



GAS MEASUREMENT EMISSIONS TESTING LABORATORY
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**EXTENDED HYDROCARBON LIQUID STUDY
CERTIFICATE OF ANALYSIS**

Company:	Synergy Resources	Sample Name:	Wolfson #23-15 Unpressurized Liquid
Sample Date:	5/26/2016	Sample Number:	16060108-06
Sample Facility:	Wolfson #23-15	Date Tested:	6/6/2016
Sample Equipment:	Bradenhead	Test Method:	GPA 2186M
Sample Location:	Not Indicated	Date Reported:	6/7/2016
Sample Pressure:	Ambient		
Sample Temperature:	56°F		
Sampling Method:	GPA-2174		
Type Sample:	Spot		

Components	Mole %	Weight %	Liq. Vol. %
Carbon Dioxide	0.008	0.002	0.002
Nitrogen	0.515	0.095	0.087
Methane	0.123	0.013	0.032
Ethane	0.628	0.124	0.258
Propane	2.622	0.758	1.109
iso-Butane	1.718	0.655	0.863
n-Butane	6.193	2.401	3.044
iso-Pentane	3.742	1.770	2.101
n-Pentane	4.114	1.947	2.290
2-Methylpentane	2.150	1.215	1.378
3-Methylpentane	0.857	0.484	0.549
Heptanes	7.119	4.678	5.121
Octanes	7.126	5.338	5.670
Nonanes	4.405	3.647	3.454
Decanes+	50.134	71.559	68.995
Benzene	0.501	0.257	0.215
Toluene	2.051	1.239	1.054
Ethylbenzene	0.144	0.100	0.085
m-Xylene	1.676	1.167	0.996
p-Xylene	0.271	0.188	0.161
o-Xylene	0.421	0.294	0.246
n-Hexane	2.933	1.658	1.852
2,2,4-Trimethylpentane	0.549	0.411	0.438
Totals	100.000	100.000	100.000

**TOTAL C31+ EXTENDED REPORT
CERTIFICATE OF ANALYSIS**

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p-Xylene	0.271	0.188	0.161
o-Xylene	0.421	0.294	0.246
Nonanes	4.405	3.647	3.454
Decanes	3.199	2.942	2.670
Undecanes (C11)	5.134	4.790	4.868
Dodecanes (C12)	6.958	7.261	7.280
Tridecanes (C13)	3.846	4.211	4.166
Tetradecanes (C14)	4.346	5.654	5.549
Pentadecanes (C15)	5.481	7.633	7.425
Hexadecanes (C16)	2.707	4.019	3.878
Heptadecanes (C17)	3.338	5.264	5.053
Octadecanes (C18)	2.470	4.122	3.936
Nonadecanes (C19)	2.030	3.574	3.413
Eicosanes (C20)	2.653	4.917	4.641
Heneicoanes (C21)	1.560	3.033	2.854
Docosanes (C22)	1.735	3.533	3.310
Tricosanes (C23)	1.579	3.362	3.206
Tetracosanes (C24)	1.271	2.823	2.628
Pentacosanes (C25)	0.706	1.634	1.521
Hexacosanes (C26)	0.706	1.697	1.572
Heptacosanes (C27)	0.091	0.228	0.217
Octacosanes (C28)	0.205	0.531	0.505
Nonacosanes (C29)	0.046	0.124	0.114
Triacosanes (C30)	0.042	0.117	0.107
Hentriacontanes Plus (C31+)	0.031	0.090	0.082
Totals	100.000	100.000	100.000

SAMPLE CHARACTERISTICS

RELATIVE SPECIFIC GRAVITY, calculated	0.74196
API GRAVITY AT 60/60 F, calculated	59.2
TRUE VAPOR PRESSURE AT 100 F, PSIA, calculated	48.569
AVERAGE MOLECULAR WEIGHT	152.489
AVERAGE BOILING POINT, F, calculated	340.203
RELATIVE SPECIFIC GRAVITY OF DECANES+ (C10+) FRACTION, calculated	0.76539
AVERAGE MOLECULAR WEIGHT OF DECANES+ (C10+) FRACTION, calculated	200.306
BTU / GALLON OF LIQUID AT 14.73 PSIA, calculated	73,945.20
LBS / GALLON OF LIQUID, calculated	6.186
CUBIC FEET OF GAS / GALLON OF LIQUID, as Ideal Gas, calculated	10.835

NOTATION: ALL CALCULATIONS PERFORMED USING PHYSICAL CONSTANTS FROM GPA 2145-09, THE TABLES
OF PHYSICAL CONSTANTS FOR HYDROCARBONS AND OTHER COMPOUNDS OF INTEREST
TO THE NATURAL GAS INDUSTRY.