition (Year)

to 2008 (Addenda (date)) | N/A (Code Case numbers) | N/A (Special service per UG-120(d))

6. Shell: SA-312-304 (Material spec. number, grade) | 0.5" (Nominal thickness) | None (Corr. allow.) | 1'-5" (Inner diameter) | 11'-3.563" (Length (overall))

7. Seams: Welded (Long. (welded, dbl., sngl., lap, butt)) | RT-1 (R. T. (spot or full)) | 100 (Eff., %) | N/A (H. T. temp.) | N/A (Time, hr) | Welded (Girth (welded, dbl., sngl., lap, butt)) | RT-1 (R. T. (spot or full)) | 100% (Eff., %) | 1 (No. of courses)

8. Heads: (a) Material SA-240-304 (Spec. no., grade) (b) Material SA-240-304 (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)	TOP	0.4917"	N/A			2:1				Concave
(b)	BOTTOM	0.4917"	N/A			2:1				Concave

If removable, bolts used (describe other fastenings) (20) 1.625" SA-193-B7 Studs (10.75" Long), (40) SA-194-2H Nuts
(Material spec. number, grade, size, number)

9. MAWP 800 PSI (Internal) | 15 (External) at max. temp. 250 (Internal) | 350 (External)

Min. design metal temp. 20 at 800 Hydro., ~~pneu.~~ or ~~comb.~~ test pressure 1040

10. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain)	Number	Diameter or Size	Type	Material	Nominal Thickness	Reinforcement Material	How Attached	Location
Inlet	1	3"	RFWN	SA-312-304/SA-182-304	S80	Inherent	UW-16.1(e)	Shell
Vapor Out	1	3"	RFWN	SA-312-304/SA-182-304	S80	Inherent	UW-16.1(e)	Top Head
Level	2	2"	RFLWN	SA-182-304	0.685"	Inherent	UW-16.1(e)	Shell
PSV Conn.	1	2"	RFLWN	SA-182-304	0.685"	Inherent	UW-16.1(e)	Top Head
Liquid Out	1	1.5"	RFWN	SA-312-304/SA-182-304	S40	Inherent	UW-16.1(e)	Btm Head
Steam Out	1	1"	RFWN	SA-312-304/ SA-182-304	S40	Inherent	UW-16.1(e)	Top Head
Spare	1	1"	RFLWN	SA-182-304	0.58"	Inherent	UW-16.1(e)	Shell

11. Supports: Skirt Yes (Yes or no) | Lugs (Number) | Legs (Number) | Other (Describe) | Attached Welded to Shell (Where and how)

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

Exempt from Impact testing per UHA-51(d), PSV Elsewhere in System

CERTIFICATE OF SHOP / FIELD 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 BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. "U" Certificate of Authorization Number 29,455

expires 01/15/12.

Date 6/16/09 Co. name PRECISION PIPE AND VESSEL, LLC (Manufacturer) Signed [signature] (Representative)

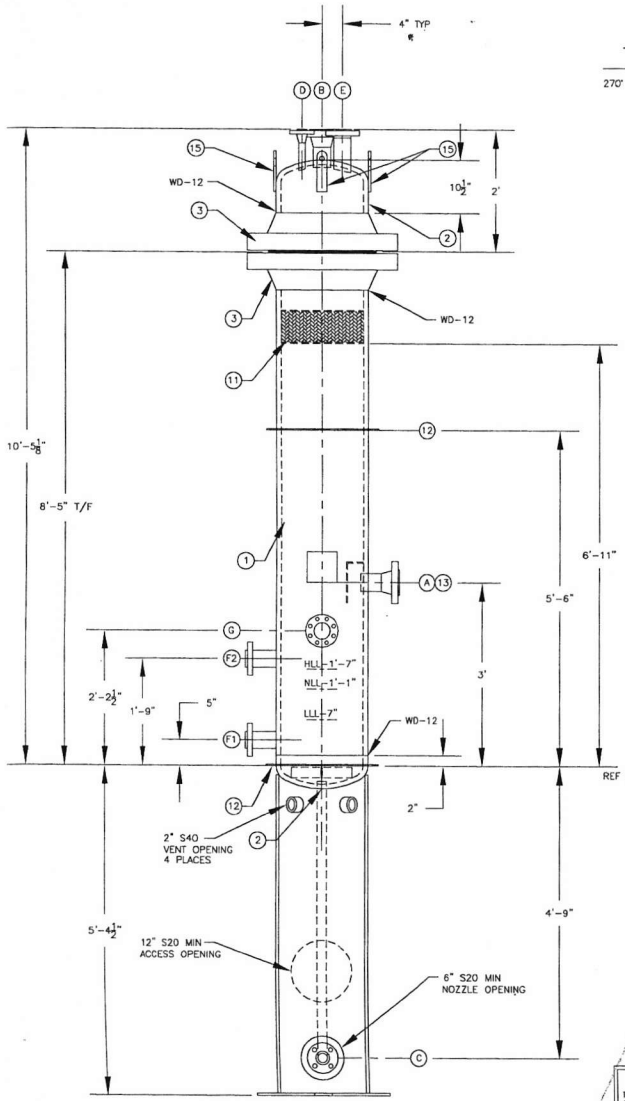
CERTIFICATE OF SHOP / FIELD INSPECTION

Vessel constructed by PRECISION PIPE AND VESSEL, LLC at 6535 N. WASHINGTON ST. DENVER, CO 80229 USA

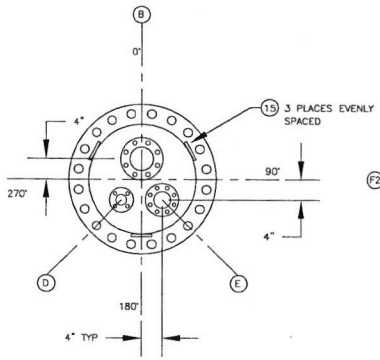
I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of CO and employed by One Beacon America Insurance Co.

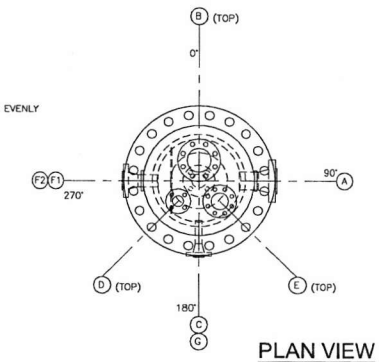
have inspected the component described in this Manufacturer's Data Report on 6/16/09, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By Signing this certificate 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 6/16/09 Signed [signature] (Authorized Inspector) Commissions NB 9625 ANB COLO 326 [National Board (incl. endorsements), State, Province, and number]



ELEVATION VIEW





PLAN VIEW

SCHEDULE OF OPENINGS & WELD MAP

MARK	SIZE	QTY	RATING	TYPE	DESCRIPTION	OS PROJ	INT PROJ	WD	A	B	C
A	3"	1	600#	RFWN	INLET	6"	FLUSH	6/12	3/4"	N/A	N/A
B	3"	1	600#	RFWN	VAPOR OUTLET	6"	FLUSH	6/12	1/2"	3/8"	N/A
C	1 1/2"	1	600#	RFWN	LIQUID OUTLET	6"	FLUSH	6/12	1/2"	N/A	N/A
D	1"	1	600#	RFWN	STEAM OUTLET	6"	1/2" MAX	6/12	1/4"	3/16"	N/A
E	2"	1	600#	RFLWN	PSV CONNECTION	6"	1/2" MAX	6/12	3/8"	3/8"	N/A
F1	2"	1	600#	RFLWN	LEVEL BRIDLE	6"	1/2" MAX	6	3/8"	N/A	N/A
F2	2"	1	600#	RFLWN	LEVEL BRIDLE	6"	1/2" MAX	6	3/8"	N/A	N/A
G	1"	1	600#	RFLWN	SPARE	6"	1/2" MAX	6	1/2"	N/A	N/A
H											
J											
AO	12"	1	N/A	PIPE	SKIRT ACCESS OPENING	1/2"	1/2"	6	3/8"	N/A	N/A
NO	6"	1	N/A	PIPE	NOZZLE OPENING	1/2"	1/2"	6	3/8"	N/A	N/A
VO	2"	4	N/A	PIPE	VENT OPENING	1/2"	1/2"	6	3/8"	N/A	N/A
M	18"	2	600#	RFWN	TOP ACCESS	N/A	N/A	12	3/4"	N/A	N/A

DESIGN DATA

REGISTRATION	NATIONAL BOARD	YEAR BUILT	2009
CONSTRUCTION	ASME SEC VIII, DIV 1; 5141-434113	SERIAL NO.	CV-0885, 31-V-180
DESIGN PRESSURE	800 PSIG	CAPACITY (VOL)	110 GAL
DESIGN TEMP	250° F	SHIPPING WT (EMPTY)	2500 lbs
EXTERNAL PRESSURE	FULL VACUUM @ 350° F	WT. FULL OF WATER	3500 lbs
OPERATING PRESSURE	697 PSIG	VESSEL SHELL MAT'L	18" NPS ERW PIPE, Sch 80
OPERATING TEMP	64° F	TOP/LEFT HEAD	18" NPS PIPE CAP W/ FLANGE
MIN. DES. METAL TEMP	20° F	BOTTOM/ RIGHT HEAD	18" NPS PIPE CAP
WIND CRITERIA	IBC 2006, 100 MPH	NOZZLES	SEE BOM
SEISMIC CRITERIA	IBC 2006, SDS=0.181; SD1=0.090	GASKETS	SS SPIRAL WOUND
HYDRO TEST PRESS	1040 PSI	STUDS & NUTS	SA-193 GR7/SA-194 2H
CORROSION ALLOW.	NONE	SURFACE PREP	SSPC-SP6
RADIOGRAPHY	R1-1	PRIMER	NONE PER 5141-09000 1.1.C.4
POST WELD HEAT TREAT	N/A	FINISH PAINT	NONE PER 5141-09000 1.1.C.4
CORROSION ALLOW. FOR CLAD	N/A	INSULATION	1 1/2" BY OTHERS
MATERIAL HARDNESS	N/A	AUTHORIZED QUALITY CONTROL PROGRAM	

BILL OF MATERIAL

ITEM	QTY	PART	DESCRIPTION	MATERIAL		WT
32						
31						
30						
29						
28						
27						
26						
25						
24						
23						
22						
21						
20						
19						
18						
17						
16	1	-	2'-2" OD x 3 1/2" ID x 1/2" THICK BASE RING	A-36		
15	3	-	LIFT EYE, 1/2" THICK MATERIAL, 8" LONG	304 SS		
14	20	-	1 5/8" B7 STUD WITH 2H NUTS	-		-
13	1	-	NAMEPLATE BRACKET AND NAMEPLATE	304 SS		-
12	2	-	1 1/4" INSULATION RING, 18" ID ROLLED THE HARDWAY	A-36		-
11	1	-	18 7/8" OD X 6" THICK 9# DENSITY DEMISTER PAD	304 SS		-
10	-	-	DELETED	-		-
9	1	-	INLET DIVERTOR PLATE (SEE SHEET 2 OF 2)	SA-240 304/304L		20
8	1	-	VORTEX BREAKER (SEE SHEET 2 OF 2)	SA-240 304/304L		20
7	3	D,G	1" 600# RFWN FLANGE WITH Sch 40 ERW PIPE STUB	SA-182/312 304/304L		90
6	1	C	1 1/2" 600# RFWN FLANGE WITH Sch 40 ERW PIPE STUB	SA-182/312 304/304L		30
5	3	E,F1,F2	2" 600# RFLWN FLANGE, 0.825" WALL	SA-182 F304L		60
4	2	A,B	3" 600# RFWN FLANGE WITH Sch 80 ERW PIPE STUB	SA-182/312 304/304L		60
3	2	M	18" 600# RFWN FLANGE, Sch 40 BORE	SA-182 304/304L		1100
2	2	-	18" NPS Sch 40 PIPE CAP, 0.4917" MIN	SA-240 TP304/304L		300
1	1	-	18" NPS Sch 80s ERW PIPE 0.3642" MIN, 8'-0" LONG	SA-312 TP304/304L		1400

REV	DESCRIPTION	BY	APPD	DATE
2	MATCHED BOM WITH MTR & CALS; REMOVED "C" CONNECTION FLANGES;	DRR	MH	6/13/09
1	ADDED SKIRT, REMOVED LUGS	DRR	MH	5/28/09
0	RELEASED FOR FABRICATION; DESIGNATED NOZZLE E AS 2"	DRR	DRR	5/7/09
B	ADDED LIFT EYES; MOVED HLL DESIGNATION; PLACED NOZZLE E ON HOLD; ADDED INSULATION RING THICKNESS; ADDED INSULATION THICKNESS	DRR	DRR	5/6/09

NB

U

W

RT-1

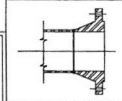
CERTIFIED BY
PRECISION PIPE & VESSEL, LLC
6535 NORTH WASHINGTON STREET
DENVER, COLORADO

MAWP 800/FV PSI AT 250/350 °F
MDMT 20 °F AT 800/FV PSI
SERIAL NO. CV-0885
YEAR BUILT 2009

PART NO. 31-V-180
D-1496

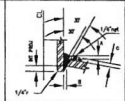
NOTES:
1. ALL BOLT HOLES TO STRADDLE NATURAL CENTERLINES OF VESSEL
2. ANTISIEZE TO BE APPLIED TO ALL BOLTING PRIOR TO TIGHTENING
3. NATIONAL BOARD NUMBER WILL BE ASSIGNED WHEN ALL TESTING HAS BEEN COMPLETED.
4. INTERNAL DEMISTER PAD TO BE REMOVABLE THROUGH MANWAY
5. ALL WELD JOINTS AND 1" ON EITHER SIDE OF JOINT TO BE CLEANED PRIOR TO WELDING.

WD-12



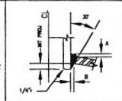
WPS: M8-8, M1-8, T8-8, T1-8

WD-8



WPS: M8-8, M1-8, T8-8, T1-8

WD-6



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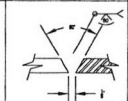
WD-1



WPS: M8-8, M1-8, T8-8, T1-8

PRECISION PIPE & VESSEL, LLC
6535 N. WASHINGTON STREET
DENVER, CO 80229

CUSTOMER: RANGE FUELS SOPERTON PLANT, LLC					JOB NO: 4356 SOP 10535	
TITLE / PROJECT: CHILLER SYNGAS SEPARATOR, 31-V-180					PAGE NUMBER: 1 OF 2	
DRAWN BY: DRR	CHECKED BY: MH	APPROVED: DRR	DATE: 5/7/09	SCALE: NTS	DRAWING NO: D-1496	REV: 2