



Traverse City Laboratory  
781 Industrial Circle, Ste 6  
Traverse City, MI 49686  
Phone 231-421-8202

## Certificate of Analysis

Mar. 30, 2013

**Workorder: 13030164**

Jack Rokos  
SAVOY ENERGY  
P.O. Box 1560  
Traverse City, MI 49685

**Project: ADRIAN 1-25**

Collection State: MI

Enclosed are the analytical results for the sample(s) received on Thursday, March 28, 2013.

The analyses were performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

If you have questions concerning this report, please contact us referencing workorder 13030164.

SPL is pleased to be of service to you and we look forward to fulfilling your current and future analytical needs.

Sincerely,

A handwritten signature in black ink, appearing to read "S. L. Gurdak".

Hydrocarbon Laboratory Manager



# Certificate of Analysis

Number: 8010-13030164-001A

Traverse City Laboratory  
781 Industrial Circle, Ste 6  
Traverse City, MI 49686  
Phone 231-421-8202

Station Location: ADRIAN 1-25  
Sample Point: TREATOR  
Method: GPA 2286  
Analyzed: 03/28/2013 16:26:38 by JG

Sampled By: (JR) SAVOY ENERGY  
Sample Of: Gas Spot  
Sample Date: 03/28/2013 10:00  
Sample Conditions: 40 psig, @ 60 °F

## Analytical Data

Components	Mol. %	Wt. %	GPM at 14.696 psia		
Nitrogen	5.491	5.449		GPM TOTAL C2+	11.219
Carbon Dioxide	0.189	0.295		GPM TOTAL C3+	7.397
Methane	56.463	32.090		GPM TOTAL iC5+	1.988
Ethane	14.244	15.173	3.822		
Propane	11.910	18.606	3.292		
Iso-Butane	1.759	3.622	0.578		
n-Butane	4.864	10.015	1.539		
Iso-Pentane	1.047	2.676	0.384		
n-Pentane	1.654	4.228	0.602		
Hexane	1.022	3.097	0.418		
Heptanes Plus	1.357	4.749	0.584		
	100.000	100.000	11.219		

Physical Properties	Total
Relative Density Real Gas	0.9801
Calculated Molecular Weight	28.23
Compressibility Factor	0.9940

### GPA 2172-09 Calculation:

#### Calculated Gross BTU per ft<sup>3</sup> @ 14.696 psia & 60°F

Real Gas Dry BTU	1576
Water Sat. Gas Base BTU	1549

Comments: H2O Mol% : 1.744 ; Wt% : 1.120  
GAS TO FLARE



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 Sample Of: Gas Spot  
 Sample Date: 03/28/2013 10:00  
 Sample Conditions: 40 psig, @ 60 °F

## Analytical Data

Components	Mol. %	Wt. %	GPM at 14.696 psia	Detection Limit		
Nitrogen	5.4911	5.4495		10 ppm/v	GPM TOTAL C2+	11.219
Carbon Dioxide	0.1890	0.2947		10 ppm/v	GPM TOTAL C3+	7.397
Methane	56.4627	32.0897		100 ppm/v	GPM TOTAL iC5+	1.988
Ethane	14.2441	15.1735	3.822	10 ppm/v		
Propane	11.9101	18.6056	3.292	10 ppm/v		
Iso-Butane	1.7590	3.6219	0.578	10 ppm/v		
n-Butane	4.8640	10.0154	1.539	10 ppm/v		
Iso-Pentane	1.0470	2.6761	0.384	10 ppm/v		
n-Pentane	1.6540	4.2276	0.602	10 ppm/v		
i-Hexanes	0.6241	1.8840	0.254	1 ppm/v		
n-Hexane	0.3978	1.2133	0.164	1 ppm/v		
Benzene	0.0062	0.0171	0.002	1 ppm/v		
Cyclohexane	0.1985	0.5918	0.068	1 ppm/v		
i-Heptanes	0.4705	1.5954	0.198	1 ppm/v		
n-Heptane	0.2810	0.9975	0.130	1 ppm/v		
Toluene	0.0080	0.0262	0.003	1 ppm/v		
i-Octanes	0.2258	0.8021	0.094	1 ppm/v		
n-Octane	0.0890	0.3601	0.046	1 ppm/v		
Ethylbenzene	0.0025	0.0095	0.001	1 ppm/v		
Xylenes	0.0133	0.0503	0.005	1 ppm/v		
i-Nonanes	0.0095	0.0435	0.005	1 ppm/v		
n-Nonane	0.0206	0.0934	0.012	1 ppm/v		
i-Decanes	0.0322	0.1618	0.020	1 ppm/v		
n-Decane	NIL	NIL	NIL	1 ppm/v		
Undecanes	NIL	NIL	NIL	1 ppm/v		
Dodecanes	NIL	NIL	NIL	1 ppm/v		
Tridecanes	NIL	NIL	NIL	1 ppm/v		
Tetradecanes Plus	NIL	NIL	NIL	1 ppm/v		
	100.0000	100.0000	11.219			

Physical Properties	Total	C14+
Calculated Molecular Weight	28.23	NIL
<b>GPA 2172-09 Calculation:</b>		
<b>Calculated Gross BTU per ft<sup>3</sup> @ 14.696 psia &amp; 60°F</b>		
Real Gas Dry BTU	1576	NIL
Water Sat. Gas Base BTU	1549	NIL
Relative Density Real Gas	0.9801	NIL
Compressibility Factor	0.9940	

**Comments:** GAS TO FLARE



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Mar. 30, 2013

Station Location: ADRIAN 1-25  
 Sample Point: TREATOR  
 Method: ASTM D-5504  
 Analyzed: 03/29/2013 00:00:00 by AS

Sampled By: (JR) SAVOY ENERGY  
 Sample Of: Gas Spot  
 Sample Date: 03/28/2013 10:00  
 Sample Conditions: 40 psig, @ 60 °F

**Sulfur Analysis**

<b>SULFIDES</b>	<b>ppm (v)</b>
Hydrogen Sulfide	ND <1
Dimethyl Sulfide	ND <1
Diethyl Sulfide	ND <1
Methyl Ethyl Sulfide	ND <1
<b>MERCAPTANS</b>	
	<b>ppm (v)</b>
Methyl Mercaptan	1
Ethyl Mercaptan	1
Isopropyl Mercaptan	ND <1
n-Propyl Mercaptan	ND <1
n-Butyl Mercaptan	ND <1
Isobutyl Mercaptan	ND <1
<b>DISULFIDES</b>	
	<b>ppm (v)</b>
Dimethyl Disulfide	ND <1
Diethyl Disulfide	ND <1
Methyl Ethyl Disulfid	ND <1
Misc. Sulfurs	1
<b>Total Sulfur (Calc.)</b>	<b>3</b>

Note: ND = None Detected  
 Note: Total Sulfur (Calc.) = Sum of detected sulfurs