BHS WATER FLASHED GAS ANALYSIS

Project Number: HH-108056

WELL: Louisiana Green Fuels Well 001

Prepared for

Strategic Biofuels LLC

By

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DESCRIPTION OF EXPERIMENT

The Sample validation study was conducted on bottom hole samples collected from the well Louisiana Green Fuels Well 001

The samples were conditioned at temperature and pressure for a minimum of 24 hours prior to measuring gas water ratio and flashed gas composition using gas chromatography methods.

Strategic Biofuels LLC - Louisiana Green Fuels Well 001
TABLE 1
Sample Inventory

Client	Strategic Biofules LLC
Well	Louisiana Green Fuels Well 001
Sample Type	BHS Water

Sample No.	Cylinder Number	Depth (ft)	Sample Type	Opening Pressure (psig @77.0°F)	Gas Water Ratio (scf/stb)
1.01	817099	5050	Water	5398	4.9
1.02	822302	5035	Water	5231	6.2
2.01	817141	5595	Water	5324	21.7
2.02	817135	5581	Water	5276	19.0
3.01	818054	5808	Water	5163	6.3
3.02	822291	5794	Water	5931	6.4
4.01	817111	4134	Water	5066	6.1

TABLE 2
Compositional Analysis of Flashed Gas From BHS Water, Depth 5050 and 5035 ft

Component Name	Chemical Symbol	1.01		1.02	
		mole %	Weight%	mol%	Weight%
Nitrogen	N_2	7.237	8.593	18.666	21.731
Carbon Dioxide	CO_2	23.589	44.005	20.378	37.272
Hydrogen Sulphide	H_2S	0.000	0.000	0.000	0.000
Methane	C_1	68.709	46.724	60.512	40.347
Ethane	C_2	0.364	0.464	0.345	0.431
Propane	C_3	0.079	0.147	0.073	0.133
i-Butane	i-C_4	0.011	0.026	0.010	0.023
n-Butane	n-C_4	0.006	0.014	0.005	0.013
i-Pentane	i-C_5	0.000	0.000	0.001	0.003
n-Pentane	n-C_5	0.000	0.000	0.000	0.000
Hexanes	C_6	0.000	0.000	0.000	0.000
M-C-Pentane		0.000	0.000	0.000	0.000
Benzene		0.000	0.000	0.000	0.000
cyclo-hexane		0.000	0.000	0.000	0.000
Heptanes	C_7	0.005	0.023	0.005	0.020
M-C-Hexane		0.000	0.000	0.000	0.000
Toluene		0.001	0.003	0.006	0.022
Octanes	C_8	0.000	0.000	0.000	0.000
E-Benzene		0.000	0.000	0.000	0.000
M/P-Xylene		0.000	0.000	0.000	0.000
O-Xylene		0.000	0.000	0.000	0.000
Nonanes	C_9	0.000	0.000	0.001	0.005
1,2,4-TMB		0.000	0.000	0.000	0.000
Decanes	C_{10}	0.000	0.000	0.000	0.000
Undecane	C_{11}	0.000	0.000	0.000	0.000
Dodecanes Plus	C_{12+}	0.000	0.000	0.000	0.000
Total		**100.000**	**100.000**	**100.000**	**100.000**

Calculated Gas Properties @ Standard Conditions			
Molecular Weight	23.59	24.06	kg/kmol
Specific Gravity	0.8145	0.8307	Air=1
MW of C7+	99.04	98.68	kg/kmol
Density of C7+	0.7076	0.7666	g/cc
Calculated Pseudocritical Properties			
Ppc	749.60	716.67	psia
Tpc	384.03	364.20	R
Calculated Gross Heating Values @ Standard Conditions			
Dry	704.71	621.51	Btu/scf
Wet	692.45	610.70	Btu/scf
Calculated Net Heating Value @ Standard Conditions			
Dry	634.53	559.65	Btu/scf
Wet	623.49	549.91	Btu/scf

Standard Conditions: 60°F @ 14.696 psia

TABLE 3
Compositional Analysis of Flashed Gas From BHS Water, Depth 5595 and 5581 ft

Component Name	Chemical Symbol	2.01		2.02	
		mole %	Weight%	mol%	Weight%
Nitrogen	N_2	2.387	1.779	2.915	2.229
Carbon Dioxide	CO_2	76.013	89.002	72.380	86.952
Hydrogen Sulphide	H_2S	0.000	0.000	0.000	0.000
Methane	C_1	21.601	9.220	24.705	10.819
Ethane	C_2	0.000	0.000	0.000	0.000
Propane	C_3	0.000	0.000	0.000	0.000
i-Butane	i-C_4	0.000	0.000	0.000	0.000
n-Butane	n-C_4	0.000	0.000	0.000	0.000
i-Pentane	i-C_5	0.000	0.000	0.000	0.000
n-Pentane	n-C_5	0.000	0.000	0.000	0.000
Hexanes	C_6	0.000	0.000	0.000	0.000
M-C-Pentane		0.000	0.000	0.000	0.000
Benzene		0.000	0.000	0.000	0.000
cyclo-hexane		0.000	0.000	0.000	0.000
Heptanes	C_7	0.000	0.000	0.000	0.000
M-C-Hexane		0.000	0.000	0.000	0.000
Toluene		0.000	0.000	0.000	0.000
Octanes	C_8	0.000	0.000	0.000	0.000
E-Benzene		0.000	0.000	0.000	0.000
M/P-Xylene		0.000	0.000	0.000	0.000
O-Xylene		0.000	0.000	0.000	0.000
Nonanes	C_9	0.000	0.000	0.000	0.000
1,2,4-TMB		0.000	0.000	0.000	0.000
Decanes	C_{10}	0.000	0.000	0.000	0.000
Undecane	C_{11}	0.000	0.000	0.000	0.000
Dodecanes Plus	C_{12+}	0.000	0.000	0.000	0.000
Total		**100.000**	**100.000**	**100.000**	**100.000**

Calculated Gas Properties @ Standard Conditions			
Molecular Weight	37.59	36.63	kg/kmol
Specific Gravity	1.2977	1.2648	Air=1
MW of C7+	#DIV/0!	#DIV/0!	kg/kmol
Density of C7+	#DIV/0!	#DIV/0!	g/cc
Calculated Pseudocritical Properties			
Ppc	969.10	953.56	psia
Tpc	495.74	487.70	R
Calculated Gross Heating Values @ Standard Conditions			
Dry	218.60	250.02	Btu/scf
Wet	214.80	245.67	Btu/scf
Calculated Net Heating Value @ Standard Conditions			
Dry	196.78	225.07	Btu/scf
Wet	193.36	221.15	Btu/scf

Standard Conditions: 60°F @ 14.696 psia

TABLE 4
Compositional Analysis of Flashed Gas From BHS Water, Depth 5808 and 5794 ft

Component Name	Chemical Symbol	3.01		3.02	
		mole %	Weight%	mol%	Weight%
Nitrogen	N_2	20.888	27.449	9.838	13.393
Carbon Dioxide	CO_2	9.837	20.309	11.912	25.476
Hydrogen Sulphide	H_2S	0.000	0.000	0.000	0.000
Methane	C_1	69.114	52.015	78.062	60.857
Ethane	C_2	0.161	0.227	0.188	0.274
Propane	C_3	0.000	0.000	0.000	0.000
i-Butane	i-C_4	0.000	0.000	0.000	0.000
n-Butane	n-C_4	0.000	0.000	0.000	0.000
i-Pentane	i-C_5	0.000	0.000	0.000	0.000
n-Pentane	n-C_5	0.000	0.000	0.000	0.000
Hexanes	C_6	0.000	0.000	0.000	0.000
M-C-Pentane		0.000	0.000	0.000	0.000
Benzene		0.000	0.000	0.000	0.000
cyclo-hexane		0.000	0.000	0.000	0.000
Heptanes	C_7	0.000	0.000	0.000	0.000
M-C-Hexane		0.000	0.000	0.000	0.000
Toluene		0.000	0.000	0.000	0.000
Octanes	C_8	0.000	0.000	0.000	0.000
E-Benzene		0.000	0.000	0.000	0.000
M/P-Xylene		0.000	0.000	0.000	0.000
O-Xylene		0.000	0.000	0.000	0.000
Nonanes	C_9	0.000	0.000	0.000	0.000
1,2,4-TMB		0.000	0.000	0.000	0.000
Decanes	C_{10}	0.000	0.000	0.000	0.000
Undecane	C_{11}	0.000	0.000	0.000	0.000
Dodecanes Plus	C_{12+}	0.000	0.000	0.000	0.000
Total		**100.000**	**100.000**	**100.000**	**100.000**

Calculated Gas Properties @ Standard Conditions			
Molecular Weight	21.32	20.58	kg/kmol
Specific Gravity	0.7360	0.7105	Air=1
MW of C7+	#DIV/0!	#DIV/0!	kg/kmol
Density of C7+	#DIV/0!	#DIV/0!	g/cc
Calculated Pseudocritical Properties			
Ppc	670.35	698.04	psia
Tpc	339.31	356.42	R
Calculated Gross Heating Values @ Standard Conditions			
Dry	702.31	793.33	Btu/scf
Wet	690.09	779.53	Btu/scf
Calculated Net Heating Value @ Standard Conditions			
Dry	632.26	714.20	Btu/scf
Wet	621.26	701.78	Btu/scf

Standard Conditions: 60°F @ 14.696 psia

TABLE 5
Compositional Analysis of Flashed Gas From BHS Water, Depth 4134 ft

Component Name	Chemical Symbol	4.01 mole %	4.01 Weight%		
Nitrogen	N_2	8.917	13.939		
Carbon Dioxide	CO_2	2.644	6.494		
Hydrogen Sulphide	H_2S	0.000	0.000		
Methane	C_1	88.059	78.840		
Ethane	C_2	0.287	0.482		
Propane	C_3	0.071	0.176		
i-Butane	i-C_4	0.017	0.054		
n-Butane	n-C_4	0.005	0.016		
i-Pentane	i-C_5	0.000	0.000		
n-Pentane	n-C_5	0.000	0.000		
Hexanes	C_6	0.000	0.000		
M-C-Pentane		0.000	0.000		
Benzene		0.000	0.000		
cyclo-hexane		0.000	0.000		
Heptanes	C_7	0.000	0.000		
M-C-Hexane		0.000	0.000		
Toluene		0.000	0.000		
Octanes	C_8	0.000	0.000		
E-Benzene		0.000	0.000		
M/P-Xylene		0.000	0.000		
O-Xylene		0.000	0.000		
Nonanes	C_9	0.000	0.000		
1,2,4-TMB		0.000	0.000		
Decanes	C_{10}	0.000	0.000		
Undecane	C_{11}	0.000	0.000		
Dodecanes Plus	C_{12+}	0.000	0.000		
Total		**100.000**	**100.000**		

Calculated Gas Properties @ Standard Conditions		
Molecular Weight	17.92	kg/kmol
Specific Gravity	0.6187	Air=1
MW of C7+	#DIV/0!	kg/kmol
Density of C7+	#DIV/0!	g/cc
Calculated Pseudocritical Properties		
Ppc	662.30	psia
Tpc	339.06	R
Calculated Gross Heating Values @ Standard Conditions		
Dry	898.83	Btu/scf
Wet	883.19	Btu/scf
Calculated Net Heating Value @ Standard Conditions		
Dry	809.25	Btu/scf
Wet	795.17	Btu/scf

Standard Conditions: 60°F @ 14.696 psia