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December 13, 2001

HAND DELIVERY

Mr. Michael E. Stogner, Hearing Examiner
Oil Conservation Division
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505

OIL CONSERVATION DIV.
01 DEC 13 AM 8:54

Re: ***NMOCD Case: 12734***
Application of Richardson Operating Company to establish a Special "Infill Well" Area within the Basin-Fruitland Coal Gas Pool, San Juan County, New Mexico

Dear Mr. Stogner:

On behalf of Richardson Operating Company, please find enclosed:

(a) our proposed order;

(b) a motion to strike SJCC's written "summary of testimony" of the SJCC witnesses.

Very truly yours,

W. Thomas Kellahin

cc: David Brooks, Esq. Division Attorney

James Bruce, Esq.,
Larry P. Ausherman, Esq.
Attorneys for San Juan Coal Company

Richardson Operating Company
Attn: Cathy Colby
Bjork, Lindley, Danielson & Little
Attn: Laura Lindley, Esq.

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

CASE NO. 12734

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

RICHARDSON OPERATING COMPANY'S PROPOSED ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on November 13-14, 2001, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this ___ day of November, 2001, the Division Director, having considered the testimony, the record and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

Issue

(2) The fundamental issue involved in this case concerns when and how to remove the coalbed methane ("CBM") from the coal:

> should the Division allow coalbed methane ("CBM") to be vented and thereby wasted when San Juan Coal Company ("SJCC") mines the coal;
>
> should Richardson Operating Company ("Richardson") as the owner of the CBM be afforded its right to produce and sell the CBM before the coal is mined.

Background

(3) Effective October 17, 1988, Division Order R-8768 created the Basin-Fruitland Coal Gas Pool, established special rules and regulations for this pool ("Pool Rules") and authorized the production of gas from the coal seam within the Fruitland formation.

(4) Rule 4 of the Pool provides for one parent well and for an exception from Rule 4 for "specifically defined areas of the pool" for the drilling of an optional second well within a 320-acre gas proration and spacing unit ("GPU") providing this **one optional** "infill well" to be located on the opposite 160-acres from the 160-acres containing the original well ("the initial well") **and** further providing that these infill wells were not closer than 660 feet to the outer boundary of the GPU and not closer than 10 feet to any quarter, quarter-quarter line or subdivision inner boundary.

(5) Rule 4 of the Pool provides a procedure to allow an oil and gas operator to drill a second well on a gas spacing unit in this pool and an opportunity for other oil and gas operators and certain oil and gas interest owners to complain about whether the optional infill well might cause the waste of hydrocarbons or adversely affect oil and gas correlative rights.

Richardson's Request

(6) Richardson is the current operator of wells in the Basin Fruitland Coal Gas Pool and within the proposed Special "Infill Well" Area.

(7) San Juan Coal Company ("SJCC") has certain state and federal coal leases which are subject to the prior existing rights of Richardson as the oil and gas lessee.

(8) Richardson's application is an attempt to prevent the waste of valuable gas resources by accelerating the production of gas from the Fruitland formation prior SJCC mining the coal and venting the gas.

(9) In addition to accelerating the rate of recovery, Richardson's petroleum engineering study demonstrates that infill drilling will increase ultimate CBM recovery.

(10) Furthermore, by allowing Richardson to produce the CBM through additional "infill wells" the waste of significant quantities of CBM can be prevented.

(11) In accordance with Rule 4 of the Pool, Richardson seeks the creation of a Special "Infill Well" Area within the western edge of the Basin Fruitland Coal Gas Pool and allowing it to produce 2 CBM wells per 320-acre spacing unit ("infill drilling").

(12) On August 20, 2001, SJCC filed for a Coal Exploration License on 5,800 additional acres ("Twin Peaks Extension") located east of their current Deep Coal Lease Extension Area.

(13) Richardson's application includes an area of Richardson's gas leases that will be immediately affected by SJCC's current mine plan and a so-called "buffer" area which covers part of the Twin Peaks Extension which SJCC also plans to mine.

San Juan Coal Company's position

(14) SJCC, which owns no oil and gas interest, seeks to complain about oil and gas exploration and development which is occurring in an area which SJCC would like to mine.

(15) SJCC's protest essentially asks the Division to allow too few Basin-Fruitland Coal Gas wells in the vicinity of its mine for the purpose of simplifying its coal mining operations.

The mine plan:

(16) SJCC mine plan involves converting to underground mine system (consisting of "mine districts") to mine the Coal Seam #8 with a continuous miner which will construct a network of tunnels around coal blocks each approximately 10,000 feet long

and 1,000 feet wide. These coal blocks are then mined by a "longwall" miner contraption which runs parallel to the 1,000 foot face of the coal block. The mine plan is to mine each mine district through the system, expanding the mining in an easterly direction towards Richardson's existing CBM wells and gathering system.

(17) Mining operations are currently underway one-half mile from the west edge of Richardson's Special "Infill Well" Area.

(18) The longwall miner process allows for the extraction of the coal but vents the CBM and leaves behind a void which then collapses into a rubble heap called the "gob" which contains a residue of debris including some CBM.

(19) SJCC wants to mine the coal before the CBM is produced by Richardson which would require SJCC to vent to the atmosphere any CBM present in the coal seam and contends that there will be CBM in the gob left after it has mined the coal.

(20) The SJCC mine plan proposes to deal with the wellbores it encounters in various ways. In the Special "Infill Well" Area, there are currently:

(a) 26 existing plugged and abandoned wellbores;

(b) 49 existing producing wellbores (CBM, PC, Dakota formation and salt water disposal wells;

(c) 11 proposed CBM/PC wellbores to be drilled.

Original position:

(21) Prior to August, 2001, SJCC took the position that it was in the best interests of all parties, including SJCC, to have Richardson drill and produce the "infill" CBM wells and accelerate the recovery of methane.

Current position:

(22) In August, 2001, SJCC changed its position and now wants the Division to preclude any new wells and prevent the hydraulic fracturing of new and old wells for the purpose of simplifying its coal mining operations;

(23) SJCC wants the Division to minimize the number and location of protection pillars that it must leave underground as required by MSHA regulations.

Special Infill Area

(24) Richardson's proposed Special "Infill Well" Area would allow the following:

(a) completion in the Basin Fruitland Coal Gas Pool of 18 existing Pictured Cliffs formation wells and the downhole commingling of that production; and

(b) drilling of 7 new wells to be completed as downhole commingled wellbores in the Pictured Cliffs formation and the Basin Fruitland Coal Gas Pool.

Bureau of Land Management Position

Priority of Oil & Gas Lease:

(25) The Bureau of Land Management ("BLM") approved the SJCC request for the Deep Lease Extension Area specifically conditioned, among other things, that SJCC would be "solely responsible...to clear the coal tract of any..pre-existing land uses that would impede or prevent coal mining on the tract" **and** that "the coal lease is subject to all prior existing rights including the right of oil and gas lessees..." **See Richardson Exhibit A-17.**

(26) By letter dated August 31, 2001, SJCC protested the BLM's issuance of approval of 4 Richardson APDs contending, among other things, that the proposed hydraulic fracturing of the CBM wells would create two potential operations and safety hazards (i) significantly decreasing roof stability above Coal Seam #8 and (ii) increasing the threat of spontaneous combustion in the fractured coal by introducing oxygen. In addition, SJCC argued that dewatering the coal, which is essential for any CBM production, would prematurely dry the coal and thereby increase the risk of spontaneous combustion.

(27) By letter dated September 20, 2001, the BLM-Farmington denied SJCC's protest and re-instated Richardson's 4 APDs. Those wells have now been drilled but not completed for CBM production.

Acceleration of CBM development:

(28) The BLM has:

(a) acknowledged Richardson's priority (**See Richardson Exhibit A-12**:

(b) authorized to "suspend the coal lease or coal operation to allow optimum recovery of CBM" **(See Richardson Exhibit A-9)**: and

(c) repeatedly encouraged Richardson as the CBM lessee to rapidly develop the CBM to maximize its recovery **prior to coal mining operations (See Richardson Exhibits A-11).**

Mine Safety:

(29) The BLM, after a detailed review of SJCC's protests, including its concerns about hydraulic fracturing, denied SJCC protests and concluded that "there are many publications which attempt to address the safety concerns raised by BHP-Billiton with conflicting opinions as to severity and magnitude." Further, the BLM believes "the safety issues should be addressed by the mine safety plan developed by BHP-Billiton ("SJCC").

Petroleum Geology and Reservoir Engineering Evidence

Richardson's technical case:

(30) **geology:** On behalf of Richardson, Mr. Rick Shapiro, a petroleum geologist presented geologic cross sections, structure map and isopach maps which demonstrate that:

(a) the basal coal ("Coal Seam #8") is present throughout the Special "Infill Well" Area in sufficient thickness and continuity to be geologically suitable for a well density of 4 wells per section;

(b) the structure dips approximately 100 feet per mile in a west to east direction but is not so dramatic as to geologically alter the suitability of a well density of 4 wells per section.

(c) there are no limiting geologic factors that would preclude infill development of the CBM

(31) **petroleum engineering:** On behalf of Richardson, Mr. Dave Cox, a petroleum engineer with more than 26 years of expertise with CBM wells, presented evidence which demonstrated that:

(a) the CBM has unique source in the coal seam and production characteristics including the necessity to dewater the coal seam;

(b) the coal seam is methane gas saturated and underpressured;

(c) the methane ("CBM") adheres to the surfaces of the coal and as the pressure is reduced, is liberated from the coal and produced through the natural occurring fracture system in the coal seam;

(d) the CBM is just above the Pictured Cliffs ("PC") sandstone formation which also contains methane;

(e) almost all CBM and PC wells are hydraulically fractured to increase the productivity of the gas wells;

(f) because of inclining-declining production curves, CBM wells could not be analyzed by conventional reservoir engineering methodology; **See Richardson Exhibit C-2**

(g) gas content derived from gas samples ("gas canister desorption data") was inherently wrong because of gas "lost" prior to the laboratory analysis of the coal-gas content;

(h) instead, the proper methodology involved selecting an appropriate absorption isotherm and pressure data from which to determine a gas content per ton of coal; **See Richardson Exhibit C-3 and C-4**

(i) by using the correct methodology, Mr. Cox's Langmuir absorption isotherm curve yielded gas content ranging from 178 to 281 standard cubic feet per ton of coal and pressures ranging from 164 to 294 psia. **See Richardson Exhibit C-5**

(j) Mr. Cox then calculated an estimated an average of 2.17 Bcf of recoverable gas per 320-acres within the Special "Infill Well" Area. **See Richardson Exhibit C-6**

(k) Mr. Cox estimated that of the 2.17 Bcf of recoverable gas per 320-acre spacing unit, the parent well would only recover about 33% and would only drain 106 acres over a 32 year period thus leaving sufficient economically recoverable reserves to justify the infill wells. **See Exhibit C-14**

(l) infill drilling will increase ultimate CBM recovery.

SJCC's technical case:

(32) **geology:** SJCC, in cross examination of Mr. Shapiro, was critical of his isopach and failure to use SJCC confidential coal core hole data, but failed to have a geologist testify and failed to introduce any geologic evidence.

(33) **petroleum engineering:** On behalf of SJCC, Mr. Paul Bertoglio presented no petroleum engineering evidence or exhibits, but, instead, sought to discredit Mr. Cox's testimony on the following points:

(a) While Mr. Bertoglio agreed that Mr. Cox had used the correct methodology and that the CBM was saturated, he contended that Mr. Cox's Langmuir absorption isotherm curve yielded a greater gas content per ton of coal than was present in the coal based upon SJCC coal test gas samples;

(b) Mr. Bertoglio estimated that an appropriate gas content value would substantially reduce Mr. Cox's estimate of recoverable gas. However, on cross examination, Mr. Bertoglio agreed that the gas content at worst is about 175 standard cubic feet per ton.

(c) Mr. Bertoglio failed to introduce an isotherm which he thought was applicable;

(d) Mr. Bertoglio failed to introduce any drainage calculation or estimates of original gas in place or recoverable gas

(34) **coal mining:** On behalf of SJCC, Mr. Jacques Abrahamse, a mine ventilation engineer, testified that:

(a) coal mining is an inherently dangerous business fraught with the risk of explosion or spontaneous combustion regardless of whether or not wells have been drilled through the coal.

(b) about the timing of the mining operations including the fact that by year 2008, SJCC would have constructed a 1000 foot wide mine main to the north-western corner of Section 28, T30N, R14W.

(c) SJCC prefers to vent the CBM to the atmosphere while mining the coal;

(d) SJCC plans to mine Coal Seam #8 at a thickness of 12 feet which would result in a collapse of the subsurface and would result in a subsidence at the surface of 8 feet.

(e) SJCC wants the Division to minimize the number and location of protection pillars that it must leave underground around wellbores as required by MSHA regulations.

(f) SJCC wants the Division to preclude any new wells and prevent the hydraulic fracturing of new and old wells for the purpose of simplifying its coal mining operations;

(g) there would be some CBM left in the "gob" following mining which might be recoverable by Richardson.

(h) SJCC negotiations with the oil and gas lessees had stalled and its protest based upon hydraulic fracturing was an effort by SJCC to control the operations and techniques of the oil and gas lessees.

Division Jurisdiction

(35) Richardson contends that SJCC's protest should be dismissed because:

(a) SJCC has no ownership rights in the CBM and their coal lease was issued subject to the prior existing rights of the oil and gas lessee;

(b) all SJCC really wants is for the Division to minimize the amount of coal SJCC has to leave underground as protection pillars;

(c) Rule 4 of the Pool Rules provides a procedure for oil and gas operators and certain oil and gas interest owners to complain about whether the optional infill gas well might waste hydrocarbons or adversely affect gas correlative rights.

(d) the Division has no authority to decide how much coal is "wasted" by SJCC having to leave protection pillars.

(36) SJCC is unable to cite to any specific statutory authority which authorizes the Division to protect the coal, but SJCC contends that the Division has jurisdiction under its broad statutory duties to protect public health and safety.

Division Conclusions:

(37) In accordance with Rule 4 of the Pool, Richardson seeks the creation of a Special "Infill Well" Area which is within the western edge of the Basin Fruitland Coal Gas Pool.

(38) Richardson is the current operator of wells in the Basin Fruitland Coal Gas Pool and within the proposed Special "Infill Well" Area and has priority over SJCC's development of the coal.

(39) SJCC has certain state and federal coal leases which are subject to the prior existing rights of Richardson as the oil and gas lessee.

(40) Richardson's application is an attempt to prevent waste of a valuable resource by accelerating the production of gas from the Fruitland formation prior to SJCC mining the coal and venting the methane gas.

(41) SJCC, which owns no oil and gas interest, seeks to complain about oil and gas exploration and development which is occurring in an area which SJCC would like to mine.

(42) SJCC's concerns about mine safety and health can be resolved:

(a) provided SJCC leaves a 300 foot radius protection pillar[1] around any current or future wellbore; or in the alternative

(b) any wellbore purchased by SJCC could be milled out through the coal seam and plugged and abandoned with cement, in which case a coal protection pillar would not be needed.

(43) It is irrelevant that SJCC asserts that its coal is more valuable than the CBM and that the Division should minimize the number of future wellbores which penetrate Coal Seam #8.

(44) The Oil & Gas Act has specific statutory mandates concerning the prevention of the waste of potash in addition to prevention of the waste of hydrocarbons. However the Oil & Gas Act has no such mandates concerning waste of coal.

(45) SJCC's protest essentially asks the Division to allow too few Basin-Fruitland Coal Gas wells in the vicinity of its mine for the purpose of simplifying its coal mining operations.

(46) The Division does not have any authority over coal mining operations and its consideration of Richardson's application must be limited to a consideration of waste of hydrocarbons and the protection of oil & gas correlative rights.

---

[1] There is a conflict between SJCC testimony in which it refers to a 300 foot radius protection pillar required by MSHA and the MSHA's web page which shows a 300 foot diameter protection pillar.

(47) SJCC has a mining plan which will unreasonably interfere with Richardson's ability and right to produce the coalbed methane gas within the Fruitland Coal-Gas formation.

(48) In order to minimize the adverse consequences of SJCC's mining plan, the Division should grant Richardson's request to establish a Special "Infill Well" Area to provide an opportunity to accelerate the production of gas from the Fruitland Coal formation prior to having that gas wasted by the mining operations of SJCC

IT IS THEREFORE ORDERED THAT:

(1) Richardson Operating Company's application is hereby **granted** and it is authorized to drill, complete and produce the optional infill well as an exception to Rule 4 of the Special Rules and Regulations of the Basin Fruitland Coal Gas Pool within the following described Special "Infill Well" Area:

Township 29 North, Range 14 West
Sections 4, 5, and 6

Township 29 North, Range 15 West
Section 1

Township 30 North, Range 14 West
Sections 16, 19-21, 28-33

Township 30 North, Range 15 West
Section 36

(2) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinafter designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

LORI WROTENBERY, DIRECTOR

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
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 POOL RULES, SAN JUAN COUNTY, NEW MEXICO

CASE NO. 12734

RICHARDSON OPERATING COMPANY'S MOTION TO STRIKE SAN JUAN COAL COMPANY'S EXHIBITS 15, 16 AND 18

Richardson Operating Company ("Richardson"), by its attorneys, Kellahin and Kellahin, moves to strike the following San Juan Coal Company's ("SJCC") exhibits introduced over the objection of Richardson:

(1) Exhibit 15: summary of testimony of Lynn Woomer

(2) Exhibit 16: summary of testimony of Paul C. Bertoglio

(3) Exhibit 18: summary of testimony of Jacques Abrahamse

and in support states:

MISREPRESENTATION BY SJCC

On two different occasions at the hearing of this case and over the timely objection of Richardson, the Examiner admitted SJCC's purported "summaries of testimony" of its witnesses. SJCC moved the admission of SJCC Exhibits 15, 16 and 17 by representing to the Division that these were summaries of the its witnesses' testimony given to the Examiner. That representation is not true.

In fact these "summaries" were prepared and filed by SJCC as exhibits in its appeal to the State Director, Bureau of Land Management of the BLM Farmington's approval of certain of Richardson's applications for permits to drill.

SJCC has gratuitously included in those "summaries" a number of important "expert opinions and conclusions" to which their witness **never testified** to before the Division. In addition, those summaries to do not include any of the testimony elicited during cross-examination.

As a result of this misrepresentation, Richardson is entitled to have the Division strike from the record SJCC Exhibits 15, 16 and 18.

SJCC'S EXHIBITS 15, 16, AND 18 ARE NOT ACCURATE SUMMARIES OF ITS WITNESSES TESTIMONY BEFORE THE DIVISION

Each of these summaries is not an accurate summary of their witnesses testimony before the Division. Significant opinions and conclusions of material importance are contained in SJCC's Exhibits 15 and 16 which were never testified to by its witnesses.

Attached to this motion are copies of exhibits 15 and 16 which have been highlighted in yellow to demonstrate statements for which there was no testimony before the Division. In addition, while Exhibit 18 is generally consistent with Mr. Abrahamse's direct testimony, it does not include any summary of this cross examination testimony.

Because these exhibits are not an accurate summary of the testimony of the SJCC witnesses, Richardson is entitled to have the Division strike from the record SJCC Exhibits 15, 16 and 18.

INTRODUCTION OF SJCC'S WITNESS TESTIMONY SUMMARIES DENIED RICHARDSON ITS RIGHT TO CROSS EXAMINATION

Each of these summaries was introduced after the SJCC's witnesses had been excused following his direct testimony and cross examination. Richardson was not provided time to review the summaries nor afforded its right to cross examine SJCC's witnesses as to these summaries.

As a result of being denied its right to cross examination, Richardson is entitled to have the Division strike from the record SJCC Exhibits 15, 16 and 18.

THE INTRODUCTION OF SJCC'S EXHIBITS 15, 16 AND 18 VIOLATE THE RULES OF EVIDENCE

While the Rules of Evidence are "relaxed" in cases before the Division, that does not equate to entirely ignoring those rules. **See Division Rule 1212.**

SJCC's Exhibits 15, 16 and 18 constitute "Hearsay" and therefore are not admissible. **See Rule 801-802 Rules of Evidence.**

As a result of violation of the "Hearsay Rule," Richardson is entitled to have the Division strike from the record SJCC Exhibits 15, 16 and 18.

Respectfully submitted,

W. Thomas Kellahin
P. O. Box 2265
Santa Fe, New Mexico 87504

CERTIFICATE OF SERVICE

I certify that a copy of the foregoing pleading were forwarded this 13th day of December, 2001 to James Bruce, Esq. and Larry Ausherman, Esq., attorneys for San Juan Coal Company.

W. Thomas Kellahin

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

IN THE MATTER OF THE HEARING CALLED
BY THE OIL CONSERVATION DIVISION
FOR THE PURPOSE OF CONSIDERING:

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

SJCC

16

Case No. 12734

SUMMARY OF TESTIMONY OF PAUL C. BERTOGLIO

My name is Paul Bertoglio. I am a licensed professional engineer with training and experience in evaluating coal bed methane reserves. I graduated from Montana College of Mineral Science and Technology with a Bachelor of Science degree in Petroleum Engineering. Since that time I have developed expertise in many facets of petroleum engineering, include reservoir engineering. I have over twenty years of broad experience in the oil and gas industry, and approximately fifteen years of that experience has focused on the San Juan Basin. I have specific experience with evaluation of gas reserves in the San Juan Basin, including coal seam gas.

Starting in November 1996, on behalf of San Juan Coal Company, I began evaluating oil and gas interests in the area of San Juan Coal Company's underground mine. The interests I evaluated include those of Richardson Operating Company ("Richardson"). The evaluation is ongoing. I have evaluated well production histories, potentially economic producing formations, coal bed reservoir engineering, and BLM's February 2000 Maximum Economic Recovery Report, San Juan Mine Lease By Application - NM9914 ("BLM Report").

Although oil and gas leases now held by Richardson on the lands of San Juan Coal Company's two underground coal leases were leased many years ago, they have produced relatively small amounts of gas. In the entire Deep Lease and Deep Lease Extension, approximately 2,614,200 mcf of gas and 76,400 barrels of oil as of July 1, 2001.

The BLM Report indicates recoverable gas reserves of 36,843,839 mcf on San Juan Coal Company's Deep Lease and Deep Lease Extension. (BLM Report, Appendix 4, Ex. 7). At an average price (used in BLM Report) of $2.25 per mcf at the well, the royalty value of 1/8 of this production would be $10,362,330.

The BLM Report's estimate of recoverable gas reserves overstates actual recoverable reserves. This overstatement in part results from the BLM Report's erroneous assumption (inherent in BLM's use of the Langmuir absorption isotherm) that the coal on San Juan Coal Company's two underground leases is saturated with gas. It is not. Core tests from coal in and near the San Juan Coal Company mine area shows that the coal there is undersaturated with gas. Also, the BLM's blanket use of an 80% recovery factor overstates the reserves.

Correction of erroneous assumptions in the BLM Report shows substantially less recoverable gas reserves. By correcting the assumptions in the BLM Report that coal is saturated and the recovery factor is 80%, the BLM Report's estimate of recoverable gas reserves would be reduced by approximately 60% to 90%, depending upon abandonment pressure. Of course, this reduction would create a corresponding reduction in the royalty stream.

The location of the mine leases and vicinity, is clearly outside of the higher producing gas zones in the San Juan Basin known as the "fairway". Production from these wells on average cannot be expected to be nearly what wells in the fairway would be. Not only is this area well outside of the fairway, based upon my review of existing data, I have significant doubt that the coal bed methane reserves in Sections 13, 14, 23, 24, 25, 26 and 35, Township 30 North Range 15 West NMPM of San Juan County Company's Deep Lease can be economically developed.

It is unnecessary to accelerate the development of production of gas from many of Richardson's wells in order to deplete the natural gas resources before mining operations reach them. Particularly in portions of the Deep Lease Extension and areas outside the Deep Lease Extension to the east, most of the natural gas resource that would be affected by the mining operations would already be produced. The area of Richardson's application is therefore overbroad. The application is premature.

Richardson is likely already producing on a 160 acre spacing basis with certain Pictured Cliffs wells. His Pictured Cliffs wells are likely fracing the coal bed. He is effectively taking coal bed methane gas from the pictured cliff wells.

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

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

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

SJCC 15

Case No. 12734

SUMMARY OF TESTIMONY OF LYNN WOOMER

I am Lynn Woomer, technical services coordinator for San Juan Coal Company. For many years I have worked in the mining industry with particular expertise and experience in coal mine reclamation and environmental permitting. I have a Bachelor of Science degree in Forestry and a Master of Science degree in Forestry with an emphasis in soil science and mine reclamation. For thirteen years I worked in state government with much of my time during that period devoted to coal mine reclamation and environmental permitting. I have been employed by BHP (now BHP Billiton) for six years. During that time, I worked on obtaining the permit from the New Mexico Energy, Minerals and Natural Resources Department for the San Juan pilot underground mine project, and I have been involved with permitting and development of the San Juan underground mine. I have general familiarity with development of the underground mine and the conflict between development of the underground coal reserve and gas wells in the vicinity.

Since the early 1980's, San Juan Coal Company has operated a mine to mouth coal mine to supply to the San Juan Generating Station, a power plant operated by Public Service Company of New Mexico. Operations are about sixteen miles east of Farmington, New Mexico. A long term contract between SJCC and owners of the San Juan Generating Station provides for annual purchases of coal. The contract for coal from the underground mine extends to 2017. The San Juan Generating Station is the second largest power plant in New Mexico, and it is the essential source of much electricity distributed in New Mexico, Arizona and elsewhere. Until now, San Juan Mine has operated a surface coal mine and, in recent times, has mined approximately 3 to 4 million tons per year or more to supply San Juan Generating Station. In addition, San Juan Coal Company has been mining coal from surface operations at La Plata mine north of San Juan mine to supply to San Juan Generating Station for an average total of 6.5 million tons per year. A substantial payroll, royalties, and taxes, in addition to those at San Juan Mine, are generated by San Juan Coal Company's operations at La Plata Mine.

In 1980, shortly before San Juan Coal Company began mining the surface deposit at San Juan Mine, known as the "Deep Lease" underground lease was acquired by Western Coal Company; the Deep Lease adjoins the eastern boundary of San Juan Coal Company's surface mine. Later in 2001, San Juan Coal Company acquired the Deep Lease Extension.

In about 1997, San Juan Coal Company began to explore for coal to the east of the Deep Lease to learn more about the coal deposits within the Deep Lease Extension. Concluding that there were good coal reserves to the east of the Deep Lease, San Juan Coal Company set out to investigate the development of an underground mine that would include the Deep Lease and acquisition of the lands within the Deep Lease Extension.

In the late 1990s, San Juan Coal Company began development of an underground mine to replace surface operations at San Juan and La Plata Mines as the source of coal supply to San Juan Generating Station. Shallow reserves at San Juan and La Plata Mines were dwindling and the coal deposit at San Juan Mine was becoming too deep to economically mine with a surface operation. Development of an underground mine by long wall mining method was chosen by San Juan Coal Company to replace existing surface mines to supply coal to the San Juan Generating Station. San Juan Coal Company received its permit revision 99-01 formalizing approval of the new underground mine from New Mexico Energy, Minerals and Natural Resources Department, Mining and Minerals Division on October 22, 1999. In 1997, San Juan Coal Company began development of a pilot underground mine. It was located near the southwest corner of the Deep Lease and was developed to investigate the feasibility of a broader underground mine there. The results of the pilot project were positive, and San Juan Coal Company decided to proceed to develop an underground mine.

On February 6, 2001 San Juan Coal Company acquired the coal lease from the United States Bureau of Land Management the Deep Lease Extension, affective March 1, 2001. The Deep Lease Extension was acquired to compliment the Deep Lease and allow for mining well into the future. Two State Sections - one in the Deep Lease and one in the Deep Lease Extension - are also in the mine plan.

The San Juan Coal Company mine plan is designed so that mining occurs in a sequence that begins in the west of the mine permit area and proceeds to the east. Underground mining on the Deep Lease has commenced, but estimates of mining plans indicate that it will not be until 2005 that mining on the Deep Lease reaches its eastern boundary, and the Deep Lease Extension mining will begin. The mine will develop one coal seam, the Number 8 seam, but one other seam exists above and below.

San Juan Coal Company is in the process of securing a license from the BLM to explore for coal to the east of the Deep Lease Extension. On August 31, 2001 it filed with the BLM an application for a coal exploration license. The license is expected to be issued in December 2001.

The size of the proposed underground mine is very substantial, with related great benefit to state and local economies. The mine plan for San Juan Coal Company's

underground operations estimates a 114 million ton coal reserve. Development of the underground mine involves initial capital investment of approximately $146 million, with additional capital requirements over time. San Juan Coal Company has already commenced construction of the underground mine and has invested over $130 million in the mine. It plans to employ over 300 people in the underground mine in associated surface operations when in full production.

The underground mine will provide tremendous benefits to the State of New Mexico in its royalty stream. San Juan Mine promises to be one of the largest underground coal mines in the west. Approximately 100 million tons will be mined during the current contract with the owners of San Juan Generating Station through 2017. I estimate that these tons will yield approximately $250 million in royalty based upon an 8% royalty rate for underground operations described in SJCC's two Federal Coal Leases. One half of this $250 million is earmarked for the State of New Mexico. The long term coal contract with San Juan Generating Station gives greater assurance to the State of New Mexico for a long term royalty stream beyond 2017.

I have been involved in coordination with BLM and oil gas operators to try to resolve problems arising from the existence of gas wells and the coal lease. There are numerous existing wells on the Deep Lease and the Deep Lease Extension that San Juan Coal Company will be mining for coal. Until recently - - this summer - - SJCC thought that a good solution to a conflict between coal development and coal bed methane development was for the coal bed methane development to occur first, in advance of mining. The San Juan Coal Company's mine plan was such that it would not be mining much of the underground areas until many years hence. It appeared to San Juan Coal Company that there was ample time for mining to proceed in advance and coal could follow mining.

In the late summer of this year, San Juan Coal Company's views about the feasibility of mining occurring after gas development changed. Jacques Abrahamse, a ventilation engineer with substantial experience in evaluation of explosivity potential and preventing spontaneous combustion in other underground mines joined San Juan Coal Company staff this summer. When he evaluated the mine plan, he concluded that gas development well in advance of coal mining would pose significant safety risk to underground miners and risk to the viability of the coal mine itself. I advised Mr. Richardson of this view well in advance of his September 11 filing. I stated these concerns in my August 31 letter to BLM. As explained in greater detail in Mr. Abrahamse's testimony, hydraulic fracturing of the coal seam by coal bed methane wells in advance of coal mining significantly increases the risk of spontaneous combustion and mine fires. Spontaneous combustion events must be avoided because they can cause death and injury to miners. Also, they can cause closure of large parts of or the entire mine. The San Juan Generating Station is depending upon this mine as the source of its coal.

Another problem posed by coal bed methane development is the existence of well casings the coal seam. When wells exist in the coal seam, and are not abandoned with their casings milled out in advance of mining operations, those mining operations must either avoid the wells and large segments of the coal seam around each well. Even if existing wells

are reentered and no new casing is put into the coal seam, the fracing associated with coal bed methane development of the reentered wells can require mining operations to bypass or take significant mitigative measures to stabilize the fractured areas due to instability problems. The more wells that are drilled, the greater the problem for the coal mine, especially if the location of the wells is in the wrong place in the mine plan. Fracing in the passageways can be particularly dangerous because fractures can cause roof cave ins. Even without cave ins, the cracks can prevent obtaining an adequate seal in the efforts to avoid spontaneous combustion, as described in greater detail by the testimony of Jacques Abrahamse.

These problems and risks posed by fracing in the coal seam put at risk large parts of the coal mine. They may cause large amounts of coal to be bypassed and wasted with the associated loss of royalty to the State of New Mexico. For example, when encountering an existing well bore, San Juan Coal Company could be forced to bypass a rectangular section of coal at least 600 feet long and about 1,000 feet wide. Generally, most mine panels in the mine plan are about 10,000 long, 1,000 wide and 13 feet high or deep. Roughly, this would require 330,000 tons of coal be bypassed per well, and the lost royalty per well would be at an 8% royalty rate would total about $800,000.

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

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

APPLICATION OF RICHARDSON OPERATING COMPANY TO ESTABLISH A SPECIAL "INFILL WELL" AREA WITHIN THE BASIN-FRUITLAND COAL GAS POOL AS AN EXCEPTION TO RULE 4 OF THE SPECIAL RULES FOR THIS POOL, SAN JUAN COUNTY, NEW MEXICO. Case No. 12734

SJCC 18

SUMMARY OF TESTIMONY OF JACQUES ABRAHAMSE

My name is Jacques Abrahamse and I am an mining engineer. I am currently employed as Ventilation Engineer for the San Juan Underground Mine. I am responsible for development of The Underground Mine Ventilation System and a Mine Gas Monitoring Analysis System. In 1987, I obtained my Mining Engineering Degree with honors from the University of Wollongong in New South Wales. I have taken training in mine ventilation and have received a statutory qualification for ventilation in Australia. Since my graduation, I have worked in underground mines, initially operating underground machines and then in 1991, I joined BHP as a mining engineer. I have developed specific expertise in mine ventilation planning since then. In particular, I was involved in the inquiry into a serious underground explosion at BHP Australia Coal's Moura Number 2 underground mine, and that involvement has given me substantial insight into management of risk of spontaneous combustion. I am familiar with the operations of long wall mines generally and ventilation management of them in particular.

The long wall mining process involves an enormous piece of equipment, made up of numerous shields, AFC's and a shearer. The longwall miner at San Juan Coal Company is 1000 feet wide. The longwall miner shears off long stretches of coal from the coal seam in a highly automated and efficient process. The process is shown on the CD animation which is Exhibit SJCC-12 and the longwall mining schematic, which is Exhibit SJCC-11.

The longwall mining process requires a systematic plan. Adherence to the plan is important for several reasons. First, if the long wall miner is required to stop production, for prolonged periods (days), explosive gases can accumulate, and the risk of explosion increases. Second, it is cumbersome, time consuming and costly to stop a long wall miner

and attempt to move it around obstacles such as well bores. Part of San Jan Coal Company's longwall plan is to keep the longwall equipment operating without the need to disassemble and reassemble it to avoid obstacles.

In July 2001, I was brought to San Juan Mine by BHP because of my experience in ventilation of underground mines. I reviewed the mine plan and the potential gas development in the coal seam. I evaluated the assumption that gas development could safely occur well advance of coal. I concluded that gas development well in advance of mining at San Juan mine could cause significant safety risk for the underground mine and the gas wells if it is not coordinated with mining plans. If infill spacing is allowed, these safety problems will be compounded by the additional drilling or reentry of wells. Safety of its employees is a primary concern for San Juan Coal Company.

Hydraulic fracturing of the coal seam by CBM wells can create dangerous conditions in at least two ways. First, hydraulic fracturing opens passageways for oxygen to mix with remaining methane in the coal bed. This mixture of gases can create conditions conducive to spontaneous combustion and mine fires. This potential is particularly real in coal deposits such as those at San Juan mine. It is exacerbated if the extraction of gas occurs well in advance of coal mining because that sequence allows greater time and opportunity for coal oxidation to occur.

A second way that fracing of the coal seam can create dangerous conditions, particularly in and around gate roads, is by creating cracks in the ceiling and elsewhere that make it difficult to construct a good seal. An important part of ventilation management in underground mines is to seal off areas that have been mined through to prevent dilution of the inert atmosphere in the gob. Cracks in the gate roads create pores that cannot be readily sealed where gases can migrate. Also, cracking in the seam caused by fracing of coal bed methane wells can extend into the roof of the mine and increase the potential for cave-ins. This potential is particularly problematic for longwall mining operations because the extensive shield that is incorporated in the design of a longwall miner. As shown in the schematic (Exhibit SJCC-11), a shield that pushes up onto the mine roof protects miners. If the roof against which the shield is wedged is not stable, dangerous cave-ins can result. Also, the cave ins can halt progress of the longwall miner. Every day that a longwall miner is stalled for cave-ins increases the risk that explosive gases will accumulate, and coal in the gob is exposed to oxidation.

In addition to fracing, an additional safety hazard caused by development of coal bed methane wells is dewatering. Dewatering of the coal formation well in advance of mining creates a pressure differential that allows oxygen to mix with the residual methane. If the mine is allowed to "dry out" in advance of mining, the risk of spontaneous combustion is increased.

The problems created by fracing and dewatering exists for reentered wells, as well as for new wells. Although reentered wells do not require the drilling and placement of additional well bores and casings that a longwall miner must avoid, reentering is

nevertheless problematic because it involves fracing and dewatering in much the same way that the placement of new wells can cause such problems.

San Juan Coal Company's preferred alternative would be for there to be no further wells in its coal seam. As to existing wells, as coal is developed there are ways to manage risks and problems associated with development of coal bed methane from the same coal seam at San Juan mine. First, placement of wells to avoid gate roads and locating them instead in the coal panels can be of help. Second, prohibiting the drilling of new wells, allowing only development from existing wells can manage risk. Third, allowing the coal company input into the location of the wells and sequencing of operations can reduce the risk of spontaneous combustion. Finally, gas can be produced after mining takes place. While the volume of recoverable gas is uncertain in comparison to what could be recovered in advance of mining, experience in the eastern United States shows that economic recovery of methane is achievable after a longwall mining occurs. This is because the longwall mining process leaves coal in the roof (or upper part of the seam), and as the roof collapse behind the longwall equipment advancing into the coal seam, the coal in the roof and rock in the formations above is crushed. This pulverizing effect serves to liberate methane present in the formation in a manner even far more effective than simple hydraulic fracturing, so the percentage of recoverable gas in the formation is higher. Also, "floor heave" results in fractures in rock strata underlying the coal seam that has been mined (in this case the pictured cliff sandstone which is a gas bearing strata). Finally, other seams in the vicinity of the number 8 seam, our target, could be developed for coal bed methane.

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