



STATE OF WEST VIRGINIA  
GEOLOGICAL AND ECONOMIC SURVEY  
P. O. BOX 879  
MORGANTOWN

PAUL H. PRICE, DIRECTOR  
AND STATE GEOLOGIST

September 5, 1964

LABORATORY ANALYSES  
of the  
W. V. STONE WELL #M-100

Operating  
Company: Mountaineer Mineral Co., Inc.  
318 Professional Bldg.  
Clarksburg, West Virginia

Mineral Rights Owner: W. V. Stone Heirs  
Farm Name: J. M. Healey  
Permit No: Harrison County - 318

Well Location: Coal District, Harrison County, W. Va.  
E.C. Clarksburg Quadrangle: Scale - 1/62,500  
5.43 miles South of Lat. 39°25'  
3.02 miles West of Long. 80°15'  
Located on Simpson Creek, 4 $\frac{1}{2}$  miles north-northwest of Clarksburg

Well Head Elevation: 1023.33'  
Drilling Commenced: January 30, 1964  
Drilling Completed: June 12, 1964  
Total Depth of Well: 3244'                      Bottomed in the Speechley Sand  
Production: Dry Hole

Detailed Lithologic Description by: Wallace R. McCord  
Sedimentary Petrographer  
W. Va. Geological Survey  
Morgantown, W. Va.

Core Analyses by: Charles E. Hozdic  
Technical Assistant  
W. Va. Geological Survey

<u>CORE ANALYSES</u>			<u>LITHOLOGIC DESCRIPTION</u>
Top	Bottom	Thickness (in feet)	Character of Rocks
0	2022'	2022.0'	WELL-CUTTINGS NOT EXAMINED <i>are they still available?</i>
			DEVONIAN ROCK SYSTEM
2022'	2030'	8.0'	CORE #1 "Fifty-Foot" Sand
<u>Top Sample</u>			Sandstone: very light-gray, very fine- and even-grained, highly angular, glassy to slightly frosted, very hard and tightly cemented, calcareous, slightly micaceous.
*por. 3.60%			
*perm. < 0.10 mil/d			
<u>Middle Sample</u>			Sandstone: same as above except less calcareous and more argillaceous, contains numerous specks of carbonaceous material.
por. 9.82%			
perm. < 0.10 mil/d			Sandstone: same as above, almost non-calcareous.
<u>Bottom Sample</u>			
por. 7.80%			
perm. < 0.10 mil/d			
2030'	2438'	408.0'	INTERVAL NOT EXAMINED
2438'	2460'	22.0'	WELL-CUTTINGS "Fourth" Sand
2438'	2455'	17.0'	Sandstone (70%): light-gray, very fine- to coarse-grained, conglomeratic with subangular to rounded, frosted quartz pebbles, argillaceous, slightly calcareous, micaceous; shale (30%) -- medium-gray, silty, slightly micaceous; shale fragments may be mostly cavings.
2455'	2460'	5.0'	Sandstone (65%): same as above except more argillaceous and less conglomeratic; shale (35%)-- medium light-gray to medium-gray, some grayish-red shale, silty, micaceous, few specks of pyrite.
2460'	2524'	64.0'	INTERVAL NOT EXAMINED
2524'	2545'	21.0'	CORES "Fifth" Sand
2524'	2526'	2.0'	CORE #2
<u>Top Sample</u>			Conglomerate (80% quartz): quartz pebbles up to 12 mm. in diameter, subangular to rounded (mostly subrounded), slightly to highly frosted, very hard and tightly cemented, slightly calcareous (5 - 8% lime), argillaceous, numerous specks of micaceous and carbonaceous materials, slightly pyritic.
por. 7.02%			
perm. < 0.10 mil/d			Conglomerate (65% quartz): less conglomeratic than above, angular to rounded quartz pebbles, larger pebbles mostly subrounded to rounded, highly argillaceous and silty, partially cemented with argillaceous material, fairly micaceous, shaly.
<u>Middle Sample</u>			
por. 9.10%			
perm. < 0.10 mil/d			

## LABORATORY ANALYSES (cont'd)

<u>CORE ANALYSES</u>			<u>LITHOLOGIC DESCRIPTION</u>
Top	Bottom	Thickness (in feet)	Character of Rocks
2524'	2526'	2.0'	CORE #2 (cont'd)
<u>Bottom Sample</u>			Sandstone: medium-gray, very fine-grained with abundant fine- to very coarse-sized embedded grains of quartz, angular to subrounded, tightly cemented, very silty, highly argillaceous, fairly micaceous, contains numerous specks of carbonaceous material, shaly.
por. 4.20% perm. < 0.10 mil/d			
2526'	2530'	4.0'	CORE #3
<u>Top Sample</u>			Sandstone: medium light- to medium-gray, very fine- to coarse-grained, angular to subrounded, glassy to frosted, tightly cemented, highly argillaceous, fairly silty, slightly micaceous, few specks of pyrite, shaly. <u>These core samples were too thin for determining porosity and permeability.</u>
<u>Middle Sample</u>			
por. 7.46% perm. 0.264 mil/d			Sandstone: medium light-gray to medium brownish-gray, same as above sandstone.
<u>Bottom Sample</u>			
por. 7.50% perm. < 0.10 mil/d			Sandstone: medium-gray, same as above except more argillaceous and shaly.
2530'	2542'	12.0'	
<u>Top Sample</u>			Sandstone: grayish-brown, very fine- to fine-grained with a few scattered medium-sized grains of quartz, highly angular, fairly hard and tightly cemented, argillaceous, slightly micaceous, small show of oil.
por. 9.20% perm. 0.397 mil/d			
<u>Middle Sample</u>			Sandstone: same as above, very fine- to fine-grained, small show of oil.
por. 13.33% perm. 0.240 mil/d			
<u>Bottom Sample</u>			Sandstone: same as above, small show of oil.
por. 11.26% perm. < 0.10 mil/d			
2542'	2544'	2.0'	CORE #5
<u>Top Sample</u>			Sandstone: medium light-gray to medium-gray, very fine- to fine-grained with a few scattered medium-sized grains of quartz, angular to subangular, slightly friable, fairly argillaceous, silty, slightly micaceous, shaly, slight oil show. <u>These core samples were too thin for determining porosity and permeability.</u>

## LABORATORY ANALYSES (cont'd)

<u>CORE ANALYSES</u>			<u>LITHOLOGIC DESCRIPTION</u>
Top	Bottom	Thickness (in feet)	Character of Rocks
2542'	2544'	2.0'	CORE #5 (cont'd)
<u>Middle Sample</u>			Sandstone: same as above except no oil show.
por. 7.32%			
perm. < 0.10 mil/d			
<u>Bottom Sample</u>			Sandstone: same as above sandstone, no oil show.
por. 7.50%			
perm. < 0.10 mil/d			
2544'	2545'	1.0'	CORE #6
<u>Top Sample</u>			Sandstone: medium-gray, very fine- to medium-grained (mostly fine-grained), highly angular to subangular, fairly argillaceous, micaceous, slightly shaly.
por. 9.10 %			
perm. < 0.10 mil/d			
<u>Middle Sample</u>			Sandstone: same as above except coarser grained.
por. 7.80%			
perm. < 0.10 mil/d			
<u>Bottom Sample</u>			Sandstone: same as above sandstone, contains some scattered coarse-sized grains of subrounded quartz.
por. 9.40%			
perm. < 0.10 mil/d			
2545'	3244'	699.0'	INTERVAL NOT EXAMINED
	3244'		Total Depth of Well.

\*porosity in percent (%)

\*permeability in millidarcy (mil/d)

Assuming  $\rho_g = 2.65$

Chenir Kodziat

	Depth	Density Log C.P.S	Density Log $\rho_B$	$\phi$	$\mu$
1	2022-26	550	2.48	13%	3.8
	2026-30	360	2.68	2%	
2	2524-26	520	2.49	11%	3.0
	2526-30	470	2.54	8.5%	
3	2530-34	480	2.53	9%	7.5
	2534-38	590	2.44	14%	
	2538-42	570	2.50	10%	
4	2542-44	480	2.53	-9%	5.5
5	2544-45	560	2.47	-13%	8.0

Mountaineer Mining Company, Inc.,  
 Company Well M-100, W.V. Stone Lease,  
 Fifth and Fifty-foot Sands,  
 Coal District, Harrison County, West Virginia

Porosity, Bulk Density, and Sand Grain Density

Fifth Sand

<u>Sample No.</u>	<u>Porosity, percent</u>	<u>Bulk density, gms/cc</u>	<u>Sand grain density, gms/cc</u>
2524-TH	7.7	2.55	2.76
2524-CH	11.5	2.48	2.80
2524-BH	4.2	2.65	2.77
Average	7.8	2.56	2.78

Fifty-Foot Sand

<del>2002</del> -TH	3.6	2.61	2.71
<del>2002</del> -MH	11.2	2.44	2.75
<del>2002</del> -BH	7.8	2.50	2.71
Average	7.5	2.52	2.72

~~Handwritten scribbles and numbers~~

Sample	Chem	Hydro	BoffM	Schl
2022-2030	12%	3.8%	7.5%	—
2528-2526	11%	3%	7.8%	9%

Handwritten notes:  
Blanes  
2.3

Thimble No.	Comments					Date
N/A	Porosity Test					8 July 69
Jar No.	Depth		Gross Weight			
N/A	Surface to					
At start	Readings				Dry Weight	Wt. Thimble Net Wt.
H <sub>2</sub> O	Zero					
Wt. Wet	7.680	7.151	3.192	3.090	3.014	Loss in Wt.
Wt. Dry	7.939	6.996	3.168	3.049	2.986	
Sample #	2530 T-V	2526 M-V	2528 B-H	2022 M-H	2028 F-H	Wt. H <sub>2</sub> O
PV	.291	.155	.028	.091	.028	T.B.VXA Por = T.P.S. =
Wt. Wet	7.680	7.151	3.192	3.090	3.014	Wt. Oil
Wt. Sub.	5.197	4.876	2.290	2.123	2.086	Saturation Water = %
Loss	0.000	0.000	0.000	0.000	0.000	Vol. Oil
BV	2.533	2.275	.952	.967	.928	Oil = %
PV	.291	.155	.028	.091	.028	
NV	2.292	2.120	.928	.926	.900	Average
✓ Por.	(.95%)	(.81%)	(.52%)	(.29%)	(.30%)	
ASG	2.37	2.48	2.69	2.58	2.60	
MSG	2.62	2.66	2.75	2.86	2.68	Temp.

Thimble No.	Comments					Date
N/A	Porosity Test					8 July 69
Jar No.	Depth		Gross Weight			
N/A	Surface to					
At start	Readings				Dry Weight	Wt. Thimble Wet Wt.
H <sub>2</sub> O	Zero					
Wt. Wet	2.590	1.958	1.423	.919		Loss in Wt.
Wt. Dry	2.550	1.933	1.392	.894		
Sample #	2022 B-H	2528 M-H	2544 M-H	2544 B-H		Wt. H <sub>2</sub> O
PV	.040	.025	.031	.025		T.B.VXA Por = T.P.S. =
Wt. Wet	2.590	1.958	1.423	.919		Wt. Oil
Wt. Sub.	1.772	1.395	.929	.623		Saturation Water = %
Loss	0.000	0.000	0.000	0.000		Vol. Oil
BV	.814	.613	.454	.296		Oil = %
PV	.040	.025	.031	.025		
NV	.774	.588	.423	.271		Average
Por	4.9%	(4.1%)	(6.7%)	(8.9%)		
ASG	2.53	2.58	2.47	2.44		
MSG	2.66	2.65	2.66	2.66		Temp.



Thimble No.	Comments					Date	
N/A	Porosity Test					8 July 64	
Jar No.	Depth		Surface to		Gross Weight		
N/A	At start		Readings		Dry Weight		
H <sub>2</sub> O			None		Wt. Thimble Net Wt.		
Wt. Wet	3.123	3.195	2.783	3.198	3.153	Loss in Wt. $\frac{N. W.}{A.A.S.G.} = T.B.V. =$	
Wt. Dry	3.093	3.093	2.679	3.073	3.011		
Sample #	2524 TH	2542 M-H	2530 B-H	2526 MH	2530 MH	Wt. H <sub>2</sub> O T.B.VXA Por = T.P.S. =	
PV	.030	.052	.104	.075	.192		
Wt. Wet	3.123	3.195	2.783	3.198	3.153	Wt. Oil Saturation Water = %	
Wt. Sub.	2.151	2.167	1.859	2.192	2.098		
Loss	0.000	0.000	0.000	0.000		Vol. Oil Oil = %	
BV	.972	.978	.924	1.006	1.065		
PV	.030	.052	.104	.075	.192		
NV	.992	.926	.820	.931	.923	Average	
Por.	3.09%	5.32%	11.26%	2.46%	13.33%		
ASG	2.57	2.55	2.34	2.96	2.28		
MSG	2.65	2.70	2.64	2.66	2.63	Temp.	

Thimble No.	Comments					Date	
N/A	Porosity Test					8 July 64	
Jar No.	Depth		Surface to		Gross Weight		
N/A	At start		Readings		Dry Weight		
H <sub>2</sub> O			None		Wt. Thimble Wet Wt.		
Wt. Wet	2.199	2.713	2.674	2.109		Loss in Wt. $\frac{N. W.}{A.A.S.G.} = T.B.V. =$	
Wt. Dry	2.093	2.648	2.596	2.073			
Sample #	2544 TH	2526 RH	2530 RH	2542 BH		Wt. H <sub>2</sub> O T.B.VXA Por = T.P.S. =	
PV	.056	.065	.078	.032			
Wt. Wet	2.199	2.713	2.674	2.109		Wt. Oil Saturation Water = %	
Wt. Sub.	1.954	1.896	1.801	1.450			
Loss	0.000	0.000	0.000	0.000		Vol. Oil Oil = %	
BV	.695	.867	.873	.659			
PV	.056	.065	.078	.032			
NV	.639	.802	.795	.623		Average	
Por	(8.1%)	(7.5%)	(8.9%)	(5.5%)			
ASG	2.43	2.46	2.40	2.54			
MSG	2.64	2.66	2.64	2.69		Temp.	

Thimble No. <sup>N/A</sup>	Comments <i>Porosity Test</i>					Date <i>8 July 64</i>	
Jar No. <sup>N/A</sup>	Depth <i>Surface to</i>		Gross Weight				
At start		Readings			Dry Weight	Wt. Thimble Net Wt.	
H <sub>2</sub> O	<i>None</i>						
Wt. Wet	<i>8.812</i>	<i>7.099</i>	<i>7.536</i>	<i>9.103</i>	<i>10.711</i>	Loss in Wt. $\frac{N.W.}{A.A.S.G.} = T.B.V. =$	
Wt. Dry	<i>8.736</i>	<i>7.013</i>	<i>7.498</i>	<i>9.010</i>	<i>10.638</i>		
<i>Sample #</i>	<i>2528 T-R</i>	<i>2528 C-V</i>	<i>2528 T-R</i>	<i>2022 M-V</i>	<i>2022 B-V</i>	Wt. H <sub>2</sub> O	
PV	<i>.076</i>	<i>.086</i>	<i>.038</i>	<i>.093</i>	<i>.133</i>	T.B.VXA Por = T.P.S. =	
Wt. Wet	<i>8.812</i>	<i>7.099</i>	<i>7.536</i>	<i>9.103</i>	<i>10.711</i>	Wt. Oil	
Wt. Sub.	<i>6.078</i>	<i>4.873</i>	<i>5.235</i>	<i>6.262</i>	<i>7.390</i>	Saturation Water = %	
Loss	<i>1.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	Vol. Oil	
BV	<i>2.739</i>	<i>2.226</i>	<i>2.301</i>	<i>1.891</i>	<i>3.381</i>	Oil = %	
PV	<i>.076</i>	<i>.086</i>	<i>.038</i>	<i>.093</i>	<i>.133</i>		
NV	<i>2.658</i>	<i>2.140</i>	<i>2.263</i>	<i>2.798</i>	<i>3.248</i>	Average	
Por.	<i>2.78%</i>	<i>3.86%</i>	<i>1.65%</i>	<i>3.27%</i>	<i>3.93%</i>		
ASG	<i>2.58</i>	<i>2.64</i>	<i>2.63</i>	<i>2.56</i>	<i>2.54</i>		
MSG	<i>2.65</i>	<i>2.68</i>	<i>2.67</i>	<i>2.65</i>	<i>2.62</i>		

Thimble No. <sup>N/A</sup>	Comments <i>Porosity Test</i>					Date <i>8 July 64</i>	
Jar No. <sup>N/A</sup>	Depth <i>Surface to</i>		Gross Weight				
At start		Readings			Dry Weight	Wt. Thimble Wet Wt.	
H <sub>2</sub> O	<i>Not Taken</i>						
Wt. Wet	<i>14.411</i>	<i>11.257</i>	<i>13.920</i>			Loss in Wt. $\frac{N.W.}{A.A.S.G.} = T.B.V. =$	
Wt. Dry	<i>14.315</i>	<i>11.098</i>	<i>13.808</i>				
<i>Sample #</i>	<i>2528 -B-V</i>	<i>2022 T-V</i>	<i>2022 T-H</i>	<i>VOID</i>		Wt. H <sub>2</sub> O	
PV	<i>.096</i>	<i>.159</i>	<i>.116</i>			T.B.VXA Por = T.P.S. =	
Wt. Wet	<i>14.411</i>	<i>11.257</i>	<i>13.920</i>			Wt. Oil	
Wt. Sub.	<i>11.132</i>	<i>12.657</i>	<i>9.671</i>			Saturation Water = %	
Loss	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>		Vol. Oil	
BV	<i>4.279</i>	<i>5.600</i>	<i>4.249</i>			Oil = %	
PV	<i>.096</i>	<i>.159</i>	<i>.116</i>				
NV	<i>4.183</i>	<i>5.991</i>	<i>4.133</i>			Average	
Por.	<i>2.24%</i>	<i>2.89%</i>	<i>2.73%</i>				
ASG	<i>2.70</i>	<i>2.61%</i>	<i>2.62</i>				
MSG	<i>2.76</i>	<i>2.68</i>	<i>2.70</i>				



PERMEABILITY

Core No.

8 July 69

Piece No.	2522 BH	2530 -BH	2522 M-H	2524 TH	2526 MH	2530 M-H	2526 B-H	2530 TH	2544 TH
Hg Man						.332			
Left at.									
Right at.						.322			
Barometer at.						.971			
P <sub>1</sub> atmos.						1.625			
(P <sub>1</sub> ) <sup>2</sup>						2.64			
H <sub>2</sub> O Man.									
Left cm.						2.6			
Right cm.						4.2			
Sum cm.						6.8			
Atmos.						.0068			
P <sub>2</sub> Atmos.						.978			
(P <sub>2</sub> ) <sup>2</sup>						.956			
(P <sub>1</sub> ) <sup>2</sup> - (P <sub>2</sub> ) <sup>2</sup>						1.684			
Capillary						#1			
Q						.019			
$\frac{Q}{(P_1)^2 - (P_2)^2}$						.0113			
Room Temp. °C.						29°C			
Viscosity- 2 U						.037			
Square or Diameter						.78/.85			
Area						.623			
C						.054			
Length in cm.						2.11			
LC	Y	Y	Y	Y	Y	.114	Y	Y	Y
K. Md.	0.000	0.000	0.000	0.000	0.000	240 Md	0.000	0.000	0.000

PERMEABILITY

Core No.

8 July 64

Piece No.	2022 T-V	2022 T-H	2524 B-V	2022 B-V	2022 M-V	2524 T-V	2530 T-V	2526 M-V
Hg Man								
Left at.							.328	.320
Right at.							.318	.310
Barometer at.							.971	.971
P <sub>1</sub> atmos.							1.617	1.601
(P <sub>1</sub> ) <sup>2</sup>							2.615	2.563
H <sub>2</sub> O Man.								
Left cm.							10.45	0.0
Right cm.							8.45	1.3
Sum cm.							17.9	1.3
Atmos.							.0179	.0013
P <sub>2</sub> Atmos.							.989	.972
(P <sub>2</sub> ) <sup>2</sup>							.978	.945
(P <sub>1</sub> ) <sup>2</sup> - (P <sub>2</sub> ) <sup>2</sup>							1.637	1.618
Capillary							#1	#1
Q							.05	.0035
$\frac{Q}{(P_1)^2 - (P_2)^2}$							.0305	.0022
Room Temp. °C.							29°C	29°C
Viscosity- 2 U							.037	.037
Square or Diameter							1.96	1.97
Area							3.02	3.05
C							.012	.012
Length in cm.							1.11	.97
LC							.013	.012
K. Md.	0.000	0.000	0.000	0.000	0.000	0.000	.397Md	.26Md

\* Fractured in Machine.