

**JAMES BRUCE**  
ATTORNEY AT LAW

POST OFFICE BOX 1056  
SANTA FE, NEW MEXICO 87504

369 MONTEZUMA, NO. 213  
SANTA FE, NEW MEXICO 87501

(505) 982-2043 (PHONE)  
(505) 982-2151 (FAX)

jamesbruc@aol.com

December 2, 2002

Lori Wrotenbery  
Oil Conservation Commission  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

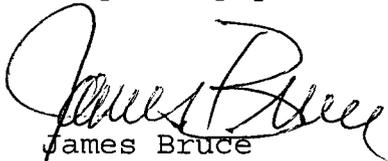
Re: Case No. 12734 (*de novo*)

Dear Ms. Wrotenbery:

Enclosed are an original and three copies of:

1. The affidavit of Dan Paul Smith, which was attached as Exhibit A to San Juan Coal Company's Motion to Supplement the Record, filed on November 12, 2002; and
2. The affidavit of Dan Paul Smith, which was attached as Exhibit A to San Juan Coal Company's Objection and Motion to Strike, filed on November 19, 2002.

Very truly yours,



James Bruce

Attorney for San Juan Coal Company

cc: W. Thomas Kellahin w/encl.

**RECEIVED**

DEC 03 2002

OIL CONSERVATION  
DIVISION

*Application of Richardson Operating  
Co.  
Record on Appeal, 2062.*

**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION COMMISSION**

**IN THE MATTER OF THE APPLICATION OF  
RICHARDSON OPERATING COMPANY TO  
ESTABLISH A SPECIAL "INFILL WELL" AREA  
WITHIN THE BASIN-FRUITLAND COAL GAS  
POOL AS PROVIDED BY RULE 4  
OF THE SPECIAL RULES FOR THIS POOL,  
SAN JUAN COUNTY, NEW MEXICO.**

**Case No. 12734 (De Novo)**

**AFFIDAVIT OF DAN PAUL SMITH**

I, Dan Paul Smith, being first duly sworn, state the following based on my personal knowledge:

1. My name is Dan Paul Smith, and I testified in this proceeding on October 31, 2002.
2. I, and others under my supervision at Netherland Sewell & Associates, Inc. ("NSAI"), have reviewed Richardson Operating Company's Response to the Request of Commissioner Dr. Robert Lee Concerning Reservoir Simulation for Coalbed Methane Wells in the Underpressured Area of the Basin-Fruitland Coal Gas Pool, and associated materials, consisting of five bound volumes.
3. Based upon my review of the Response and associated materials, I believe the model and the backup data are flawed by deficiencies which render the model inaccurate and not based upon fundamental engineering and simulation principals. The model is not reliable and over estimates gas volumes, as further described below.
4. The model only covers a limited portion of Deep Lease or Deep Lease Extension.
5. Model grid blocks are very large with 880 foot sides.
6. There appears to be only one layer for each coal which does not allow for vertical variations in coal quality.
7. Gas contents are 237 scf per ton for the lower coal and 187 scf per ton for the upper coal based on the coal being fully saturated which we do not believe to be the case.
8. Gas production rates are arbitrarily increased over a 5 year period as a specified condition. It is our understanding that the basis of this increase is an analogy well, the Ropco Fee 6-1, located approximately 15 miles to the east of the project area that is deeper in the basin, under higher pressure, with higher permeability and in communication with a much more prolific Pictured Cliffs section.
9. Model rates are projected to a peak producing rate of 500 MCF per day per well again based on a well located 15 miles to the east. This projected peak is higher than any well in the project area.
10. Model permeability values had to be increased by a factor of 3 in order to allow producing rates at these levels.
11. Model permeability is not directional although it is known in San Juan Basin that a southwest to northeast directional permeability exists.



*Application of Richardson Operating  
Co.  
Record on Appeal, 2063.*

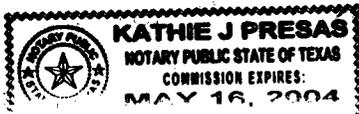
12. The relative permeability curve used in the model is based on data from other regions of the San Juan Basin and is not likely to be applicable to the project area.
13. Infill wells in the model start at specified water rates of 20 BWPD which is less than most existing wells.
14. All infill wells have a -3 skin factor as compared to a range of 0 to -3 for the existing wells.
15. The model does not match actual water production for the existing wells. In general, the model water rates are too low which could be an indication of unrealistically high gas-in-place values in the model and/or unrepresentative relative permeability curves.
16. Based on performance, well WF Federal 30-1 appears to be non-commercial at current rates yet it produces at rates in excess of 100 MCFD in the model.
17. No information is provided regarding whether this is a dual porosity model to properly model the interaction between the coal matrix and the cleat system.
18. It appears that the 320 acre versus 160 acre results comparison is based on simulations run to 2020. The 320 acre spacing model is at higher pressure at the end than the 160 acre spacing model due to the lower production rate and could produce more gas.
19. This model can be characterized as a big cup with the 160-acre case having more straws than the 320-acre case.
20. The model does not attempt to simulate connection of the Fruitland Coal to the Pictured Cliffs which is known to exist in actual field conditions.
21. The model boundary is specified to be no flow conditions which is not correct in this or other parts of the San Juan Basin.
22. There is no isolated historical production that can be used to calibrate the predicted model gas production from the upper coal seam.

*Dan Paul Smith*

Dan Paul Smith

STATE OF TEXAS )  
 ) ss.  
 COUNTY OF DALLAS )

This instrument was acknowledged before me on November 19, 2002, by Dan Paul Smith.



*Kathie J. Presas*  
 Notary Public

*Application of Richardson Operating Co.*  
 Record on Appeal, 2064.

RECEIVED

DEC 03 2002

STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION COMMISSION

DEPARTMENT OF  
OIL CONSERVATION  
DIVISION

IN THE MATTER OF THE APPLICATION OF  
RICHARDSON OPERATING COMPANY TO  
ESTABLISH A SPECIAL "INFILL WELL" AREA  
WITHIN THE BASIN-FRUITLAND COAL GAS  
POOL AS PROVIDED BY RULE 4  
OF THE SPECIAL RULES FOR THIS POOL,  
SAN JUAN COUNTY, NEW MEXICO.

Case No. 12734 (De Novo)

AFFIDAVIT OF DAN PAUL SMITH

I, Dan Paul Smith, being first duly sworn, state the following based on my personal knowledge:

1. My name is Dan Paul Smith, and I testified in this proceeding on October 31, 2002.
2. During my testimony, Commissioner Lee asked me questions about the back-up desorption data from the San Juan Underground mine area that I used in my analysis. I testified that I had no reason to doubt the validity of the desorption data, collected by several firms expert in the field, but the desorption data itself was not with me in Santa Fe during the hearing.
3. I have reviewed that data again, and I summarize it here to further address Commissioner Lee's questions. Because the desorption data itself is voluminous and contained in two binders, each about 3" thick, I prepared the summary which is Exhibit 1. The Exhibit 1 summary fairly and accurately summarizes the desorption data collected for the San Juan Underground mine area. The two binders are on file in my offices in Dallas, Texas and are available to submit to the Commission and counsel for Richardson Operating Company, if the Commission desires.

*Application of Richardson Operating  
Co.  
Record on Appeal, 2069.*



4. During the third quarter of 2002, San Juan Coal Company provided my firm, Netherland, Sewell & Associates, Inc. (NSAI), with the two binders of data and associated reports from desorption tests to assist the NSAI analysis, which was the subject of my testimony. These tests were conducted on San Juan Coal Company test wells located in their Deep Lease and Deep Lease Extension. The data was taken by firms with experience in collecting, analyzing and reporting coalbed methane desorption test results: Rocky Mountain Geo-Engineering Corp., Commercial Testing and Engineering Co. and Raven Ridge Resources Incorporated.

5. Gas content of the coal cores were measured by placing the core samples in desorption canisters at reservoir temperature and measuring the gas that evolved from the cores. Gas content is the volume of gas at standard temperature and pressure conditions per unit weight of coal.

6. Estimating the total sorbed gas content of coal requires estimates of three components: desorbed gas, lost gas and residual gas. Desorbed gas is the volume of gas that is released from the desorption canister as a function of time and measurement conditions. Lost gas is the volume of gas that is lost before sealing a sample in the canister. Residual gas is the volume of gas that remains sorbed on the coal at the conclusion of the desorption test; these volumes were negligible in relation to desorbed gas in the San Juan Mine data.

7. The desorbed gas and lost gas estimates summarized in the columns labeled "Desorption" and "Lost Gas" in Exhibit 1 are from 95 samples taken from 18 holes spread throughout the mine area, as shown on San Juan Exhibit 46, submitted at hearing. Multiple desorption tests were performed on the 95 samples at various depths within coal seams 8 and 9. For any given sample, the "Desorption" number in Exhibit 1 is the sum of the desorbed gas estimate for that sample plus the corresponding "Lost Gas" number.

8. In general, the tests measured desorption time, gas volume, temperature, pressure, gas volume at standard conditions, desorption rate and cumulative gas volume. The samples were desorbed according to standard protocols until they stopped releasing measurable gas volumes. These methods are commonly used and accepted in the industry as valid.

9. The Exhibit 1 summary shows as “Time To Closed Canister” (in the far right column) the time from starting to surface with the core sample until the canister is sealed with the core sample inside. This time is an important item in assessing the validity of the desorption tests, and it was raised by Mr. Dave Cox, on behalf of Richardson Operating Company. In general, as shown in Exhibit 1, this time varied from 18 to 78 minutes with an average of approximately 45 minutes. This time is reasonable and does not materially diminish the validity of the tests.

10. The Exhibit 1 summary also shows the magnitude of the “lost gas” correlation. Lost gas is generally considered to be the greatest potential source of error in the total gas content estimate. Several methods are used to estimate the lost gas. The USBM method uses a plot of cumulative desorbed gas versus the square root of time since the start of desorption to estimate lost gas. The Smith and Williams method estimates lost gas by multiplying the volume of desorbed gas by a volume correction factor and subtracting this from the desorbed gas. Other methods are used including the decline curve method and the Raven Ridge method.

11. The Exhibit 1 summary shows that the lost gas volumes are generally small in comparison to desorbed gas volumes. In the 95 samples, average lost gas for the three techniques is in the range of 5 to 10 percent of total desorbed gas. This result is expected in relatively low permeability coals such as those contained in the Deep Lease and Deep Lease Extension. Therefore, large errors could occur in the measurement of lost gas volumes and still

not materially effect the total gas content estimates from the desorption tests. Even if there were a 100% error in the lost gas correlation, the gas content estimate is still an order of magnitude less than the fully saturated isotherm value proposed by Mr. Cox, as compared on San Juan Exhibit 47, submitted at hearing.

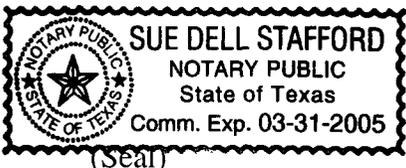
*Dan Paul Smith*

Dan Paul Smith

STATE OF TEXAS            )  
  ) ss.  
COUNTY OF Dallas        )

This instrument was acknowledged before me on November 12, 2002, by Dan Paul Smith.

*Sue Dell Stafford*  
Notary Public



My commission expires: March 31, 2005

W0263736.DOC

**Summary of Desorption Data  
for  
San Juan Underground Mine**

		Gas Content - SCF per Ton of Raw Coal									Time To Closed
		USBM			Smith & Williams			Raven Ridge			Canister
Hole	Canister	Desorption	Lost Gas	% Lost	Desorption	Lost Gas	% Lost	Desorption	Lost Gas	% Lost	(minutes)
E/94	129	54.11	4.65	8.6%	53.02	3.56	6.7%	49.70	0.23	0.5%	43
E/94	119	48.90	4.57	9.3%	47.66	3.33	7.0%	44.92	0.58	1.3%	43
E/94	126	84.77	11.40	13.4%	84.45	11.08	13.1%	82.24	8.87	10.8%	44
E/94	125	59.86	5.52	9.2%	57.93	3.59	6.2%	57.62	3.28	5.7%	60
E/94	128	70.20	11.04	15.7%	68.15	8.99	13.2%	60.47	1.31	2.2%	46
E/94	132	42.83	2.95	6.9%	42.64	2.75	6.4%	42.83	2.95	6.9%	29
E/94	123	41.67	3.71	8.9%	40.43	2.47	6.1%	40.75	2.78	6.8%	43
J/94	160	47.46	4.92	10.4%	45.61	3.06	6.7%	42.85	0.30	0.7%	43
J/94	177	43.81	5.32	12.1%	41.42	2.93	7.1%	39.59	1.10	2.8%	48
J/94	188	41.01	8.42	20.5%	37.84	5.25	13.9%	36.18	3.59	9.9%	51
J/94	193	56.22	12.49	22.2%	49.67	5.95	12.0%	49.43	5.71	11.6%	68
J/94	153	27.70	3.91	14.1%	25.64	1.86	7.3%	24.20	0.42	1.7%	53
J/94	179	30.52	4.94	16.2%	27.61	2.02	7.3%	26.44	0.85	3.2%	61
J/94	181	44.03	9.23	21.0%	38.25	3.45	9.0%	37.93	3.12	8.2%	73
Q/94	172	43.85	3.01	6.9%	43.66	2.82	6.5%	41.80	0.91	2.2%	48
Q/94	180	38.84	3.24	8.3%	38.16	2.56	6.7%	37.49	1.89	5.0%	50
Q/94	220	36.90	3.83	10.4%	35.51	2.45	6.9%	34.56	1.50	4.3%	53
Q/94	184	38.14	2.16	5.7%	38.50	2.52	6.5%	35.98	0.00	0.0%	35
Q/94	202	39.02	2.51	6.4%	39.13	2.63	6.7%	36.51	0.00	0.0%	37
Q/94	248	52.31	3.50	6.7%	52.48	3.66	7.0%	48.81	0.00	0.0%	43
Q/94	265	40.52	3.21	7.9%	40.30	2.98	7.4%	37.31	0.00	0.0%	49
Q/94	309	44.41	3.66	8.2%	44.38	3.63	8.2%	41.47	0.72	1.7%	58
Q/94	116	56.32	3.53	6.3%	56.92	4.12	7.2%	52.97	0.18	0.3%	38
Q/94	8	0.15	0.10	66.7%	0.09	0.04	44.4%	0.05	0.00	0.0%	33
Q/94	134	0.30	0.09	30.0%	0.25	0.04	16.0%	0.24	0.02	8.3%	32
D 294-06	1	29.95	1.25	4.2%	30.71	2.01	6.5%	28.70	0.00	0.0%	19
D 294-06	8	37.47	2.59	6.9%	37.46	2.58	6.9%	34.88	0.00	0.0%	19
D 294-06	13	31.66	1.62	5.1%	32.14	2.10	6.5%	30.03	0.00	0.0%	18
D 294-06	40	35.30	3.07	8.7%	34.77	2.55	7.3%	33.11	0.89	2.7%	24
D 294-06	48	26.82	2.90	10.8%	26.36	2.44	9.3%	25.25	1.33	5.3%	24
D 294-07	58	22.24	0.35	1.6%	23.70	1.82	7.7%	21.89	0.00	0.0%	36
D 294-07	33	12.36	1.06	8.6%	12.32	1.02	8.3%	11.30	0.00	0.0%	21
D 294-07	82	10.78	0.19	1.8%	11.28	0.69	6.1%	10.59	0.00	0.0%	58
D 294-15	76	18.45	1.13	6.1%	18.67	1.35	7.2%	17.32	0.00	0.0%	41
D 294-15	73	8.84	0.36	4.1%	9.15	0.67	7.3%	8.48	0.00	0.0%	59
D 294-15	81	11.69	0.45	3.8%	12.25	1.01	8.2%	11.24	0.00	0.0%	48
D 294-15	92	7.83	0.36	4.6%	8.15	0.67	8.2%	7.47	0.00	0.0%	48
D 294-15	65	10.38	0.23	2.2%	11.03	0.88	8.0%	10.15	0.00	0.0%	45
D 294-17	168	37.96	2.91	7.7%	38.20	3.15	8.2%	35.05	0.00	0.0%	43
D 294-17	158	44.12	1.60	3.6%	45.42	2.89	6.4%	42.52	0.00	0.0%	20
D 294-17	183	37.55	1.18	3.1%	39.24	2.87	7.3%	36.37	0.00	0.0%	34
D 294-17	202	39.86	1.87	4.7%	41.10	3.12	7.6%	37.99	0.00	0.0%	41
DLP 9705	122	15.63	2.58	16.5%	15.26	2.21	14.5%	14.20	1.15	8.1%	19
DLP 9705	123	13.97	4.47	32.0%	12.86	3.35	26.0%	11.99	2.49	20.8%	20
DLP 9705	131	7.69	2.10	27.3%	7.48	1.89	25.3%	8.19	2.59	31.6%	21
DLP 9705	132	3.70	1.56	42.2%	3.46	1.33	38.4%	3.12	0.98	31.4%	23
DLP 9705	154	8.56	3.14	36.7%	8.46	3.04	35.9%	7.41	1.99	26.9%	24
DX 9707	335	50.98	1.95	3.8%	52.27	3.24	6.2%	46.65	0.00	0.0%	46
DX 9707	170	47.33	1.72	3.6%	48.92	3.11	6.4%	46.02	0.22	0.5%	48
DX 9707	307	52.38	3.45	6.6%	52.26	3.33	6.4%	75.65	26.72	35.3%	47
DX 9708	272	77.59	8.18	10.5%	75.65	6.25	8.3%	74.68	5.27	7.1%	64
DX 9708	16	119.37	20.86	17.5%	112.50	13.99	12.4%	113.04	14.53	12.9%	64
DX 9708	174	108.26	17.10	15.8%	100.27	9.12	9.1%	102.25	11.09	10.8%	68
DX 9708	251	80.43	7.42	9.2%	77.76	4.75	6.1%	75.74	2.73	3.6%	70
DX 9708	10	95.98	12.58	13.1%	89.49	6.09	6.8%	89.95	6.55	7.3%	72
DX 9711	124	71.65	4.57	6.4%	71.44	4.36	6.1%	67.44	0.37	0.5%	34
DX 9711	118	48.26	2.40	5.0%	53.70	3.12	5.8%	45.86	0.01	0.0%	36
DX 9711	116	52.84	2.30	4.4%	53.70	2.00	3.7%	52.82	2.00	3.8%	30
DX 9711	114	60.75	3.20	5.3%	61.23	3.68	6.0%	52.82	4.32	8.2%	34
DX 9712	157	73.68	10.54	14.3%	67.05	3.91	5.8%	67.42	4.28	6.3%	43
DX 9712	142	111.53	24.07	21.6%	107.75	20.29	18.8%	102.96	15.49	15.0%	43
DX 9712	8	72.39	9.65	13.3%	66.69	3.95	5.9%	64.50	1.76	2.7%	43
DX 9712	127	73.60	14.75	20.0%	65.09	6.24	9.6%	64.91	6.06	9.3%	44
DX 9713	7	45.61	2.42	5.3%	45.69	2.50	5.5%	43.63	0.45	1.0%	69
DX 9713	40	53.08	6.67	12.6%	49.38	2.97	6.0%	50.54	4.13	8.2%	78
DX 9713	113	48.65	5.19	10.7%	46.11	2.65	5.7%	47.08	3.62	7.7%	72
DX 9713	123	34.06	3.18	9.3%	32.79	1.91	5.8%	32.12	1.25	3.9%	73
DX 9717	253	89.93	10.26	11.4%	84.68	5.02	5.9%	80.10	0.44	0.5%	48
DX 9717	172	94.75	11.49	12.1%	88.43	5.16	5.8%	85.24	1.97	2.3%	53
DX 9717	202	126.23	18.76	14.9%	114.25	6.77	5.9%	113.80	6.32	5.6%	55
DX 9717	131	117.12	18.10	15.5%	105.46	6.44	6.1%	105.10	6.06	5.8%	57
DX 9717	273	116.86	13.41	11.5%	110.17	6.72	6.1%	107.31	3.86	3.6%	57
DL 2000-07	37	21.70	0.60	2.8%	23.00	0.80	3.5%	22.20	0.00	0.0%	37
DL 2000-07	67	21.80	0.80	3.7%	22.10	0.70	3.2%	21.40	0.00	0.0%	41
DL 2000-07	80	21.80	0.70	3.2%	23.40	0.90	3.8%	22.50	0.00	0.0%	40
DL 2000-07	245	21.20	0.60	2.8%	21.70	0.60	2.8%	21.10	0.00	0.0%	34
DL 2000-07	919	19.50	0.60	3.1%	20.10	0.70	3.5%	19.40	0.00	0.0%	34
DL 2000-11	4	30.60	0.00	0.0%	32.20	1.10	3.4%	31.10	0.00	0.0%	28
DL 2000-11	84	29.80	0.00	0.0%	31.80	1.50	4.7%	30.30	0.00	0.0%	30
DL 2000-11	86	38.40	0.50	1.3%	40.20	1.90	4.7%	38.30	0.00	0.0%	40
DL 2000-11	89	38.20	0.00	0.0%	42.70	2.10	4.9%	40.60	0.00	0.0%	37
DL 2000-11	96	44.00	0.20	0.5%	46.20	1.50	3.2%	44.80	0.00	0.0%	35
DL 2000-11	229	37.40	0.00	0.0%	39.70	1.30	3.3%	38.40	0.00	0.0%	35
DL 2000-11	307	26.90	0.00	0.0%	29.20	1.00	3.4%	28.20	0.00	0.0%	37
DL 2000-13	115	53.10	3.60	6.8%	51.60	1.60	3.1%	50.00	0.00	0.0%	62
DL 2000-13	240	35.90	0.00	0.0%	37.70	1.00	2.7%	36.70	0.00	0.0%	50
DL 2000-13	247	42.50	0.00	0.0%	47.30	4.50	9.5%	44.90	2.10	4.7%	54
DL 2000-13	908	30.30	0.00	0.0%	32.10	0.80	2.5%	31.20	0.00	0.0%	55
DL 2000-13	911	30.50	0.20	0.7%	32.70	1.40	4.3%	31.30	0.00	0.0%	56
DL 2000-13	917	24.60	0.00	0.0%	26.60	1.20	4.5%	25.40	0.00	0.0%	58
DL 2000-17	17	14.20	0.00	0.0%	15.10	0.60	4.0%	14.50	0.00	0.0%	50
DL 2000-17	29	9.40	0.00	0.0%	11.20	1.80	16.1%	10.00	0.60	6.0%	57
DL 2000-17	30	11.30	0.00	0.0%	12.60	2.00	15.9%	11.10	0.50	4.5%	59
DL 2000-17	47	9.10	0.00	0.0%	9.80	1.70	17.3%	9.00	1.00	11.1%	61
DL 2000-17	260	9.50	0.00	0.0%	11.20	2.20	19.6%	10.60	1.60	15.1%	48
Average		43.18	4.22	9.8%	42.34	3.18	7.5%	40.95	1.97	4.8%	44.97

**Exhibit 1 to Affidavit of Dan Paul Smith**

*Application of Richardson Operating  
Co.  
Record on Appeal, 2073.*