STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION FOR THE PURPOSE OF CONSIDERING:	)	CASE NO. 12,734
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	)	

OFFICIAL EXHIBIT FILE
(2 OF 3: Richardson Exhibits B and C)
COMMISSION HEARING

BEFORE: LORI WROTENBERY, CHAIRMAN
JAMI BAILEY, COMMISSIONER
ROBERT LEE, COMMISSIONER

October 29th-31st, 2002
Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Commission, LORI WROTENBERY, Chairman, on Tuesday-Thursday, October 29th-31st, 2002, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South Saint Francis Drive, Room 102, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

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Application of Richardson Operating Co.
Record on Appeal, 867.

RICHARDSON OPERATING COMPANY

B&C

New Mexico Oil Conservation Commission
Case 12734
October 28-30, 2002

Application of Richardson Operating Co.
Record on Appeal, 868.

RICHARDSON'S GEOLOGIC SUMMARY

Roger Hively

Occupation: Petroleum Geologist

Qualifications: BA, Geology, 1974 and MS, Geology, 1976 with 25 years experience in the oil and gas industry, including 6 years experience with coalbed methane projects in the Raton, San Juan and Powder River Basins

Exhibit B-1: Geologic Summary

Prepared by Roger Hively

Exhibit B-2: Type Log for Area

This log of the Richardson WF Federal 5-3 typifies the pertinent producing horizons in this area. This is a cased hole neutron porosity log. Fruitland coal beds, which are late Cretaceous in age, are seen from approximately surface to 803 feet depth. The Fruitland coal is the main producing horizon in Mr. Richardson's wells. The Fruitland Coal occurs in several thin coal beds, which were characterized as including Lower, or Basal Coals, and other beds that have been aggregated into Upper Coals. Between the various coal beds are tight sandstones, siltstones, claystones and shales that are basically impermeable. The Pictured Cliffs Sandstone underlies the Fruitland from about 680 to 700 ft in this well. The Pictured Cliffs is a relatively tight and dirty sandstone in this area, and most of the production from the Pictured Cliffs comes from the upper portion of this formation.

Exhibit B-3: Structure Map on Top of the Basal Fruitland Coal

Over to the west and southwest, the coal outcrops at elevations of about 4,500 ft. There is a gentle structure dipping roughly 100 feet per mile sloping eastward into the basin. This is consistent with dips throughout much of the rest of the producing portion of the basin. There was no evidence of any significant faulting that might affect reservoir continuity in this area. In addition, the location of two cross-sections is shown on this map.

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BEFORE THE
OIL CONSERVATION COMMISSION
Case No. 12734
Exhibit # B-1
Submitted By:Richardson Oper.Co.
Hearing Date:October 28 & 30, 2002

Exhibits B-4 and B-5: Cross Sections A-A' and B-B'

Mr. Hively prepared two cross-sections through the application area, A-A' going east-west and B-B' going north-south. These cross-sections are hung on a common elevation of +5000 ft, so that the gentle structure in the area shown as well as the geological character and continuity of the Fruitland Coal and the Pictured Cliffs. These cross sections demonstrate that the Fruitland Coal is basically continuous across the application area, and that there are no major stratigraphic changes that would affect continuity of the coal in the area. The coal here is similar in thickness to other productive areas of the Fruitland Coal south of the fairway in the San Juan Basin. Dip is generally down to the East (A-A') and to the south (B-B').

Exhibit B-6: Isopach Map of Basal Coal

Mr. Hively prepared an isopachous map of the Basal Coal thickness throughout the application area. Following generally accepted usage in the coalbed methane production business in the San Juan Basin, a net density log cutoff of 2.0 g/cm^3 was used in picking coal thickness. For those wells that did not have a density log (which actually was the majority of the wells), a neutron log cutoff was used that similar to the level correspond corresponding to a density of about 2.0 g/cm^3 was used. Individual coal seams less than 2 ft thick were not included in the net coal thickness. The typical net coal thickness of the Basal Coal across the application area was 12 ft, with a range from 8 to 18 ft across the application area.

Exhibit B-7: Isopach Map of Upper Coals

Mr. Hively also prepared an isopachous map of the Upper Coal thickness throughout the application area. The same methodology was used for the Upper Coals as for the Lower Coal Isopach. The typical net coal thickness of the Upper Coal across the application area was 12 ft, with a range from 3 to 21 ft across the application area.

Further Testimony of Mr. Hively

At the request of Mr. Cox, Mr. Hively also picked coal thickness from well logs for various additional wells outside the application area using the same methodology for picking coal thickness as was described above. Those coal thicknesses are summarized in Mr. Cox's Exhibit C-22.

Based on his analysis of well logs and other information, his Exhibits and his other experience with coalbed methane wells in general, Mr. Hively concludes that the Fruitland Coal has sufficient thickness and continuity across the application area that it should be producible throughout the application area, if gas content and permeability are sufficiently good as to allow economic production levels to be established.

ROGER E. HIVELY
621 17th St.,Ste1145
Denver, Colorado 80293
303 296-2870off
303 233-7462h
hroger15 @qwest.net

SUMMARY:

Roger E. Hively has a Master's degree in Geology and over 25 years of experience in the oil and gas exploration industry. He has been active in coal bed methane exploration for the past six years, completing projects in the Raton Basin, the Powder River Basin, and the San Juan Basin. He is a member of the American Association of Petroleum Geologists(AAPG), is a certified professional geologist of the American Institute of Professional Geologists(AIPG), and is a Registered Professional Geologist in the state of Wyoming.

EDUCATION:

Wittenberg University,Springfield, Ohio, B. A. Geology, June 1974
University of Texas at Arlington, Arlington, Texas, M. S. Geology, June 1976
Colorado School of Mines, Golden, Colorado, Hazardous Materials Management Training Program, August 1991

EXPERIENCE:

April 1996 to February 2000
Consulting Geologist/Chief Geologist, Chandler and Associates LLC/Shenandoah Energy Inc.
Primary geologic expertise for 40 plus year old private oil and gas E&P company. Responsible for hands-on work and management of activities on company properties in all Rocky Mountain Basins. Prospect generation, Submittal review, and geologic operations management. Technical staff and consultant team management. Exclusively responsible for acquisition and successful development of oil production in Uinta basin, and coal bed methane gas production in Raton Basin

August 1994 to June 1998
Consultant, Partner, Automated Mudlogging Systems

Responsible for all field operations in newly developed technology for mudlogging and wellsite geology. Guided technology, hardware and software development. Sucessfully evaluated over 125 wells in 18 month period.

December 1985 to Present
Owner, Roger E. Hively Oil and Gas Exploration

Oil and gas prospect generation, lease acquisition, geologic and engineering evaluation, wellsite geology, geologic consulting, and drillsite operations management, Rocky Mountain and Mid-Continent areas. Major consulting projects include operations manager for multiple well directional and horizontal drilling in Central Montana, and managing multiple well projects in the Powder River Basin, Raton Basin and San Juan Basin.

October 1980 to December 1985
Senior Geologist - Bellwether Exploration Co.- Denver, Colorado
Involved in all phases of oil and gas exploration in the Rocky Mountain, Mid-Continent and Louisiana Gulf Coast Basins. Duties included prospect generation and review of prospect submittals, sale of internally generated prospects, well site evaluation, reserve estimation, and contract negotiation.

June 1979 to September 1980
Geologist - Ferret Exploration Co. - Denver, Colorado
Precious metal, uranium and petroleum exploration. Recommended prospects and re-viewed progress of same from non-operating position. Generated and screened oil and gas prospects on large leasehold positions held by Ferret in several Rocky Mountain basins.

August 1976 to June 1979
Geologist - Ashland Exploration Inc. - Denver, Colorado
Involved in all phases of uranium exploration. Assumed a wide range of responsibilities, including geologic reconnaissance and mapping, evaluation of prospect submittals, negotiation with landowners, drilling program supervision, subsurface mapping, evaluation of ore potential and calculation of ore reserves.

January 1975 to January 1976
Geologist - APCO Oil Corporation - Dallas, Texas
Employed as a geologist; worked closely with geophysicists in prospect generation in Southern Oklahoma and Anadarko Basin.

PROFESSIONAL ORGANIZATIONS:
American Association Of Petroleum Geologists
American Institute of Professional Geologists (C.P.G #8467)
Wyoming Registered professional geologist (P.G. #2758)

PUBLICATIONS: ***Geologic Aspects of the Codell Sandstone, Weld and Larimer Counties, Colorado.*** Society of Petroleum Engineers/U.S. Department of Energy 1985 Low Permeability Gas Reservoirs Symposium.

References available upon request.