

Basic Evaluation Methodologies
Deep Lease and Deep Lease Extension
San Juan Basin
San Juan County, New Mexico
Based on Estimates as of January 1, 2002

Scope and Objective of Study

- 1-Estimate the proved, probable and possible gas reserves in the Fruitland Coal and Pictured Cliffs
- 2-Estimate original gas in place in the Fruitland Coal and Pictured Cliffs
- 2-Determine level of saturation of Fruitland coal
- 3-Asses commerciality of drilling program

Fruitland Coal Analysis Process

- 1-Prepare geologic maps of major S8 and S9 coals including structure and isopachs
- 2-NSAI interpreted logs for 176 wells in area for tops and net pays; cutoff of approximately 1.7 g/cc used
- 3-Obtained results of 42 core sample tests acquired by BHP in S8 and S9 coals
- 4-Ash content, moisture content and specific gravity estimated for each 160 acre tract based on core sample results
- 5-Estimated bulk coal volume for each 160 acre tract
- 6-Obtain results of 18 desorption tests run by BHP on core well samples
- 7-Based on this information, estimate gas content across Deep Lease and Deep Lease Extension
- 8-Using available isotherm data, estimated degree of undersaturation of coal
- 9-Estimate pressures in each 160 acre tract
- 10-Estimate original gas in place for each 160 acre tract
- 11-Determine theoretical gas reserves to 10 psi abandonment pressure
- 12-Project proved developed producing reserves based on decline curve extrapolation
- 13-Assign proved, probable and possible undeveloped reserves for undrilled offsets based on SPE/WPC definitions

Pictured Cliffs (PC) Analysis Process

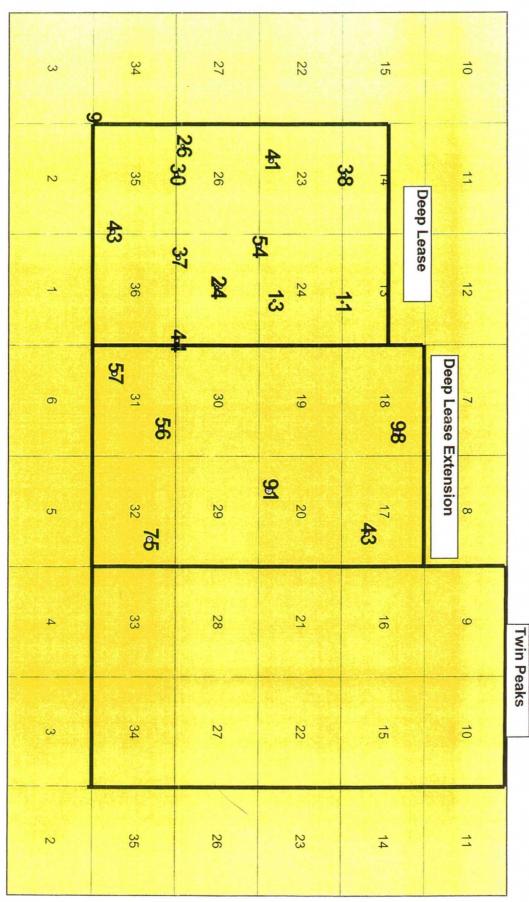
- 1-Prepare geologic maps of major PC including structure and isopachs
- 2-Estimate current pressures in each 160 acre tract
- 3-Estimate current gas in place for each 160 acre tract
- 4-Determine theoretical gas reserves to 25 psi abandonment pressure

5-Project proved developed producing reserves based on decline curve extrapolation

- 6-Assign proved, probable and possible undeveloped reserves for undrilled offsets based on SPE/WPC definitions
- 7-Add PC reserves to coal completion wells as behind pipe reserves with minimal additional investment

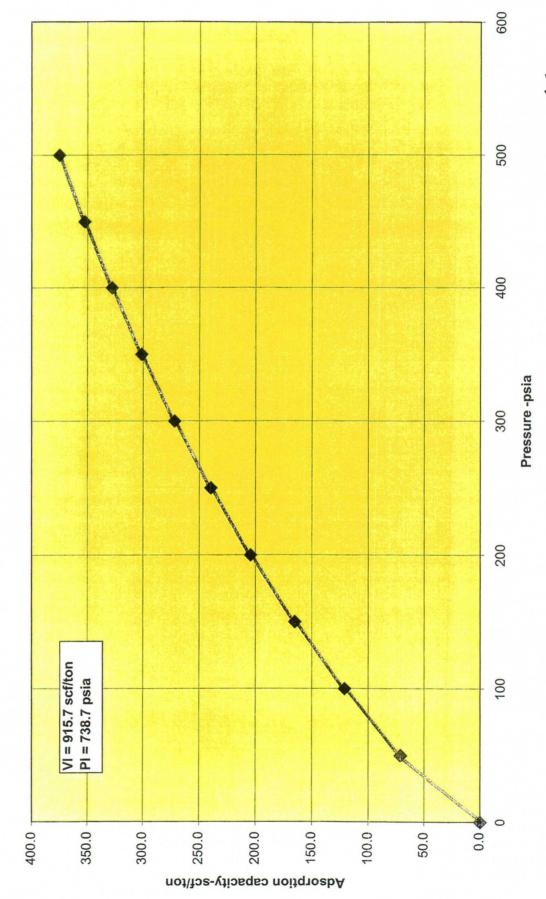


Deep Lease and Deep Lease Extension Desorption Gas Content SCF/Ton





Deep Lease and Deep Lease Extension Adsorption Isotherm



San Juan Coal Co. Exhibit No. 47
Before the Oil Conservation Commission
Hearing Dates: October 29-31, 2002



8 Coal Gas Content by Quarter Section Deep Lease and Deep Lease Extension

SCF/Ton Twin Peaks

ω	34	27	22	15	10
2	1.5 2.4 3.5 8 2.0	28 41 26 18 30	38 47 23 35 49	Deep Lease 36 43 52	3
1	37 47 36 32 44	54 62 44 25 54	59 63 59 68	ease 18 60	12
6	58 67 31 53 65	69 74 30 65 69	74 82 19 73 77	65 72 18 72 77	7 8 Deep Lease Extension
SI .	73 75 32 69 74	79 82 29 76 79	82 85 84	7.9 8.4 17 82 86	8 Extension
4	79 83 33 79	83 89 28 89	75 89 21 84 89	849 945 849 945	80 89 87 94
ယ	849 94 34 942	92 97 90 27 94	94 100 22 94 100	99 107 15 97 104	96 104 10 99 197
2	35	26	23	14	1

San Juan Coal Co. Exhibit No. <u>50</u>
Before the Oil Conservation Commission
Hearing Dates: October 29-31, 2002



Deep Lease and Deep Lease Extension 8 & 9 Coal Reserves-By Quarter Section MMCF

Twin Peaks

ω	34	27	22	15	10
2	35	26 (3)	9 23 (P) 9 (23	Deep Lease	11
1	69 (4) 36 8 (2)	(4) (20) (25) (5) (5)	(T) 200 24 (254)	(2) (6)	12
6	200 253 31 226	232) 278 230 259	228 19 254 304	(18) (24) (18) (27)	7 8 Deep Lease Extension
Ó	345 32 32 253 290	300 297 29 308	313 344 275 20 349	305 322	8 Extension
4	394 486 322 33 401	381 379 28 369	255 299 323 21 402	318 354 16 314	200 246 292
ω	434 404 399	393 420 374 27 398	346 22 367 22 399	353 15 327 360	274 304
2	35	26	23	14	11

San Juan Coal Co. Exhibit No. 53

Before the Oil Conservation Commission

Hearing Dates: October 29-31, 2002



Deep Lease and Deep Lease Extension Pictured Cliffs Volumetric Reserves MMCF

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4	33	28	21	16	9	4
ω	34	27	22	15 	10	ယ
2	35	26	23	Deep Lease	11	2
4	36	25	24	ease	12	1
6	31 ©	©	19	18	7 8 Deep Lease Extension	6
O	0 32 192 0 0	79 29 (114)	20	17	8 Extension	5
4	183	28 140	21 (et)	16	9	4 Twin Peaks
ယ	175	114	22	15	10	3 eaks
2	35	26	23	14	11	2
1	36	25	24	13	12	1

San Juan Coal Co. Exhibit No. 55
Before the Oil Conservation Commission



Deep Lease and Deep Lease Extension 8 & 9 Coal & PC Reserves-By Quarter Section MMCF

ω	34	27	22	15	10	
N	35	76 26	© (1) O 23 O (2)	Deep Lease	= =====================================	
1	69 36 129	(4) 200 25 (2) (5)	177) 200) 216 254	13 (13) (13)	12	
6	200 253 253 290 226	232 287 30 230 259	228 263 19 254 304	183 241	7 8 Deep Lease Extension	MM
ڻ ن	345 32 270 290	300 410 29 355 308	313 344 20 275 349	305 17 321 340	8 Extension	MMCF
4	394 599 33 401	381 519 28 369	255 299 21 402	318 354 16 335 314	2000 246 9 248 292	Twin Peaks
3	434 578 34 399	393 533 27 398 398	317 346 22 399	353 (414) 15 327 (360)	274 304 10 314 287	eaks
2	35	26	23	14	11	

San Juan Coal Co. Exhibit No. 56
Before the Oil Conservation Commission

Hearing Dates: October 29-31, 2002