APPENDIX C

KEMPER COUNTY IGCC PROJECT AIR EMISSIONS DATA

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Table 3-1 - Facility-Wide Annual Potential Emissions (TPY)
Mississippi Power Company - IGCC Plant

Emission Source	NO_X	SO_2	CO	PM/PM_{10}	VOC	Lead	H_2SO_4 Mist	HAPs	
								Total Combined	Maximum Indivdual HAP (COS)
IGCC Stacks (#1 and #2)	1839.6	114.8	1112.5	455.5	181.3	<0.1	15.8	9.18	Neg.
Material Handling	NA	NA	NA	33.2	NA	NA	NA	NA	NA
Wet Gas Sulfuric Acid (WSA) Process	72.3	198.9	Neg.	Neg.	Neg.	Neg.	21.9	Neg.	Neg.
AGR Process Vents (MP 1 & 2, LP 1 & 2)	NA	NA	--*	NA	NA	NA	NA	8.6	8.6
Flares (Continuous Operation)	132.9	318.1	106.4	1.3	1.0	<0.1	24.4	0.29	Neg.
Flares (during Gasifier Startups)	2.1	7.5	7.5	<0.1	<0.1	<0.1	0.6	<0.01	Neg.
Gasifier Startup Stacks	28.8	30.3	0.6	<0.1	<0.1	<0.1	2.3	<0.01	Neg.
Auxiliary Boiler	13.8	0.1	8.4	2.1	1.1	<0.1	<0.1	0.39	Neg.
Gasification Cooling Tower	NA	NA	NA	13.2	NA	NA	NA	NA	NA
Combined Cycle Cooling Tower	NA	NA	NA	16.4	NA	NA	NA	NA	NA
Emergency Fire Pumps	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	Neg.
Facility-WideTotal	**2089.6**	**669.7**	**1235.4**	**521.8**	**183.4**	**Neg.**	**64.9**	**18.5**	**8.6**

* TPY to be determined based on total hours described in Section 3.1.9 of the PSD application.

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Table 3-2 - Criteria Pollutant Emission Rates per IGCC Stack - Syngas
Mississippi Power Company - IGCC Plant

Unit Load (%)	Ambient Temperature (^{o}F)	NO_x			SO_2			CO			PM/PM_{10}[3]			VOC			Lead			H_2SO_4 Mist		
		lb/MMBtu[2]	lb/hr	TPY[4]	lb/MMBtu[2]	lb/hr	TPY[4]	lb/MMBtu[2]	lb/hr	TPY[4]	lb/MMBtu[2]	lb/hr	TPY[4]	lb/MMBtu[2]	lb/hr	TPY[4]	lb/MMBtu[2]	lb/hr	TPY[4]	lb/MMBtu[2]	lb/hr	TPY[4]
100[1]	10	0.061	210	919.8	0.0040	13.1	57.4	0.031	105	459.9	0.015	52	227.8	0.005	17.1	74.9	Neg.	<0.1	<0.1	0.00051	1.8	7.9
	65	0.06	202	884.8	0.0040	12.9	56.5	0.029	97	424.9	0.015	50	219.0	0.0048	15.8	69.2	Neg.	<0.1	<0.1	0.00052	1.7	7.4
	95	0.06	203	889.1	0.0040	12.9	56.5	0.029	98	429.2	0.015	50	219.0	0.0048	16	70.1	Neg.	<0.1	<0.1	0.00052	1.7	7.4
75	10	0.059	143	626.3	0.0040	10.1	44.2	0.023	56	245.3	0.015	37	162.1	0.0035	8.4	36.8	Neg.	<0.1	<0.1	0.00054	1.3	5.7
	65	0.059	140	613.2	0.0040	9.8	42.9	0.023	54	236.5	0.015	36	157.7	0.0034	8.2	35.9	Neg.	<0.1	<0.1	0.00054	1.3	5.7
	95	0.059	139	608.8	0.0040	9.8	42.9	0.023	53	232.1	0.015	36	157.7	0.0035	8.2	35.9	Neg.	<0.1	<0.1	0.00054	1.3	5.7

[1] Emission rates include emissions from the Duct Burner (DB) combusting natural gas.
[2] Heat input is calculated on a Gasifier + DB basis.
[3] Filterable PM
[4] TPY estimates are based on 8760 hours per year operation at the specified conditions.

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Table 3-3 - Criteria Pollutant Emission Rates per IGCC Stack - Natural Gas
Mississippi Power Company - IGCC Plant

Unit Load (%)	Ambient Temperature (°F)	NO_x			SO_2			CO			PM/PM_{10}[3]			VOC			Lead			H_2SO_4 Mist		
		lb/MMBtu[2]	lb/hr	TPY[4]	lb/MMBtu[2]	lb/hr	TPY[4]	lb/MMBtu[2]	lb/hr	TPY[4]	lb/MMBtu[2]	lb/hr	TPY[4]	lb/MMBtu[2]	lb/hr	TPY[4]	lb/MMBtu[2]	lb/hr	TPY[4]	lb/MMBtu[2]	lb/hr	TPY[4]
100[1]	10	0.014	39	170.8	0.0006	1.9	8.3	0.045	127	556.3	0.009	24	105.1	0.0074	20.7	90.7	Neg.	<0.1	<0.1	0.0001	0.29	1.27
	65	0.015	38	166.4	0.0006	1.8	7.9	0.047	126	551.9	0.009	24	105.1	0.0076	20.7	90.7	Neg.	<0.1	<0.1	0.0001	0.27	1.18
	95	0.015	38	166.4	0.0006	1.8	7.9	0.048	126	551.9	0.009	23	100.7	0.0078	20.7	90.7	Neg.	<0.1	<0.1	0.0001	0.27	1.18
75	10	0.013	20	87.6	0.0006	1.0	4.4	0.021	33	144.5	0.009	14	61.3	0.0029	4.5	19.7	Neg.	<0.1	<0.1	0.0001	0.16	0.70
	65	0.014	21	92.0	0.0006	1.0	4.4	0.022	33	144.5	0.009	13	56.9	0.0030	4.6	20.1	Neg.	<0.1	<0.1	0.0001	0.15	0.66
	95	0.014	19	83.2	0.0006	0.9	3.9	0.022	31	135.8	0.009	12	52.6	0.0031	4.2	18.4	Neg.	<0.1	<0.1	0.0001	0.14	0.61
60	10	0.012	16	70.1	0.0006	0.9	3.9	0.059	79	346.0	0.010	13	56.9	0.0027	3.6	15.8	Neg.	<0.1	<0.1	0.0001	0.14	0.61
	65	0.013	16	70.1	0.0006	0.9	3.9	0.062	80	350.4	0.009	12	52.6	0.0029	3.7	16.2	Neg.	<0.1	<0.1	0.0001	0.13	0.57
	95	0.013	15	65.7	0.0006	0.8	3.5	0.063	75	328.5	0.009	11	48.2	0.0029	3.4	14.9	Neg.	<0.1	<0.1	0.0001	0.12	0.53

[1] Emission rates include emissions from the Duct Burner (DB) combusting natural gas.
[2] Heat input is calculated on a CT + DB basis.
[3] Filterable PM
[4] TPY estimates are based on 8760 hours per year operation at the specified conditions.

Table 3-4 - Material Handling Emissions
Mississippi Power Company - IGCC Plant

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Emission Source	Source Type	Emission Control Type	PM/PM$_{10}$	
			lb/hr	TPY[(1)]
Haul Roads				
Haul Road #1 - Mine to Coal Handling Equipment	Fugitive	BMPs	0.62	2.72
Haul Road #2 - Ash/Salt to Temporary Storage Pile	Fugitive	BMPs	0.34	1.49
Haul Road #3 - Ash/Salt to Hwy	Fugitive	BMPs	0.15	0.66
Haul Road #4 - Ash/Salt on Landfill	Fugitive	BMPs	0.34	1.49
Coal Handling Fugitive Sources				
Dump Truck Unloading to Backup Coal Storage Pile #1	Fugitive	BMPs	0.03	0.14
Wind Erosion Backup Coal Storage Pile #1	Fugitive	BMPs	0.49	2.16
Dump Truck Unloading	Fugitive	Stilling Shed, Wet Suppression, Fogging	0.02	0.07
Primary Sizer	Fugitive	Fogging, partially enclosed	0.27	1.18
Primary Sizer to Conveyor 1	Fugitive	Partially enclosed	0.05	0.20
Secondary Sizer	Fugitive	Fogging, partially enclosed	0.27	1.18
Secondary Sizer to Conveyor 2	Fugitive	Fogging, partially enclosed	0.05	0.20
Conveyor 2 to Conveyor 3	Fugitive	Fogging, partially enclosed	0.05	0.20
Conveyor 3 to Active Storage Pile	Fugitive	Wet Supression, inside coal barn	0.05	0.20
Wind Erosion Active Coal Storage Pile	Fugitive	Wet Supression, inside coal barn (negligible wind emissions expected)	Neg.	Neg.
Transfer Building 1	Fugitive	Fogging, partially enclosed	0.06	0.24
Transfer Building 2	Fugitive	Fogging, partially enclosed	0.06	0.24
Conveyor 3 to Conveyor 4S	Fugitive	Enclosed, Fogging	0.05	0.20
Conveyor 4S to Backup Coal Storage Pile #2	Fugitive	Wet suppression	0.09	0.40
Wind Erosion Backup Coal Storage Pile #2	Fugitive	Pile to be covered with tarp (negligible wind emissions expected)	Neg.	Neg.
Coal Handling Point Sources				
Crushed Coal Storage Silos (6)	Point	Baghouse (single baghouse for the 6 silos)	0.05	0.22
Coal Milling and Drying #1	Point	Baghouse	0.47	2.06
Coal Milling and Drying #2	Point	Baghouse	0.47	2.06
Coal Milling and Drying #3	Point	Baghouse	0.47	2.06
Coal Milling and Drying #4	Point	Baghouse	0.47	2.06
Coal Milling and Drying #5	Point	Baghouse	0.47	2.06
Coal Milling and Drying #6	Point	Baghouse	0.47	2.06
Ash/Salt Handling				
Ash/Salt Temporary Storage Pile (Includes truck unloading, wind erosion, and dozier operations)	Fugitive	Ash will be wetted prior to loading into truck, BMPs	0.66	2.89
Ash/Salt Landfill (Includes truck unloading, wind erosion, and dozier operations)	Fugitive	Ash will be wetted prior to loading into truck, BMPs	1.09	4.79
		Total		**33.2**

[(1)] TPY estimates are based on 8760 hours per year.

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Table 3-5 - Crietria Pollutant Emission Rates - Miscellaneous Sources
Mississippi Power Company - IGCC Plant

Unit Load (%)	NO_X		SO_2		CO		PM/PM_{10} [3]		VOC		Lead		H_2SO_4 Mist	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Wet Gas Sulfuric Acid (WSA) Process	16.5	72.3	45.4	198.9	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	5.0	21.9
Flare #1	15.2	66.4	36.3	159.0	12.2	53.2	0.15	0.66	0.11	0.48	<0.1	<0.1	2.8	12.2
Flare #2	15.2	66.4	36.3	159.0	12.2	53.2	0.15	0.66	0.11	0.48	<0.1	<0.1	2.8	12.2
AGR Process Vent MP1	NA	NA	NA	NA	260.0	--[4]	NA	NA	NA	NA	NA	NA	NA	NA
AGR Process Vent LP1	NA	NA	NA	NA	15.0	--[4]	NA	NA	NA	NA	NA	NA	NA	NA
AGR Process Vent MP2	NA	NA	NA	NA	260.0	--[4]	NA	NA	NA	NA	NA	NA	NA	NA
AGR Process Vent LP2	NA	NA	NA	NA	15.0	--[4]	NA	NA	NA	NA	NA	NA	NA	NA
Auxiliary Boiler[1]	18.4	13.8	0.17	0.13	11.2	8.4	2.83	2.12	1.41	1.06	<0.1	<0.1	0.01	0.06
Gasification Cooling Tower	NA	NA	NA	NA	NA	NA	3.0	13.2	NA	NA	NA	NA	NA	NA
Combined Cycle Cooling Tower	NA	NA	NA	NA	NA	NA	3.8	16.4	NA	NA	NA	NA	NA	NA
Fire Water Pumps[2]	4.0	0.10	0.56	0.01	2.4	0.06	0.22	0.01	1.04	0.03	<0.1	<0.1	0.04	0.00
Total		219.1		517.1		114.9		33.0		2.0		Neg.		46.3

[1] TPY emission rates are based on a maximum of 1,500 hr/yr operation.
[2] TPY emission rates are based on a maximum of 52 hr/yr operation.
[3] Filterable PM
[4] TPY to be determined based on total hours described in Section 3.1.9 of the PSD application.

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Table 3-6 - Crietria Pollutant Emissions - Gasifier Startup
Mississippi Power Company - IGCC Plant

Unit Load (%)	NO_X		SO_2		CO		PM/PM_{10} [3]		VOC		Lead		H_2SO_4 Mist	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Gasifier Startup Stack#1[1]	90.1	14.4	94.7	15.2	1.8	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	7.25	1.16
Gasifier Startup Stack#2[1]	90.1	14.4	94.7	15.2	1.8	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	7.25	1.16
Flare #1[2]	48	1.0	174	3.8	172.0	3.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	13.32	0.3
Flare #2[2]	48	1.0	174	3.8	172.0	3.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	13.32	0.3
Total		30.9		37.8		8.0		Neg.		Neg.		Neg.		2.90

[1] lb/hr rates are expressed as an average across Startup period; TPY emission rates are based on 16 hr/startup and 20 starts/year.
[2] lb/hr rates are expressed as an average across Startup period; TPY emission rates are based on 2.2 hr/startup and 20 starts/year.
[3] Filterable PM

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Table 3-7 - Mercury Emissions - IGCC Stacks
Mississippi Power Company - IGCC Plant

Avg. Hg content in Coal	ppm	0.077
Avg. Coal Usage per gasifier	lb/hr	576,000
Avg. Coal Heat content	Btu/lb	5,290
Avg. Heat Input at 100% load per gasifier	MMBtu/hr	3,047
Avg. Hg to gasifier	lb/hr	0.0444
Expected Efficiency of Hg Removal	%	92%
Hg in Cleaned Syngas per CT	lb/hr	0.0035
Hg in Cleaned Syngas per CT	lb/MMBtu	1.16 E-06
Hg emissions (total from 2-CTs)	lb/hr	0.0071
Hg emissions (total from 2-DBs) (AP-42)	lb/hr	0.00025
Hg emissions (total from 2-CT/HRSGs)	lb/hr	0.0073
Expected Hg emissions at 8,760 hrs/year (total from 2-CT/HRSGs)	lb/year	**64.4**

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Table 3-8 - Hazardous Air Pollutants
Mississippi Power Company - IGCC Plant

Source	Total Combined HAPs (TPY)	Maximum Indivdual HAP (TPY)	
		Formaldehyde	COS
IGCC Stacks (#1 and #2)	9.18	3.10	--
Auxiliary Boiler	0.39	0.02	--
Flares	0.29	0.01	--
AGR Process Vents	8.6	0.00	8.6*
Totals	**18.46**	**3.13**	**8.6**

* See Section 3.1.9 of the PSD application.