

ANALYSIS OF MARMATON AND CHEROKEE GROUP CORE SAMPLES FOR GAS
CONTENT

-- LAYNE-CHRISTENSEN #16-1 PIERCE; NE SE SW 16-T.31S.-R.17E.;
MONTGOMERY COUNTY, KANSAS

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SUMMARY

Seven three-inch diameter core samples from the Pennsylvanian Marmaton and Cherokee Groups were collected from the Layne-Christensen #16-1 Pierce well, NE SE SW 16-T.31S.-R.17E., Montgomery County, KS from May 28 to May 31, 2003. The following as-received gas contents were measured, based on the dry weight of the sample:

- 471.0' to 471.8' (Lexington "B" coal) (139.5 scf/ton)
- 569.0' to 570.0' (Excello Shale) (40.0 scf/ton)
- 571.1' to 572.0' (Mulky coal) (188.1 scf/ton)
- 875.5' to 876.4' (Dry Wood coal) (189.9 scf/ton)
- 910.7' to 911.4' (Neutral(?) coal) (110.7 scf/ton)
- 982.0' to 983.0' (Riverton coal) (144.2 scf/ton)
- 983.0' to 984.0' (Riverton coal) (74.1 scf/ton)

Analyses of five desorbed coal gases indicate that they are dry gases, ranging from 952 to 1041 BTU/scf. Nitrogen and carbon dioxide are the major non-combustible component gases. Carbon dioxide contents range from 1.4% to 3.6%. Isotopic analysis indicate the gas is mixed thermogenic and biogenic in origin.

Based on gas content, density, and thickness measurements, the gas-in-place estimates for the respective units are:

<i>unit</i>	<i>gas per acre (thousand cubic ft)</i>
Lexington "B"	345.2
Excello Sh.	399.4
Mulky	347.8
Dry Wood	289.2
Neutral(?)	111.4
Riverton	467.7

BACKGROUND

The Layne-Christensen #16-1 Pierce well; NE SE SW 16-T.31S.-R.17E., Montgomery County, KS, was selected for desorption tests in association with an on-going coalbed-gas research project at the Kansas Geological Survey. The samples (3-inch-diameter cores) were gathered from May 28, 2003 to May 31, 2003 by K. David Newell of the Kansas Geological Survey, with assistance by Jim Stegeman of Colt Energy. Samples were obtained by wireline coring on a rig owned by Layne-Christensen, Canada.

Bottom-hole times (i.e., the time the core sample was lifted from the bottom of the hole) and canistering times (i.e., the time the sample was placed in the desorption canister) were noted in order to determine lost gas and start of desorption. Approximate wet weight of the sample was determined by subtraction of the weight of the empty canister from the weight of the canister with the sample in it. After the sample was removed from the canister, it was weighed again

before air-drying, then weighed after drying. The weight loss is noted in the desorption table (Table 1).

Temperature baths for the desorption canisters were on site, with temperatures at 75 °F for the Mulky coal and shallower samples. Samples deeper than the Mulky coal were desorbed at 80 °F. The canistered samples were transported to the laboratory at the Kansas Geological Survey in Lawrence, KS after their collection at the wellsite and desorption measurements were continued at these temperatures. Desorption measurements were periodically made until the canisters produced no more gas upon testing for at least two successive measurements.

DESORPTION MEASUREMENTS

The equipment and method for measuring desorption gas is that prescribed by McLennan and others (1995). The volumetric displacement apparatus is a set of connected dispensing burettes, one of which measures the gas evolved from the desorption canister. The other burette compensates for the compression that occurs when the desorbed gas displaces the water in the measuring burette. This compensation is performed by adjusting the cylinders so that their water levels are identical, then figuring the amount of gas that evolved by reading the difference in water level using the volumetric scale on the side of the burette.

Some of the canisters utilized for this study (i.e., canisters with the prefix "Mer") were obtained from PEL-I-CANS (by J.R. Levine) in Richardson, TX. These canisters are approximately 11.2 inches high (28.5 cm), 3.8 inches (9.7 cm) in diameter, and enclose a volume of approximately 127 cubic inches (2082 cm³). The rest of the canisters utilized for this study were obtained from SSD, Inc. in Grand Junction, CO. On average, these canisters are approximately 12.5 inches high (32 cm), 3 1/2 inches (9 cm) in diameter, and enclose a volume of approximately 150 cubic inches (2450 cm³). The desorbed gas that collected in the desorption canisters was periodically released into the volumetric displacement apparatus and measured as a function of time, temperature, and atmospheric pressure.

The time and atmospheric pressure were measured in the field using a portable weather station (model BA928) marketed by Oregon Scientific (Tualatin, OR). The atmospheric pressure was displayed in millibars on this instrument, however, this measurement was not the actual barometric pressure, but rather an altitude-compensated barometric pressure automatically converted to a sea-level-equivalent pressure. To translate this measurement to actual atmospheric pressure, a regression correlation was determined over several weeks by comparing readings from the Oregon Scientific instrument to that from a pressure transducer in the Petrophysics Laboratory in the Kansas Geological Survey (Figure 1). The regression equation shown graphically in Figure 1 was entered into a spreadsheet and was used to automatically convert the millibar measurement to barometric pressure in psi.

A spreadsheet program written by K.D. Newell was used to convert all gas volumes at standard temperature and pressure. Conversion of gas volumes to standard temperature and pressure was by application of the perfect-gas equation, obtainable from basic college chemistry texts:

$$n = PV/RT$$

where n is moles of gas, T is degrees Kelvin (i.e., absolute temperature), V is in liters, and R is the universal gas constant, which has a numerical value depending on the units in which it is measured (for example, in the metric system $R = 0.0820$ liter atmosphere per degree mole). The number of moles of gas (i.e., the value n) is constant in a volumetric conversion, therefore the conversion equation, derived from the ideal gas equation, is:

$$(P_{\text{stp}} V_{\text{stp}})/(RT_{\text{stp}}) = (P_{\text{rig}} V_{\text{rig}})/(RT_{\text{rig}})$$

Customarily, standard temperature and pressure for gas volumetric measurements in the oil industry are 60 °F and 14.7 psi (see Dake, 1978, p. 13), therefore P_{stp} , V_{stp} , and T_{stp} , respectively, are pressure, volume, and temperature at standard temperature and pressure, where standard temperature is degrees Rankine ($^{\circ}\text{R} = 460 + ^{\circ}\text{F}$). P_{rig} , V_{rig} , and T_{rig} , respectively, are ambient pressure, volume, and temperature measurements taken at the rig site or in the desorption laboratory.

The universal gas constant R drops out as this equation is simplified and the determination of V_{stp} becomes:

$$V_{\text{stp}} = (T_{\text{stp}}/T_{\text{rig}}) (P_{\text{rig}}/P_{\text{stp}}) V_{\text{rig}}$$

The conversion calculations in the spreadsheet were carried out in the English metric system, as this is the customary measure system used in American coal and oil industry. V is therefore converted to cubic feet; P is psia; T is °R.

The desorbed gas was summed over the time period for which the coal samples evolved all of their gas.

Lost gas (i.e., the gas lost from the sample from the time it was drilled, brought to the surface, to the time it was canistered) was determined using the direct method (Kissel and others, 1975; also see McLennan and others, 1995, p. 6.1-6.14) in which the cumulative gas evolved is plotted against the square root of elapsed time. Time zero is assumed to be instant the core sample is lifted from the bottom of the hole. Characteristically, the cumulative gas evolved from the sample, when plotted against the square root of time, is linear for a short time period after the sample reaches ambient pressure conditions, therefore lost gas is determined by a line projected back to time zero. The period of linearity generally is about two hours for core samples.

LITHOLOGIC ANALYSIS

Upon removal from the canisters, the cores were washed of drilling mud, and air-dried for several days. After drying, the cores were weighed again to obtain a dry-weight based gas content.

DATA PRESENTATION

Data and analyses accompanying this report are presented in the following order: 1) data tables for the desorption analyses, 2) lost-gas graphs, 3) desorption graphs for individual samples, and 4) desorption graph for all samples at a common scale, 5) gas chemistry diagrams, and 6) reserve diagrams.

Data Tables of the Desorption Analyses (Table 1)

These are the basic data used for lost-gas analysis and determination of total gas desorbed from the core samples. Basic temperature, volume, and barometric measurements are listed at left. Farther to the right, these are converted to standard temperature, pressure and volumes. The volumes are cumulatively summed, and converted to scf/ton based on the total weight of coal and dark shale in the sample. At the right of the table, the time of the measurements are listed and converted to hours (and square root of hours) since the sample was drilled.

Lost-Gas Graphs (Figures 2-8)

Gas lost prior to the canistering of the sample was estimated by extrapolation of the first few data points after the sample was canistered. The linear characteristic of the initial desorption measurements was usually lost within the first two hours after canistering, thus data are presented in the lost-gas graphs for only up to 9 hours after canistering. Lost-gas volumes derived from this analysis are incorporated in the data tables described above.

Desorption Graphs (Figures 9-16)

Desorption graphs for individual samples are presented in Figures 8-14. A summary graph showing all the samples at a common scale is presented in Figure 15. A second summary graph (Figure 16) expresses the desorption in terms of percentage of the total gas desorbed with time. Sorption times (the time it takes for 63.2% of the gas from a sample to desorb) are derived from this latter figure.

Gas Chemistry (Figure 17-18)

Gas isotopic chemistry is compared to similar analyses on other nearby coalbed gases, with respect to the local stratigraphy (Figure 17). The crossplot of chemistry and location of samples is shown in Figure 18.

Reserve Estimate (Figure 19)

Gas reserves are calculated based on desorption data, and crossplotted with sorption time, which is a semi-quantitative indicator of production rates.

Appendix 1

These are photocopies of the results of the Luman's Laboratories proximate analyses.

RESULTS and DISCUSSION

The following as-received gas contents are calculated, based on dry weight of the sample:

- 471.0' to 471.8' (Lexington "B" coal) (139.5 scf/ton)
- 569.0' to 570.0' (Excello Shale) (40.0 scf/ton)
- 571.1' to 572.0' (Mulky coal) (188.1 scf/ton)
- 875.5' to 876.4' (Dry Wood coal) (189.9 scf/ton)
- 910.7' to 911.4' (Neutral(?) coal) (110.7 scf/ton)
- 982.0' to 983.0' (Riverton coal) (144.2 scf/ton)
- 983.0' to 984.0' (Riverton coal) (74.1 scf/ton)

Proximate analyses were made for ten selected samples . The core was cut down its vertical axis and half was preserved for future analyses. The proximate analyses were performed on the following samples by Luman's Laboratory (see Appendix 1):

Luman's Lab proximate analysis:

<i>unit</i>	<i>depth</i>	<i>moisture</i>	<i>ash</i>	<i>moisture-free ash</i>
Lexington "B"	471.0'	1.42%	18.82%	19.10%
Excello Sh.	569.0'	0.97%	72.10%	72.81%
Mulky	571.1'	1.25%	15.95%	16.16%
Dry Wood	875.5'	2.69%	25.21%	25.90%
Neutral(?)	910.7'	2.61%	30.31%	31.13%
Riverton	982.0'	1.41%	8.86%	8.99%
Riverton	983.0'	1.84%	41.64%	42.42%

According to the BTU/lb. (dry, ash-free) determinations, all the samples can be classified as high-volatile A bituminous coal. The dry, ash-free heating value of the Excello Shale sample, at 19,632 BTU/lb., is enigmatic. Nevertheless, a rather inflated calculation for this particular unit appears to be a consistent characteristic, for a nearby well (the Layne-Christensen #1 Beurskens well in sec. 28-T.31S.-R.16E.; also in Montgomery County), also yielded a high value for this measurement. These are the first two ashing measurements of the Excello Shale that have been brought to the attention of the Kansas Geological Survey, so the spatial extent of this behavior or its cause is not yet known. A possible explanation is that the Excello may contain considerable amount of oil, which may serve to increase its apparent heat content.

Using the equation from McLennan and others (1995):

$$G_c = G_{pc} (1-a_d)$$

where:

G_c = gas content, scf/ton

G_{pc} = "pure coal", gas content, scf/ton

a_d = dry ash content, weight fraction

the gas content of the samples converts to:

<i>unit</i>	<i>depth</i>	<i>moisture-free ash</i>	<i>G_c</i>	<i>G_{pc}</i>
Lexington "B"	471.0'	19.10%	139.5 scf/ton	172.4 scf/ton
Excello Sh.	569.0'	72.81%	40.0 scf/ton	147.3 scf/ton
Mulky	571.1'	16.16%	188.1 scf/ton	224.4 scf/ton
Dry Wood	875.5'	25.90%	189.9 scf/ton	256.3 scf/ton
Neutral(?)	910.7'	31.13%	110.7 scf/ton	160.7 scf/ton
Riverton	982.0'	8.99%	144.2 scf/ton	158.4 scf/ton
Riverton	983.0'	42.42%	74.1 scf/ton	128.7 scf/ton

Samples were also tested for their density. Dried samples were weighed and immersed in water in a beaker filled to its brim. With placing the sample in the beaker, the displaced water was spilled from the beaker and subsequently weighed. The volume of the sample is thus easily converted to volume using 1 gram/cc for the density of the water. The following density measurements were calculated:

<i>unit</i>	<i>depth</i>	<i>density and uncertainty</i>
Lexington "B"	471.0'	1.40 g/cc ± 0.04
Excello Shale	569.0'	2.16 g/cc ± 0.09
Mulky	571.1'	1.36 g/cc ± 0.01
Dry Wood	875.5'	1.40 g/cc ± 0.03
Neutral(?)	910.7'	1.48 g/cc ± 0.02
Riverton	982.0'	1.28 g/cc ± 0.07
Riverton	983.0'	1.71 g/cc ± 0.19

Compositional and isotopic chemistry were performed on five gas samples. These analyses are in Appendix II and were performed by Isotech Laboratories in Champaign, IL.

Isotopic Analyses

Analysis	L'ton "B" (471.0')	Excello (569.0')	Mulky (571.1')	Dry Wood (875.5')	Riverton (982.0')
$\delta^{13}\text{CO}_2$	3.27	-9.47	2.83	7.81	0.98
$\delta^{13}\text{C}_{\text{methane}}$	-62.28	-61.29	-61.33	-55.73	-63.00
$\delta\text{DC}_{\text{methane}}$	-220.9	-218.5	-220.3	-223.9	-226.6

Chemical Analyses (as reported; red = hydrocarbons; blue = non hydrocarbons, green = oxygen)

Component (%)	L'ton	Excello	Mulky	Dry Wood	Riverton
Methane	85.05	96.10	96.18	96.13	95.16
Ethane	0.645	0.0619	0.0740	0.150	0.420
Propane	0.0161	0.0020	0.0076	0.0029	0.411
n-Butane	0.0013	0.0000	0.0000	0.0000	0.178
iso-Butane	0.0018	0.0000	0.0000	0.0000	0.0528
n-Pentane	0.0000	0.0000	0.0000	0.0000	0.0402

iso-Pentane	0.0000	0.0000	0.0000	0.0000	0.0308
Hexane+	0.0000	0.0000	0.0124	0.0028	0.0672
Nitrogen	9.83	1.95	0.69	2.01	1.70
Oxygen	0.885	0.191	0.019	0.0020	0.0392
Argon	0.133	0.0417	0.0134	0.0275	0.0252
Hydrogen	0.0	0.0	0.0	0.217	0.0169
Carbon Dioxide	3.44	1.65	3.00	1.46	1.86
Helium	0.00	0.00	0.00	0.00	0.00

Chemical Analyses (recalculated after removing atmospheric contamination; *red* = hydrocarbons; *blue* = non hydrocarbons)

Component (%) ¹	L'ton	Excello	Mulky	Dry Wood	Riverton
Methane	88.80	96.99	96.27	96.14	95.34
Ethane	0.673	0.0625	0.0741	0.150	0.421
Propane	0.0168	0.0020	0.0076	0.0029	0.412
n-Butane	0.0014	0.0000	0.0000	0.0000	0.178
iso-Butane	0.0019	0.0000	0.0000	0.0000	0.0529
n-Pentane	0.0000	0.0000	0.0000	0.0000	0.0403
iso-Pentane	0.0000	0.0000	0.0000	0.0000	0.0309
Hexane+	0.0000	0.0000	0.0124	0.0028	0.0673
Nitrogen	6.82	1.25	0.62	2.00	1.56
Argon	0.098	0.0335	0.0126	0.0274	0.0235
Hydrogen	0.0	0.0	0.0	0.217	0.0169
Carbon Dioxide	3.59	1.66	3.00	1.46	1.86
Helium	0.00	0.00	0.00	0.00	0.00

¹atmospheric component (based on oxygen content) subtracted from the analysis, with components recalculated to 100%

Summary

	L'ton	Excello	Mulky	Dry Wood	Riverton
Calculated BTU	952	1026	1020	1019	1041
Total % non-HCs	10.51	2.95	3.64	3.71	3.46
HC Wetness (%)	0.77	0.07	0.10	0.16	1.25

Plotting of the isotopes and gas wetness (Figure 18) indicates that the gas is of mixed biogenic and thermogenic origin.

An estimate of gas reserves per acre for the coals and shales tested can be made using thickness, density, and gas content data:

unit	thickness ¹ (ft)	coal/shale per acre (ft ³) ²	(ton) ³	gas per acre (thousand cubic ft) ⁴
Lexington "B"	1.3	56,628	2,475	345.2
Excello Sh.	3.4	148,104	9,986	399.4
Mulky	1.0	43,560	1,849	347.8
Dry Wood	0.8	34,848	1,523	289.1

Neutral(?)	0.5	21,780	1,006	111.4
Riverton	2.1	91,476	4,283 ⁵	467.7 ⁵

¹ thicknesses (ft) from Rolland Yoakum, Layne Energy (personal communication, 2005)

² thickness (ft) X 43,560 ft²/acre

³ ft³ coal or shale per acre X density (g/cm³) X (1/ 907,168 g/ton) X 28,317 cm³/ft³

⁴ tons coal or shale per acre X gas content (ft³/ton)

⁵ averaged density (1.50 g/cm³) and gas content (109.2 ft³/ton) used

Sorption times (time required to desorb 63.2% of the total gas content) for the samples are as follows (see Figure 26):

<i>unit</i>	<i>depth</i>	<i>sorption time (days)</i>
Lexington "B"	677.8'	182.6
Excello Shale	681.5'	17.7
Mulky	682.4'	12.8
Dry Wood	706.0'	63.5
Neutral(?)	731.5'	16.3
Mineral	772.0'	36.7
Riverton	1053.7'	13.0
Riverton	1054.7'	10.6
Lexington "B"	471.0'	34.9
Excello Shale	569.0'	85.7
Mulky	571.1'	31.0
Dry Wood	875.5'	10.2
Neutral(?)	910.7'	11.5
Riverton	982.0'	22.1
Riverton	983.0'	20.0

A reserves versus sorption time diagram is shown in Figure 19.

REFERENCES

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- McLennan, J.D., Schafer, P.S., and Pratt, T.J., 1995, A guide to determining coalbed gas content: Gas Research Institute, Chicago, IL, Reference No. GRI-94/0396, 180 p.

FIGURES, TABLES, and APPENDICES

FIGURE 1. Correlation of field barometer to Petrophysics Lab pressure transducer.

TABLE 1. Desorption measurements for samples.

FIGURE 2. Lost-gas graph for 471.0' to 471.8' (Lexington "B" coal).

FIGURE 3. Lost-gas graph for 569.0' to 570.0' (Excello Shale).

FIGURE 4. Lost-gas graph for 571.1' to 572.0' (Mulky coal).

FIGURE 5. Lost-gas graph for 875.5' to 876.4' (Dry Wood coal).

FIGURE 6. Lost-gas graph for 910.7' to 911.4' (Neutral(?) coal).

FIGURE 7. Lost-gas graph for 982.0' to 983.0' (Riverton coal).

FIGURE 8. Lost-gas graph for 983.0' to 984.0' (Riverton coal).

FIGURE 9. Desorption graph for Lexington "B" coal.

FIGURE 10. Desorption graph for Excello Shale.

FIGURE 11. Desorption graph for Mulky coal.

FIGURE 12. Desorption graph for Dry Wood coal.

FIGURE 13. Desorption graph for Neutral(?) coal.

FIGURE 14. Desorption graph for Riverton coal.

FIGURE 15. Desorption graph for all samples

FIGURE 16. Sorption times for all samples.

FIGURE 17. Gas chemistry of individual well samples

FIGURE 18. Gas chemistry of samples compared to other nearby samples.

FIGURE 19. Reserves and sorption times for all units.

APPENDIX I. Proximate analyses of samples by Luman's Laboratories, Chetopa, KS.

Correlation of Field Barometer to KGS Petrophysics Lab Barometer

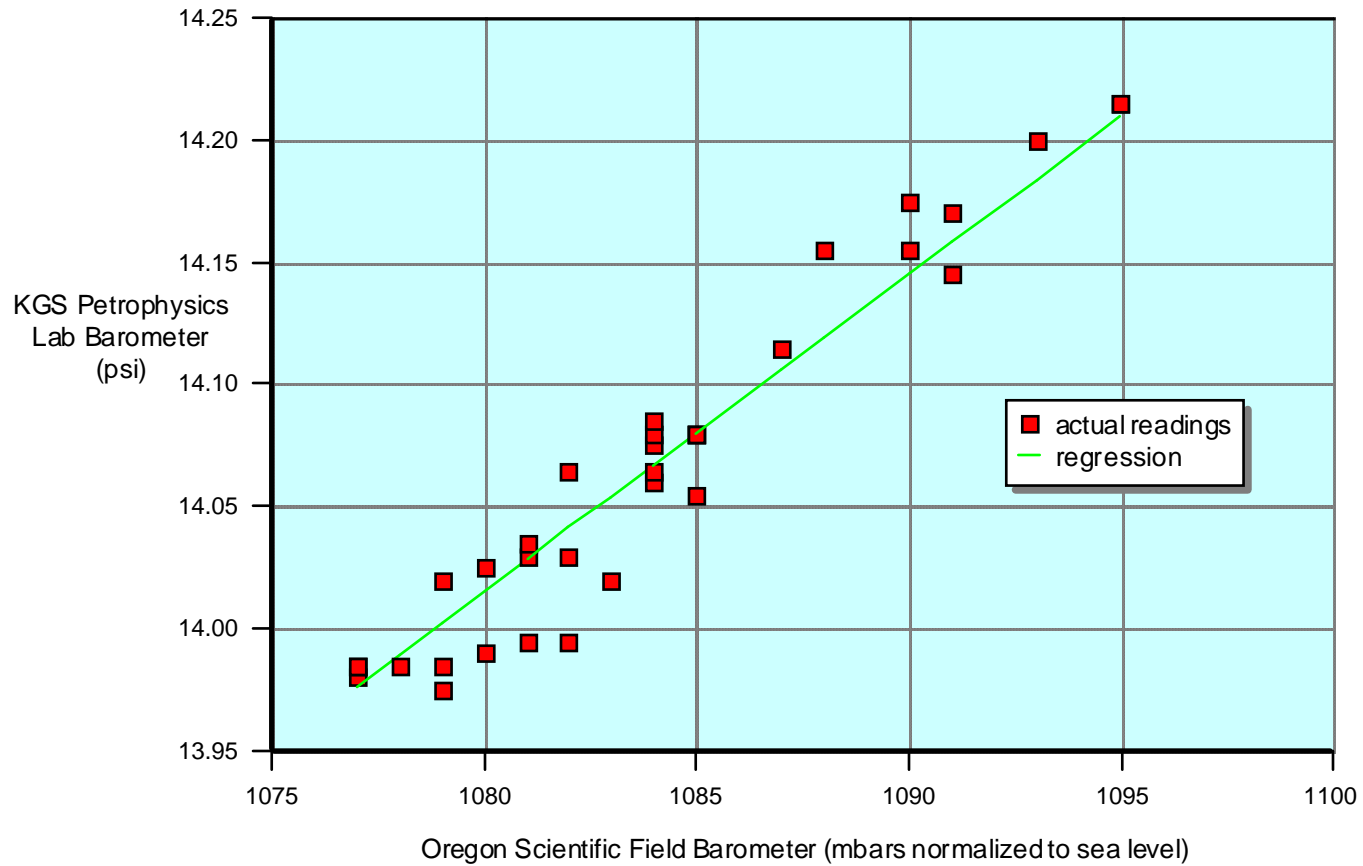
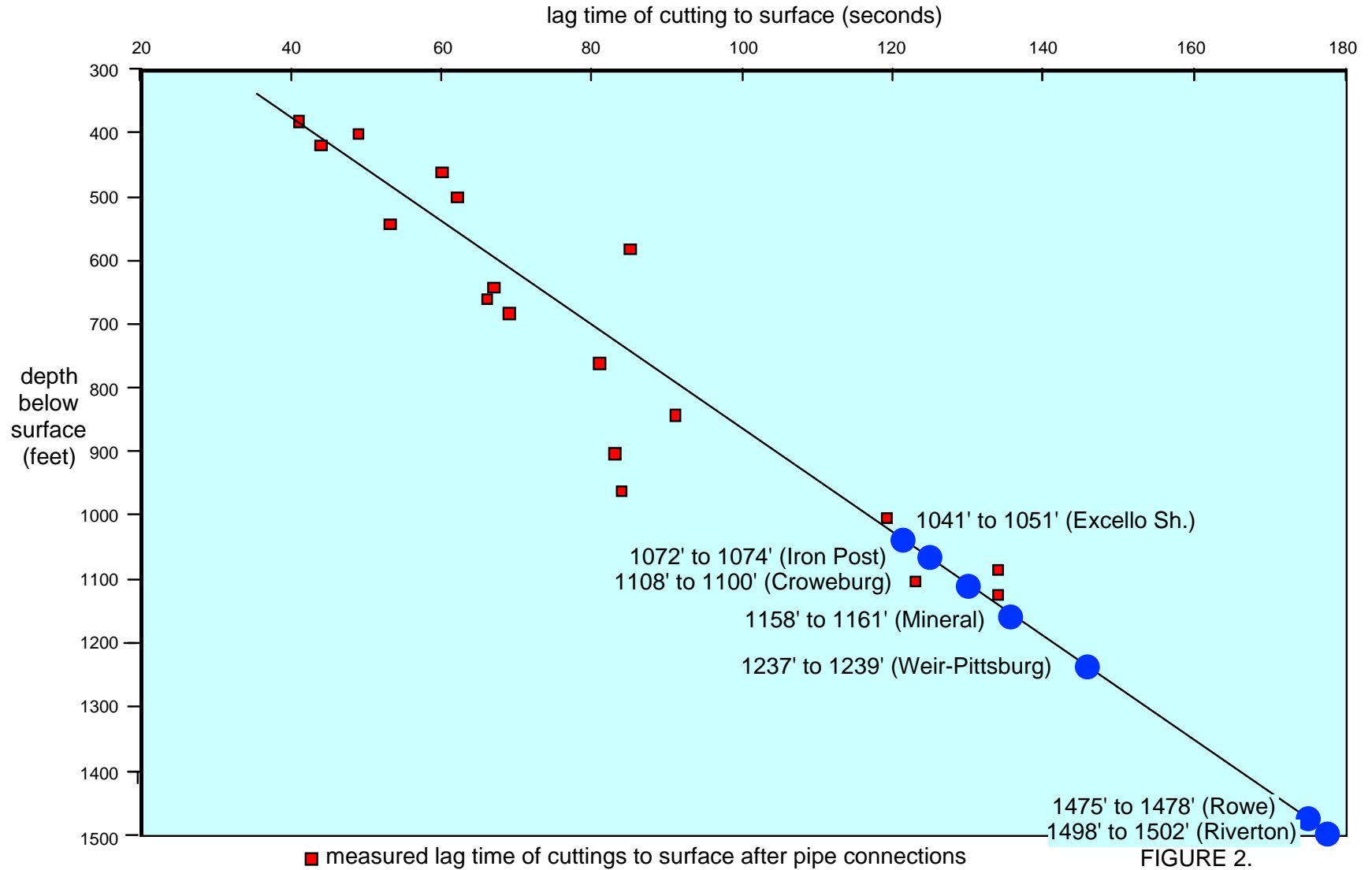


FIGURE 1.

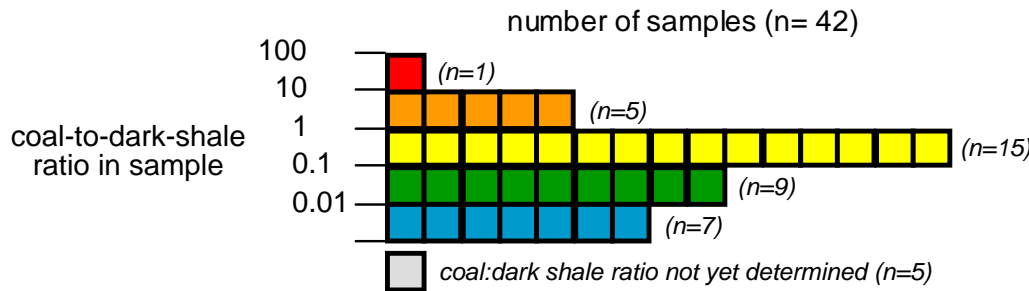
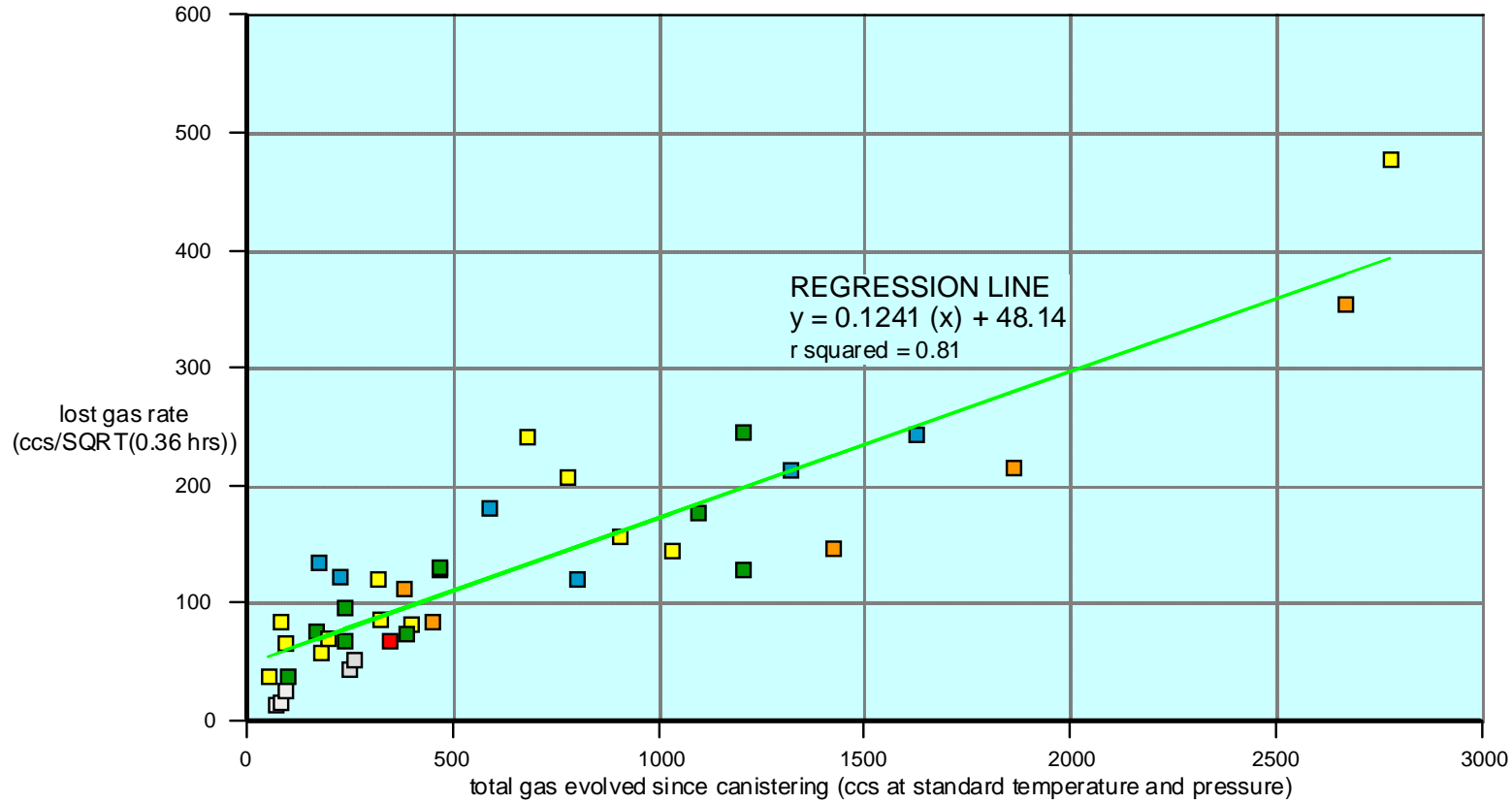
Dart Cherokee Basin #A3-36 Fields, NW NE 36-T.34S.-R.14E., Montgomery County, KS

(based on lag times from Dart Cherokee Basin #CH-1 Holder; sec. 1-T.30S.-R.14E., Wilson County, KS)

lag-time to surface for well cuttings



RELATIONSHIP of TOTAL GAS EVOLVED FROM a CUTTINGS SAMPLE to RATE of LOST-GAS
 (from 42 cuttings samples from air-drilled wells, Cherokee basin, southeastern Kansas)



LOST-GAS ALGORITHM

$$\text{ccs lost gas} = \sqrt{X} (Y)$$

where X = bottom-hole to canister time (in hours)

where Y = ccs lost gas at 0.36 hours

(i.e., value Y from regression equation)

FIGURE 3.

Desorption Characteristics of Cuttings Samples

Dart Cherokee Basin #A3-36 Fields, 36-T.34S.-R.14E., Montgomery County, KS

LITHOLOGIC COMPONENT SENSITIVITY ANALYSIS for calculation of Excello Shale from 1041' to 1051'

$$\text{GAS CONTENT}_{\text{coal}} = \frac{\text{total gas desorbed} - ((\text{gas content}_{\text{dark shale}}) * (\text{weight}_{\text{dark shale}}))}{\text{weight}_{\text{coal}}}$$

total gas desorbed
(including estimated lost gas) = 468.9 ccs

TOTAL DRY WEIGHT OF SAMPLE = 1684.41 grams

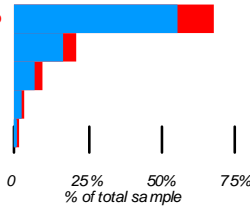
weight_{light-colored lithologies} = 332.59 grams (19.7%)

weight_{dark shale} = 1351.82 grams (80.3%)

weight_{coal} = 0.00 grams (0.0%)

sieve size	grams	% coal / % dark shale / % light-colored liths
>0.0930"	1120.19	0.00% / 82.20% / 17.71%
>0.0661"	341.24	0.00% / 79.01% / 9.30%
>0.0460"	159.73	0.00% / 73.33% / 7.72%
>0.0331"	46.48	0.00% / 69.64% / 30.46%
<0.0331"	16.77	0.00% / 65.00% / 35.00%

1684.41 TOTAL



GAS CONTENT
(coal)
scf/ton

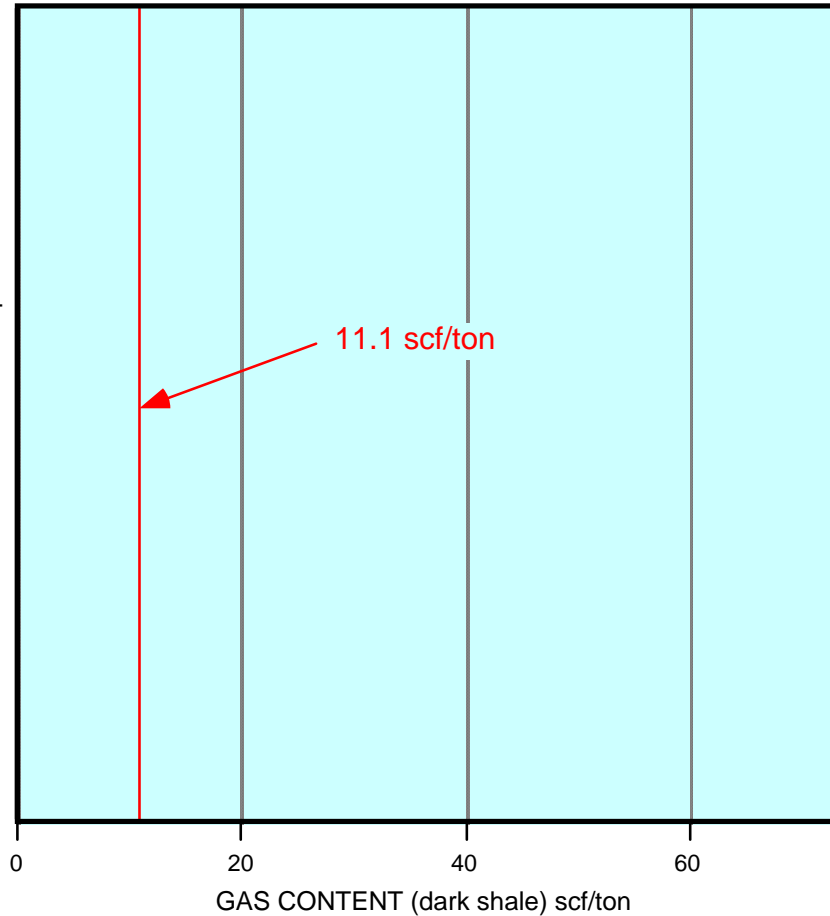


FIGURE 4.

Desorption Characteristics of Cuttings Samples

Dart Cherokee Basin #A3-36 Fields, 36-T.34S.-R.14E., Montgomery County, KS

LITHOLOGIC COMPONENT SENSITIVITY ANALYSIS for calculation of gas content of Iron Post coal from 1072' to 1074'

$$\text{GAS CONTENT}_{\text{coal}} = \frac{\text{total gas desorbed} - ((\text{gas content}_{\text{dark shale}}) * (\text{weight}_{\text{dark shale}}))}{\text{weight}_{\text{coal}}}$$

total gas desorbed
(including estimated lost gas) = 126.9 ccs

TOTAL DRY WEIGHT OF SAMPLE = 390.71 grams

weight_{light-colored lithologies} = 280.33 grams (71.8%)

weight_{dark shale} = 57.89 grams (14.8%)

weight_{coal} = 52.49 grams (13.4%)

sieve size	grams	% coal / % dark shale / % light-colored liths
>0.0930"	178.78	10.57% / 20.98% / 68.44%
>0.0661"	89.28	22.11% / 11.30% / 66.58%
>0.0460"	71.72	15.19% / 8.83% / 75.97%
>0.0331"	32.18	7.41% / 11.11% / 81.48%
<0.0331"	18.76	3.00% / 2.00% / 95.00%
390.71 TOTAL		

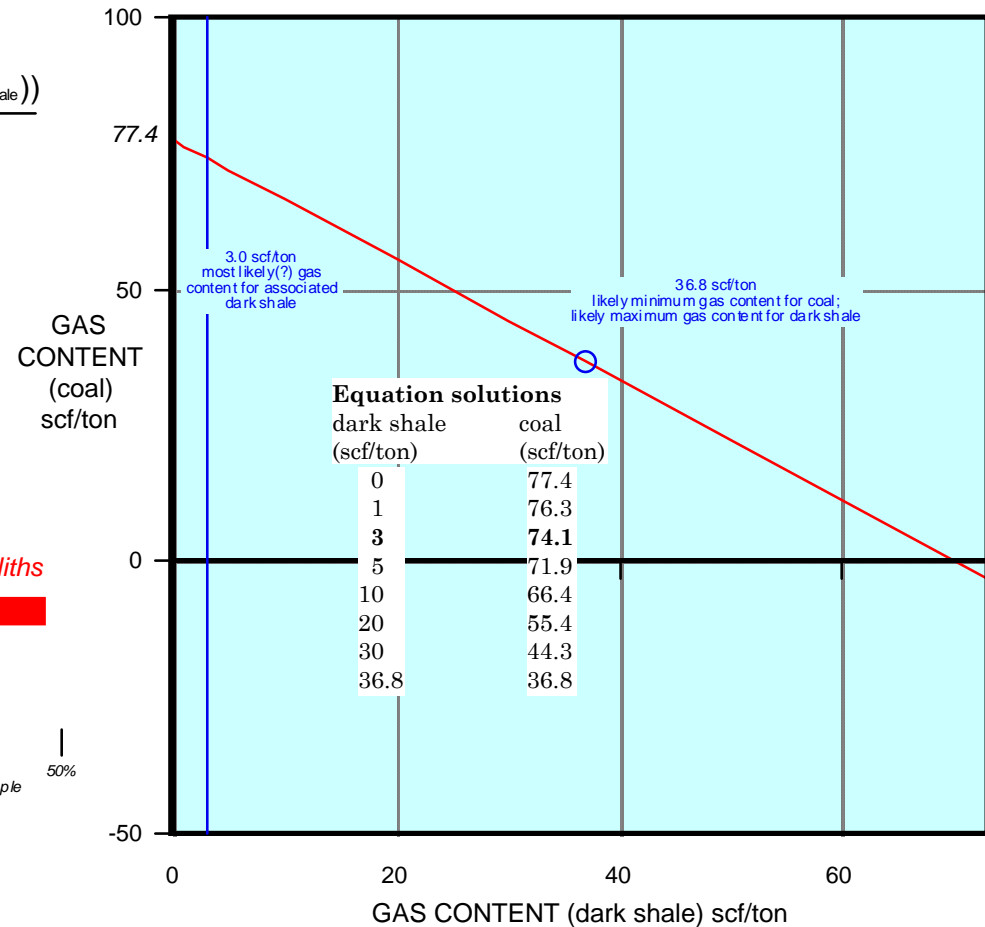


FIGURE 5.

Desorption Characteristics of Cuttings Samples

Dart Cherokee Basin #A3-36 Fields, 36-T.34S.-R.14E., Montgomery County, KS

LITHOLOGIC COMPONENT SENSITIVITY ANALYSIS for calculation of gas content of Croweburg coal from 1108' to 1110'

$$\text{GAS CONTENT}_{\text{coal}} = \frac{\text{total gas desorbed} - ((\text{gas content}_{\text{dark shale}}) * (\text{weight}_{\text{dark shale}}))}{\text{weight}_{\text{coal}}}$$

total gas desorbed
(including estimated lost gas) = 204.4 ccs

TOTAL DRY WEIGHT OF SAMPLE = 322.04 grams

weight_{light-colored lithologies} = 105.46 grams (32.8%)

weight_{dark shale} = 169.18 grams (53.5%)

weight_{coal} = 47.40 grams (14.7%)

sieve size	grams	% coal / % dark shale / % light-colored liths
>0.0930"	192.65	12.61% / 56.67% / 30.73%
>0.0661"	72.77	20.89% / 49.53% / 29.58%
>0.0460"	47.34	15.30% / 47.01% / 37.69%
>0.0331"	6.28	8.24% / 17.65% / 74.12%
<0.0331"	3.00	5.00% / 20.00% / 75.00%
322.04 TOTAL		

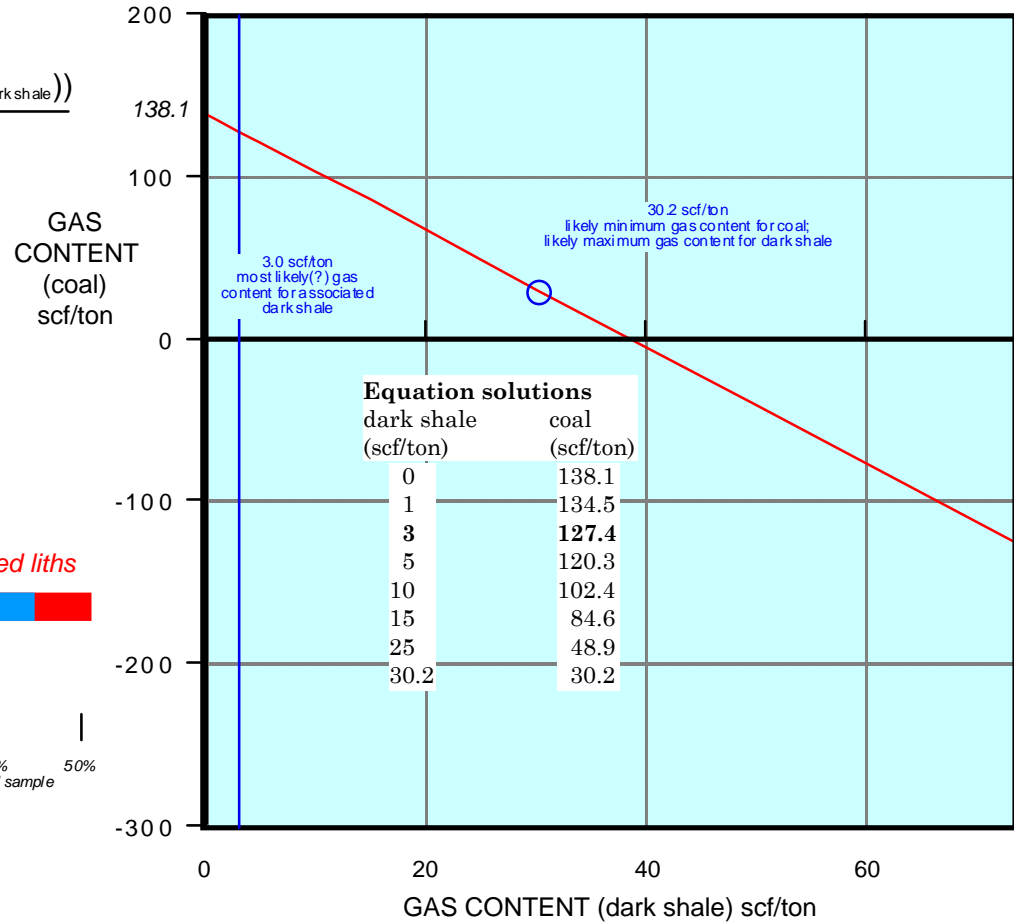
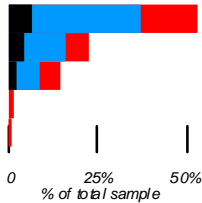


FIGURE 6.

Desorption Characteristics of Cuttings Samples

Dart Cherokee Basin #A3-36 Fields, 36-T.34S.-R.14E., Montgomery County, KS

LITHOLOGIC COMPONENT SENSITIVITY ANALYSIS for calculation of gas content of Mineral coal from 1158' to 1161'

$$\text{GAS CONTENT}_{\text{coal}} = \frac{\text{total gas desorbed} - ((\text{gas content}_{\text{dark shale}}) * (\text{weight}_{\text{dark shale}}))}{\text{weight}_{\text{coal}}}$$

total gas desorbed
(including estimated lost gas) = 248.6 ccs

TOTAL DRY WEIGHT OF SAMPLE = 935.21 grams

weight_{light-colored lithologies} = 520.74 grams (55.7%)

weight_{dark shale} = 357.76 grams (38.3%)

weight_{coal} = 56.71 grams (6.1%)

sieve size	grams	% coal / % dark shale / % light-colored liths
>0.0930"	426.25	4.48% / 32.68% / 62.83%
>0.0661"	269.94	9.66% / 38.94% / 51.40%
>0.0460"	181.51	5.03% / 47.80% / 47.17%
>0.0331"	39.58	5.62% / 44.94% / 49.44%
<0.0331"	17.93	1.00% / 49.00% / 50.00%
935.21 TOTAL		

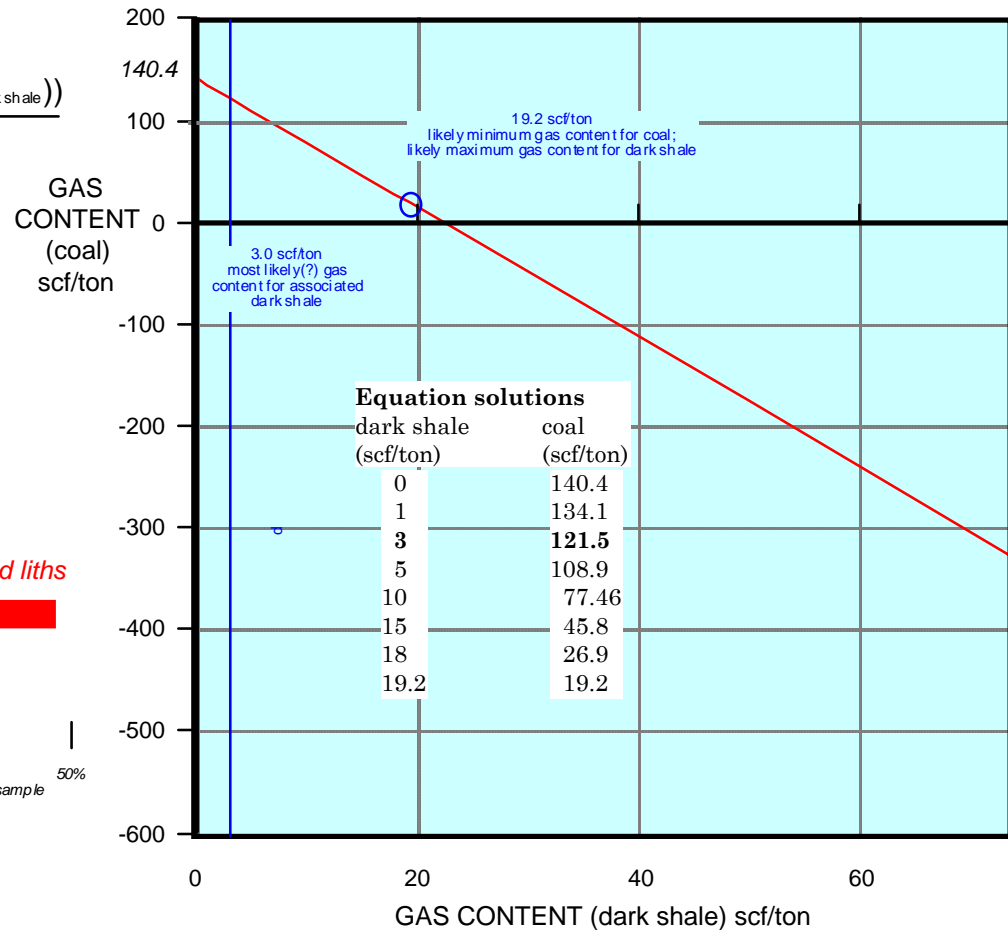
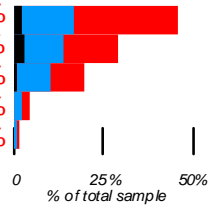


FIGURE 7.

Desorption Characteristics of Cuttings Samples

Dart Cherokee Basin #A3-36 Fields, 36-T.34S.-R.14E., Montgomery County, KS

LITHOLOGIC COMPONENT SENSITIVITY ANALYSIS for calculation of gas content of Weir-Pittsburg coal from 1237' to 1239'

$$\text{GAS CONTENT}_{\text{coal}} = \frac{\text{total gas desorbed} - ((\text{gas content}_{\text{dark shale}}) * (\text{weight}_{\text{dark shale}}))}{\text{weight}_{\text{coal}}}$$

total gas desorbed
(including estimated lost gas) = 63.5 ccs

TOTAL DRY WEIGHT OF SAMPLE = 314.62 grams

weight_{light-colored lithologies} = 284.51 grams (90.4%)

weight_{dark shale} = 15.65 grams (5.0%)

weight_{coal} = 14.46 grams (4.6%)

sieve size	grams	% coal	% dark shale	% light-colored liths
>0.0930"	197.63	5.16%	6.04%	88.80%
>0.0661"	83.62	4.46%	3.27%	92.27%
>0.0460"	28.40	1.76%	3.23%	95.01%
>0.0331"	3.48	0.70%	1.40%	97.91%
<0.0331"	1.49	0.60%	1.20%	98.20%
314.62 TOTAL				

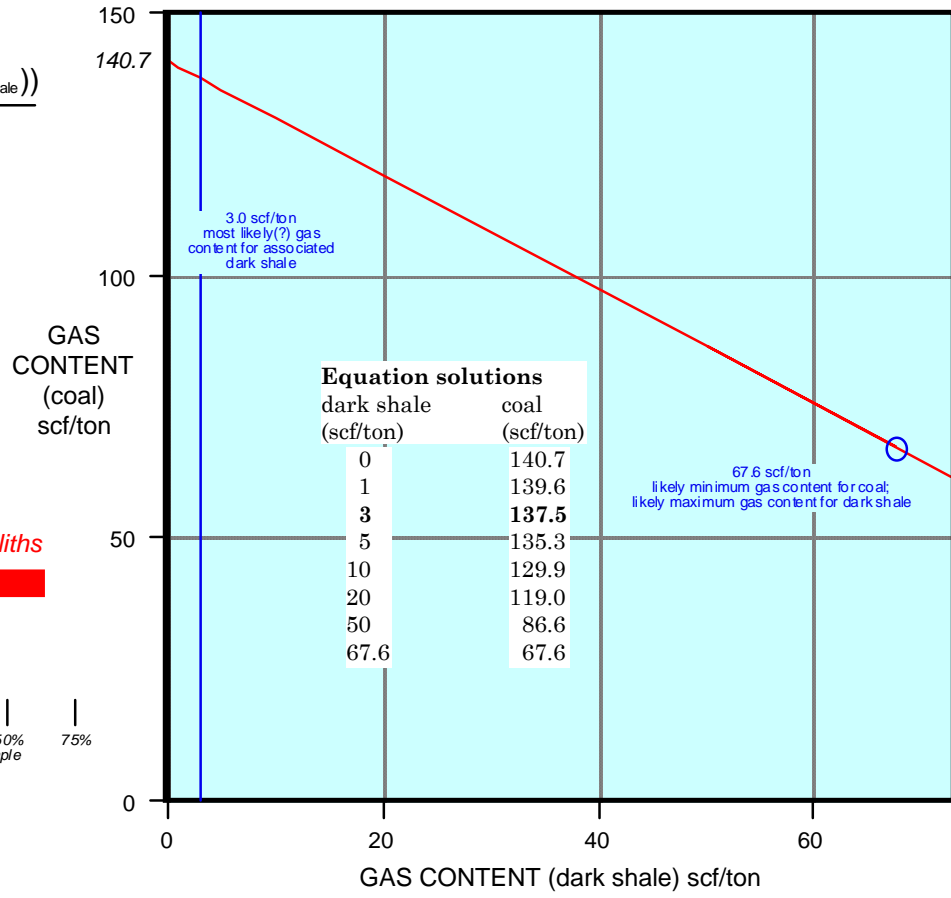
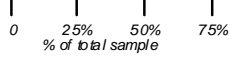


FIGURE 8.

Desorption Characteristics of Cuttings Samples

Dart Cherokee Basin #A3-36 Fields, NW NE 36-T.34S.-R.14E., Montgomery County, KS

LITHOLOGIC COMPONENT SENSITIVITY ANALYSIS for calculation of gas content of Rowe coal from 1475' to 1478'

$$\text{GAS CONTENT}_{\text{coal}} = \frac{\text{total gas desorbed} - ((\text{gas content}_{\text{dark shale}}) * (\text{weight}_{\text{dark shale}}))}{\text{weight}_{\text{coal}}}$$

total gas desorbed
(including estimated lost gas) = 2056.5 ccs

TOTAL DRY WEIGHT OF SAMPLE = 2240.20 grams

weight_{light-colored lithologies} = 64.54 grams (2.9%)

weight_{dark shale} = 1930.28 grams (86.2%)

weight_{coal} = 245.38 grams (11.0%)

sieve size	grams	% coal / % dark shale / % light-colored liths
>0.0930"	927.26	20.99% / 76.31% / 2.70%
>0.0661"	666.71	5.23% / 93.11% / 1.66%
>0.0460"	552.77	2.68% / 93.39% / 3.93%
>0.0331"	81.30	1.19% / 91.70% / 7.11%
<0.0331"	12.16	1.00% / 91.00% / 8.00%
2240.20 TOTAL		

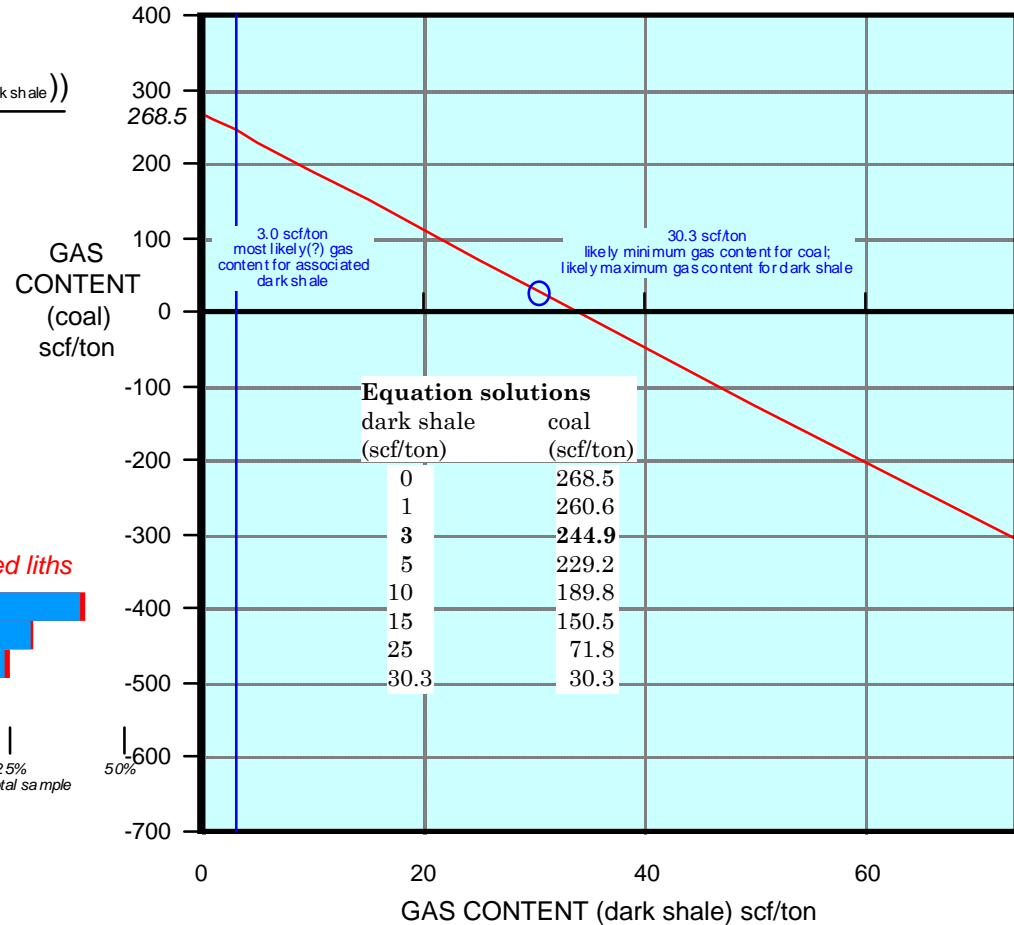
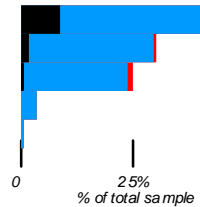


FIGURE 9.

Desorption Characteristics of Cuttings Samples

Dart Cherokee Basin #A3-36 Fields, 36-T.34S.-R.14E., Montgomery County, KS

LITHOLOGIC COMPONENT SENSITIVITY ANALYSIS for calculation of gas content of Riverton coal from 1498' to 1502'

$$\text{GAS CONTENT}_{\text{coal}} = \frac{\text{total gas desorbed} - ((\text{gas content}_{\text{dark shale}}) * (\text{weight}_{\text{dark shale}}))}{\text{weight}_{\text{coal}}}$$

total gas desorbed
(including estimated lost gas) = 627.1 ccs

TOTAL DRY WEIGHT OF SAMPLE = 1190.47 grams
 weight_{light-colored lithologies} = 492.50 grams (41.4%)
 weight_{dark shale} = 590.26 grams (49.6%)
 weight_{coal} = 107.71 grams (9.1%)

sieve size	grams	% coal	% dark shale	% light-colored liths
>0.0930"	544.29	9.38%	32.54%	58.08%
>0.0661"	353.54	11.76%	57.65%	30.59%
>0.0460"	231.76	5.47%	73.18%	21.35%
>0.0331"	44.43	4.26%	70.92%	24.82%
<0.0331"	16.47	3.60%	50.00%	47.00%
1190.47 TOTAL				

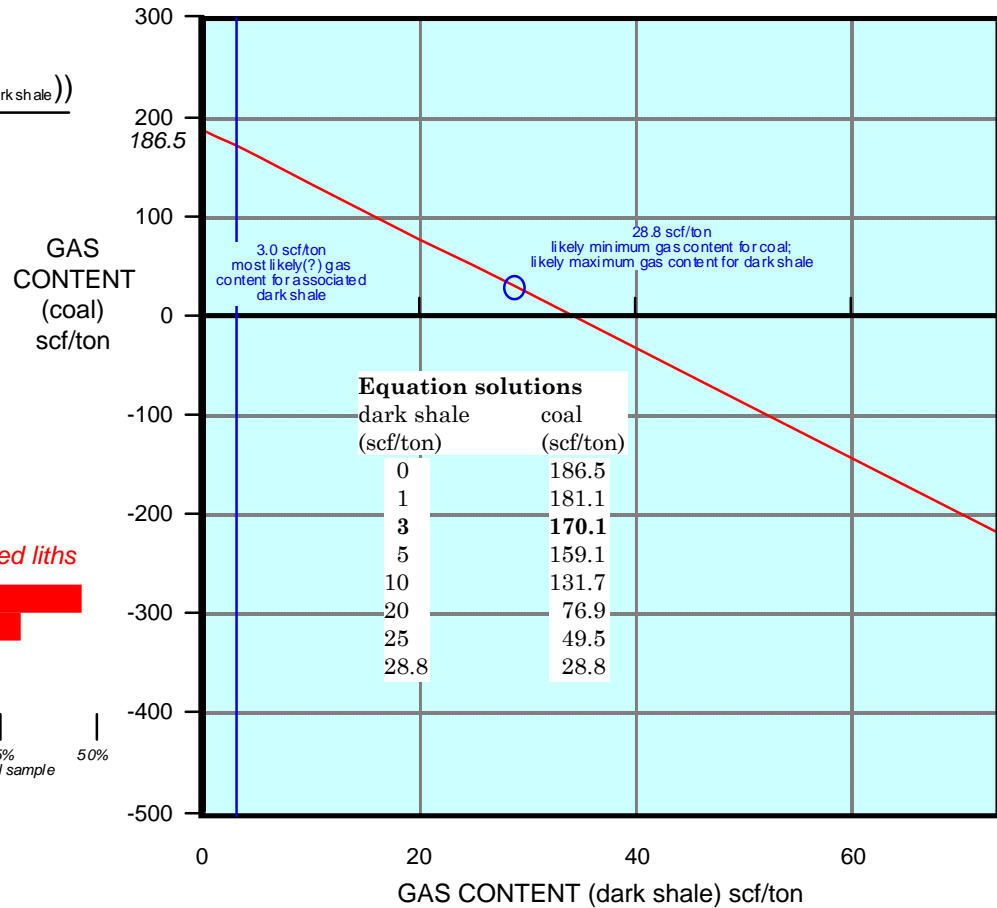
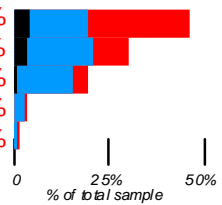


FIGURE 10.

surface

100'

200'

300'

400'

500'

600'

700'

800'

900'

1000'

1041'-1051' Exello Shale

1072'-1074' Iron Post

1108'-1110' Croweburg

1158'-1161' Mineral

1200'

1237'-1239' Weir-Pittsburg

1400'

1475'-1478' Rowe

1498'-1502' Riverton

Desorption Characteristics of Cuttings Samples

Dart Cherokee Basin #A3-36 Fields, NW NE 36-T.34S.-R.14E., Montgomery County, KS

LITHOLOGIC COMPONENT SENSITIVITY ANALYSIS for all samples

UNIT	coal in sample	scf/ton w/ shale @ 3 scf/ton	maximum scf/ton	minimum scf/ton
Excello Shale	----	----	----	11.1
Iron Post	13%	74.1	77.4	36.8
Croweburg	15%	127.4	138.1	30.2
Mineral	6%	121.5	140.4	19.2
Weir-Pittsburg	5%	137.5	140.7	67.6
Rowe	11%	244.9	268.5	30.3
Riverton	9%	170.1	186.5	28.8

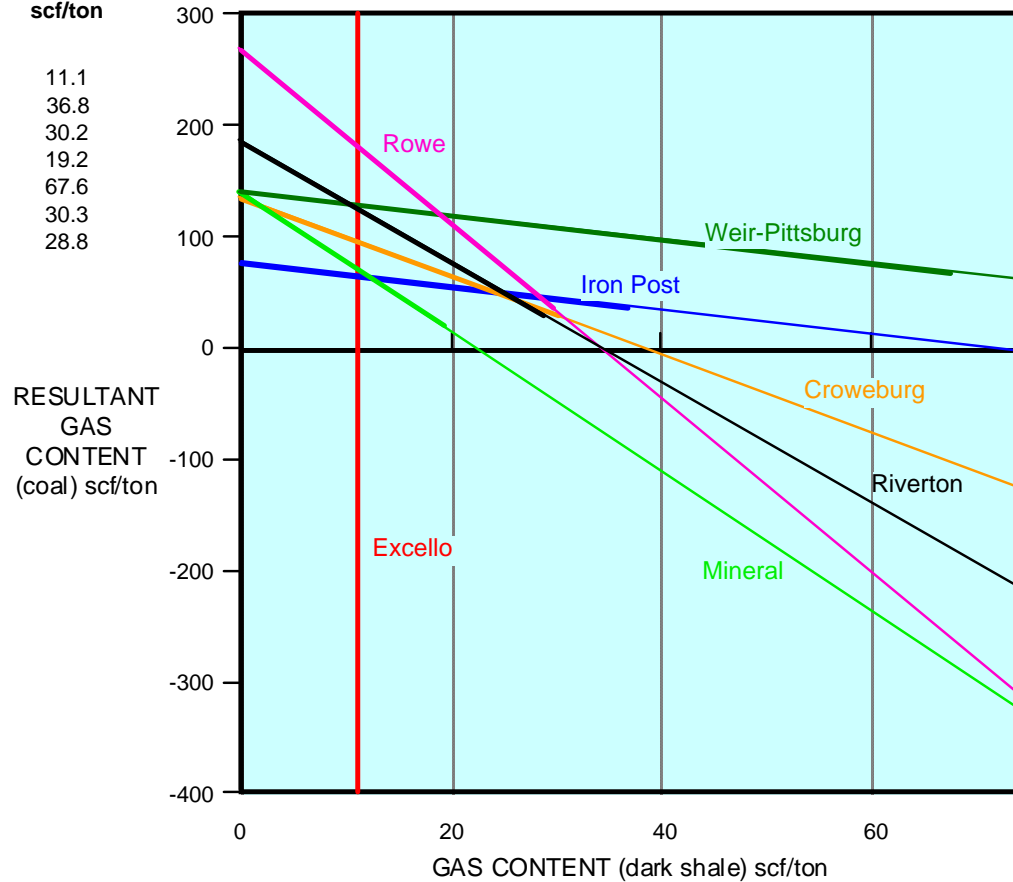


FIGURE 11.

surface

100'

200'

300'

400'

500'

600'

700'

800'

900'

1000'

1041'-1051' Excello Shale

1072'-1074' Iron Post

1108'-1110' Croweburg

1158'-1161' Mineral

1200'

1237'-1239' Weir-Pittsburg

1475'-1478' Rowe

1498'-1502' Riverton

1400'

Desorption Characteristics of Cuttings Samples

based on total weight of gas-generating lithologies (i.e., coal and dark shale) in sample Dart Cherokee Basin #A3-36 Fields, NW NE 36-T.34S.-R.14E., Montgomery County, KS

APPROX. GAS CONTENT (scf/ton) (approx. wet weight, counting lost gas)

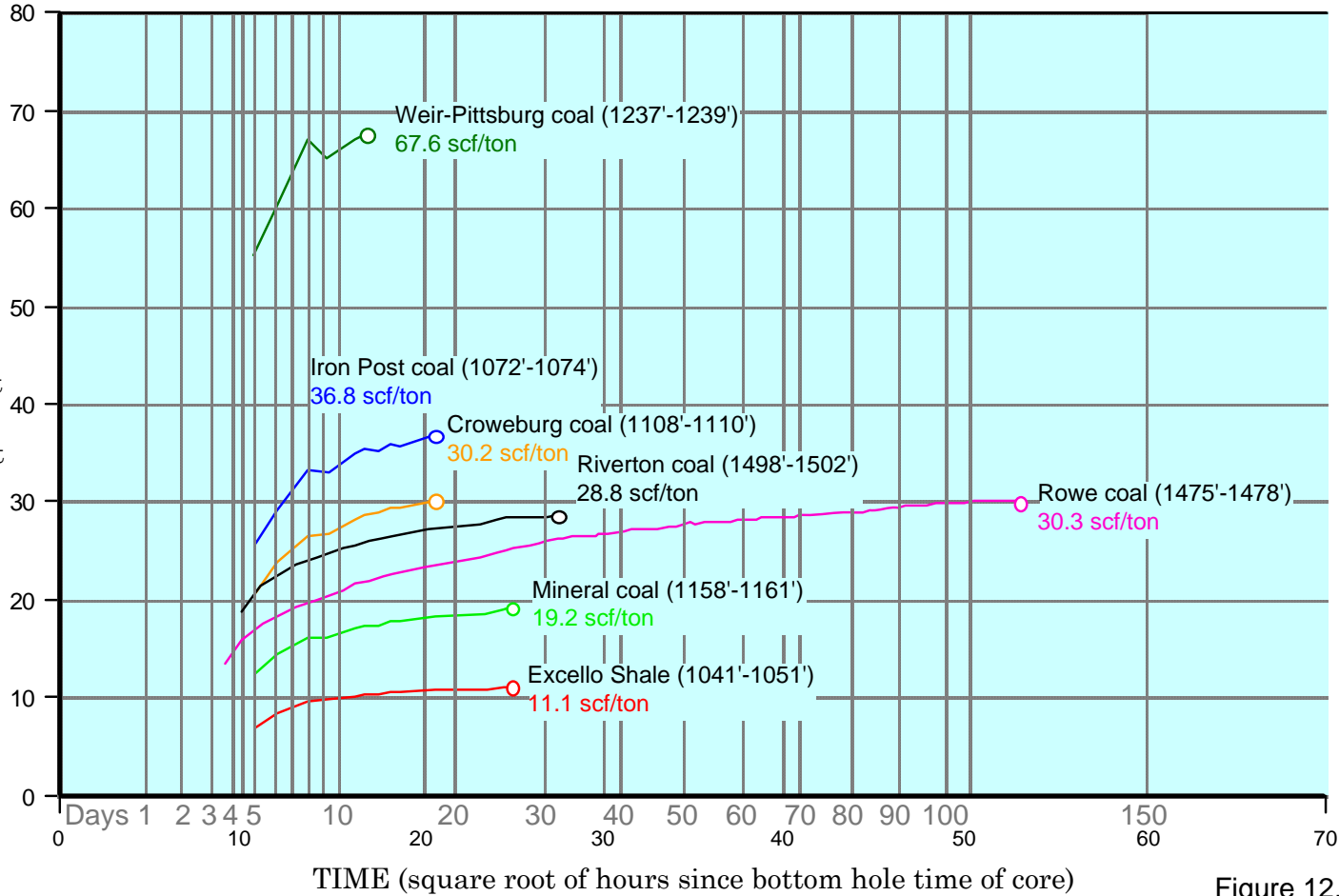


Figure 12.

TABLE 1 -- DESORPTION DATA for Layne-Christensen #16-1 Pierce; NE SE SW 16-T.31S.-R.17E., Montgomery County, KS

SAMPLE:	471.0' to 471.8' (Lexington "B" coal) in canister MAGGY 1																				
dry sample weight:	lbs.	grams	wet sample weight:	lbs.	grams	moisture %	est. lost gas (cc) =		TIME OF:		elapsed time (off bottom to canister)										
	2.000	906.98		2.041	925.86	2.04%	120		off bottom		in canister		22.5 minutes		0.375 hours						
										5/28/2003 9:52	5/28/2003 10:15										
RIG/LAB MEASUREMENTS	CONVERSION OF RIG/LAB MEASUREMENTS TO STP (@60 deg		CUMULATIVE VOLUMES (@		SCF/TON		SCF/TON		TIME OF MEASU		TIME SINCE		SQR T hrs. (since off bottom)								
measured cc	measured T (F)	measured P (psia)	cubic ft (absolute T)	cubic ft (@STP)	cc (@STP)	cubic ft	cc	without lost gas	with lost gas	TIME OF MEASU	off bottom	in canister	SQR T hrs. (since off bottom)								
4.5	74	1092	0.00028	534	14.174	0.000285262	7.51	0.000285262	7.51	0.27	4.50	5/28/2003 10:18	0:26:15	0:03:45	0.61437828						
8	74	1092	0.00016	534	14.174	0.00014921	4.23	0.00014471	11.74	0.41	4.65	5/28/2003 10:20	0:28:00	0:05:30	0.683130051						
3.5	74	1092	0.00012	534	14.174	0.000116052	3.29	0.000350523	15.02	0.53	4.77	5/28/2003 10:22	0:29:45	0:07:15	0.704154339						
14	74	1092	0.00049	534	14.174	0.000464208	13.14	0.000994731	28.17	0.99	5.23	5/28/2003 10:29	0:36:30	0:14:00	0.779957264						
14	74	1092	0.00049	534	14.174	0.000464208	13.14	0.001458939	41.31	1.46	5.70	5/28/2003 10:35	0:42:30	0:20:00	0.841625411						
11	74	1092	0.00039	534	14.174	0.000364735	10.33	0.001823674	51.64	1.82	6.06	5/28/2003 10:40	0:48:00	0:25:30	0.894427191						
4	74	1092	0.00014	534	14.174	0.000132631	3.76	0.001956305	55.40	1.96	6.20	5/28/2003 10:43	0:50:30	0:28:00	0.91742393						
5	74	1092	0.00018	534	14.174	0.000165789	4.69	0.002122094	60.09	2.12	6.36	5/28/2003 10:46	0:54:00	0:31:30	0.946883298						
6	74	1092	0.00021	534	14.174	0.000198946	5.63	0.00232104	65.72	2.32	6.56	5/28/2003 10:49	0:56:30	0:34:00	0.970395108						
15	74	1092	0.00053	534	14.174	0.000497366	14.08	0.002818406	79.81	2.82	7.06	5/28/2003 10:57	1:04:45	0:42:15	1.038829469						
13	74	1092	0.00046	534	14.174	0.00043105	12.21	0.003249456	92.01	3.25	7.49	5/28/2003 11:04	1:11:30	0:49:00	1.09163486						
7	74	1092	0.00025	534	14.174	0.000232104	6.57	0.00348156	98.59	3.48	7.72	5/28/2003 11:09	1:16:30	0:54:00	1.129158979						
18	74	1092	0.00064	534	14.174	0.000596839	16.90	0.004078399	115.49	4.08	8.32	5/28/2003 11:19	1:26:30	1:04:00	1.200694244						
39	74	1092	0.00138	534	14.174	0.001293151	36.62	0.00537155	152.10	5.37	9.61	5/28/2003 11:43	1:50:30	1:28:00	1.357080199						
38	74	1092	0.00134	534	14.174	0.001259993	35.68	0.006631543	187.78	6.63	10.87	5/28/2003 12:10	2:17:30	1:55:00	1.513825177						
16	74	1091	0.00057	534	14.161	0.000530038	15.01	0.007161581	202.79	7.16	11.40	5/28/2003 12:21	2:28:30	2:06:00	1.573213272						
12	75	1091	0.00042	535	14.161	0.000396785	11.24	0.007558366	214.03	7.56	11.80	5/28/2003 12:30	2:37:30	2:15:00	1.620185175						
115	78	1089	0.00406	538	14.135	0.003774389	106.88	0.011332755	320.91	11.34	15.57	5/28/2003 14:22	4:29:30	4:07:00	2.119355248						
52	78	1089	0.00184	538	14.135	0.00170668	48.33	0.013039435	369.23	13.04	17.28	5/28/2003 15:13	5:20:30	4:58:00	2.311204592						
41	77	1088	0.00145	537	14.122	0.00134692	38.14	0.014386354	407.37	14.39	18.63	5/28/2003 15:51	5:58:30	5:36:00	2.444381312						
28	77	1088	0.00099	537	14.122	0.000919848	26.05	0.015306202	433.42	15.31	19.55	5/28/2003 16:27	6:34:30	6:12:00	2.564176281						
23	77	1088	0.00081	537	14.122	0.000755589	21.40	0.016061791	454.82	16.07	20.30	5/28/2003 16:57	7:04:30	6:42:00	2.659887216						
24	77	1087	0.00085	537	14.109	0.000787716	22.31	0.016849507	477.12	16.85	21.09	5/28/2003 17:33	7:40:30	7:18:00	2.770379035						
25	77	1087	0.00088	537	14.109	0.000820538	23.23	0.017670045	500.36	17.67	21.91	5/28/2003 18:15	8:22:30	8:00:00	2.893859226						
25	76	1089	0.00088	536	14.135	0.000823581	23.32	0.018493626	523.68	18.50	22.74	5/28/2003 20:08	10:15:30	9:53:00	3.202863302						
45	74	1089	0.00159	534	14.135	0.001487998	42.14	0.019981624	565.81	19.99	24.22	5/28/2003 22:57	13:04:30	12:42:00	3.615936946						
90	72	1088	0.00318	532	14.122	0.002984441	84.51	0.022966064	650.32	22.97	27.21	5/29/2003 5:06	19:13:30	18:51:00	4.384632254						
32	71	1089	0.00113	531	14.135	0.00106411	30.13	0.024030175	680.46	24.04	28.27	5/29/2003 6:48	20:55:30	20:33:00	4.574385205						
29	70	1087	0.00102	530	14.109	0.000964395	27.31	0.024994569	707.76	25.00	29.24	5/29/2003 9:19	23:26:30	23:04:00	4.841659495						
21	72	1087	0.00074	532	14.109	0.000695729	19.70	0.025690299	727.47	25.70	29.93	5/29/2003 11:05	25:12:30	24:50:00	5.02079011						
30	76	1086	0.00106	536	14.096	0.000985575	27.91	0.026675873	755.37	26.68	30.92	5/29/2003 13:25	27:32:30	27:10:00	5.248015498						
20	76	1085	0.00071	536	14.083	0.000656445	18.59	0.027332318	773.96	27.34	31.58	5/29/2003 14:51	28:58:30	28:36:00	5.382843115						
24	75	1083	0.00085	535	14.057	0.000787751	22.31	0.028120069	796.27	28.13	32.37	5/29/2003 16:47	30:54:30	30:32:00	5.559526359						
20	75	1081	0.00071	535	14.031	0.000655247	18.55	0.028775317	814.82	28.78	33.02	5/29/2003 18:48	32:55:30	32:33:00	5.738031021						
97	71	1076	0.00343	531	13.968	0.003180708	90.25	0.031962395	905.07	31.97	36.21	5/30/2003 7:49	45:56:30	45:34:00	6.778028229						
34	74	1075	0.00112	534	13.953	0.001109812	31.43	0.033072206	936.50	33.08	37.32	5/30/2003 10:48	48:55:30	48:33:00	6.994640806						
41	75	1076	0.00145	535	13.966	0.001337044	37.86	0.03440925	974.36	34.42	38.66	5/30/2003 14:58	53:05:30	52:43:00	7.286402862						
10	75	1076	0.00035	535	13.966	0.000326108	9.23	0.034735358	983.59	34.74	38.98	5/30/2003 16:15	54:22:30	54:00:00	7.373940602						
14	70	1076	0.00049	530	13.966	0.000460859	13.05	0.035196217	996.64	35.20	39.44	5/30/2003 6:35	44:42:30	44:20:00	6.686429042						
169	75	1085	0.00597	535	14.083	0.005557326	157.37	0.040753543	1154.01	40.76	45.00	5/31/2003 21:25	83:32:30	83:10:00	9.140113055						
107	72	1082	0.00378	532	14.044	0.003528601	99.92	0.044282144	1253.93	44.29	48.53	6/1/2003 14:25	100:32:30	100:10:00	10.02704676						
118	76	1075	0.00417	536	13.953	0.003837328	108.66	0.048119472	1362.59	48.13	52.37	6/2/2003 11:17	121:24:30	121:02:00	11.01854497						
84	76	1082	0.00297	536	14.044	0.002749445	77.86	0.050068916	1440.44	50.88	55.12	6/3/2003 9:27	143:34:30	143:12:00	11.98227858						
71	71	1082	0.00251	531	14.044	0.002345818	66.43	0.053214734	1506.87	53.23	57.47	6/4/2003 9:17	167:24:30	167:02:00	12.93863723						
130	74	1078	0.00459	534	13.992	0.00425524	120.49	0.057469974	1627.36	57.48	61.72	6/6/2003 13:45	219:52:30	219:30:00	14.82818263						
74	75	1078	0.00275	535	13.992	0.002548372	72.16	0.060018346	1699.52	60.03	64.27	6/7/2003 19:36	249:43:30	249:21:00	15.80268964						
79	75	1078	0.00279	535	13.992	0.002581043	73.09	0.062599389	1772.61	62.61	66.85	6/9/2003 14:14	292:21:30	291:59:00	17.09848921						
110	75	1075	0.00388	535	13.953	0.003583856	101.48	0.066183245	1874.09	66.20	70.44	6/11/2003 17:15	343:22:30	343:00:00	18.53080406						
72	75	1078	0.00254	535	13.992	0.002352343	66.61	0.068535589	1940.70	68.55	72.79	6/13/2003 15:12	389:19:30	388:57:00	19.73132028						
52	75	1085	0.00184	535	14.083	0.001709946	48.42	0.070245535	1989.12	70.26	74.50	6/15/2003 14:40	436:47:30	436:25:00	20.8995614						
38	75	1087	0.00134	535	14.109	0.00125188	35.45	0.071497415	2024.57	71.51	75.75	6/16/2003 13:31	459:38:30	459:16:00	21.43925527						
34	74	1085	0.00112	534	14.083	0.001120136	31.72	0.072617755	2056.29	72.63	76.87	6/17/2003 13:29	483:36:30	483:14:00	21.99109668						
37	74	1081	0.00131	534	14.031	0.001214477	34.39	0.073832027	2090.68	73.85											

13	72	1075	0.00046	532	13.953	0.000425935	12.06	0.116047406	3286.08	116.07	120.31	10/27/2003 15:14	3653:21:30	3652:59:00	60.44301724
13	72	1080	0.00046	532	14.018	0.000427916	12.12	0.116475322	3298.20	116.50	120.74	11/3/2003 10:20	3816:27:30	3816:05:00	61.77749051
26	75	1085	0.00092	535	14.083	0.000854973	24.21	0.117330295	3322.41	117.36	121.60	11/10/2003 11:35	3985:42:30	3985:20:00	63.13246656
39	76	1069	0.00138	536	13.875	0.001261191	35.71	0.118591486	3358.12	118.62	122.86	11/17/2003 16:39	4158:46:30	4158:24:00	64.48856488
3	73	1086	0.00011	533	14.096	9.91122E-05	2.81	0.118690598	3360.93	118.72	122.96	11/24/2003 14:33	4324:40:30	4324:18:00	65.76226121
13	75	1090	0.00046	535	14.148	0.000429457	12.16	0.119120055	3373.09	119.15	123.39	12/4/2003 20:27	4570:34:30	4570:12:00	67.60602784
17	74	1083	0.0006	534	14.057	0.000559035	15.83	0.11967909	3388.92	119.71	123.94	12/10/2003 15:05	4709:12:30	4708:50:00	68.62367181
15	76	1087	0.00053	536	14.109	0.000493241	13.97	0.120172331	3402.89	120.20	124.44	12/16/2003 14:31	4852:38:30	4852:16:00	69.66090487
16	73	1081	0.00057	533	14.031	0.000526165	14.90	0.120698496	3417.79	120.73	124.96	12/22/2003 16:15	4998:22:30	4998:00:00	70.6991867
19	75	1082	0.00067	535	14.044	0.000623061	17.64	0.121321556	3435.43	121.35	125.59	12/29/2003 14:42	5164:49:30	5164:27:00	71.86671691
0	74	1103	0	534	14.316	0	0.00	0.121321556	3435.43	121.35	125.59	1/6/2004 15:19	5357:26:30	5357:04:00	73.1945467
23	75	1093	0.00081	535	14.187	0.000761899	21.57	0.122083455	3457.01	122.11	126.35	1/12/2004 11:50	5497:57:30	5497:35:00	74.14821868
30	75	1089	0.00106	535	14.135	0.000990144	28.04	0.1230736	3485.04	123.10	127.34	1/21/2004 10:42	5712:49:30	5712:27:00	75.58323227
7	71	1091	0.00025	531	14.161	0.000233202	6.60	0.123306801	3491.65	123.33	127.57	1/27/2004 10:17	5856:24:30	5856:02:00	76.52717382
19	75	1085	0.00067	535	14.083	0.000624788	17.69	0.12393159	3509.34	123.96	128.20	2/2/2004 15:48	6005:55:30	6005:33:00	77.4979032
7	75	1091	0.00025	535	14.161	0.000231458	6.55	0.124163048	3515.89	124.19	128.43	2/9/2004 10:40	6168:47:30	6168:25:00	78.54165561
13	75	1091	0.00046	535	14.161	0.000429851	12.17	0.124592898	3528.06	124.62	128.86	2/16/2004 14:32	6340:39:30	6340:17:00	79.62825085
17	74	1086	0.0006	534	14.096	0.000560584	15.87	0.125153482	3543.94	125.18	129.42	2/23/2004 14:41	6508:48:30	6508:26:00	80.67718595
10	75	1091	0.00035	535	14.161	0.000330654	9.36	0.125484136	3553.30	125.51	129.75	3/2/2004 10:52	6696:59:30	6696:37:00	81.83514933
13	75	1088	0.00046	535	14.122	0.000428669	12.14	0.125912805	3565.44	125.94	130.18	3/8/2004 10:17	6840:24:30	6840:02:00	82.70676111
17	74	1081	0.0006	534	14.031	0.000558003	15.80	0.126470808	3581.24	126.50	130.74	3/15/2004 11:50	7009:57:30	7009:35:00	83.72549393
1	75	1097	3.5E-05	535	14.239	3.32473E-05	0.94	0.126504055	3582.18	126.53	130.77	3/22/2004 10:12	7176:19:30	7175:57:00	84.7131926
10	75	1088	0.00035	535	14.122	0.000329745	9.34	0.1268338	3591.52	126.86	131.10	3/30/2004 20:42	7378:49:30	7378:27:00	85.90008731
17	75	1080	0.0006	535	14.018	0.000556445	15.76	0.127390245	3607.28	127.42	131.66	4/6/2004 14:50	7540:57:30	7540:35:00	86.83869145
1	75	1086	3.5E-05	535	14.096	3.29139E-05	0.93	0.127423159	3608.21	127.45	131.69	4/12/2004 15:07	7685:14:30	7684:52:00	87.66551013
4	68	1088	0.00014	528	14.122	0.000133647	3.78	0.127556806	3611.99	127.59	131.82	4/19/2004 14:36	7852:43:30	7852:21:00	88.61560246
12	76	1090	0.00042	536	14.148	0.000395682	11.20	0.127952488	3623.20	127.98	132.22	4/26/2004 11:40	8017:47:30	8017:25:00	89.5421223
17	76	1083	0.0006	536	14.057	0.000556949	15.77	0.128509437	3638.97	128.54	132.78	5/3/2004 19:59	8194:06:30	8193:44:00	90.52131425
22	77	1081	0.00078	537	14.031	0.000718087	20.33	0.129227525	3659.30	129.26	133.50	5/10/2004 14:06	8356:13:30	8355:51:00	91.41238975
12	78	1082	0.00042	538	14.044	0.000391318	11.08	0.129618842	3670.38	129.65	133.89	5/17/2004 9:49	8519:56:30	8519:34:00	92.30353009
14	74	1075	0.00049	534	13.953	0.000456981	12.94	0.130075824	3683.32	130.11	134.34	5/24/2004 10:37	8688:44:30	8688:22:00	93.21341999
9	77	1077	0.00032	537	13.979	0.000292676	8.29	0.13036885	3691.61	130.40	134.64	6/1/2004 10:59	8881:06:30	8880:44:00	94.2396325
20	78	1076	0.00071	538	13.966	0.000648579	18.37	0.131017079	3709.98	131.05	135.29	6/7/2004 10:41	9024:48:30	9024:26:00	94.99899122
9	75	1078	0.00032	535	13.992	0.000294043	8.33	0.131311122	3718.30	131.34	135.58	6/14/2004 10:55	9193:02:30	9192:40:00	95.88035079
7	77	1082	0.00025	537	14.044	0.000228694	6.48	0.131539816	3724.78	131.57	135.81	6/23/2004 16:32	9414:39:30	9414:17:00	97.02916228
13	77	1082	0.00046	537	14.044	0.000424717	12.03	0.131964533	3736.81	131.99	136.23	7/1/2004 11:58	9602:05:30	9601:43:00	97.99026312
15	79	1082	0.00053	539	14.044	0.00048824	13.83	0.132452772	3750.63	132.48	136.72	7/7/2004 10:38	9744:45:30	9744:23:00	98.71554251
16	79	1082	0.00057	539	14.044	0.000520789	14.75	0.132973561	3765.38	133.00	137.24	7/13/2004 14:24	9892:31:30	9892:09:00	99.46117333
-8	73	1080	-0.0003	533	14.018	-0.000262839	-7.44	0.132710722	3757.93	132.74	136.98	7/19/2004 11:26	10033:33:30	10033:11:00	100.1676511
6	79	1091	0.00021	539	14.161	0.00019692	5.58	0.132907642	3763.51	132.94	137.18	7/26/2004 10:27	10200:34:30	10200:12:00	100.997896
23	80	1079	0.00081	540	14.005	0.000745176	21.10	0.133652818	3784.61	133.68	137.92	8/2/2004 14:47	10372:54:30	10372:32:00	101.8474758
6	78	1086	0.00021	538	14.096	0.000196382	5.56	0.1338492	3790.17	133.88	138.12	8/9/2004 14:08	10540:15:30	10539:53:00	102.6657603
2	78	1088	7.1E-05	538	14.122	6.55813E-05	1.86	0.133914781	3792.03	133.95	138.18	8/16/2004 11:10	10705:17:30	10704:55:00	103.4663794
14	75	1076	0.00049	535	13.966	0.000456551	12.93	0.134371333	3804.96	134.40	138.64	8/23/2004 14:16	10876:23:30	10876:01:00	104.2899404
-12	73	1087	-0.0004	533	14.109	-0.000396814	-11.24	0.133974519	3793.72	134.00	138.24	8/30/2004 16:51	11046:58:30	11046:36:00	105.1045908
16	75	1088	0.00057	535	14.122	0.000527592	14.94	0.134502111	3808.66	134.53	138.77	9/7/2004 16:03	11238:10:30	11237:48:00	106.0102589
22	77	1073	0.00078	537	13.927	0.000712773	20.18	0.135214884	3828.84	135.25	139.48	9/14/2004 18:44	11408:51:30	11408:29:00	106.8122574
-10	77	1083	-0.0004	537	14.057	-0.000327007	-9.26	0.134887877	3819.58	134.92	139.16	9/21/2004 16:50	11574:57:30	11574:35:00	107.5869803
-1	75	1089	-4E-05	535	14.135	-3.30048E-05	-0.93	0.134854872	3818.65	134.89	139.12	9/28/2004 21:10	11747:17:30	11746:55:00	108.3849236
7	76	1085	0.00025	536	14.083	0.000229756	6.51	0.135084628	3825.16	135.12	139.35	10/8/2004 10:17	11976:24:30	11976:02:00	109.4367778
DECANISTERED 10/08/2004, sample air dried 13 days															

SAMPLE: 569.0' to 570.0' (Exello Shale) in canister Brady 25															
dry sample weight:		lbs.	grams	wet sample weight:		lbs.	grams	moisture %	est. lost gas (cc) =	TIME OF: off bottom	in canister	elapsed time (off bottom to canister)			
		5.645	2560.49			5.701	2585.98	0.99%	70	#####	5/28/2003 15:02	19.8 minutes 0.329 hours			
RIG/LAB MEASUREMENTS		CONVERSION OF RIG/LAB MEASUREMENTS TO STP (@60 deg				CUMULATIVE VOLUMES (@		SCF/TON	SCF/TON	TIME OF MEASU	TIME SINCE	0.573730493	SQRT (hrs)		
measured cc	measured T (F)	measured P (psia)	absolute T (F)	cubic ft (@STP)	cc (@STP)	cc	cc	without lost gas	with lost gas	off bottom	in canister	SQRT hrs. (since off bottom)			
14	78	1089	0.00049	538	14.135	0.000459491	13.01	0.000459491	13.01	0.16	1.04	5/28/2003 15:09	0:26:45	0:07:00	0.667707521
9	78	1089	0.00032	538	14.135	0.000295387	8.36	0.000295387	21.38	0.27	1.14	5/28/2003 15:16	0:33:00	0:13:15	0.741619849
8	78	1089	0.00028	538	14.135	0.000225666	7.44	0.001017444	28.81	0.36	1.24	5/28/2003 15:21	0:38:45	0:19:00	0.803637563
5	78	1089	0.00018	538	14.135	0.000164104	4.65	0.001181548	33.46	0.42	1.29	5/28/2003 15:26	0:43:00	0:23:15	0.846561673
4	78	1089	0.00014	538	14.135	0.000131283	3.72	0.001312831	37.18	0.47	1.34	5/28/2003 15:29	0:46:00	0:26:15	0.875595036
3	77	1089	0.00011	537	14.135	9.86457E-05	2.79	0.001411477	39.97	0.50	1.38	5/28/2003 15:31	0:48:00	0:28:15	0.894427191
10	77	1089	0.00035	537	14.135	0.000328819	9.31	0.001740296	49.28	0.62	1.49	5/28/2003 15:40	0:57:15	0:37:30	0.976814551
10	77	1088	0.00035	537	14.122	0.000328517	9.30	0.002068813	58.58	0.73	1.61	5/28/2003 15:50	1:07:00	0:47:15	1.056724499
18	77	1088	0.00064	537	14.122	0.000591331	16.74	0.002660143	75.33	0.94	1.82	5/28/2003 16:16	1:33:00	1:13:15	1.24498996
10	77	1088	0.00035	537	14.122	0.000328517	9.30	0.00298866	84.63	1.06	1.93	5/28/2003 16:22	1:39:00	1:19:15	1.284523258
29	77	1088	0.00102	537	14.122	0.000952699	26.98	0.003941359	111.61	1.40	2.27	5/28/2003 17:06	2:23:00	2:03:15	1.543804824
16	77	1087	0.00057	537	14.109	0.000525144	14.87	0.004466503	126.48	1.58	2.46	5/28/2003 17:31	2:48:00	2:28:15	1.673320053
24	77	1087	0.00085	537	14.109	0.000787716	22.31	0.005254219	148.78	1.86	2.74	5/28/2003 18:14	3:31:00	3:11:15	1.875277757
46	76	1089	0.00162	536	14.135	0.001515389	42.91	0.006769608	191.69	2.40	3.27	5/28/2003 20:09	5:26:00	5:06:15	2.330951165
30	74	1089	0.00106	534	14.135	0.000991999	28.09	0.007761607	219.78	2.75	3.63	5/28/2003 22:55	8:12:00	7:52:15	2.863564213
59	72	1088	0.00208	532	14.122	0.001956467	55.40	0.009718074	275.18	3.44	4.32	5/29/2003 5:07	14:24:00	14:04:15	3.794733192
22	71	1089	0.00078	531	14.135	0.000731576	20.72	0.010446949	295.90	3.70	4.58	5/29/2003 6:47	16:04:00	15:44:15	4.008324671
24	70	1087	0.00085	530	14.109	0.00079812	22.60	0.011247769	318.50	3.99	4.86	5/29/2003 9:20	18:37:00	18:17:15	4.314703543
17	72	1087	0.00068	532	14.109	0.00056321	15.95	0.011810979	334.45	4.18	5.06	5/29/2003 11:09	20:26:00	20:06:15	4.520324472
15	76	1086	0.00053	536	14.096	0.000492787	13.95	0.012303766	348.40	4.36	5.24	5/29/2003 13:24	22:41:00	22:21:15	4.762702314
12	76	1085	0.00042	536	14.083	0.000393867	11.15	0.012697633	359.56	4.50	5.37	5/29/2003 14:48	24:05:00	23:45:15	4.907477288
14	75	1083	0.00049	535	14.057	0.000459522	13.01	0.013157155	372.57	4.66	5.54	5/29/2003 16:48	26:05:00	25:45:15	5.107184482
16	75	1081	0.00057	535	14.031	0.000524198	14.84	0.013681352	387.41	4.85	5.72	5/29/2003 18:47	28:04:00	27:44:15	5.297798285
56	71	1076	0.00198	531	13.966	0.001839963	52.10	0.015521315	439.51	5.50	6.38	5/30/2003 7:51	41:08:00	40:48:15	6.413527371
20	74	1074	0.00071	534	13.940	0.000652223	18.47	0.016173538	457.98	5.73	6.61	5/30/2003 10:51	44:08:00	43:48:15	6.643292356
21	75	1076	0.00074	535	13.966	0.000684827	19.39	0.016858365	477.37	5.97	6.85	5/30/2003 14:57	48:14:00	47:54:15	6.945021998
14	70	1076	0.00049	530	13.966	0.000460859	13.05	0.017319224	490.42	6.14	7.01	5/30/2003 18:35	51:52:00	51:32:15	7.201851614
90	75	1085	0.00318	535	14.083	0.002959523	83.80	0.020278746	574.23	7.18	8.06	5/31/2003 21:20	78:37:00	78:17:15	8.86660401
71	72	1082	0.00251	532	14.044	0.002341408	66.30	0.022620155	640.53	8.01	8.89	6/1/2003 14:26	95:43:00	95:23:15	9.783489493
72	76	1075	0.00254	536	13.953	0.00234142	66.30	0.024961575	706.83	8.84	9.72	6/2/2003 11:15	116:32:00	116:12:15	10.79506066
81	76	1082	0.00215	536	14.044	0.00199662	56.54	0.028958196	763.37	9.55	10.43	6/3/2003 9:27	138:44:00	138:24:15	11.77851151
52	71	1082	0.00184	531	14.044	0.001718064	48.65	0.028676259	812.02	10.16	11.04	6/4/2003 9:19	162:36:00	162:16:15	12.7514705
70	74	1078	0.00247	534	13.992	0.002291283	64.88	0.030967543	876.90	10.97	11.85	6/6/2003 13:50	215:07:00	214:47:15	14.66885606
53	75	1078	0.00187	535	13.992	0.001731586	49.03	0.032699129	925.93	11.59	12.46	6/7/2003 19:39	244:56:00	244:36:15	15.65034611
120	75	1075	0.00424	535	13.953	0.003909661	110.71	0.03668079	1036.64	12.97	13.85	6/11/2003 17:14	338:31:00	338:11:15	18.99882243
50	75	1078	0.00177	535	13.992	0.001633572	46.26	0.038242361	1082.90	13.55	14.43	6/13/2003 15:05	384:22:00	384:02:15	19.56052714
53	75	1085	0.00187	535	14.083	0.00174283	49.35	0.03985192	1132.25	14.17	15.04	6/15/2003 14:41	431:58:00	431:38:15	20.7838078
32	75	1087	0.00113	535	14.109	0.001054214	29.85	0.041039406	1162.10	14.54	15.42	6/16/2003 13:32	454:49:00	454:29:15	21.32643118
29	74	1085	0.00102	534	14.083	0.00095541	27.05	0.041994816	1189.16	14.88	15.75	6/17/2003 13:30	478:47:00	478:27:15	21.88111819
29	74	1081	0.00102	534	14.031	0.000951888	26.95	0.042946703	1216.11	15.22	16.09	6/18/2003 13:51	503:08:00	502:48:15	22.43063381
25	74	1082	0.00088	534	14.044	0.000821352	23.26	0.043768055	1239.37	15.51	16.38	6/19/2003 13:47	527:04:00	526:44:15	22.95793254
22	73	1085	0.00078	533	14.083	0.000726153	20.56	0.04494209	1259.93	15.76	16.64	6/20/2003 14:00	551:17:00	550:57:15	23.47942362
22	75	1082	0.00078	535	14.044	0.000721439	20.43	0.045215647	1280.36	16.02	16.90	6/21/2003 10:40	571:57:00	571:37:15	23.91547616
34	73	1079	0.0012	533	14.005	0.001116031	31.60	0.046331678	1311.96	16.42	17.29	6/23/2003 11:15	620:32:00	620:12:15	24.91050648
41	73	1078	0.00145	533	13.992	0.001344555	38.07	0.047676234	1350.04	16.89	17.77	6/25/2003 10:33	667:50:00	667:30:15	25.8424715
34	74	1082	0.0012	534	14.044	0.001117038	31.63	0.048793272	1381.67	17.29	18.16	6/27/2003 15:10	720:27:00	720:07:15	26.84119968
32	74	1086	0.00113	534	14.096	0.001055217	29.88	0.049848489	1411.55	17.66	18.54	6/29/2003 11:48	765:05:00	764:45:15	27.66013979
32	73	1084	0.00113	533	14.070	0.001055225	29.88	0.050903739	1441.43	18.04	18.91	7/1/2003 12:48	814:05:00	813:45:15	28.53214561
32	73	1078	0.00113	533	13.992	0.001049409	29.72	0.051953148	1471.14	18.41	19.28	7/3/2003 9:47	859:04:00	858:44:15	29.30983908
39	75	1078	0.00138	535	13.992	0.001274186	36.08	0.053227333	1507.22	18.86	19.73	7/5/2003 20:09	917:26:00	917:06:15	30.28916198
29	75	1081	0.00102	535	14.031	0.000951018	26.90	0.054177442	1534.13	19.20	20.07	7/7/2003 14:13	959:30:00	959:10:15	30.975797
33	75	1078	0.00117	535	13.992	0.001078157	30.53	0.055255599	1564.66	19.58	20.45	7/9/2003 14:23	1007:40:00	1007:20:15	31.74376579
33	74	1081	0.00117	534	14.031	0.001083182	30.67	0.056380781	1595.33	19.96	20.84	7/11/2003 16:01	1057:18:00	1056:58:15	32.51614983
46	75	1084	0.00162	535	14.070	0.001511251	42.79	0.057850032	1638.12	20.50	21.37	7/15/2003 14:02	1151:19:00	1150:59:15	33.93105755
63	75	1079	0.00222	535	14.005	0.00206021	58.34	0.059910242	1696.46	21.23	22.10	7/21/2003 16:39	1297:56:00	1297:36:15	36.02684185
66	77	1081	0.00233	537	14.031	0.002154262	61.00	0.06206504	1757.46	21.99	22.87	7/28/2003 20:37	1469:54:00	1469:34:15	38.3392749
59	75	1079	0.00208	535	14.005	0.001929403	54.63	0.06393907	1812.10	22.67	23.55	8/4/2003 13:53	1631:10:00	1630:50:15	40.3877044
60	78	1086	0.00212	538	14.096	0.001963821	55.61	0.065957728	1867.71	23.37	24.24	8/11/2003 14:09	1799:26:00	1799:06:15	42.41972811
60	76	1082	0.00212	536	14.044	0.001963889	55.61	0.067921617	1923.32	24.06	24.94	8/18/2003 20:20	1973:37:00	1973:17:15	44.42540564
55	76	1083	0.00194	536	14.057	0.001801895	51.02	0.069723512	1974.34	24.70	25.58	8/24/2003 22:56	2120:13:00	2119:53:15	46.04581052
49	78	1086	0.00173	538	14.096	0.001603788	45.41	0.0713273	2019.76	25.27	26.15	9/1/2003 14:59	2304:16:00	2303:56:15	

15	71	1091	0.00053	531	14.161	0.000499718	14.15	0.091388851	2587.83	32.38	33.26	2/9/2004 10:41	6163:58:00	6163:38:15	78.51093342	
15	71	1091	0.00053	531	14.161	0.000499718	14.15	0.091888568	2601.98	32.56	33.43	2/16/2004 14:33	6335:50:00	6335:30:15	79.59794805	
17	70	1086	0.0006	530	14.096	0.000564815	15.99	0.092453383	2617.98	32.76	33.63	2/23/2004 14:42	6503:59:00	6503:39:15	80.64727728	
18	72	1091	0.00064	532	14.161	0.000598534	16.95	0.093051917	2634.93	32.97	33.84	3/2/2004 10:52	6692:09:00	6691:49:15	81.80556216	
15	71	1088	0.00053	531	14.122	0.000498344	14.11	0.093550261	2649.04	33.14	34.02	3/8/2004 10:19	6835:36:00	6835:16:15	82.67768744	
17	70	1081	0.0006	530	14.031	0.000562214	15.92	0.094112475	2664.96	33.34	34.22	3/15/2004 11:51	7005:08:00	7004:48:15	83.69667457	
15	72	1097	0.00053	532	14.239	0.000501521	14.20	0.094613996	2679.16	33.52	34.40	3/22/2004 10:12	7171:29:00	7171:09:15	84.68461096	
15	70	1088	0.00053	530	14.122	0.000499284	14.14	0.09511328	2693.30	33.70	34.57	3/30/2004 20:43	7374:00:00	7373:40:15	85.87199776	
14	70	1080	0.00049	530	14.018	0.000462572	13.10	0.095575852	2706.40	33.86	34.74	4/6/2004 14:51	7536:08:00	7535:48:15	86.81090561	
8	68	1086	0.00028	528	14.096	0.000266802	7.55	0.095842654	2713.95	33.96	34.83	4/12/2004 15:07	7680:24:00	7680:04:15	87.63789135	
13	69	1088	0.00046	529	14.122	0.000433531	12.28	0.096276185	2726.23	34.11	34.99	4/19/2004 14:37	7847:55:00	7847:35:15	88.58846802	
12	71	1090	0.00042	531	14.148	0.000399408	11.31	0.096675592	2737.54	34.25	35.13	4/26/2004 11:40	8012:57:00	8012:37:15	89.51508253	
12	70	1083	0.00042	530	14.057	0.000397591	11.26	0.097073184	2748.80	34.39	35.27	5/3/2004 20:02	8189:19:00	8188:59:15	90.49484332	
22	75	1081	0.00078	535	14.031	0.000720772	20.41	0.097793956	2769.21	34.65	35.52	5/10/2004 14:07	8351:24:00	8351:04:15	91.38599455	
16	76	1082	0.00057	536	14.044	0.000523704	14.83	0.098317659	2784.04	34.83	35.71	5/17/2004 9:50	8515:07:00	8514:47:15	92.27738979	
20	75	1075	0.00071	535	13.953	0.00065161	18.45	0.098969627	2802.49	35.06	35.94	5/24/2004 10:37	8683:54:00	8683:34:15	93.18744551	
18	75	1077	0.00064	535	13.979	0.00058754	16.64	0.09955681	2819.12	35.27	36.15	6/1/2004 11:00	8876:17:00	8875:57:15	94.21402939	
16	77	1076	0.00057	537	13.966	0.00051983	14.72	0.10007664	2833.84	35.46	36.33	6/7/2004 10:41	9019:58:00	9019:38:15	94.97350508	
18	74	1078	0.00064	534	13.992	0.000589187	16.68	0.100665827	2850.53	35.67	36.54	6/14/2004 10:55	9188:12:00	9187:52:15	95.85509898	
15	75	1082	0.00053	535	14.044	0.00049189	13.93	0.101157717	2864.46	35.84	36.72	6/23/2004 16:33	9409:50:00	9409:30:15	97.00429544	
17	77	1082	0.0006	537	14.044	0.000553399	15.73	0.101713116	2880.18	36.04	36.91	7/1/2004 11:59	9597:16:00	9596:56:15	97.96564024	
14	79	1082	0.00049	539	14.044	0.00045569	12.90	0.102168806	2893.09	36.20	37.07	7/7/2004 10:39	9739:56:00	9739:36:15	98.69110058	
15	79	1082	0.00053	539	14.044	0.00048824	13.83	0.102657045	2906.91	36.37	37.25	7/13/2004 14:26	9887:43:00	9887:23:15	99.43699848	
9	75	1080	0.00032	535	14.018	0.000294588	8.34	0.102951634	2915.25	36.48	37.35	7/19/2004 11:27	10028:44:00	10028:24:15	100.1435636	
13	78	1091	0.00046	538	14.161	0.000427454	12.10	0.103379088	2927.36	36.63	37.50	7/26/2004 10:27	10195:44:00	10195:24:15	100.973924	
16	78	1079	0.00057	538	14.005	0.00052031	14.73	0.103899398	2942.09	36.81	37.69	8/2/2004 14:47	10368:04:00	10367:44:15	101.8237039	
12	78	1086	0.00042	538	14.096	0.000392764	11.12	0.104292162	2953.21	36.95	37.83	8/9/2004 14:09	10535:26:00	10535:06:15	102.642259	
10	78	1088	0.00035	538	14.122	0.000327906	9.29	0.104620068	2962.50	37.07	37.94	8/16/2004 11:10	10700:27:00	10700:07:15	103.4429795	estimate
13	75	1076	0.00046	535	13.966	0.000423941	12.00	0.105044009	2974.50	37.22	38.09	8/23/2004 14:17	10871:34:00	10871:14:15	104.2668052	estimate
8	73	1087	0.00028	533	14.109	0.000264543	7.49	0.105308552	2981.99	37.31	38.19	8/30/2004 16:52	11042:09:00	11041:49:15	105.0816349	estimate
15	75	1087	0.00053	535	14.109	0.000494163	13.99	0.105802715	2995.99	37.49	38.36	9/7/2004 16:04	11233:21:00	11233:01:15	105.9874993	estimate
6	76	1073	0.00021	536	13.927	0.000194755	5.51	0.10599747	3001.50	37.56	38.43	9/14/2004 18:46	11404:03:00	11403:43:15	106.7897467	
-3	76	1083	-0.0001	536	14.057	-9.82852E-05	-2.78	0.105899185	2998.72	37.52	38.40	9/21/2004 16:50	11570:07:00	11569:47:15	107.5644768	
5	76	1089	0.00018	536	14.135	0.000164716	4.66	0.106063901	3003.38	37.58	38.45	9/28/2004 21:11	11742:28:00	11742:08:15	108.3626627	
10	75	1085	0.00035	535	14.083	0.000328836	9.31	0.106392737	3012.70	37.70	38.57	10/8/2004 10:19	11971:36:00	11971:16:15	109.414807	
12	72	1079	0.00042	532	14.005	0.000394634	11.17	0.106787371	3023.87	37.83	38.71	10/19/2004 14:18	12239:35:00	12239:15:15	110.6326504	
10	74	1086	0.00035	534	14.096	0.000329755	9.34	0.107117126	3033.21	37.95	38.83	10/27/2004 14:07	12431:24:00	12431:04:15	111.4961883	
10	74	1090	0.00035	534	14.148	0.00033097	9.37	0.107448096	3042.58	38.07	38.94	11/5/2004 11:15	12644:32:00	12644:12:15	112.4479139	
8	75	1095	0.00028	535	14.213	0.000265493	7.52	0.107713589	3050.10	38.16	39.04	11/12/2004 16:32	12817:49:00	12817:29:15	113.2157969	
15	75	1080	0.00053	535	14.018	0.000490981	13.90	0.10820457	3064.00	38.34	39.21	11/24/2004 10:56	13100:13:00	13099:53:15	114.4561779	
13	75	1081	0.00046	535	14.031	0.000425911	12.06	0.10863048	3076.06	38.49	39.36	12/3/2004 16:01	13321:18:00	13320:58:15	115.4179362	
13	75	1089	0.00046	535	14.135	0.000429063	12.15	0.109059543	3088.21	38.64	39.52	12/15/2004 17:33	13610:50:00	13610:30:15	116.6654762	
8	76	1100	0.00028	536	14.278	0.000266208	7.54	0.109325751	3095.75	38.73	39.61	12/23/2004 12:05	13797:22:00	13797:02:15	117.4621925	
12	75	1085	0.00042	535	14.083	0.000394603	11.17	0.109720354	3106.92	38.87	39.75	12/31/2004 18:00	13995:17:00	13994:57:15	118.3016624	
12	75	1081	0.00042	535	14.031	0.000393148	11.13	0.110113502	3118.06	39.01	39.89	1/10/2005 14:02	14231:19:00	14230:59:15	119.2950823	
8	76	1078	0.00028	536	13.992	0.000260884	7.39	0.110374386	3125.44	39.11	39.98	1/20/2005 15:06	14472:23:00	14472:03:15	120.3012192	
4	75	1094	0.00014	535	14.200	0.000132625	3.76	0.110507011	3129.20	39.15	40.03	1/27/2005 16:17	14641:34:00	14641:14:15	121.0023416	
1	75	1093	3.5E-05	535	14.187	3.3126E-05	0.94	0.110540137	3130.14	39.16	40.04	2/3/2005 15:24	14808:41:00	14808:21:15	121.6909337	
0	75	1093	0	535	14.187	0	0.00	0.110540137	3130.14	39.16	40.04	2/10/2005 14:58	14976:15:00	14975:55:15	122.3774898	
DECANISTERED 2/10/2005, sample air dried 30 days																

SAMPLE: 571.1' to 572.0' (Mully coal) in canister M																					
dry sample weight:		lbs.	grams	wet sample weight:		lbs.	grams	moisture %	est. lost gas (cc) =		TIME OF:		elapsed time (off bottom to canister)								
		3.039	1378.43			3.110	1410.69	2.29%	315		# off bottom		12.8 minutes								
											#####		5/28/2003 14:55								
											TIME SINCE		0.460977223 SQRT (hrs)								
RIG/LAB MEASUREMENTS		CONVERSION OF RIG/LAB MEASUREMENTS		TO STP (@60 deg		CUMULATIVE VOLUMES (@		SCF/TON	SCF/TON	TIME OF MEASU	TIME SINCE	in canister	SQRT hrs. (since off bottom)								
measured cc	measured T (F)	absolute T (F)	psia	cubic ft (@STP)	cc (@STP)	cubic ft	cc	without lost gas	with lost gas		off bottom	in canister									
50	78	1089	0.00177	538	14.135	0.001641039	46.47	0.001641039	46.47	1.08	8.40	5/28/2003 14:59	0:16:45	0:04:00	0.52836225						
52	78	1089	0.00184	538	14.135	0.00170668	48.33	0.00347719	94.80	2.20	9.52	5/28/2003 15:04	0:21:30	0:08:45	0.5986095						
13	78	1089	0.00046	538	14.135	0.00042667	12.08	0.003774389	106.88	2.48	9.81	5/28/2003 15:06	0:23:00	0:10:15	0.619139187						
12	78	1089	0.00042	538	14.135	0.000393849	11.15	0.004168238	118.03	2.74	10.06	5/28/2003 15:07	0:24:30	0:11:45	0.639009651						
13	78	1089	0.00046	538	14.135	0.00042667	12.08	0.004594908	130.11	3.02	10.35	5/28/2003 15:09	0:26:00	0:13:15	0.658280589						
24	78	1089	0.00078	538	14.135	0.000787699	22.31	0.005382607	152.42	3.54	10.86	5/28/2003 15:12	0:29:00	0:16:15	0.695221787						
21	78	1089	0.00074	538	14.135	0.000689236	19.52	0.006071843	171.93	4.00	11.32	5/28/2003 15:14	0:31:45	0:19:00	0.727438428						
38	78	1089	0.00134	538	14.135	0.001247189	35.32	0.007319032	207.25	4.82	12.14	5/28/2003 15:21	0:38:00	0:25:15	0.795822426						
24	78	1089	0.00085	538	14.135	0.000787699	22.31	0.008106731	229.56	5.34	12.66	5/28/2003 15:25	0:42:00	0:29:15	0.836660027						
33	77	1089	0.00117	537	14.135	0.001085102	30.73	0.009191833	260.28	6.05	13.37	5/28/2003 15:32	0:49:15	0:36:30	0.905985828						
22	77	1089	0.00078	537	14.135	0.000723402	20.48	0.009915235	280.77	6.53	13.85	5/28/2003 15:37	0:54:00	0:41:15	0.948683298						
20	77	1088	0.00071	537	14.122	0.000657034	18.61	0.010572269	299.37	6.96	14.28	5/28/2003 15:42	0:59:00	0:46:15	0.991631652						
11	77	1088	0.00039	537	14.122	0.000361369	10.23	0.010933638	309.60	7.20	14.52	5/28/2003 15:45	1:02:00	0:49:15	1.016530045						
29	77	1088	0.00102	537	14.122	0.000952699	26.98	0.011886337	336.58	7.82	15.14	5/28/2003 15:53	1:10:15	0:57:30	1.082050523						
48	77	1088	0.0017	537	14.122	0.001576881	44.65	0.013463218	381.23	8.86	16.18	5/28/2003 16:08	1:25:15	1:12:30	1.191987136						
46	77	1088	0.00162	537	14.122	0.001511178	42.79	0.014974397	424.03	9.86	17.18	5/28/2003 16:23	1:40:00	1:27:15	1.290944449						
90	77	1088	0.00318	537	14.122	0.002956653	83.72	0.017931049	507.75	11.80	19.12	5/28/2003 17:01	2:18:00	2:05:15	1.516575089						
67	77	1087	0.00237	537	14.109	0.002199041	62.27	0.020130009	570.02	13.25	20.57	5/28/2003 17:34	2:51:00	2:38:15	1.688194302						
67	77	1087	0.00237	537	14.109	0.002199041	62.27	0.022329131	632.29	14.70	22.02	5/28/2003 18:13	3:30:00	3:17:15	1.870828693						
129	77	1089	0.00456	537	14.135	0.004241764	120.11	0.026570895	752.40	17.49	24.81	5/28/2003 20:11	5:28:00	5:15:15	2.338090389						
131	77	1089	0.00463	537	14.135	0.004307528	121.98	0.030878423	874.38	20.32	27.64	5/28/2003 22:54	8:11:00	7:58:15	2.860562606						
220	77	1088	0.00777	537	14.122	0.007227373	204.66	0.038105796	1079.03	25.08	32.40	5/29/2003 5:10	14:27:00	14:14:15	3.801315562						
65	77	1089	0.00223	537	14.135	0.002137323	60.52	0.040243119	1139.55	26.49	33.81	5/29/2003 6:45	16:02:00	15:49:15	4.004164499						
81	77	1087	0.00286	537	14.109	0.002658542	75.28	0.042901661	1214.84	28.23	35.56	5/29/2003 9:21	18:38:00	18:25:15	4.316634492						
58	77	1087	0.00205	537	14.109	0.001903647	53.91	0.044805308	1268.74	29.49	36.81	5/29/2003 11:10	20:27:00	20:14:15	4.612676222						
66	77	1086	0.00233	537	14.096	0.002164226	61.28	0.046989534	1330.02	30.91	38.23	5/29/2003 13:22	22:39:00	22:26:15	4.7589201614						
45	77	1085	0.00159	537	14.083	0.00147425	41.75	0.048443785	1371.77	31.88	39.20	5/29/2003 14:43	24:00:00	23:47:15	4.898979486						
57	77	1083	0.00201	537	14.057	0.001863941	52.78	0.050307726	1424.55	33.11	40.43	5/29/2003 16:49	26:06:00	25:53:15	5.10881591						
42	77	1081	0.00148	537	14.031	0.001370894	38.82	0.05167862	1463.37	34.01	41.33	5/29/2003 18:46	28:03:00	27:50:15	5.296225071						
195	77	1078	0.00689	537	13.966	0.006335426	179.40	0.058014046	1642.77	38.18	45.50	5/30/2003 7:54	41:11:00	40:58:15	6.147424198						
79	74	1075	0.00279	534	13.953	0.00257868	73.02	0.060592726	1715.79	39.88	47.20	5/30/2003 10:55	44:12:00	43:59:15	6.484308055						
85	75	1076	0.003	535	13.966	0.00277192	78.49	0.063364646	1794.28	41.70	49.02	5/30/2003 14:55	48:12:00	47:59:15	6.942621983						
56	70	1076	0.00198	530	13.966	0.001843434	52.20	0.06520808	1846.48	42.92	50.24	5/30/2003 18:37	51:54:00	51:41:15	7.204165462						
321	75	1085	0.01134	535	14.083	0.010555631	298.90	0.075763711	2145.38	49.86	57.18	5/31/2003 21:22	78:39:00	78:26:15	8.868483523						
221	72	1082	0.0078	532	14.044	0.007288046	206.37	0.083051757	2351.75	54.66	61.98	6/1/2003 14:27	95:44:00	95:31:15	9.764341231						
229	76	1075	0.00809	536	13.953	0.007447017	210.88	0.090498774	2562.63	59.56	66.88	6/2/2003 11:15	116:32:00	116:19:15	10.7950606						
187	76	1082	0.0066	536	14.044	0.006120787	173.32	0.096619561	2735.95	63.59	70.91	6/3/2003 9:24	138:41:00	138:28:15	11.77638881						
161	71	1082	0.00569	531	14.044	0.00531939	150.63	0.101938951	2886.58	67.09	74.41	6/4/2003 9:20	162:37:00	162:24:15	12.75212401						
285	73	1082	0.01006	533	14.044	0.009380978	265.64	0.111319929	3152.22	73.26	80.58	6/6/2003 13:55	215:12:00	214:59:15	14.66969666						
158	75	1078	0.00558	535	13.992	0.005162086	146.17	0.116482016	3298.39	76.66	83.98	6/7/2003 19:40	244:57:00	244:44:15	15.65087857						
161	75	1078	0.00569	535	13.992	0.005260101	148.95	0.121742116	3447.34	80.12	87.44	6/9/2003 14:17	287:34:00	287:21:15	16.95779074						
109	75	1075	0.00385	535	13.953	0.003551276	100.56	0.125293392	3547.90	82.46	89.78	6/10/2003 13:40	310:57:00	310:44:15	17.63377441						
102	74	1076	0.0036	534	13.966	0.003332532	94.37	0.128625924	3642.27	84.65	91.97	6/11/2003 13:59	335:16:00	335:03:15	18.31028855						
215	75	1085	0.00759	535	14.083	0.007069971	200.20	0.135695895	3842.47	89.31	96.63	6/15/2003 14:42	431:59:00	431:46:15	20.78420875						
99	75	1087	0.0035	535	14.109	0.003261476	92.35	0.138957371	3934.82	91.45	98.77	6/16/2003 13:33	454:50:00	454:37:15	21.32682192						
81	74	1085	0.00286	534	14.083	0.002668558	75.56	0.14162593	4010.38	93.21	100.53	6/17/2003 13:30	478:47:00	478:34:15	21.88111819						
77	74	1081	0.00272	534	14.031	0.002527426	71.57	0.144153355	4081.95	94.87	102.19	6/18/2003 13:51	503:08:00	502:55:15	22.43063381						
66	74	1082	0.00233	534	14.044	0.002168369	61.40	0.146321724	4143.35	96.30	103.62	6/19/2003 13:48	527:05:00	526:52:15	22.95829552						
58	73	1085	0.00205	533	14.083	0.001914405	54.21	0.148236128	4197.56	97.56	104.88	6/20/2003 14:01	551:18:00	551:05:15	23.47977853						
53	75	1082	0.00187	535	14.044	0.001738011	49.21	0.14997414	4246.78	98.70	106.02	6/21/2003 10:41	571:58:00	571:45:15	23.91582461						
86	73	1079	0.00304	533	14.005	0.002822903	79.94	0.152797042	4326.71	100.56	107.88	6/23/2003 11:17	620:34:00	620:21:15	24.9117554						
101	73	1078	0.00357	533	13.992	0.003312197	93.79	0.156109239	4420.50	102.74	110.06	6/25/2003 10:33	667:50:00	667:37:15	25.8424715						
85	74	1082	0.003	534	14.044	0.002792596	79.08	0.158901835	4499.58	104.58	111.90	6/27/2003 15:11	720:28:00	720:15:15	26.84151014						
75	74	1086	0.00265	534	14.096	0.002473165	70.03	0.161375	4569.61	106.21	113.53	6/29/2003 11:49	765:06:00	764:53:15	27.66044107						
78	73	1084	0.00275	533	14.070	0.002572171	72.84	0.163947171	4642.45	107.90	115.22	7/1/2003 12:49	814:06:00	813:53:15	28.53243768						
76	73	1078	0.00268	533	13.992	0.002492346	70.58	0.166439517	4713.02	109.54	116.86	7/3/2003 9:49	859:06:00	858:53:15	29.31040771						
95	75	1078	0.00335	535	13.992	0.003103786	87.89	0.169543303	4800.91	111.58	118.90	7/5/2003 20:11	917:28:00	917:15:15	30.28971222						
58	75	1081	0.00205	535	14.031	0.001900217	53.81	0.17144352	4854.72	112.83	120.15	7/7/2003 14:13	959:30:00	959:17:15	30.975797						
69	75	1078	0.00244	535	13.992	0.002254329	63.84	0.173697849	4918.56	114.32	121.64	7/9/2003 14:25	1007:42:00	1007:29:15	31.74429083						
65	74	1081	0.0023	534	14.031	0.002133541	60.41	0.175833139</													

25	73	1081	0.00088	533	14.031	0.000822132	23.28	0.230125436	6516.40	151.45	158.77	12/22/2003 16:16	4993:33:00	4993:20:15	70.66505501
28	75	1082	0.00099	535	14.044	0.000918195	26.00	0.231043631	6542.40	152.06	159.38	12/29/2003 14:44	5160:01:00	5159:48:15	71.83325599
15	74	1103	0.00053	534	14.316	0.000502376	14.23	0.231546006	6556.63	152.39	159.71	1/6/2004 15:21	5352:38:00	5352:25:15	73.16169307
31	75	1093	0.00109	535	14.187	0.001026907	29.08	0.232572914	6585.71	153.06	160.38	1/12/2004 11:51	5493:08:00	5492:55:15	74.11567536
44	75	1089	0.00155	535	14.135	0.001452212	41.12	0.234025126	6626.83	154.02	161.34	1/21/2004 10:43	5708:00:00	5707:47:15	75.55130707
22	71	1091	0.00078	531	14.161	0.000732919	20.75	0.234758045	6647.58	154.50	161.82	1/27/2004 10:19	5851:36:00	5851:23:15	76.49575152
22	75	1085	0.00078	535	14.083	0.000723439	20.49	0.235481484	6668.07	154.98	162.30	2/2/2004 15:49	6001:06:00	6000:53:15	77.46676707
16	75	1091	0.00057	535	14.161	0.000529047	14.98	0.236010531	6683.05	155.33	162.65	2/9/2004 10:41	6163:58:00	6163:45:15	78.51093342
20	75	1091	0.00071	535	14.161	0.000661309	18.73	0.236671839	6701.77	155.76	163.08	2/16/2004 14:34	6335:51:00	6335:38:15	79.59805274
22	74	1086	0.00078	534	14.096	0.000725462	20.54	0.237397301	6722.32	156.24	163.56	2/23/2004 14:43	6504:00:00	6503:47:15	80.64738061
18	75	1091	0.00064	535	14.161	0.000591978	16.85	0.237992479	6739.17	156.63	163.95	3/2/2004 10:52	6692:09:00	6691:56:15	81.80556216
20	75	1088	0.00071	535	14.122	0.000685949	18.67	0.238651969	6757.85	157.06	164.38	3/8/2004 10:19	6835:36:00	6835:23:15	82.67768744
22	74	1081	0.00078	534	14.031	0.000722122	20.45	0.239373709	6778.29	157.54	164.86	3/15/2004 11:52	7005:09:00	7004:56:15	83.69677413
15	75	1091	0.00053	535	14.239	0.000498709	14.12	0.239872799	6792.42	157.87	165.19	3/22/2004 10:13	7171:30:00	7171:17:15	84.68470936
21	75	1088	0.00074	535	14.122	0.000692465	19.61	0.240565264	6812.02	158.32	165.64	3/30/2004 20:44	7374:01:00	7373:48:15	85.87209481
23	75	1080	0.00081	535	14.018	0.000752837	21.32	0.241318101	6833.34	158.82	166.14	4/6/2004 14:51	7536:08:00	7535:55:15	86.81090561
10	75	1086	0.00035	535	14.096	0.000329139	9.32	0.24164724	6842.66	159.04	166.36	4/12/2004 15:08	7680:25:00	7680:12:15	87.63798644
5	68	1088	0.00018	528	14.122	0.000167058	4.73	0.241814298	6847.39	159.15	166.47	4/19/2004 14:38	7847:55:00	7847:42:15	88.58846802
20	76	1090	0.00071	536	14.148	0.00065947	18.67	0.242473768	6866.07	159.58	166.90	4/26/2004 11:40	8012:57:00	8012:44:15	89.51508253
23	76	1083	0.00081	536	14.057	0.00075352	21.34	0.243227288	6887.40	160.07	167.40	5/3/2004 20:03	8189:20:00	8189:07:15	90.4949354
26	77	1081	0.00092	537	14.031	0.000848649	24.03	0.244075937	6911.43	160.63	167.95	5/10/2004 14:08	8351:25:00	8351:12:15	91.38608574
19	78	1082	0.00067	538	14.044	0.000619586	17.54	0.244695623	6928.98	161.04	168.36	5/17/2004 9:50	8515:07:00	8514:54:15	92.27738979
18	74	1075	0.00064	534	13.953	0.000587547	16.64	0.245283071	6945.62	161.43	168.75	5/24/2004 10:37	8683:54:00	8683:41:15	93.18744551
13	77	1077	0.00046	537	13.979	0.000422754	11.97	0.245705825	6957.59	161.71	169.03	6/1/2004 11:00	8876:17:00	8876:04:15	94.21402939
27	78	1076	0.00095	538	13.966	0.000875582	24.79	0.246581407	6982.38	162.28	169.60	6/7/2004 10:42	9019:59:00	9019:46:15	94.97359282
17	74	1078	0.0006	534	13.992	0.000556454	15.76	0.247137862	6998.14	162.65	169.97	6/14/2004 10:55	9188:12:00	9187:59:15	95.85509898
15	77	1082	0.00053	537	14.044	0.000490058	13.88	0.24762792	7012.02	162.97	170.29	6/23/2004 16:33	9409:50:00	9409:37:15	97.00429544
21	77	1082	0.00074	537	14.044	0.000686081	19.43	0.248314001	7031.44	163.42	170.74	7/1/2004 11:59	9597:16:00	9597:03:15	97.96564024
22	79	1082	0.00078	539	14.044	0.000716085	20.28	0.249030085	7051.72	163.89	171.22	7/7/2004 10:40	9739:57:00	9739:44:15	98.69118502
23	79	1082	0.00081	539	14.044	0.000748634	21.20	0.249778719	7072.92	164.39	171.71	7/13/2004 14:26	9887:43:00	9887:30:15	99.43699848
-4	73	1080	-0.0001	533	14.018	-0.000131419	-3.72	0.2496473	7069.20	164.30	171.62	7/19/2004 11:27	10028:44:00	10028:31:15	100.1435636
14	79	1091	0.00049	539	14.161	0.000459481	13.01	0.25010678	7082.21	164.60	171.92	7/26/2004 10:28	10195:45:00	10195:32:15	100.9740066
26	80	1079	0.00092	540	14.005	0.000842373	23.85	0.250949153	7106.06	165.16	172.48	8/2/2004 14:48	10368:05:00	10367:52:15	101.8237857
14	78	1086	0.00049	538	14.096	0.000458225	12.98	0.251407378	7119.04	165.46	172.78	8/9/2004 14:10	10535:27:00	10535:14:15	102.6423402
6	78	1088	0.00021	538	14.122	0.000196744	5.57	0.251604122	7124.61	165.59	172.91	8/16/2004 11:11	10700:28:00	10700:15:15	103.444306
16	75	1076	0.00057	535	13.966	0.000521773	14.77	0.252125895	7139.38	165.93	173.25	8/23/2004 14:18	10871:35:00	10871:22:15	104.2668851
-8	73	1087	-0.0003	533	14.109	-0.000264543	-7.49	0.251861352	7131.89	165.76	173.08	8/30/2004 16:53	11042:10:00	11041:57:15	105.0817142
21	75	1087	0.00074	535	14.109	0.000691828	19.59	0.252553181	7151.48	166.21	173.53	9/7/2004 16:11	11233:28:00	11233:15:15	105.9880496
23	77	1073	0.00081	537	13.927	0.000745172	21.10	0.253298353	7172.58	166.70	174.02	9/14/2004 18:47	11404:04:00	11403:51:15	106.7898247
-5	77	1083	-0.0002	537	14.057	-0.000163504	-4.63	0.253134849	7167.95	166.60	173.92	9/21/2004 16:52	11570:09:00	11569:56:15	107.5646317
3	75	1089	0.00011	535	14.135	9.90144E-05	2.80	0.253233863	7170.76	166.66	173.98	9/28/2004 21:13	11742:30:00	11742:17:15	108.3628165
7	76	1085	0.00025	536	14.083	0.000229756	6.51	0.253463619	7177.26	166.81	174.13	10/8/2004 10:20	11971:37:00	11971:24:15	109.4148832
0	72	1079	0	532	14.005	0	0.00	0.253463619	7177.26	166.81	174.13	10/19/2004 14:20	12239:37:00	12239:24:15	110.832801
4	75	1086	0.00014	535	14.096	0.000131656	3.73	0.253595275	7180.99	166.90	174.22	10/27/2004 14:08	12431:25:00	12431:12:15	111.496263
1	73	1090	3.5E-05	533	14.148	3.31591E-05	0.94	0.253628434	7181.93	166.92	174.24	11/5/2004 11:16	12644:33:00	12644:20:15	112.447988
3	75	1095	0.00011	535	14.213	9.956E-05	2.82	0.253727994	7184.75	166.99	174.31	11/12/2004 16:34	12817:51:00	12817:38:15	113.2159441
22	75	1080	0.00078	535	14.018	0.000720105	20.39	0.254448099	7205.14	167.46	174.78	11/24/2004 10:57	13100:14:00	13100:01:15	114.4562507
16	75	1081	0.00057	535	14.031	0.000524198	14.84	0.254972296	7219.98	167.80	175.13	12/3/2004 16:02	13321:19:00	13321:06:15	115.4180084
12	75	1089	0.00042	535	14.135	0.000396058	11.22	0.255368354	7231.20	168.07	175.39	12/15/2004 17:34	13610:51:00	13610:38:15	116.6655476
-7	72	1100	-0.0002	532	14.278	-0.000234683	-6.65	0.255133671	7224.55	167.91	175.23	12/23/2004 12:06	13797:23:00	13797:10:15	117.4622634
21	76	1085	0.00074	536	14.083	0.000689267	19.52	0.255822938	7244.07	168.36	175.69	12/31/2004 18:02	13995:19:00	13995:06:15	118.3018033
6	75	1081	0.00021	535	14.031	0.000196574	5.57	0.256019512	7249.64	168.49	175.82	1/10/2005 14:03	14231:20:00	14231:07:15	119.2951522
15	76	1078	0.00053	536	13.992	0.000489157	13.85	0.256508669	7263.49	168.82	176.14	1/20/2005 15:08	14472:25:00	14472:12:15	120.3013577
-2	76	1094	-7E-05	536	14.200	-6.6189E-05	-1.87	0.25644248	7261.61	168.77	176.09	1/27/2005 16:17	14641:34:00	14641:21:15	121.0023416
6	75	1093	0.00021	535	14.187	0.000198756	5.63	0.256641236	7267.24	168.90	176.22	2/3/2005 15:24	14808:41:00	14808:28:15	121.6909337
5	75	1093	0.00018	535	14.187	0.000165663	4.69	0.256806867	7271.93	169.01	176.33	2/10/2005 14:59	14976:16:00	14976:03:15	122.3775579
7	75	1089	0.00025	535	14.135	0.000231034	6.54	0.2570379	7278.48	169.16	176.49	2/17/2005 14:00	15143:17:00	15143:04:15	123.0580486
11	77	1087	0.00039	537	14.109	0.000361037	10.22	0.257398937	7288.70	169.40	176.72	2/24/2005 15:17	15312:34:00	15312:21:15	123.7439561
8	75	1080	0.00028	535	14.018	0.000261856	7.41	0.257660793	7296.11	169.57	176.90	3/3/2005 14:13	15479:30:00	15479:17:15	124.4166388
8	75	1075	0.00028	535	13.953	0.000260644	7.38	0.257921437	7303.49	169.75	177.07	3/10/2005 13:57	15647:14:00	15647:01:15	125.089017
5	75	1071	0.00018	535	13.901	0.000162296	4.60	0.258083734	7308.09	169.85	177.17	3/18/2005 10:38	15835:55:00	15835:42:15	125.8408386
-2	75	1081	-7E-05	535	14.031	-6.55247E-05	-1.86	0.258018209	7306.23	169.8					

SAMPLE: 875.5' to 876.4' (Dry Wood coal) in canister MER I															
dry sample weight:		lbs.	grams	wet sample weight:		lbs.	grams	moisture %	est. lost gas (cc) =		TIME OF:	elapsed time (off bottom to canister)			
		2.087	946.51			2.189	993.03	4.68%	220		off bottom	in canister			
											#####	5/30/2003 11:51			
												13.7 minutes			
												0.228 hours			
RIG/LAB MEASUREMENTS		CONVERSION OF RIG/LAB MEASUREMENTS TO STP (@60 deg				CUMULATIVE VOLUMES (@		SCF/TON	SCF/TON	TIME OF MEASU	TIME SINCE	0.477260702 SQRT (hrs)			
measured cc	measured T (F)	measured P (psia)	absolute T (F)	cubic ft (@STP)	cc (@STP)	cubic ft	cc	without lost gas	with lost gas	TIME OF MEASU	off bottom	in canister	SQRT hrs. (since off bottom)		
19	80	1076	0.00067	540	13.966	0.000613868	17.38	0.000613868	17.38	0.59	8.03	5/30/2003 11:53	0:15:40	0:02:00	0.510990324
9	80	1076	0.00032	540	13.966	0.00029078	8.23	0.00029078	25.62	0.87	8.31	5/30/2003 11:54	0:16:40	0:03:00	0.527046277
16	80	1076	0.00057	540	13.966	0.000516942	14.64	0.00142159	40.25	1.36	8.81	5/30/2003 11:56	0:18:40	0:05:00	0.557773351
13	80	1076	0.00046	540	13.966	0.000420015	11.89	0.001841605	52.15	1.77	9.21	5/30/2003 11:58	0:20:40	0:07:00	0.586893895
23	80	1076	0.00081	540	13.966	0.000743104	21.04	0.002584709	73.19	2.48	9.92	5/30/2003 12:01	0:23:55	0:10:15	0.631356564
18	80	1076	0.00064	540	13.966	0.00058156	16.47	0.003166289	89.66	3.03	10.48	5/30/2003 12:04	0:26:40	0:13:00	0.666666667
25	80	1076	0.00088	540	13.966	0.000807722	22.87	0.003973991	112.53	3.81	11.26	5/30/2003 12:08	0:30:55	0:17:15	0.717828516
17	80	1076	0.0006	540	13.966	0.000549251	15.55	0.004523241	128.08	4.34	11.78	5/30/2003 12:11	0:33:55	0:20:15	0.751849571
24	80	1076	0.00085	540	13.966	0.000775413	21.96	0.005298654	150.04	5.08	12.52	5/30/2003 12:15	0:38:25	0:24:45	0.800173592
23	80	1076	0.00081	540	13.966	0.000743104	21.04	0.006041758	171.08	5.79	13.24	5/30/2003 12:20	0:43:10	0:29:30	0.84820071
12	80	1076	0.00042	540	13.966	0.000387706	10.98	0.006429464	182.06	6.16	13.61	5/30/2003 12:23	0:45:55	0:32:15	0.874801565
61	80	1076	0.00215	540	13.966	0.001970841	55.81	0.008400305	237.87	8.05	15.50	5/30/2003 12:37	0:59:40	0:46:00	0.997218353
25	80	1076	0.00088	540	13.966	0.000807722	22.87	0.008208027	260.74	8.83	16.27	5/30/2003 12:40	1:03:25	0:49:45	1.028078034
23	80	1076	0.00081	540	13.966	0.000743104	21.04	0.009951131	281.78	9.54	16.98	5/30/2003 12:46	1:08:55	0:55:15	1.071732761
50	80	1076	0.00177	540	13.966	0.001615443	45.74	0.011566574	327.53	11.09	18.53	5/30/2003 13:00	1:22:40	1:09:00	1.173787791
55	80	1076	0.00194	540	13.966	0.001776988	50.32	0.013343562	377.85	12.79	20.24	5/30/2003 13:17	1:39:40	1:26:00	1.288840995
66	80	1076	0.00233	540	13.966	0.002132385	60.38	0.015475947	438.23	14.83	22.28	5/30/2003 13:43	2:05:40	1:52:00	1.447219556
158	80	1076	0.00558	540	13.966	0.005104801	144.55	0.020580748	582.78	19.73	27.17	5/30/2003 14:53	3:15:40	3:02:00	1.805854676
170	80	1076	0.006	540	13.966	0.005492507	155.53	0.020873255	738.31	24.99	32.44	5/30/2003 16:13	4:35:40	4:22:00	2.143465522
111	80	1076	0.00392	540	13.966	0.003586284	101.55	0.029659539	839.86	28.43	35.87	5/30/2003 17:25	5:47:40	5:34:00	2.40716523
103	80	1076	0.00364	540	13.966	0.003327813	94.23	0.032987352	934.09	31.62	39.06	5/30/2003 18:48	7:10:40	6:57:00	2.679137506
407	73	1086	0.01437	533	14.096	0.013446221	380.75	0.046433573	1314.85	44.50	51.95	5/31/2003 8:05	20:27:40	20:14:00	4.523395971
129	78	1085	0.00456	538	14.083	0.004218328	119.45	0.050651901	1434.30	48.55	55.99	5/31/2003 11:40	24:02:40	23:49:00	4.90351348
76	79	1086	0.00268	539	14.096	0.002482892	70.31	0.053134794	1504.60	50.93	58.37	5/31/2003 13:44	26:06:40	25:53:00	5.109903239
100	76	1085	0.00353	536	14.083	0.003282224	92.94	0.056417017	1597.55	54.07	61.52	5/31/2003 18:01	30:23:40	30:10:00	5.513115675
258	86	1086	0.00911	546	14.096	0.008320704	235.62	0.064737721	1833.16	62.05	69.49	6/1/2003 2:56	39:18:40	39:05:00	6.289857344
216	81	1085	0.00763	541	14.083	0.00702408	198.90	0.071761801	2032.06	68.78	76.23	6/1/2003 13:47	50:09:40	49:56:00	7.082450925
268	86	1075	0.00946	546	13.953	0.008556666	242.27	0.080317467	2274.33	76.98	84.43	6/2/2003 11:09	71:31:40	71:18:00	8.457409638
265	80	1082	0.00936	540	14.044	0.008609592	243.80	0.088927059	2518.12	85.23	92.68	6/3/2003 9:23	93:45:40	93:32:00	9.683032124
205	78	1082	0.00724	538	14.044	0.00688501	189.30	0.095612069	2707.42	91.64	99.09	6/4/2003 9:23	117:45:40	117:32:00	10.85177917
340	80	1082	0.01201	540	14.044	0.011046289	312.79	0.106658339	3020.22	102.23	109.67	6/6/2003 14:06	170:28:40	170:15:00	13.0567139
166	80	1078	0.00586	540	13.992	0.005373241	152.15	0.112031579	3172.37	107.38	114.82	6/7/2003 19:41	200:03:40	199:50:00	14.14429606
157	81	1075	0.00554	541	13.992	0.005072527	143.64	0.117104106	3316.01	112.24	119.69	6/9/2003 14:18	242:40:40	242:27:00	15.87811856
90	80	1075	0.00318	540	13.953	0.002905096	82.26	0.120009202	3398.27	115.02	122.47	6/10/2003 13:41	266:03:40	265:50:00	16.3113798
85	79	1076	0.003	539	13.966	0.002751349	77.91	0.12276055	3476.18	117.66	125.11	6/11/2003 14:00	290:22:40	290:09:00	17.04047469
226	80	1085	0.00798	540	14.083	0.007362878	208.49	0.130123429	3684.67	124.72	132.16	6/15/2003 14:42	387:04:40	386:51:00	19.67429231
82	80	1087	0.0029	540	14.109	0.002676411	75.79	0.13279984	3760.46	127.28	134.73	6/16/2003 13:34	409:56:40	409:43:00	20.24708484
69	81	1085	0.00244	541	14.083	0.002243803	63.54	0.135043643	3824.00	129.43	136.88	6/17/2003 13:31	433:53:40	433:40:00	20.83013309
60	78	1081	0.00212	538	14.031	0.00195478	55.35	0.136998423	3879.35	131.31	138.75	6/18/2003 13:52	458:14:40	458:01:00	21.40664487
61	80	1082	0.00215	540	14.044	0.001981831	56.12	0.138980254	3935.47	133.21	140.65	6/19/2003 13:49	482:11:40	481:58:00	21.9589263
50	79	1085	0.00177	539	14.083	0.001631978	46.21	0.140612231	3981.68	134.77	142.22	6/20/2003 14:02	506:24:40	506:11:00	22.50357996
43	80	1082	0.00152	540	14.044	0.001397028	39.56	0.142009259	4021.24	136.11	143.56	6/21/2003 10:42	527:04:40	526:51:00	22.95817453
69	78	1079	0.00244	538	14.005	0.002243838	63.54	0.144253097	4084.78	138.26	145.71	6/23/2003 11:17	575:39:40	575:26:00	23.99239878
86	80	1078	0.00304	540	13.992	0.002783727	78.83	0.147036824	4163.60	140.93	148.37	6/25/2003 10:34	622:56:40	622:43:00	24.95885503
65	80	1082	0.0023	540	14.044	0.002111787	59.80	0.149148611	4223.40	142.95	150.40	6/27/2003 15:11	675:33:40	675:20:00	25.99155846
51	80	1086	0.0018	540	14.096	0.001663066	47.09	0.150811677	4270.50	144.55	151.99	6/29/2003 11:50	720:12:40	719:59:00	26.83674926
56	78	1084	0.00198	538	14.070	0.001829525	51.81	0.152641202	4322.30	146.30	153.75	7/1/2003 12:49	769:11:40	768:58:00	27.73435495
56	80	1078	0.00198	540	13.992	0.00181266	51.33	0.154453861	4373.63	148.04	155.48	7/3/2003 9:50	814:12:40	813:59:00	28.53438472
81	82	1078	0.00286	542	13.992	0.002612208	73.97	0.157066069	4447.60	150.54	157.99	7/5/2003 20:12	872:34:40	872:21:00	29.53942751
32	81	1081	0.00113	541	14.031	0.001036768	29.36	0.158102837	4476.96	151.53	158.98	7/7/2003 14:14	914:36:40	914:23:00	30.24253811
29	77	1078	0.00102	537	13.992	0.000943943	26.73	0.15904678	4503.69	152.44	159.89	7/9/2003 14:23	962:45:40	962:32:00	31.02839202
48	83	1081	0.0017	543	14.031	0.001549424	43.87	0.160596204	4547.56	153.92	161.37	7/11/2003 16:03	1012:25:40	1012:12:00	31.81867027
69	85	1084	0.00244	545	14.070	0.002225282	65.01	0.162821486	4610.57	156.06	163.50	7/15/2003 14:02	1106:24:40	1106:11:00	33.26275862
93	80	1079	0.00328	540	14.005	0.003013102	83.32	0.165834588	4695.89	158.94	166.39	7/21/2003 16:39	1253:01:40	1252:48:00	35.39813241
85	83	1081	0.003	543	14.031	0.002743772	77.69	0.16857836	4773.59	161.57	169.02	7/28/2003 20:37	1424:59:40	1424:46:00	37.74909859
64	80	1079	0.00226	540	14.005	0.002073533	58.72	0.170651892	4832.31	163.56	171.01	8/4/2003 13:55	1586:17:40	1586:04:00	39.8283121
64	81	1086	0.00226	541	14.096	0.002083127	58.99	0.172735019	4891.29	165.56	173.00	8/11/2003 14:10	1754:32:40	1754:19:00	41.88728261
76	84	1082	0.00288	544	14.044	0.00245101	69.40	0.17518603	4960.70	167.91	175.35	8/18/2003 20:22	1928:44:40	1928:31:00	43.91747311
66	85	1083	0.00233	545	14.057	0.002126567	60.22	0.177312597	5020.91	169.95	177.39	8/24/2003 22:58	2075:20:40	2075:07:00	45.55594851
45	82	1086	0.00159	542											

SAMPLE: 910.7' to 911.4' (Neutral(?) coal) in canister MER 2		lbs.		grams		lbs.		grams		moisture %		est. lost gas (cc) =		TIME OF:		elapsed time (off bottom to canister)	
dry sample weight:		2.621	1188.65	wet sample weight:		2.694	1222.14	2.74%		160		######		5/30/2003 13:42	16.0 minutes		0.267 hours
RIG/LAB MEASUREMENTS		CONVERSION OF RIG/LAB MEASUREMENTS TO STP (@60 deg				CUMULATIVE VOLUMES (@		SCF/TON	SCF/TON	TIME OF MEASU		TIME SINCE		0.516397779		SQRT (hrs)	
measured cc	measured T (F)	measured P (psia)	absolute T (F)	cubic ft (@STP)	cc (@STP)	cubic ft (@STP)	cc	without lost gas	with lost gas	TIME OF MEASU	off bottom	in canister	SQRT hrs. (since off bottom)				
24	80	1076	0.00085	540	13.966	0.000775413	21.96	0.000775413	21.96	0.59	4.90	5/30/2003 13:46	0:20:00	0:04:00	0.577350269		
26	80	1076	0.00092	540	13.966	0.000840031	23.79	0.001615443	45.74	1.23	5.55	5/30/2003 13:52	0:26:00	0:10:00	0.658280589		
10	80	1076	0.00035	540	13.966	0.000323089	9.15	0.001938532	54.89	1.48	5.79	5/30/2003 13:55	0:28:45	0:12:45	0.692218655		
17	80	1076	0.0006	540	13.966	0.000549251	15.55	0.002487783	70.45	1.90	6.21	5/30/2003 13:59	0:33:30	0:17:30	0.747217059		
15	80	1076	0.00053	540	13.966	0.000484633	13.72	0.002972416	84.17	2.27	6.58	5/30/2003 14:04	0:38:00	0:22:00	0.795822426		
16	80	1076	0.00057	540	13.966	0.000518942	14.64	0.003488358	98.81	2.66	6.98	5/30/2003 14:09	0:43:15	0:27:15	0.849019042		
17	80	1076	0.0006	540	13.966	0.000549251	15.55	0.004038608	114.36	3.08	7.39	5/30/2003 14:15	0:49:00	0:33:00	0.903896114		
8	80	1076	0.00028	540	13.966	0.000258471	7.32	0.004297079	121.68	3.28	7.59	5/30/2003 14:18	0:52:00	0:36:00	0.930949336		
13	80	1076	0.00046	540	13.966	0.000420015	11.89	0.004717094	133.57	3.60	7.91	5/30/2003 14:23	0:56:45	0:40:45	0.972539631		
28	80	1076	0.00099	540	13.966	0.000904648	25.62	0.005621743	159.19	4.29	8.60	5/30/2003 14:34	1:08:00	0:52:00	1.064581295		
56	80	1076	0.00198	540	13.966	0.001809297	51.23	0.007431039	210.42	5.67	9.98	5/30/2003 14:51	1:24:45	1:08:45	1.188486432		
18	80	1076	0.00064	540	13.966	0.00058156	16.47	0.008012599	226.89	6.12	10.43	5/30/2003 15:00	1:33:45	1:17:45	1.25		
42	80	1076	0.00148	540	13.966	0.001356972	38.43	0.009369571	265.32	7.15	11.46	5/30/2003 15:21	1:54:45	1:38:45	1.382391669		
80	80	1076	0.00283	540	13.966	0.002584709	73.19	0.011954281	338.51	9.12	13.44	5/30/2003 16:12	2:45:45	2:29:45	1.662077014		
94	80	1076	0.00332	540	13.966	0.003037033	86.00	0.014991314	424.51	11.44	15.75	5/30/2003 17:24	3:57:45	3:41:45	1.990602924		
89	80	1076	0.00314	540	13.966	0.002875489	81.42	0.017866803	505.93	13.64	17.95	5/30/2003 18:49	5:22:45	5:06:45	2.319303056		
340	73	1087	0.01201	533	14.109	0.011243058	318.37	0.029109861	824.30	22.22	26.53	5/31/2003 8:19	18:52:45	18:36:45	4.345016302		
97	78	1085	0.00343	538	14.083	0.003171921	89.82	0.032281783	914.11	24.64	28.95	5/31/2003 11:39	22:12:45	21:56:45	4.713013898		
66	79	1086	0.00233	539	14.096	0.002156196	61.06	0.034437978	975.17	26.28	30.60	5/31/2003 13:42	24:15:45	23:59:45	4.92569792		
73	76	1085	0.00258	536	14.083	0.002396023	67.85	0.036834002	1043.02	28.11	32.42	5/31/2003 17:59	28:32:45	28:16:45	5.342830087		
168	86	1086	0.00593	546	14.096	0.005418133	153.42	0.042252135	1196.44	32.25	36.56	6/1/2003 2:54	37:27:45	37:11:45	6.120661729		
155	81	1085	0.00547	541	14.083	0.005044028	142.73	0.047292562	1339.17	36.09	40.41	6/1/2003 13:44	48:17:45	48:01:45	6.949520367		
202	76	1075	0.00713	536	13.953	0.006568985	186.01	0.053861547	1625.18	41.11	45.42	6/2/2003 11:04	69:37:45	69:21:45	8.344409306		
196	80	1081	0.00692	540	14.031	0.006361964	180.15	0.060223511	1705.33	45.96	50.28	6/3/2003 9:21	91:54:45	91:38:45	9.587100709		
154	78	1082	0.00544	538	14.044	0.00502191	142.20	0.065245421	1847.54	49.80	54.11	6/4/2003 9:24	115:57:45	115:41:45	10.76858858		
156	79	1082	0.00551	539	14.044	0.005077691	143.78	0.070323112	1991.32	53.67	57.98	6/5/2003 14:50	145:23:45	145:07:45	12.05801946		
127	80	1077	0.00448	540	13.979	0.004107039	116.30	0.074430152	2107.62	56.81	61.12	6/6/2003 14:17	168:50:45	168:34:45	12.99406916		
114	80	1078	0.00403	540	13.992	0.003690057	104.49	0.078120209	2212.11	59.62	63.93	6/7/2003 19:46	198:19:45	198:03:45	14.08293885		
119	81	1078	0.0042	541	13.992	0.003844782	108.87	0.08196499	2320.98	62.56	66.87	6/9/2003 14:21	240:54:45	240:38:45	15.52135626		
89	80	1075	0.00314	540	13.953	0.002872817	81.35	0.084837807	2402.33	64.75	69.06	6/10/2003 13:41	264:14:45	263:58:45	16.25564005		
71	79	1076	0.00251	539	13.966	0.002298185	65.08	0.087135992	2467.41	66.50	70.82	6/11/2003 14:00	288:33:45	288:17:45	16.98712748		
160	80	1085	0.00565	540	14.083	0.005212657	147.61	0.092348649	2615.01	70.48	74.79	6/15/2003 14:44	385:17:45	385:01:45	19.62895395		
63	80	1087	0.00222	540	14.109	0.002056267	58.23	0.094404917	2673.24	72.05	76.36	6/16/2003 13:35	408:08:45	407:52:45	20.20261947		
51	81	1085	0.0018	541	14.083	0.001658463	46.96	0.09606338	2720.20	73.32	77.63	6/17/2003 13:32	432:05:45	431:49:45	20.78691495		
45	78	1081	0.00159	538	14.031	0.001466085	41.51	0.097529465	2761.72	74.44	78.75	6/18/2003 13:52	456:25:45	456:09:45	21.36420293		
47	80	1082	0.00166	540	14.044	0.001526984	43.24	0.099056449	2804.96	75.60	79.91	6/19/2003 13:50	480:23:45	480:07:45	21.91793406		
38	79	1085	0.00134	539	14.083	0.001240303	35.12	0.100296752	2840.08	76.55	80.86	6/20/2003 14:03	504:36:45	504:20:45	22.46358164		
33	80	1082	0.00117	540	14.044	0.001072138	30.36	0.10136889	2870.44	77.37	81.68	6/21/2003 10:42	525:15:45	524:59:45	22.91860598		
53	78	1079	0.00187	538	14.005	0.001723528	48.80	0.103092417	2919.24	78.68	82.99	6/23/2003 11:18	573:51:45	573:35:45	23.95542736		
68	80	1078	0.0024	540	13.992	0.002201087	62.33	0.105293504	2981.57	80.36	84.67	6/25/2003 10:35	621:08:45	620:52:45	24.92279746		
51	80	1082	0.0018	540	14.044	0.001656694	46.92	0.106950444	3028.49	81.63	85.94	6/27/2003 15:12	673:45:45	673:29:45	25.95693549		
41	80	1086	0.00145	540	14.096	0.001336975	37.86	0.108287419	3066.35	82.65	86.96	6/29/2003 11:51	718:24:45	718:08:45	26.80321809		
43	78	1084	0.00152	538	14.070	0.001404813	39.78	0.109692232	3106.13	83.72	88.03	7/1/2003 12:50	767:23:45	767:07:45	27.70191028		
43	80	1078	0.00152	540	13.992	0.001391864	39.41	0.111084096	3145.54	84.78	89.09	7/3/2003 9:51	812:24:45	812:08:45	28.50285073		
61	82	1078	0.00215	542	13.992	0.001967218	55.71	0.113051314	3201.24	86.28	90.59	7/5/2003 20:13	870:46:45	870:30:45	29.50896756		
21	81	1081	0.00074	541	14.031	0.000680379	19.27	0.113731693	3220.51	86.80	91.11	7/7/2003 14:14	912:47:45	912:31:45	30.21251121		
24	77	1078	0.00085	537	13.992	0.000781194	22.12	0.114512887	3242.63	87.40	91.71	7/9/2003 14:24	960:57:45	960:41:45	30.99939516		
39	82	1081	0.00138	542	14.031	0.00126123	35.71	0.115774117	3278.35	88.36	92.67	7/11/2003 16:04	1010:37:45	1010:21:45	31.79039425		
56	85	1084	0.00198	545	14.070	0.001806026	51.14	0.117580143	3329.49	89.74	94.05	7/15/2003 14:04	1104:37:45	1104:21:45	33.23596195		
75	80	1079	0.00265	540	14.005	0.002429921	68.81	0.120010064	3398.29	91.59	95.90	7/21/2003 16:42	1251:15:45	1250:59:45	35.373189		
70	83	1081	0.00247	543	14.031	0.002259577	63.98	0.122289641	3462.28	93.32	97.63	7/28/2003 20:40	1423:13:45	1422:57:45	37.7250962		
52	80	1079	0.00184	540	14.005	0.001684745	47.71	0.123954386	3509.98	94.60	98.92	8/4/2003 13:56	1584:29:45	1584:13:45	39.80572614		
53	81	1086	0.00187	541	14.096	0.001725059	48.85	0.125679476	3558.83	95.92	100.23	8/11/2003 14:11	1752:44:45	1752:28:45	41.86580745		
59	84	1082	0.00208	544	14.044	0.001902758	53.88	0.127582234	3612.71	97.37	101.68	8/18/2003 20:23	1926:56:45	1926:40:45	43.89699116		
68	85	1083	0.0024	545	14.057	0.002191009	62.04	0.129773242	3674.76	99.04	103.36	8/24/2003 22:59	2073:32:45	2073:16:45	45.53620355		
29	82	1086	0.00102	542	14.096	0.000942175	26.68	0.130715418	3701.43	99.76	104.08	9/1/2003 15:02	2257:35:45	2257:19:45	47.51416455		
22	80	1084	0.00078	540	14.070	0.00071608	20.28	0.131431497	3721.71	100.31	104.62	9/8/2003 14:14	2424:47:45	2424:31:45	49.24221597		
34	83	1085	0.0012	543	14.083	0.00110157	31.19	0.132533067	3752.90	101.15	105.46	9/15/2003 15:24	2593:57:45	2593:41:45	50.93095817		
34	85	1084	0.0														

SAMPLE: 982.0' to 983.0' (Riverton coal) in canister G																			
dry sample weight:					wet sample weight:					est. lost gas (cc) =					TIME OF: elapsed time (off bottom to canister)				
lbs. 3.383 1534.69					lbs. 3.467 1572.69					2.42% 260					# off bottom in canister 24.3 minutes				
grams 1534.69					grams 1572.69					moisture % 2.42%					0.404 hours				
RIG/LAB MEASUREMENTS										CONVERSION OF RIG/LAB MEASUREMENTS TO STP (@60 deg									
measured cc					absolute T (F)					CUMULATIVE VOLUMES (@					TIME SINCE				
measured T (F)					cubic ft (cc) (@STP)					SCF/TON					in canister				
measured T (F)					cubic ft (cc) (@STP)					SCF/TON					SQRT hrs. (since off bottom)				
34	78	1086	0.0012	538	14.096	0.001112832	31.51	0.001112832	31.51	0.66	6.09	5/31/2003 12:57	0:30:00	0:05:45	0.707106781				
6	78	1086	0.00021	538	14.096	0.000196382	5.56	0.001309214	37.07	0.77	6.20	5/31/2003 12:58	0:31:15	0:07:00	0.721687837				
8	78	1086	0.00028	538	14.096	0.000261843	7.41	0.001571057	44.49	0.93	6.36	5/31/2003 13:00	0:33:15	0:09:00	0.744423715				
5	78	1086	0.00018	538	14.096	0.000163652	4.63	0.001734709	49.12	1.03	6.45	5/31/2003 13:01	0:33:45	0:09:30	0.75				
30	79	1086	0.00106	539	14.096	0.000980089	27.75	0.002714798	76.87	1.60	7.03	5/31/2003 13:08	0:40:30	0:16:15	0.821583836				
6	79	1086	0.00021	539	14.096	0.000196018	5.55	0.002910816	82.42	1.72	7.15	5/31/2003 13:09	0:42:15	0:18:00	0.839146392				
5	79	1086	0.00018	539	14.096	0.000163348	4.63	0.003074164	87.05	1.82	7.24	5/31/2003 13:10	0:43:00	0:18:45	0.846561673				
7	79	1086	0.00025	539	14.096	0.000228687	6.48	0.003302851	93.53	1.95	7.38	5/31/2003 13:12	0:44:30	0:20:15	0.861200712				
6	79	1086	0.00021	539	14.096	0.000196018	5.55	0.003498869	99.08	2.07	7.50	5/31/2003 13:13	0:45:30	0:21:15	0.870823365				
32	79	1086	0.00113	539	14.096	0.001045428	29.60	0.004544297	128.68	2.69	8.11	5/31/2003 13:21	0:53:45	0:29:30	0.946484724				
7	79	1086	0.00025	539	14.096	0.000228687	6.48	0.004772985	135.16	2.82	8.25	5/31/2003 13:23	0:55:30	0:31:15	0.961769203				
11	79	1086	0.00039	539	14.096	0.000359366	10.18	0.005132351	145.33	3.03	8.46	5/31/2003 13:26	0:58:30	0:34:15	0.987420983				
9	79	1086	0.00032	539	14.096	0.000294027	8.33	0.005426378	153.66	3.21	8.64	5/31/2003 13:28	1:00:45	0:36:30	1.00623059				
6	79	1086	0.00021	539	14.096	0.000196018	5.55	0.005622395	159.21	3.32	8.75	5/31/2003 13:30	1:02:30	0:38:15	1.020620726				
53	79	1086	0.00187	539	14.096	0.001731491	49.03	0.007353886	208.24	4.35	9.77	5/31/2003 13:45	1:18:15	0:54:00	1.142001168				
15	79	1086	0.00053	539	14.096	0.000490045	13.88	0.007843931	222.11	4.64	10.06	5/31/2003 13:50	1:22:45	0:58:30	1.174379269				
9	79	1086	0.00032	539	14.096	0.000294027	8.33	0.008137957	230.44	4.81	10.24	5/31/2003 13:53	1:25:30	1:01:15	1.193733639				
12	79	1086	0.00042	539	14.096	0.000392036	11.10	0.008529993	241.54	5.04	10.47	5/31/2003 13:57	1:29:30	1:05:15	1.221338064				
38	79	1086	0.00134	539	14.096	0.001241446	35.15	0.009771439	276.70	5.78	11.20	5/31/2003 14:10	1:42:30	1:18:15	1.307032262				
131	79	1087	0.00463	539	14.109	0.004283663	121.30	0.014055102	397.99	8.31	13.74	5/31/2003 15:09	2:41:30	2:17:15	1.64062996				
236	76	1085	0.00833	536	14.083	0.007746048	219.34	0.021801149	617.34	12.89	18.31	5/31/2003 17:59	5:31:30	5:07:15	2.350531855				
502	86	1086	0.01773	546	14.096	0.016189898	458.45	0.037991047	1075.78	22.46	27.88	6/1/2003 2:50	14:22:30	13:58:15	3.791437722				
253	83	1087	0.00893	543	14.109	0.008212085	232.54	0.046203132	1308.32	27.31	32.74	6/1/2003 8:50	20:22:30	19:58:15	4.513867521				
168	81	1085	0.00593	541	14.083	0.005463173	154.70	0.051666305	1463.02	30.54	35.97	6/1/2003 13:43	25:15:30	24:51:15	5.02576694				
377	76	1075	0.01331	536	13.953	0.012259937	347.16	0.063926242	1810.18	37.79	43.22	6/2/2003 11:02	46:34:30	46:10:15	6.8245879				
183	82	1075	0.00646	542	13.953	0.00588523	166.65	0.069811473	1976.83	41.27	46.69	6/2/2003 17:57	53:29:30	53:05:15	7.313799742				
234	80	1082	0.00826	540	14.044	0.007602432	215.28	0.077413905	2192.11	45.76	51.19	6/3/2003 9:19	68:51:30	68:27:15	8.29809215				
264	78	1082	0.00932	538	14.044	0.008608988	243.78	0.086022893	2435.89	50.85	56.28	6/4/2003 9:26	92:58:30	92:34:15	9.642354484				
235	79	1082	0.0083	539	14.044	0.007649086	216.60	0.09367198	2652.49	55.37	60.80	6/5/2003 14:47	122:19:30	121:55:15	11.06006329				
208	80	1077	0.00735	540	13.979	0.00672649	190.47	0.100398469	2842.96	59.35	64.78	6/6/2003 14:13	145:45:30	145:21:15	12.07304159				
189	80	1078	0.00667	540	13.992	0.006117726	173.23	0.106516195	3016.19	62.96	68.39	6/7/2003 19:48	175:20:30	174:56:15	13.24166404				
214	81	1078	0.00756	541	13.992	0.006914145	195.79	0.11343034	3211.98	67.05	72.48	6/9/2003 14:21	217:53:30	217:29:15	14.76115397				
121	80	1075	0.00427	540	13.953	0.00390574	110.60	0.11733608	3322.58	69.36	74.79	6/10/2003 13:42	241:14:30	240:50:15	15.53195631				
115	79	1076	0.00406	539	13.966	0.003722413	105.41	0.121058493	3427.98	71.56	76.99	6/11/2003 14:00	265:32:30	265:08:15	16.29544926				
252	80	1085	0.0089	540	14.083	0.008209935	232.48	0.129288428	3660.46	76.41	81.84	6/15/2003 14:45	362:17:30	361:53:15	19.03396088				
95	80	1087	0.00335	540	14.109	0.00310072	87.80	0.132369148	3748.26	78.25	83.67	6/16/2003 13:36	385:08:30	384:44:15	19.62502654				
77	81	1085	0.00272	541	14.083	0.002503954	70.90	0.134873102	3819.17	79.73	85.15	6/17/2003 13:32	409:04:30	408:40:15	20.22560259				
79	78	1084	0.00279	538	14.031	0.002573794	72.88	0.137446896	3892.05	81.25	86.68	6/18/2003 13:53	433:25:30	433:01:15	20.81886164				
68	80	1082	0.0024	540	14.044	0.002209254	62.56	0.13966515	3954.61	82.55	87.98	6/19/2003 13:51	457:23:30	456:59:15	21.38671706				
58	79	1085	0.00205	539	14.083	0.001893094	53.61	0.141549244	4008.21	83.67	89.10	6/20/2003 14:04	481:36:30	481:12:15	21.94557662				
59	80	1082	0.00208	540	14.044	0.001916853	54.28	0.143466096	4062.49	84.81	90.23	6/21/2003 10:43	502:15:30	501:51:15	22.41112075				
83	78	1079	0.00293	538	14.005	0.002699109	76.43	0.146165206	4138.92	86.40	91.83	6/23/2003 11:19	550:51:30	550:27:15	23.47037139				
103	80	1078	0.00364	540	13.992	0.003333999	94.41	0.149499204	4233.33	88.37	93.80	6/25/2003 10:36	598:08:30	597:44:15	24.45693494				
79	80	1082	0.00279	540	14.044	0.002566633	72.68	0.152065838	4306.01	89.89	95.32	6/27/2003 15:13	650:45:30	650:21:15	25.50996537				
64	80	1086	0.00226	540	14.096	0.002086985	59.10	0.154152822	4365.11	91.12	96.55	6/29/2003 11:52	695:24:30	695:00:15	26.370596				
43	80	1084	0.00152	540	14.070	0.00139961	39.63	0.155552433	4404.74	91.95	97.38	7/1/2003 12:51	744:23:30	743:59:15	27.28354205				
69	80	1078	0.00244	540	13.992	0.002233455	63.24	0.157785888	4467.98	93.27	98.70	7/3/2003 9:52	789:24:30	789:00:15	28.0964114				
94	82	1078	0.00332	542	13.992	0.003031451	85.84	0.160817339	4553.82	95.06	100.49	7/5/2003 20:14	847:46:30	847:22:15	29.11657603				
46	80	1081	0.00162	540	14.031	0.001493114	42.28	0.162310453	4596.10	95.94	101.37	7/7/2003 14:15	889:47:30	889:23:15	29.8293759				
56	78	1078	0.00198	538	13.992	0.001819398	51.52	0.164129851	4647.62	97.02	102.45	7/9/2003 14:24	937:56:30	937:32:15	30.62583332				
52	78	1081	0.00184	538	14.031	0.001694143	47.97	0.165823994	4695.59	98.02	103.45	7/11/2003 16:05	987:37:30	987:13:15	31.42650156				
77	80	1084	0.00272	540	14.070	0.002506279	70.97	0.168330273	4766.56	99.50	104.93	7/15/2003 14:05	1081:37:30	1081:13:15	32.88806775				
118	78	1079	0.00417	538	14.005	0.003837288	108.66	0.172167561	4875.22	101.77	107.20	7/21/2003 16:43	1228:15:30	1227:51:15	35.04651671				
117	80	1081	0.00413	540	14.031	0.003797703	107.54	0.175965264	4982.76	104.02	109.44	7/28/2003 20:41	1400:13:30	1399:49:15	37.41958044				
95	79	1079	0.00335	539	14.005	0.00308361	87.32	0.179048874	5070.08	105.84	111.27	8/4/2003 13:57	1561:29:30	1561:05:15	39.51571417				
95	78	1086	0.00335	538	14.096	0.003109384	88.05	0.182158258	5158.13	107.68	113.10	8/11/2003 14:12	1729:44:30	1729:20:15	41.5901631				
93	79	1082	0.00328	539	14.044	0.003027085	85.72	0.185185343	5243.85	109.47	114.89	8/18/2003 20:24	1903:56:30	1903:32:15	43.63418003				
78	80	1083	0.00275	540	14.057	0.002536486	71.83	0.187721183	5315.67	110.97	116.39	8/24/2003 22:59	2050:31:30	2050:07:15	45.28272297				
71	80	1086	0.00251	540	14.096	0.002315249	65.56	0.190037078	5381.23	112.33	117.76	9/1/2003 15:03	2234:35:30	2234:11:15	47.27146779				
63	83	1084	0.00222	543	14.070	0.002039263	57.75	0.192076341	5438.98	113.54	118.97	9/8/2003 14:15	2401:47:30	2401:23:15	49.00807757				
80	80	1085	0.00212	540	14.083	0.001954746	55.35	0.194031088	5494.33	114.70	120.12	9/15/2003							

14	80	1086	0.00049	540	14.096	0.000456528	12.93	0.216967547	6143.81	128.25	133.68	2/23/2004 14:45	6434:17:30	6433:53:15	80.21403659
13	80	1091	0.00046	540	14.161	0.00042587	12.06	0.217393418	6155.87	128.51	133.93	3/2/2004 10:53	6622:25:30	6622:01:15	81.37828334
18	83	1088	0.00064	543	14.122	0.000584797	16.56	0.217978214	6172.43	128.85	134.28	3/8/2004 10:20	6765:52:30	6765:28:15	82.25493906
14	80	1081	0.00049	540	14.031	0.000454426	12.87	0.21843264	6185.30	129.12	134.55	3/15/2004 11:53	6935:25:30	6935:01:15	83.27919908
6	81	1097	0.00021	541	14.239	0.000197271	5.59	0.218629911	6190.89	129.24	134.66	3/22/2004 10:14	7101:46:30	7101:22:15	84.27202976
13	81	1085	0.00046	541	14.122	0.000423914	12.00	0.219053826	6202.89	129.49	134.91	3/30/2004 20:44	7304:16:30	7303:52:15	85.46505134
21	83	1080	0.00074	543	14.018	0.000677246	19.18	0.219731072	6222.07	129.89	135.31	4/6/2004 14:52	7466:24:30	7466:00:15	86.40838115
5	81	1086	0.00018	541	14.096	0.000162744	4.61	0.219893816	6226.68	129.98	135.41	4/12/2004 15:09	7610:41:30	7610:17:15	87.619371823
13	81	1088	0.00046	541	14.122	0.000423914	12.00	0.220317731	6238.68	130.23	135.66	4/19/2004 14:38	7778:10:30	7777:46:15	88.19396238
9	80	1090	0.00032	540	14.148	0.000294563	8.34	0.220612294	6247.02	130.41	135.84	4/26/2004 11:41	7943:13:30	7942:49:15	89.12477209
13	80	1083	0.00046	540	14.057	0.000422748	11.97	0.221035041	6258.99	130.66	136.09	5/3/2004 20:04	8119:36:30	8119:12:15	90.10886934
16	80	1081	0.00057	540	14.031	0.000519344	14.71	0.221554385	6273.70	130.97	136.39	5/10/2004 14:09	8281:41:30	8281:17:15	91.00380029
12	80	1082	0.00042	540	14.044	0.000389868	11.04	0.221944254	6284.74	131.20	136.62	5/17/2004 9:50	8445:22:30	8444:58:15	91.89872143
17	80	1075	0.0006	540	13.953	0.00054874	15.54	0.222429294	6300.28	131.52	136.95	5/24/2004 10:38	8614:10:30	8613:46:15	92.81257997
18	80	1077	0.00064	540	13.979	0.0005821	16.48	0.223075094	6316.76	131.86	137.29	6/1/2004 11:01	8806:33:30	8806:09:15	93.84326472
19	82	1076	0.00067	542	13.968	0.000611603	17.32	0.223686697	6334.08	132.23	137.65	6/7/2004 10:42	8950:14:30	8949:50:15	94.60571688
15	83	1078	0.00053	543	13.992	0.000482851	13.67	0.224169549	6347.75	132.51	137.94	6/14/2004 10:56	9118:28:30	9118:04:15	95.49070635
11	81	1082	0.00039	541	14.044	0.000356719	10.10	0.224526267	6357.85	132.72	138.15	6/23/2004 16:34	9340:06:30	9339:42:15	96.6442359
11	81	1082	0.00039	541	14.044	0.000356719	10.10	0.224882986	6367.95	132.93	138.36	7/1/2004 14:00	9529:32:30	9529:08:15	97.61837137
-5	73	1082	-0.0002	533	14.044	-0.000164579	-4.66	0.224718408	6363.29	132.84	138.26	7/7/2004 10:46	9670:18:30	9669:54:15	98.33772589
18	81	1082	0.00064	541	14.044	0.000583722	16.53	0.225302129	6379.82	133.18	138.61	7/13/2004 14:27	9817:59:30	9817:35:15	99.08577934
12	81	1080	0.00042	541	14.018	0.000388428	11.00	0.225690557	6390.82	133.41	138.84	7/19/2004 11:27	9958:59:30	9958:35:15	99.79474769
0	80	1091	0	540	14.161	0	0.00	0.225690557	6390.82	133.41	138.84	7/26/2004 10:28	10126:00:30	10125:36:15	100.6280693
18	82	1079	0.00064	542	14.005	0.000581029	16.45	0.226271587	6407.27	133.75	139.18	8/2/2004 14:48	10298:20:30	10297:56:15	101.4807453
6	81	1086	0.00021	541	14.096	0.000195293	5.53	0.22646688	6412.80	133.87	139.30	8/9/2004 14:11	10465:43:30	10465:19:15	102.3021261
2	80	1088	7.1E-05	540	14.122	6.53384E-05	1.85	0.226532218	6414.65	133.91	139.34	8/16/2004 11:11	10630:43:30	10630:19:15	103.1054072
16	81	1076	0.00057	541	13.966	0.000515986	14.61	0.227048204	6429.26	134.21	139.64	8/23/2004 14:18	10801:50:30	10801:26:15	103.9319088
2	77	1087	7.1E-05	537	14.109	6.5643E-05	1.86	0.227113847	6431.12	134.25	139.68	8/30/2004 16:55	10972:27:30	10972:03:15	104.7495028
6	80	1087	0.00021	540	14.109	0.000195835	5.55	0.227309682	6436.67	134.37	139.79	9/7/2004 16:13	11163:45:30	11163:21:15	105.6586879
22	81	1073	0.00078	541	13.927	0.000707503	20.03	0.228017185	6456.70	134.79	140.21	9/14/2004 18:48	11334:20:30	11333:56:15	106.4628652
2	81	1083	7.1E-05	541	14.057	6.49179E-05	1.84	0.228082103	6458.54	134.82	140.25	9/21/2004 16:53	11500:25:30	11500:01:15	107.2400345
-2	79	1089	-7E-05	539	14.135	-6.55198E-05	-1.86	0.228016584	6456.69	134.78	140.21	9/28/2004 21:13	11672:45:30	11672:21:15	108.0405402
13	81	1085	0.00046	541	14.083	0.000422746	11.97	0.228439329	6468.66	135.03	140.46	10/8/2004 10:21	11901:53:30	11901:29:15	109.0957912
8	80	1079	0.00028	540	14.005	0.000259192	7.34	0.228698521	6476.00	135.19	140.62	10/19/2004 14:20	12169:52:30	12169:28:15	110.3171564
10	81	1086	0.00035	541	14.096	0.000325489	9.22	0.229024009	6485.21	135.38	140.81	10/27/2004 14:09	12361:41:30	12361:17:15	111.1831447
6	80	1095	0.00021	540	14.213	0.000197276	5.59	0.229221286	6490.80	135.50	140.92	11/12/2004 16:34	12748:06:30	12747:42:15	112.9075212
13	79	1080	0.00046	539	14.018	0.000422359	11.96	0.229643644	6502.76	135.75	141.17	11/24/2004 10:58	13030:30:30	13030:06:15	114.151252
9	80	1081	0.00032	540	14.031	0.000292131	8.27	0.229935775	6511.03	135.92	141.35	12/3/2004 16:02	13251:34:30	13251:10:15	115.1154855
6	81	1090	0.00021	541	14.148	0.000196012	5.55	0.230131788	6516.58	136.04	141.46	12/15/2004 17:35	13541:07:30	13540:43:15	116.3863396
-2	80	1100	-7E-05	540	14.278	-6.6059E-05	-1.87	0.230065729	6514.71	136.00	141.42	12/23/2004 12:07	13727:39:30	13727:15:15	117.1650901
14	81	1085	0.00049	541	14.083	0.000455264	12.89	0.230520993	6527.60	136.27	141.69	12/31/2004 18:02	13925:34:30	13925:10:15	118.0066735
8	80	1081	0.00028	540	14.031	0.000259672	7.35	0.230780665	6534.96	136.42	141.85	1/10/2005 14:04	14161:36:30	14161:12:15	119.002556
11	80	1078	0.00039	540	13.992	0.000356058	10.08	0.231136723	6545.04	136.63	142.06	1/20/2005 15:08	14402:40:30	14402:16:15	120.0111453
-4	80	1094	-0.0001	540	14.200	-0.000131397	-3.72	0.231005326	6541.32	136.55	141.98	1/27/2005 16:17	14571:49:30	14571:25:15	120.7138145
4	80	1093	0.00014	540	14.187	0.000131277	3.72	0.231136603	6545.04	136.63	142.06	2/3/2005 15:26	14738:58:30	14738:34:15	121.4041803
4	80	1093	0.00014	540	14.187	0.000131277	3.72	0.231267881	6548.75	136.71	142.13	2/10/2005 14:59	14906:31:30	14906:07:15	122.0922807
9	81	1089	0.00032	541	14.135	0.000293749	8.32	0.231561629	6557.07	136.88	142.31	2/17/2005 14:00	15073:32:30	15073:08:15	122.7743526
85	70	1087	0.003	530	14.109	0.002826675	80.04	0.234388304	6637.11	138.55	143.98	2/24/2005 15:20	15242:52:30	15242:28:15	123.4620387
11	80	1080	0.00039	540	14.018	0.000356719	10.10	0.234745023	6647.21	138.76	144.19	3/3/2005 14:14	15409:46:30	15409:22:15	124.1361148
-2	79	1075	-7E-05	539	13.953	-6.46775E-05	-1.83	0.234680345	6645.38	138.72	144.15	3/10/2005 13:58	15577:30:30	15577:06:15	124.8098888
DECANISTERED 3/10/2005, sample air dried ?? Days															

15	83	1088	0.00053	543	14.122	0.00048733	13.80	0.15622766	4423.86	67.99	70.60	3/8/2004 10:21	6765:53:30	6765:33:00	82.25504037		
10	80	1081	0.00035	540	14.031	0.00032459	9.19	0.15655225	4433.05	68.13	70.74	3/15/2004 11:54	6935:26:30	6935:06:00	83.27929915		
2	81	1097	7.1E-05	541	14.239	6.57571E-05	1.86	0.156618007	4434.91	68.16	70.77	3/22/2004 10:15	7101:47:30	7101:27:00	84.27212865		
8	81	1088	0.00028	541	14.122	0.00026087	7.39	0.156878878	4442.30	68.27	70.88	3/30/2004 20:45	7304:17:30	7303:57:00	85.46514884		
17	83	1080	0.00006	543	14.018	0.000548247	15.52	0.157427124	4457.82	68.51	71.12	4/6/2004 14:52	7466:24:30	7466:04:00	86.40838115		
0	81	1086	0	541	14.096	0	0.00	0.157427124	4457.82	68.51	71.12	4/12/2004 15:09	7610:41:30	7610:21:00	87.23927823		
8	81	1088	0.00028	541	14.122	0.00026087	7.39	0.157687995	4465.21	68.62	71.23	4/19/2004 14:39	7778:11:30	7777:51:00	88.19405687		
4	80	1090	0.00014	540	14.148	0.000130917	3.71	0.157818912	4468.92	68.68	71.29	4/26/2004 11:42	7943:14:30	7942:54:00	89.12486559		
8	80	1083	0.00028	540	14.057	0.000280152	7.37	0.158079064	4476.28	68.79	71.40	5/3/2004 20:05	8119:37:30	8119:17:00	90.10896182		
16	80	1081	0.00057	540	14.031	0.000519344	14.71	0.158598408	4490.99	69.02	71.63	5/10/2004 14:09	8281:41:30	8281:21:00	91.00380029		
7	80	1082	0.00025	540	14.044	0.000227423	6.44	0.158825831	4497.43	69.12	71.73	5/17/2004 9:51	8445:23:30	8445:03:00	91.89881211		
12	80	1075	0.00042	540	13.953	0.000387346	10.97	0.159213177	4508.40	69.29	71.90	5/24/2004 10:39	8614:11:30	8613:51:00	92.81266975		
12	80	1077	0.00042	540	13.979	0.000388067	10.99	0.159601244	4519.39	69.45	72.07	6/1/2004 11:01	8806:33:30	8806:13:00	93.84326472		
13	82	1076	0.00046	542	13.966	0.000418465	11.85	0.160019709	4531.24	69.64	72.25	6/7/2004 10:42	8950:14:30	8949:54:00	94.60571688		
10	83	1078	0.00035	543	13.992	0.000321901	9.12	0.16034161	4540.35	69.78	72.39	6/14/2004 10:56	9118:28:30	9118:08:00	95.49070635		
5	81	1082	0.00018	541	14.044	0.000162145	4.59	0.160503755	4544.94	69.85	72.46	6/23/2004 16:35	9340:07:30	9339:47:00	96.64432213		
6	81	1083	0.00021	541	14.057	0.000194754	5.51	0.160698509	4550.46	69.93	72.54	7/1/2004 14:00	9529:32:30	9529:12:00	97.61937137		
-6	73	1082	-0.0002	533	14.044	-0.000194754	-5.59	0.160501015	4544.87	69.85	72.46	7/7/2004 10:41	9670:13:30	9669:53:00	98.33730218		
13	81	1082	0.00046	541	14.044	0.000421577	11.94	0.160922591	4556.80	70.03	72.64	7/13/2004 14:28	9818:00:30	9817:40:00	99.08586344		
8	81	1080	0.00028	541	14.018	0.000258952	7.33	0.161181544	4564.14	70.14	72.75	7/19/2004 11:28	9959:00:30	9958:40:00	99.7948312		
-3	80	1091	-0.0001	540	14.161	-9.82778E-05	-2.78	0.161083266	4561.35	70.10	72.71	7/26/2004 10:29	10126:01:30	10125:41:00	100.6281521		
14	82	1079	0.00049	542	14.005	0.000451912	12.80	0.161535177	4574.15	70.30	72.91	8/2/2004 14:49	10298:21:30	10298:01:00	101.4808274		
2	81	1086	7.1E-05	541	14.096	6.50977E-05	1.84	0.161600275	4575.99	70.32	72.94	8/9/2004 14:12	10465:44:30	10465:24:00	102.3022075		
-1	80	1088	-4E-05	540	14.122	-3.26692E-05	-0.93	0.161567606	4575.07	70.31	72.92	8/16/2004 11:12	10630:44:30	10630:24:00	103.1054881		
12	81	1076	0.00042	541	13.966	0.00038699	10.96	0.161954595	4586.03	70.48	73.09	8/23/2004 14:19	10801:51:30	10801:31:00	103.931989		
-1	77	1087	-4E-05	537	14.109	-3.28215E-05	-0.93	0.161921774	4585.10	70.46	73.08	8/30/2004 16:56	10972:28:30	10972:08:00	104.7495823		
3	80	1087	0.00011	540	14.109	9.79175E-05	2.77	0.162019691	4587.87	70.51	73.12	9/7/2004 16:14	11163:46:30	11163:26:00	105.6587668		
15	81	1073	0.00053	541	13.927	0.000482388	13.66	0.16250208	4601.53	70.72	73.33	9/14/2004 18:49	11334:21:30	11334:01:00	106.2462935		
-1	81	1084	-4E-05	541	14.070	-3.24889E-05	-0.92	0.162469591	4600.61	70.70	73.32	9/21/2004 16:54	11500:26:30	11500:06:00	107.2401122		
-3	79	1089	-0.0001	539	14.135	-9.82796E-05	-2.78	0.162371311	4597.83	70.66	73.27	9/28/2004 21:14	11672:46:30	11672:26:00	108.0406174		
9	81	1085	0.00032	541	14.083	0.00029267	8.29	0.162683981	4606.11	70.79	73.40	10/8/2004 10:22	11901:54:30	11901:34:00	109.0958676		
6	80	1079	0.00021	540	14.005	0.000194394	5.50	0.162858375	4611.62	70.87	73.48	10/19/2004 14:21	12169:53:30	12169:33:00	110.317322		
6	81	1086	0.00021	541	14.096	0.000195293	5.53	0.163053668	4617.15	70.96	73.57	10/27/2004 14:09	12361:41:30	12361:21:00	111.1831447		
1	80	1095	3.5E-05	540	14.213	3.28794E-05	0.93	0.163086548	4618.08	70.97	73.58	11/12/2004 16:35	12748:07:30	12747:47:00	112.907595		
9	79	1080	0.00032	539	14.018	0.000292402	8.28	0.16337895	4626.36	71.10	73.71	11/24/2004 10:55	13030:27:30	13030:07:00	114.151033		
6	80	1081	0.00021	540	14.031	0.000194754	5.51	0.163573704	4631.87	71.18	73.80	12/3/2004 16:03	13251:35:30	13251:15:00	115.1155579		
3	81	1090	0.00011	541	14.148	9.80062E-05	2.78	0.16367171	4634.65	71.23	73.84	12/15/2004 17:36	13541:08:30	13540:48:00	116.3664112		
-3	80	1100	-0.0001	540	14.278	-9.90885E-05	-2.81	0.163572622	4631.84	71.18	73.80	12/23/2004 12:08	13727:40:30	13727:20:00	117.1651612		
10	81	1085	0.00035	541	14.083	0.000325189	9.21	0.16389781	4641.05	71.32	73.94	12/31/2004 18:03	13925:35:30	13925:15:00	118.0067442		
5	80	1081	0.00018	540	14.031	0.000162295	4.60	0.164080105	4645.65	71.39	74.01	1/10/2005 14:04	14161:36:30	14161:16:00	119.002556		
9	80	1078	0.00032	540	13.992	0.00029132	8.25	0.164351426	4653.90	71.52	74.13	1/20/2005 15:10	14402:42:30	14402:22:00	120.0112842		
-6	80	1094	-0.0002	540	14.200	-0.000197096	-5.58	0.16415433	4648.32	71.44	74.05	1/27/2005 16:18	14571:50:30	14571:30:00	120.7138835		
1	80	1093	3.5E-05	540	14.187	3.28193E-05	0.93	0.164187149	4649.24	71.45	74.06	2/3/2005 15:26	14738:58:30	14738:38:00	121.4041803		
3	80	1093	0.00011	540	14.187	9.8458E-05	2.79	0.164285607	4652.03	71.49	74.11	2/10/2005 15:00	14906:32:30	14906:12:00	122.0923489		
DECANISTERED 2/10/2005, sample air dried 30 days																	

LUMAN'S LABORATORIES

P.O. Box 326 • Chetopa, KS 67336
(620) 236-7874



September 9, 2005

Layne Energy, Inc.
1900 Shawnee Mission Parkway
Mission Woods, KS 66205

Attn: Brent Nattrass

Please find listed below analysis on the following sample.

Lab ID. 90605 Sample ID. Layne-Christensen #16-1 Pierce; NE SE SW
16-T.31S.-R.17E., Montgomery County, KS: Lexington "B" Coal 471.0'-471.8'.

	As Received	Moisture Free	MAF
Moisture	1.42%		
Ash	18.82%	19.10%	
Volatile Matter	33.09%	33.57%	
Fixed Carbon	46.67%	47.33%	
BTU/lb	12,024	12,198	15,078
Sulfur	3.28%	3.33%	

Respectfully,

Carrol Luman

CGL:pdj
c: K. David Newell

APPENDIX 1

LUMAN'S LABORATORIES



P.O. Box 326 • Chetopa, KS 67336
(620) 236-7874

September 9, 2005

Layne Energy, Inc.
1900 Shawnee Mission Parkway
Mission Woods, KS 66205

Attn: Brent Natrass

Please find listed below analysis on the following sample.
Note: This sample required the use of an accelerant.

Lab ID. 90606 Sample ID. Layne-Christensen #16-1 Pierce; NE SE SW
16-T.31S.-R.17E., Montgomery County, KS: Excello Shale 569.0'-570.0'.

	As Received	Moisture Free	MAF
Moisture	0.97%		
Ash	72.10%	72.81%	
Volatile Matter	13.73%	13.86%	
Fixed Carbon	13.20%	13.33%	
BTU/lb	5.286	5.338	19,632
Sulfur	2.44%	2.46%	

Respectfully,

Carrol Luman

CGL:pdj
c: K. David Newell

APPENDIX 1

LUMAN'S LABORATORIES

P.O. Box 326 • Chetopa, KS 67336
(620) 236-7874



ANALYTICAL
AND
PHYSICAL
TESTING

September 9, 2005

Layne Energy, Inc.
1900 Shawnee Mission Parkway
Mission Woods, KS 66205

Attn: Brent Natrass

Please find listed below analysis on the following sample.

Note: This sample required the use of an accelerant.

Lab ID. 90608 Sample ID. Layne-Christensen #16-1 Pierce: NE SE SW
16-T.31S.-R.17E., Montgomery County, KS: Aw(?) Coal 875.5'-875.4'.

	As Received	Moisture Free	MAF
Moisture	2.69%		
Ash	25.21%	25.90%	
Volatile Matter	29.10%	29.90%	
Fixed Carbon	43.00%	44.20%	
BTU/lb	10,577	10,868	14,668
Sulfur	4.63%	4.76%	

Respectfully,

Carrol Luman

CGL:pdI
c: K. David Newell

APPENDIX 1

LUMAN'S LABORATORIES

P.O. Box 326 • Chetopa, KS 67336
(620) 236-7874



September 9, 2005

Layne Energy, Inc.
1900 Shawnee Mission Parkway
Mission Woods, KS 66205

Attn: Brent Natrass

Please find listed below analysis on the following sample.

Lab ID. 90609 Sample ID. Layne-Christensen #16-1 Pierce; NE SE SW
16-T.31S.-R.17E., Montgomery County, KS; Neutral (?) Coal 910.7'-911.4'.

	As Received	Moisture Free	MAF
Moisture	2.61%		
Ash	30.31%	31.13%	
Volatile Matter	26.44%	27.15%	
Fixed Carbon	40.64%	41.72%	
BTU/lb	9,739	10,001	14,520
Sulfur	4.82%	4.95%	

Respectfully,

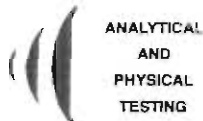
Carrol Luman

CGL:pd1
c: K. David Newell

APPENDIX 1

LUMAN'S LABORATORIES

P.O. Box 326 • Chetopa, KS 67336
(620) 236-7874



September 9, 2005

Layne Energy, Inc.
1900 Shawnee Mission Parkway
Mission Woods, KS 66205

Attn: Brent Natrass

Please find listed below analysis on the following sample.

Lab ID: 90610 Sample ID: Layne-Christensen #16-1 Pierce; NE SE SW
16-T.31S.-R.17E., Montgomery County, KS; Riverton Coal 982.0'-983.0'.

	As Received	Moisture Free	MAF
Moisture	1.41%		
Ash	8.86%	8.99%	
Volatile Matter	35.13%	35.64%	
Fixed Carbon	54.60%	55.37%	
BTU/lb	13,792	13,990	15,372
Sulfur	3.93%	3.98%	

Respectfully,

Carrol Luman

CGL:pdI
c: K. David Newell

LUMAN'S LABORATORIES

P.O. Box 326 • Chetopa, KS 67336
(620) 236-7874



September 9, 2005

Layne Energy, Inc.
1900 Shawnee Mission Parkway
Mission Woods, KS 66205

Attn: Brent Natrass

Please find listed below analysis on the following sample.

Lab ID. 90611 Sample ID. Layne-Christensen #16-1 Pierce; NE SE SW
16-T.31S.-R.17E., Montgomery County, KS: Riverton Coal 983.0'-984.0'

	As Received	Moisture Free	MAF
Moisture	1.84%		
Ash	41.64%	42.42%	
Volatile Matter	22.56%	22.99%	
Fixed Carbon	33.96%	34.59%	
BTU/lb	8,235	8,390	14,571
Sulfur	4.48%	4.56%	

Respectfully,

Carol Luman

CGL:pdl
c: K. David Newell

APPENDIX 1