



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

Company:	Synergy Resources	Sample Name:	Hall #19-31 Unpressurized Liquid
Sample Date:	5/26/2016	Sample Number:	16060108-01
Sample Facility:	Hall #19-31	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:	67°F		
Sampling Method:	GPA-2174		
Type Sample:	Spot		

Components	Mole %	Weight %	Liq. Vol. %
Carbon Dioxide	0.004	0.001	0.001
Nitrogen	0.093	0.015	0.014
Methane	0.043	0.004	0.010
Ethane	0.343	0.060	0.126
Propane	1.368	0.349	0.517
iso-Butane	0.668	0.225	0.300
n-Butane	4.741	1.659	2.123
iso-Pentane	2.990	1.249	1.500
n-Pentane	3.588	1.499	1.784
2-Methylpentane	1.825	0.911	1.045
3-Methylpentane	0.728	0.363	0.417
Heptanes	5.608	3.254	3.604
Octanes	5.109	3.379	3.632
Nonanes	2.826	2.066	1.980
Decanes+	64.316	81.831	79.829
Benzene	0.498	0.225	0.191
Toluene	0.908	0.485	0.417
Ethylbenzene	0.217	0.134	0.115
m-Xylene	0.683	0.420	0.362
p-Xylene	0.110	0.068	0.059
o-Xylene	0.234	0.144	0.122
n-Hexane	2.404	1.199	1.356
2,2,4-Trimethylpentane	0.696	0.460	0.496
Totals	100.000	100.000	100.000

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

Components	Mole %	Weight %	Liq. Vol. %
Carbon Dioxide	0.004	0.001	0.001
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p-Xylene	0.110	0.068	0.059
o-Xylene	0.234	0.144	0.122
Nonanes	2.826	2.066	1.980
Decanes	3.224	2.618	2.404
Undecanes (C11)	4.207	3.465	3.564
Dodecanes (C12)	6.333	5.834	5.919
Tridecanes (C13)	8.507	8.222	8.230
Tetradecanes (C14)	6.959	7.993	7.938
Pentadecanes (C15)	7.282	8.959	8.813
Hexadecanes (C16)	2.671	3.502	3.419
Heptadecanes (C17)	4.572	6.366	6.183
Octadecanes (C18)	4.266	6.286	6.074
Nonadecanes (C19)	3.450	5.364	5.183
Eicosanes (C20)	3.674	6.010	5.741
Heneicoanes (C21)	2.431	4.175	3.975
Docosanes (C22)	2.065	3.714	3.521
Tricosanes (C23)	1.816	3.412	3.293
Tetracosanes (C24)	1.168	2.291	2.158
Pentacosanes (C25)	0.590	1.205	1.135
Hexacosanes (C26)	0.679	1.441	1.351
Heptacosanes (C27)	0.087	0.192	0.185
Octacosanes (C28)	0.204	0.466	0.449
Nonacosanes (C29)	0.051	0.120	0.112
Triacosanes (C30)	0.051	0.124	0.115
Hentriacontanes Plus (C31+)	0.029	0.072	0.067
Totals	100.000	100.000	100.000

SAMPLE CHARACTERISTICS

RELATIVE SPECIFIC GRAVITY, calculated	0.75077
API GRAVITY AT 60/60 F, calculated	57.0
TRUE VAPOR PRESSURE AT 100 F, PSIA, calculated	16.815
AVERAGE MOLECULAR WEIGHT	172.716
AVERAGE BOILING POINT, F, calculated	398.209
RELATIVE SPECIFIC GRAVITY OF DECANES+ (C10+) FRACTION, calculated	0.76601
AVERAGE MOLECULAR WEIGHT OF DECANES+ (C10+) FRACTION, calculated	204.465
BTU / GALLON OF LIQUID AT 14.73 PSIA, calculated	68,119.64
LBS / GALLON OF LIQUID, calculated	6.259
CUBIC FEET OF GAS / GALLON OF LIQUID, as Ideal Gas, calculated	8.854

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.