

TABLE FOR FOUNDATION LOAD DATA				
CASE	WIND		SEISMIC	
	SHEAR (lb-ft)	MOMENT (lb-ft)	SHEAR (lb-ft)	MOMENT (lb-ft)
OPERATING	4703	94439	916	31878
EMPTY	4703	94439	768	29549
HYDRO-TEST (FIELD)	2365	51637	--	--






SHIELD SIDE

NOZZLE NO. (Size)	Fa (lb)	Fv (lb)	Fa (N)	Fv (N)	Mh (lb-in)	Mv (lb-in)
BS (1/8")	4743	5810	9485	31713	22427	44850
BT (1 1/2")	358	398	455	285	207	413
CS (1/2")	452	501	899	516	369	723

HEAD SIDE

NOZZLE NO. (Size)	Fa (lb)	Fv (lb)	Fa (N)	Fv (N)	Mh (lb-in)	Mv (lb-in)
BS (1/8")	3608	4462	7205	21804	15543	31087
BT (1 1/2")	450	521	899	516	369	723
CS (1/2")	497	1183	1033	2272	1608	3216

[illegible]

Kemper County IGCC Unit 1 Project																									
<div>KBR</div> <div>Engineering services by KBR Technical Services TBPE Reg. No. F-2397</div>																									
<div>SOUTHERN COMPANY</div> <div>Southern Company, Inc.</div>																									
<div>SUNGJIN GEOTECH CO., LTD ULSAN, KOREA</div>																									
TITLE: DR1064/2064 AGR GENERATOR REFLEX DRUM GENERAL ASSEMBLY																									
<table><tr><td>WELD 3</td><td>SCALE</td><td>REQ'D NO.</td><td>2 SETS</td><td>P.O. NO.</td><td>MPC17984-0001</td><td>SHEET NO.</td><td>1 of 1</td></tr><tr><td></td><td>SEE DWG.</td><td>PLANT</td><td>Kemper County</td><td>SPT DWG. NO.</td><td>SPT11-SPT1-001004/2064-01</td><td>SCT W/O NO</td><td>113P11</td></tr></table>										WELD 3	SCALE	REQ'D NO.	2 SETS	P.O. NO.	MPC17984-0001	SHEET NO.	1 of 1		SEE DWG.	PLANT	Kemper County	SPT DWG. NO.	SPT11-SPT1-001004/2064-01	SCT W/O NO	113P11
WELD 3	SCALE	REQ'D NO.	2 SETS	P.O. NO.	MPC17984-0001	SHEET NO.	1 of 1																		
	SEE DWG.	PLANT	Kemper County	SPT DWG. NO.	SPT11-SPT1-001004/2064-01	SCT W/O NO	113P11																		
A1		DRAWING NO.		MM78154				REV.																	

GENERAL NOTES

1. ALL DIMENSIONS ARE IN UNITS UNLESS OTHERWISE NOTED.
2. ALL WELD CONTINUOUS UNLESS OTHERWISE NOTED - CONTINUOUS SEAM WELD
3. ALL BOLT HEADS SHALL SPREADLE THE PLAIN CENTERLINE OR CENTERLINE CENTER LINE OF JOSSS UNLESS OTHERWISE SPECIFIED.
4. GASKET CONTACT SURFACE OF FLANGE SHALL BE FINISH WITH 120-250 AMPH
5. GASKET MATERIALS - A. SPARK TESTED 304, 316 OR 316L IN TEE, MAX. BRINELL HARDNESS 100
6. - HOOP - 304, 316 OR 316L IN TEE, MAX. BRINELL HARDNESS 100
7. - FILLER - 309L GRADE
8. - INNER RING - 304, 316
9. - OUTER RING - 304, 316
10. EXTERNAL REINFORCING PASS SHALL HAVE A MINIMUM OF ONE MPS 1/4" MP1 THREAD
11. HOLE PASS FOR NOZZLES SHALL HAVE A MINIMUM OF ONE VENT HOLE AND PASS FOR NOZZLES IN EXCESS OF 36" SHALL HAVE A MINIMUM OF 4 VENT HOLES
12. VENT HOLES IN SECTION ONE SHALL HAVE A MINIMUM OF ONE HOLE PER SECTION. VENT HOLES SHALL BE TAPPED FOR FLOW PLUGGING.

FIGURE 1

1-MPT 1/4" BOLLAGE HOLE W/REIN. PASS	2-MPT 1/4" BOLLAGE HOLE W/REIN. PASS	4-MPT 1/4" BOLLAGE HOLE W/REIN. PASS

5. SPARE PART

CONSTRUCTION AND COMMISSIONING	2 (TWO) YEARS OPERATION (OPTION)
GASKETS	GASKETS
STUD BOLLAGE & WASHER	STUD BOLLAGE & WASHER

6. ALL REMOVABLE INTERNALS SHALL PASS THROUGH THE VESSEL MANWAY.
7. ONE (1) FULL GROUND REMISING PASS @ 0.0625-0.063-0.064-0.07(294) MPD DIAMETER, SHALL BE INTERNAL SUPPLIED PROVIDE TOP AND BOTTOM SUPPORT DECK.
8. MINIMUM INTERNAL BOLT SIZE IS 3/8".
9. PAINTING SHALL BE DONE PER SPECIFICATION 02-05-01-04-VIA-05000
10. - COATING SYSTEM - ZINC-IRON DPOUT & DPOUT 1 + POLYURETHANE
11. IMPACT TEST: (N/A) FOR DPOUT DPOUT 1 & DPOUT 1 (SEE 02-05-01-04 IMPACT TEST EXEMPTION CURVE)
12. PAINTING: REFER TO THE SPECIFICATION FOR TOP AND BOTTOM SUPPORT DECK.
13. NOTE: DO NOT NOTICATED IN THIS DRAWING, REFER TO THE NDC MAP.
14. SPECIAL SPEC: (N/A) PER PER SPECIFICATION 02-05-01-04-VIA-05000
15. WELD SIZE: OTHERWISE SPECIFIED APPROX 1/8" LONG LENGTH AND 1/8" LOWER END LENGTH.
16. FABRICATION: (N/A) PER PER SPECIFICATION 02-05-01-04-VIA-05000

[illegible]

ASME

CODE STAMPED WORK (U)

020604-013	EXTERNAL SUPPORT CLIP (1/2)
010604-012	INTERNAL SUPPORT CLIP (1/2)
010604-011	DEVELOPMENT DRAWING (2/2)
020104-010	DEVELOPMENT DRAWING (1/2)
010604-009	SHIPPING DRAWING
010604-008	MANIFOLD DETAIL (1/2)
010604-007	MANIFOLD DETAIL (2/2)
010604-006	NOZZLE DETAIL (1/2)
010604-005	NOZZLE DETAIL (2/2)
010604-004	MANIFOLD DETAIL
010604-003	MANIFOLD DETAIL
010604-002	BODY DETAIL
010604-001	DESCRIPTIONS

DETAIL DRAWINGS

SA	1	LD20"	-	-	SL4703	2	SWRT ACCESS	-	-	-	-	-	-
SS	1	B"	-	-	SOL805	3	SWRT SLEEVE (FOR "CW")	-	-	-	-	-	-
SWH-4	4	3"	-	-	SOL405	3	SWRT VENT	-	-	-	-	-	-

LTA/B	2	2"	ASME 300W	UNW.R.F.	-	LEVEL DISPLACER	-	-	2"-9" (638)	-	-	-	-
LTA/B	2	2"	ASME 300W	UNW.R.F.	-	LEVEL DISPLACER	-	-	2"-9" (638)	-	-	-	-
LTA/B	2	2"	ASME 300W	UNW.R.F.	-	LEVEL DISPLACER	-	-	2"-9" (638)	-	-	-	-
LTA/B	2	2"	ASME 300W	UNW.R.F.	-	LEVEL DISPLACER	-	-	2"-9" (638)	-	-	-	-
LTA/B	2	2"	ASME 300W	UNW.R.F.	-	LEVEL DISPLACER	-	-	2"-9" (638)	-	-	-	-
LTA/B	2	2"	ASME 300W	UNW.R.F.	-	LEVEL DISPLACER	-	-	2"-9" (638)	-	-	-	-
LTA/B	2	2"	ASME 300W	UNW.R.F.	-	LEVEL DISPLACER	-	-	2"-9" (638)	-	-	-	-
LTW	2	2"	ASME 300W	UNW.R.F.	-	BIDDLE	-	-	-	-	-	-	-
CB	1	4"	ASME 150W	UNW.R.F.	SOL805	REFLUX OUT	SEE DWG.	0.65" (16)	0.65" (16)	0.65" (16)	0.65" (16)	0.65" (16)	0.65" (16)
BS	1	2"	ASME 150W	UNW.R.F.	-	STRAIGHT OUT	-	-	2"-9" (638)	-	-	-	-
BI	1	1/2"	ASME 150W	UNW.R.F.	-	STRAIGHT FILLING	-	-	2"-9" (638)	-	-	-	-
BJ	1	1"	ASME 150W	UNW.R.F.	-	INLET	SEE DWG.	0.65" (16)	0.65" (16)	0.65" (16)	0.65" (16)	0.65" (16)	0.65" (16)
AV	1	24"	ASME 150W	UNW.R.F.	-	MANHOLE	-	-	2"-10" (864)	-	-	-	W/B & DANT
BB	2	2"	ASME 150W	UNW.R.F.	SOL1605	VENT	-	-	2"-10" (864)	-	-	-	-
AD	1	14"	ASME 150W	UNW.R.F.	0.65" (16)	VAPOR OUT	SEE DWG.	0.65" (16)	0.65" (16)	0.65" (16)	0.65" (16)	0.65" (16)	0.65" (16)
AM	1	4"	ASME 150W	UNW.R.F.	SOL405	VENTILATION	SEE DWG.	0.65" (16)	0.65" (16)	0.65" (16)	0.65" (16)	0.65" (16)	0.65" (16)

NOZZLE	QTY	QTY	RATING	FLANGE	BOX	SERVICE	PROTECTION	REFIN	PAD	REMARK
MARK	/SET	(NOI)								

OPERATING	4703	94439			
EMPTY	4703	94439	768	23649	
WIND-TEST (HRS-25)	2365	51637			

NOZZLE LOAD

SHELL SIDE

NOZZLE NO. 1059	FA (lb)	FA (kN)	FW (lb)	FW (kN)	NA (lb)	NA (kN)	MA (lb)	MA (kN)
BN (18)	4743	5810	9485	37173	22427	64850		
BN (1/2)	335	385	452	205	207	413		
BN (2)	450	581	899	516	369	733		

HEAD SIDE

NOZZLE NO. 1059	FA (lb)	FA (kN)	FW (lb)	FW (kN)	NA (lb)	NA (kN)	MA (lb)	MA (kN)
AD (18)	3668	4482	7302	21804	13546	37090		
AD (1/2)	267	303	369	165	166	333		
AD (2)	450	581	899	516	369	733		
CW (4)	967	1185	1853	2272	1698	3216		

DETAIL DRAWINGS

SA	1	LD20"	-	-	SL4703	2	SWRT ACCESS	-	-	-	-	-	-
SS	1	B"	-	-	SOL805	3	SWRT SLEEVE (FOR "CW")	-	-	-	-	-	-
SWH-4	4	3"	-	-	SOL405	3	SWRT VENT	-	-	-	-	-	-

NOZZLE DETAIL (1/2)

NOZZLE DETAIL (2/2)

MANIFOLD DETAIL

MANIFOLD DETAIL

SHIPPING DRAWING

DEVELOPMENT DRAWING (1/2)

DEVELOPMENT DRAWING (2/2)

INTERNAL SUPPORT CLIP (1/2)

EXTERNAL SUPPORT CLIP (1/2)

NOZZLE LIST

NOZZLE	QTY	QTY	RATING	FLANGE	BOX	SERVICE	PROTECTION	REFIN	PAD	REMARK
MARK	/SET	(NOI)								

NOZZLE DETAIL (1/2)

NOZZLE DETAIL (2/2)

MANIFOLD DETAIL

MANIFOLD DETAIL

SHIPPING DRAWING

DEVELOPMENT DRAWING (1/2)

DEVELOPMENT DRAWING (2/2)

INTERNAL SUPPORT CLIP (1/2)

EXTERNAL SUPPORT CLIP (1/2)

NOZZLE DETAIL (1/2)

NOZZLE DETAIL (2/2)

MANIFOLD DETAIL

MANIFOLD DETAIL

SHIPPING DRAWING

DEVELOPMENT DRAWING (1/2)

DEVELOPMENT DRAWING (2/2)

INTERNAL SUPPORT CLIP (1/2)

EXTERNAL SUPPORT CLIP (1/2)

Southern Company Generation Kemper County
MM78154 E Unit 1

SUNGJIN GEOTECH PO: MPC17984-0001
SGT11-SP11-DR1064-2064-001 Rev: 5
IGCC - GASIFIER - AGR REGENERATOR REFLUX DRUM - GENERAL ASSEMBLY

KBR	
ACCEPTANCE FOR ENGINEERING USE	
THIS DOCUMENT IS	
ACCEPTED (Code 1)	X
ACCEPTED WITH COMMENTS (Code 2)	
NOT ACCEPTED (Code 3)	
NOT REVIEWED (Code 4)	
ACCEPTANCE DOES NOT RELIEVE SUPPLIER FROM FURNISHING MATERIAL IN CONFORMANCE WITH ORDER. REFER TO SDR-1 FOR FULL DEFINITION OF ACCEPTANCE CONDITIONS.	
DISCIPLINE VM	DATE 28-Nov-12

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

CORRECTED

1. Manufactured and certified by SUNG JIN GEOTEC CO., LTD. SGT-1, #20-1, SUNGAM-DONG, NAM-GU, ULSAN, 680-140, SOUTH KOREA
(Name and address of manufacturer)

2. Manufactured for Southern Company Services, Inc.
(Name and address of purchaser)

3. Location of Installation Kemper County, Mississippi.
(Name and address)

4. Type VERTICAL 11SP11-DR2064 11SP11-DR1064/2064-001 REV.5 1128 2012
(Horiz. or vert., tank) (Mfg's serial No.) (CRN) (Drawing No.) (Natl. Bd. No.) (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 2010 ED.
Year

to N/A Yes
Addenda (Date) Code Case Nos. Special Service per UG-120(d)

6. Shell : SA240-304L 0.55" 0.06 4'-0" 12'-0"
Matl. (Spec. No., Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. I.D. (ft. & in.) Length (overall) (ft. & in.)

Type 1 Welded, Single, Butt

7. Seams : SPOT 0.85 — — — SPOT 0.85 2
Long. (Welded, Dbl., Snpl., Lap, Butt) R.T. (Spot or Full) Eff. (%) H.T. Time (hr) Girth (Welded, Dbl., Snpl., Lap, Butt) R.T. (Spot, Partial, or Full) Eff. (%) No. of Courses

8. Heads : (a) Matl. SA240-304L (Spec. No., Grade) (b) Matl. SA240-304L (Spec. No., Grade)

	Location (Top, Bottom, Ends)	Minimum Thickness (in.)	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to pressure (Convex or Concave)
(a)	TOP	0.47"	0.06	—	—	2:1	—	—	—	Convex/Concave
(b)	BOTTOM	0.47"	0.06	—	—	2:1	—	—	—	Convex/Concave

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

9. MAWP 50 15 psig at max. temp. 250 115 °F
(Internal) (External) (Internal) (External)

Min. design metal temp. 10 °F at 50 psig Hydro. — or comb. test pressure 65 psig

Proof test. —

10. Nozzle, inspection and safety valve openings.

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Matl.	Nom. Thk. (in.)	Reinforcement Matl.	How Attached	Location
VENTILATION AM	1	4"	Cl. 150# WN.RF	SA312-TF304L	0.34"	SA240-304L	Fig. UW-16.1(d)	—
VAPOR OUT AO	1	14"	Cl. 150# WN.RF	SA240-304L	0.55"	SA240-304L	Fig. UW-16.1(d)	—
VENT AV	1	2"	Cl. 150# WN.RF	SA312-TP304L	0.34"	N/A	Fig. UW-16.1(d)	—
MANHOLE BB	1	12'-0"	Cl. 150# LWN.RF	SA182-304L	1.04"	N/A	Fig. UW-16.1(d)	SHELL
INLET BJ	1	18"	Cl. 150# WN.RF	SA240-304L	0.55"	SA240-304L	Fig. UW-16.1(d)	—

11. Supports : Skirt Yes Lugs No Legs No Other No Attached To shell by fillet welded
(Yes or no) (No.) (No.) (Describe) (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 : N/A
(Name of part, item number, Mfg's. name and identifying stamp)

1. Safety valve will be installed in system by other. 2. Impact test not required as per ASME SEC VIII, Division 1

3. Equipment Tag No. : DR2064

4. Pressure retaining covers were BB & AM : SA182-F304L & Stud bolt / 2 Heavy nuts : SA193-B8, 1-1/4" 8UN x L190 / SA194-B 5/8" x 11UNC x L100 / SA194-B

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. 31664

expires DEC 17, 2014
Date 19-Mar-12 Co. name SUNG JIN GEOTEC CO., LTD. SGT-1 Signed J. S. LEE
(Manufacturer) (Representative)

CERTIFICATE OF SHOP/FIELD INSPECTION

Vessel constructed by SUNG JIN GEOTEC CO., LTD. SGT-1 at #20-1, SUNGAM-DONG, NAM-GU, ULSAN, 680-140, SOUTH KOREA.

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 OHIO and employed by LR INSURANCE INC. Delaware, USA

have inspected the component described in this Manufacturer's Data Report on 19-Mar-12, 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 19-Mar-12 signed S. H. SEO Commissions NB#13354-A, OH#733
(Authorized Inspector) (National Board (incl. endorsements), State, Province, and Number)

Southern Company Generation Kemper County
MM185473 A Unit 1

SUNGJIN GEOTECH PO: MPC17984-0001
SGT11-SP11-DR2064-001 U-1A MDR Rev: 1
IGCC - GASIFIER - MULTIPAGE - MDR FOR PRESSURE VESSELS - VERTICAL

CORRECTED

1. Manufactured and certified by	SUNG JIN GEOTEC CO., LTD.SGT-1, #20-1, SUNGAM-DONG, NAM-GU, ULSAN, 680-140, SOUTH KOREA.		
	(Name and address of manufacturer)		
2. Manufactured for	Southern Company Services, Inc.		
	(Name and address of purchaser)		
3. Location of installation	Kemper County, Mississippi.		
	(Name and address)		
4. Type :	VERTICAL	Vessel	11SP11-DR2064
	(Horiz., vert., or sphere)	(tank, separator, heat exh., etc.)	(Mfg's serial No.)
	-	11SP11-DR1064/2064-001 REV.5	1128
	(CRN)	(Drawing No.)	(Nat'l. Bd. No.)
			2012
			(Year Built)

[illegible]

Certificate of Authorization : Type		U	No.	31664	Expires	DEC. 17, 2014
Date	19-Mar-12	Name	SUNG JIN GEOTEC CO., LTD. SGT-1 (Manufacturer)		Signed	J. S. LEE (Representation)
Date	19-Mar-12	Name	S. H. SEO (Authorized Inspector)		Commission	NB#13354 A, OH#733 Nat'l Board (incl. endorsements), State, Prov. and No.