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BEFORE THE OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF COLORADO

RECEIVED

SEP - 4 2013

COGCC

IN THE MATTER OF THE APPLICATION OF)
WHITING OIL AND GAS CORPORATION FOR)
AN ORDER TO VACATE ORDER NO. 535-32)
AND ESTABLISH EIGHT APPROXIMATE 640 TO)
960-ACRE DRILLING AND SPACING UNITS FOR)
SECTIONS 2, 3, 10, 14, 15, 22, 24, 25, 27, 30)
AND 34, TOWNSHIP 10 NORTH, RANGE 57)
WEST, 6TH P.M. FOR THE NIOBRARA)
FORMATION, UNNAMED FIELD, WELD)
COUNTY, COLORADO)

Cause No. 535

Docket No. 1309-SP-1145

ORIGINAL

REQUEST FOR RECOMMENDATION OF
APPROVAL OF APPLICATION WITHOUT A HEARING

Whiting Oil and Gas Corporation ("Applicant"), by and through its attorneys, Welborn Sullivan Meck & Tooley, P.C., hereby requests pursuant to Rule 511.a. of the Rules and Regulations of the Colorado Oil and Gas Conservation Commission ("Commission") for the Director to recommend approval of its July 18, 2013 verified application ("Application") and the supporting exhibits without a hearing.

Applicant requests that the above-captioned matter be approved based upon: (i) the merits of the Application and (ii) Applicant's sworn written testimony verifying sufficient facts along with exhibits that adequately support the relief requested by the Application. To Applicant's information and belief, no protests were timely filed in this matter.

WHEREFORE, Applicant requests that its request for a recommendation for approval of its Application without a hearing be granted.

DATED this 3rd day of September, 2013.

Respectfully submitted,
WHITING OIL AND GAS CORPORATION

By: Chelsey J. Russell

Stephen J. Sullivan

Chelsey J. Russell

Welborn Sullivan Meck & Tooley, P.C.

Attorneys for Applicant

1125 17th Street, Suite 2200

Denver, CO 80202

(303) 830-2500

ssullivan@wsmtlaw.com

crussell@wsmtlaw.com

BEFORE THE OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF COLORADO

IN THE MATTER OF THE APPLICATION OF)	
WHITING OIL AND GAS CORPORATION)	
FOR AN ORDER TO VACATE ORDER NO.)	Cause No. 535
535-32 AND ESTABLISH EIGHT)	
APPROXIMATE 640 TO 960-ACRE)	Docket No. 1309-SP-1145
DRILLING AND SPACING UNITS FOR)	
SECTIONS 2, 3, 10, 14, 15, 22, 24, 25, 27, 30)	
AND 34, TOWNSHIP 10 NORTH, RANGE 57)	
WEST, 6 TH P.M. FOR THE NIOBRARA)	
FORMATION, UNNAMED FIELD, WELD)	
COUNTY, COLORADO.)	

SUMMARY OF RULE 511 WRITTEN TESTIMONY

Whiting Oil and Gas Corporation ("Applicant"), by and through its attorneys, Welborn Sullivan Meck & Tooley, P.C., submits this written testimony and the accompanying Exhibits A through C to the Oil and Gas Conservation Commission of the State of Colorado ("Commission") in support of its application establishing six 960-acre drilling and spacing units and two approximate 640-acre drilling and spacing units and establishing well location rules applicable to the drilling of wells and producing of oil and gas from the Niobrara formation covering the following lands in Weld County, Colorado ("Application Lands"):

Township 10 North, Range 57 West, 6th P.M.

Section 2: Lots 1 – 4, S $\frac{1}{2}$ N $\frac{1}{2}$, S $\frac{1}{2}$ (All)
(“DSU #1” containing 642.84-acres, more or less)

Township 10 North, Range 57 West, 6th P.M.

Section 3: Lots 1 – 4, S $\frac{1}{2}$ N $\frac{1}{2}$, S $\frac{1}{2}$ (All)
Section 10: N $\frac{1}{2}$ (“DSU #2” containing 963.20-acres, more or less)

Township 10 North, Range 57 West, 6th P.M.

Section 14: All (“DSU #3” containing 640.00-acres, more or less)

Township 10 North, Range 57 West, 6th P.M.

Section 10: S $\frac{1}{2}$
Section 15: All (“DSU #4” containing 960.00-acres, more or less)

Township 10 North, Range 57 West, 6th P.M.

Section 22: All
Section 27: N $\frac{1}{2}$ (“DSU #5” containing 960.00-acres, more or less)

Township 10 North, Range 57 West, 6th P.M.

Section 24: All

Section 25: N $\frac{1}{2}$ ("DSU #6" containing 960.00-acres, more or less)

Township 10 North, Range 57 West, 6th P.M.

Section 30: Lots 3, 4, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ (S $\frac{1}{2}$)

Section 31: Lots 1 – 4, E $\frac{1}{2}$ W $\frac{1}{2}$, E $\frac{1}{2}$ (All)
("DSU #7" containing 943.39-acres, more or less)

Township 10 North, Range 57 West, 6th P.M.

Section 27: S $\frac{1}{2}$

Section 34: All ("DSU #8" containing 960-acres, more or less)

Based upon work supervised by Mr. Scott McDaniel, Applicant listed in Exhibit A to the Application in this matter the names and addresses of the interested parties and each of those parties was notified as indicated in the Certificate of Mailing filed in this matter. Mr. Scott McDaniel prepared the written land testimony, Exhibit A hereto. Mr. John R. Forster prepared the written geologic testimony, Exhibit B hereto. Mr. Ralph L. Nelms prepared the written engineering testimony, Exhibit C hereto. Copies of the affiants' respective resumes are included with their testimony.

As shown on the exhibits, several wells have been drilled, tested, and completed in the Niobrara formation in the immediate vicinity of the Application Lands. Attached to Exhibit A is a map depicting the Application Lands and certain lands in the vicinity of the Application Lands that are covered by drilling and spacing orders for the Niobrara formation, Order Nos. 535-32, 535-60, 535-179, 535-204, 535-296, 535-298, 535-314, and 535-338.

The geology exhibits include a type log from the Whiting Oil and Gas Corporation Terrace 36-32M vertical well located in Section 36, Township 10 North, Range 59 West, 6th P.M., which log shows the gross Niobrara thickness in lands near the Application Lands. The geology exhibits also include an isopach of the Niobrara formation in the vicinity of the lands included in this application. Additionally, the geology exhibits include a log cross section of the Cretaceous Niobrara in Weld County, Colorado, showing continuity of the Niobrara formation across the application area and variability in the porosity making the Niobrara a reservoir which could be developed more efficiently using horizontal drilling techniques.

The engineering exhibits set forth the engineering characteristics of the Niobrara reservoir intended to be drilled and produced by Applicant. Based on reservoir characteristics from certain 640-acre and 960-acre drilling and spacing units that are producing from the Niobrara formation, the estimated drilling and completion economics for the Applicant's proposed spacing units would produce favorable economics for the proposed operations. The spacing units are further supported in Exhibits E-3, E-4, and E-5, which present the downhole pressure response recorded in shut-in horizontal

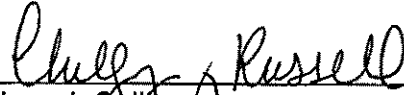
Niobrara B zone producing wells during the fracturing of an offset horizontal well at three different distances.

Based upon this geologic and engineering information, Applicant believes that the proposed 640-acre and 960-acre drilling and spacing units will result in economic wells with a favorable return on investment that will allow for the most efficient drainage and recovery of hydrocarbons from the Niobrara formation without causing waste or injuring correlative rights.

Dated September 3, 2013.

Respectfully submitted,

WHITING OIL AND GAS CORPORATION

By: 

Stephen J. Sullivan

Chelsey J. Russell

Welborn Sullivan Meck & Tooley, P.C.

Attorneys for Applicant

1125 17th Street, Suite 2200

Denver, CO 80202

(303) 830-2500

ssullivan@wsmtlaw.com

crussell@wsmtlaw.com

Land Testimony
Weld County, Colorado
Docket No. 1309-SP-1145
Spacing, Density and Well Location Rules Application
Township 10 North, Range 57 West
Section 2: Lots 1-4, S½N½, S½ (ALL)
Section 3: Lots 1-4, S½N½, S½ (ALL)
Section 10: ALL
Section 14: ALL
Section 15: ALL
Section 22: ALL
Section 24: ALL
Section 25: N½
Section 27: ALL
Section 30: Lots 3, 4, E½SW¼, SE¼ (S½)
Section 31: Lots 1-4, E½W½, E½ (ALL)
Section 34: ALL
(Niobrara Formation)
Whiting Oil and Gas Corporation

In support of the Request for Director Approval of the Verified Application of Whiting Oil and Gas Corporation in Cause 535, Docket No. 1309-SP-1145, and pursuant to Rule 511 b, Scott McDaniel, Regional Land Manager of Whiting Oil and Gas Corporation deposes and states as follows:

I am employed as a Regional Land Manager for Whiting Oil and Gas Corporation ("Whiting"). I have over 28 years of experience as a Landman and have been employed with Whiting since August of 2008 working directly with properties that are the subject of today's hearing.

In support of our Application today, I have prepared one (1) exhibit. The exhibit is attached to my sworn testimony and forms the basis for Whiting's Application to obtain an order to establish spacing and well location rules in the Niobrara formation in the following lands located in Weld County, Colorado:

Township 10 North, Range 57 West, 6th P.M.
Section 2: Lots 1 – 4, S½N½, S½ (ALL)

Containing 642.84 acres, more or less

Township 10 North, Range 57 West, 6th P.M.
Section 3: Lots 1 – 4, S½N½, S½ (ALL)
Section 10: N½
Containing 963.20 acres, more or less

Township 10 North, Range 57 West, 6th P.M.

Section 14: ALL
Containing 640.00 acres, more or less

Township 10 North, Range 57 West, 6th P.M.

Section 10: S½
Section 15: ALL
Containing 960.00 acres, more or less

Township 10 North, Range 57 West, 6th P.M.

Section 22: ALL
Section 27: N½
Containing 960.00 acres, more or less

Township 10 North, Range 57 West, 6th P.M.

Section 24: ALL
Section 25: N½
Containing 960.00 acres, more or less

Township 10 North, Range 57 West, 6th P.M.

Section 30: Lots 3, 4, E½SW¼, SE¼ (S½)
Section 31: Lots 1 – 4, E½W½, E½ (ALL)
Containing 943.39 acres, more or less

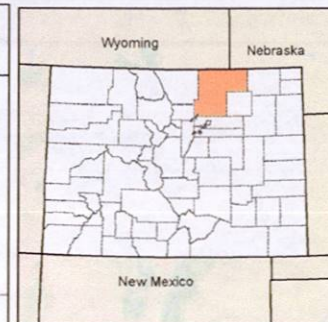
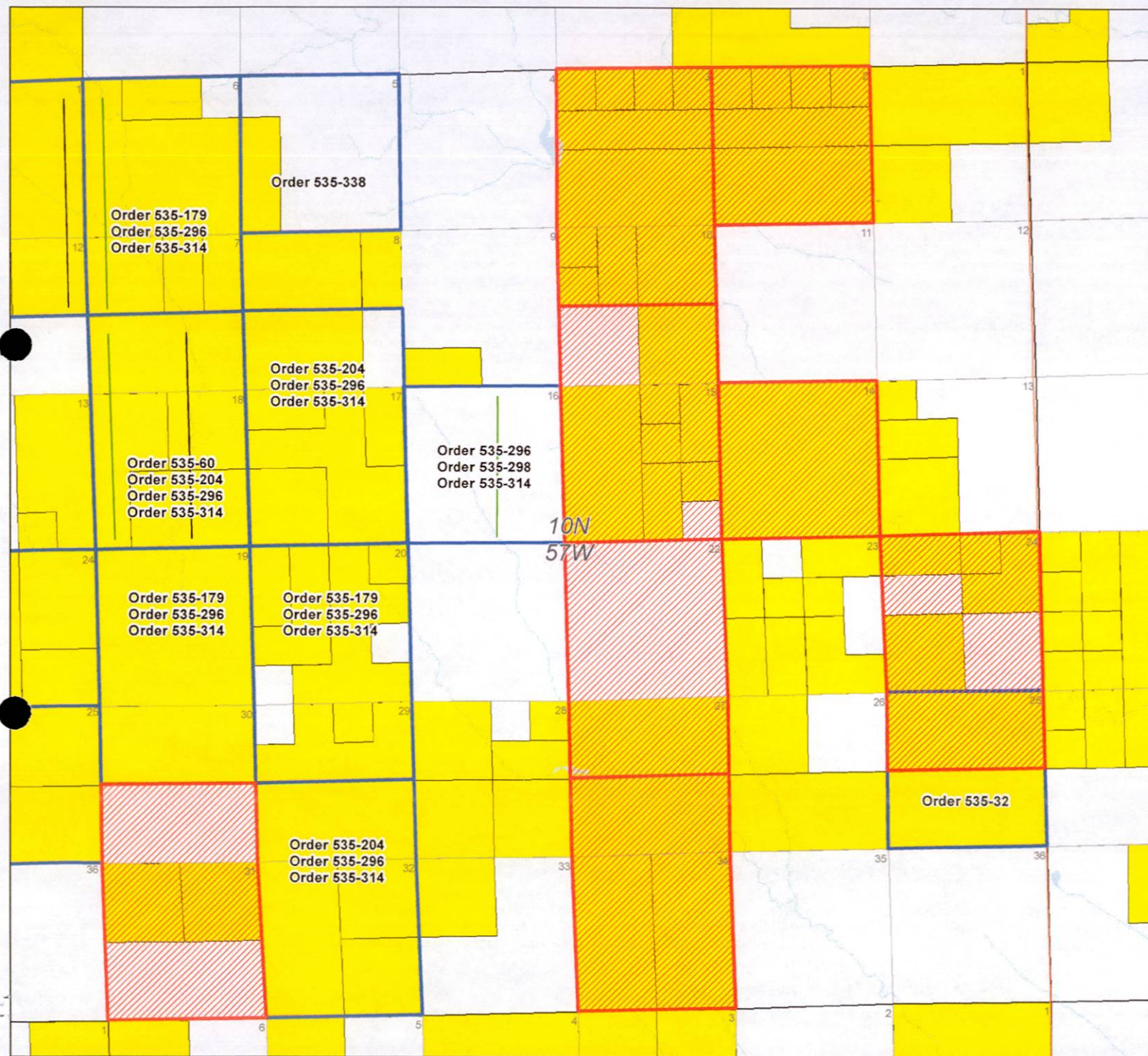
Township 10 North, Range 57 West, 6th P.M.

Section 27: S½
Section 34: ALL
Containing 960.00 acres, more or less

1. Attached Exhibit Whiting Leasehold, Existing Spacing Unit Boundaries, Proposed Spacing Unit Boundaries

The attached exhibit is a plat depicting the lands in the vicinity of the Application Lands which have previously had drilling and spacing orders approved by the COGCC for the Niobrara formation under Order No. 535-32 issued June 27, 2011, Order No. 535-60 issued August 8, 2011, Order No. 535-179 issued July 9, 2012, Order No. 535-204 issued October 1, 2012, Order No. 535-296 issued March 25, 2013, Order No. 535-298 issued March 25, 2013, Order No. 535-314 issued May 6, 2013, and Order No. 535-338 issued June 17, 2013. The plat covers an area generally centered Fifteen miles North and Six miles East of the town of New Raymer, Colorado. The plat is color coded to show the previously approved COGCC drilling and spacing units, proposed COGCC drilling and spacing units and Whiting leasehold. The lands which are the subject of this application are shown inside the red boundary and are crosshatched in red. Whiting's leasehold is shown in yellow.

Several wells have been drilled, tested and completed in the Niobrara Formation upon lands in the immediate vicinity of the Application lands, including the Horsetail 18-0713H well completed in Sections 7 & 18, Township 10 North, Range 57



Legend

-  Application Lands
-  Existing Spacing Units
-  Whiting Leasehold

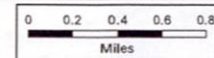


Exhibit "A"

Weld County, Colorado

Scale: 1:26,018

Projection: UTM Zone 13N

Date: 03/14/2013

Author: LAND

EXPERIENCE

Regional Land Manager

August 11, 2008 to Present

Whiting Oil and Gas Corporation

Confirm land ownership and availability for lease/purchase. Negotiate agreements with land owners for drilling or production rights. Draft and administer contracts including, but not limited to, Joint Operating Agreements, Purchase and Sale Agreements, and Unit Agreements; ensure compliance with government regulations. Lead and direct the work of support staff.

Project Manager

2002 to August 1, 2008

Contex Energy Company, Denver, CO

Managed numerous lease acquisition projects for a large lease brokerage firm. I was responsible for managing field personnel, reporting progress to the client, building lease and mineral purchase files, preparing assignments and other legal documents, due diligence reviews and title curative.

Oil and Gas Landman

1999 to 2001

The Meramar Company, Littleton, CO

Managed small lease and right-of-way acquisition projects throughout the Rocky Mountain Region. My responsibilities included title research, lease and right-of-way acquisition, map preparation, lease file management and due diligence reviews.

Land Manager

1997 to 1998

Petrogulf Corporation, Denver, CO

Managed land and lease acquisitions for a very aggressive oil and gas operator in the Rocky Mountain Region. My job description included managing field brokers, coordinating the acquisition of mineral interests and oil and gas leases within a prospect area, working with engineers and geologist on a prospect development basis, and managing lease records.

Oil and Gas Landman

1996 to 1997

Tom Noonan, Gillette, WY

Contract Landman for a Lease Broker in the Powder River Basin. I performed detailed ownership searches and reports in a highly productive coalbed methane play, calculated net revenue interests and purchased oil and gas leases.

Oil and Gas Landman and Project Manager

1994 to 1996

The Meramar Company, Denver, CO

Performed oil and gas lease acquisitions for a small Lease Broker in the Rocky Mountain Region. Managed several small lease acquisition projects in central Kansas and Northwestern Colorado. I performed patent to present grantee/grantor ownership checks and prepared lease status reports for the clients.

Commercial Title Examiner

1991 to 1994

Title Services, Inc., Denver, CO

Prepared title reviews and commitments on commercial property for a large title insurance company. Managed the commercial title department for two years and trained support staff.

Oil and Gas Landman

1983 to 1991

Frontier Land and Exploration, Lakewood, CO

Worked for a large lease brokerage firm managed and owned by my father, John T. McDaniel. Performed ownership and leasehold checks in Southeastern and Southwestern Colorado. Negotiated and purchased oil and gas leases.

EDUCATION

Red Rocks Community College, 1982 to 1983

Golden, CO

Computer Science/Geology GPA: 3.3

Worked towards an Associate of Science Degree in Computer Science with some advanced studies in Geology. Learned programming in COBOL, FORTRAN, BASIC and RPGII languages. Ran out of money and had to enter the work force before completing my degree

Arapahoe Community College and University of Colorado at Denver, 1981 to 1982

Littleton, CO and Denver, CO

Business GPA: 3.0

Worked on my basic studies with a focus on accounting and geology. Decided to transfer to Red Rocks Community College to focus more on Computer Science.

Whiting Petroleum Corporation
and its wholly owned subsidiary
Whiting Oil and Gas Corporation

Geologic Testimony
Weld County, Colorado
Cause No. 535
Docket: 1309-SP-1145

My name is John R Forster. I am currently employed as a Regional Geologic Manager with Whiting Oil and Gas Corporation. I have previously testified as an expert geology witness before the Hearing Officers of the COGCC. I have over 35 years' experience in petroleum exploration and am familiar with the geologic characteristics on the Applications Lands, and the matters set forth in the **Docket 1309-SP-1145** application. A copy of my resume is contained in the exhibit booklet submitted by Whiting.

In support of Whiting's Application in the above referenced docket, I have prepared and am submitting four (4) exhibits. The exhibits are attached to my sworn testimony and form the basis for Whiting's Application to establish six approximate 960-acre drilling and spacing units and two approximate 640-acre drilling and spacing units, and establishing well location rules applicable to the drilling of one well with the option to drill and complete up to a total of sixteen wells for production of oil, gas and associated hydrocarbons from the Niobrara Formation across the application lands.

Exhibit G-1 is a type log from the Whiting Oil and Gas Corp. Terrace 36-32M vertical well, located in Section 36-T10N-R59W. The Niobrara consists of three members, the Beecher Island, Smoky Hill and Ft. Hays members. The lithology in the Beecher Island is dominated by olive gray, pelletal chalk interstratified with 2-8 inch thick beds of dark gray pelletal marl. The Smoky Hill member is comprised of pelletal chalk and marl, which is commonly burrowed. The Ft. Hays is predominantly coccolith rich, gray to light gray chalk. The overall thickness of these members is approximately 320 feet. All members of the Niobrara share a common source of supply.

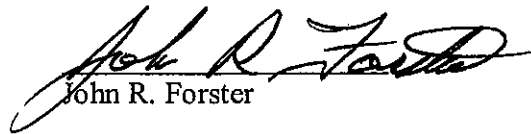
Exhibit G-2 presents a subsea structure map on the top of the Niobrara. Due to the asymmetric nature of the basin, regional structure maps generally dip downward to the west across the application lands. The amount of subsea elevation drop per mile is approximately 40-60 feet.

Exhibit G-3 presents an isopach map of gross Niobrara, calculated from the top of the Niobrara Beecher Island member to the base of the Smoky Hill member. The gross thickness averages 320' across the application lands.

Exhibit G-4 is a cross section which demonstrates the ubiquitous nature of the Beecher Island, Smoky Hill and Ft. Hays horizons across the application lands. The datum for the cross section is the top of the Niobrara.

Based upon these geologic analyses it is apparent that the proposed drilling and spacing units will promote efficient drainage, protect correlative rights and avoid waste.

Geology Exhibits G-1, G-2, G-3 and G-4 were prepared by me and to the best of my knowledge; all of the matters set forth are true, correct, and accurate.

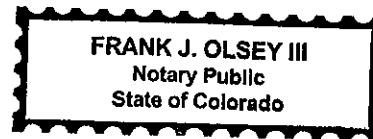

John R. Forster

BEFORE ME, the undersigned, on this day personally appeared Mr. John R. Forster in his capacity as Regional Geologic Manager for Whiting Petroleum Corporation and its wholly owned subsidiary Whiting Oil and Gas Corporation.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 26TH day of August, 2013.

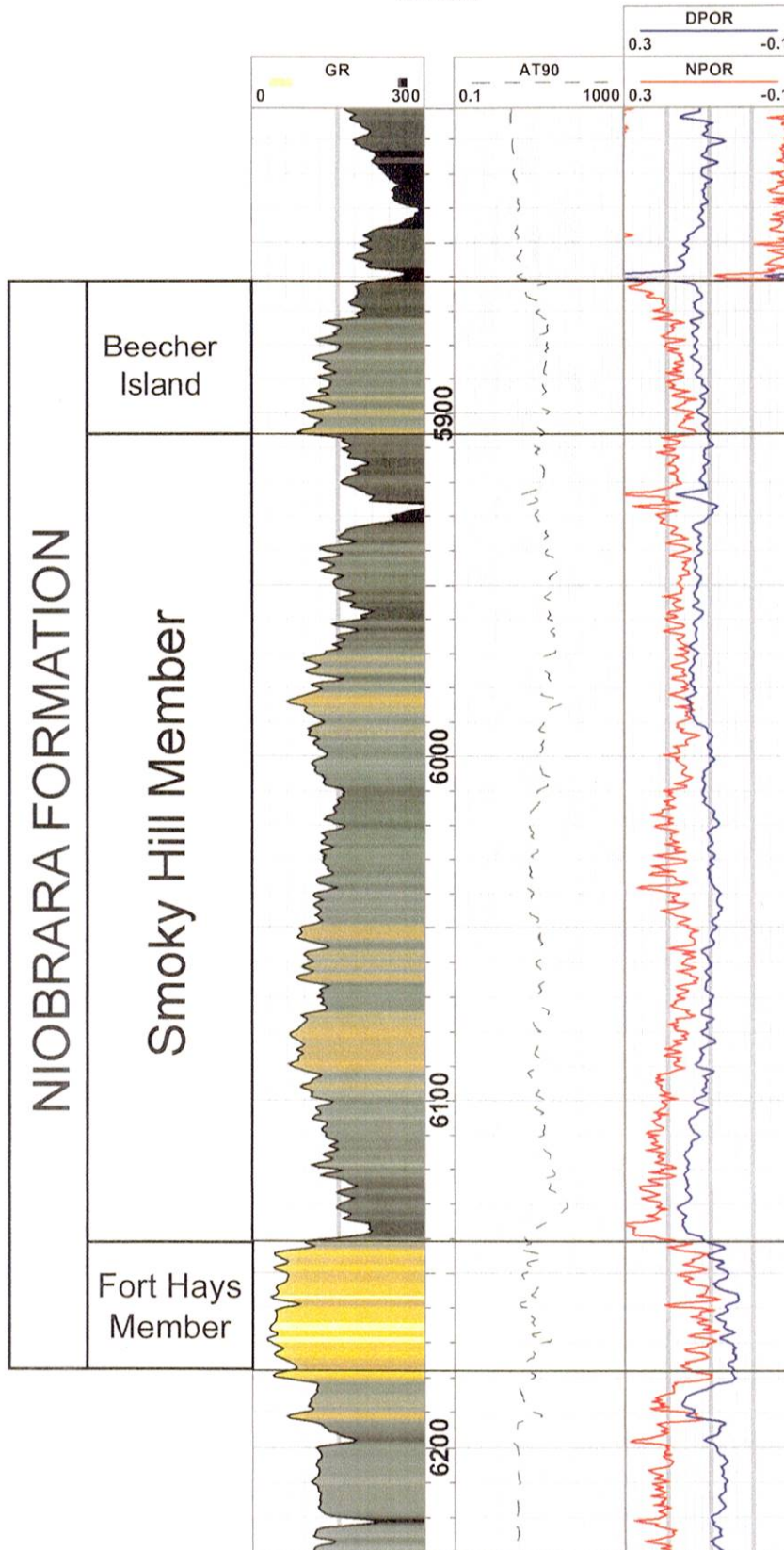

Notary Public

My Commision Expires 8-31-2014

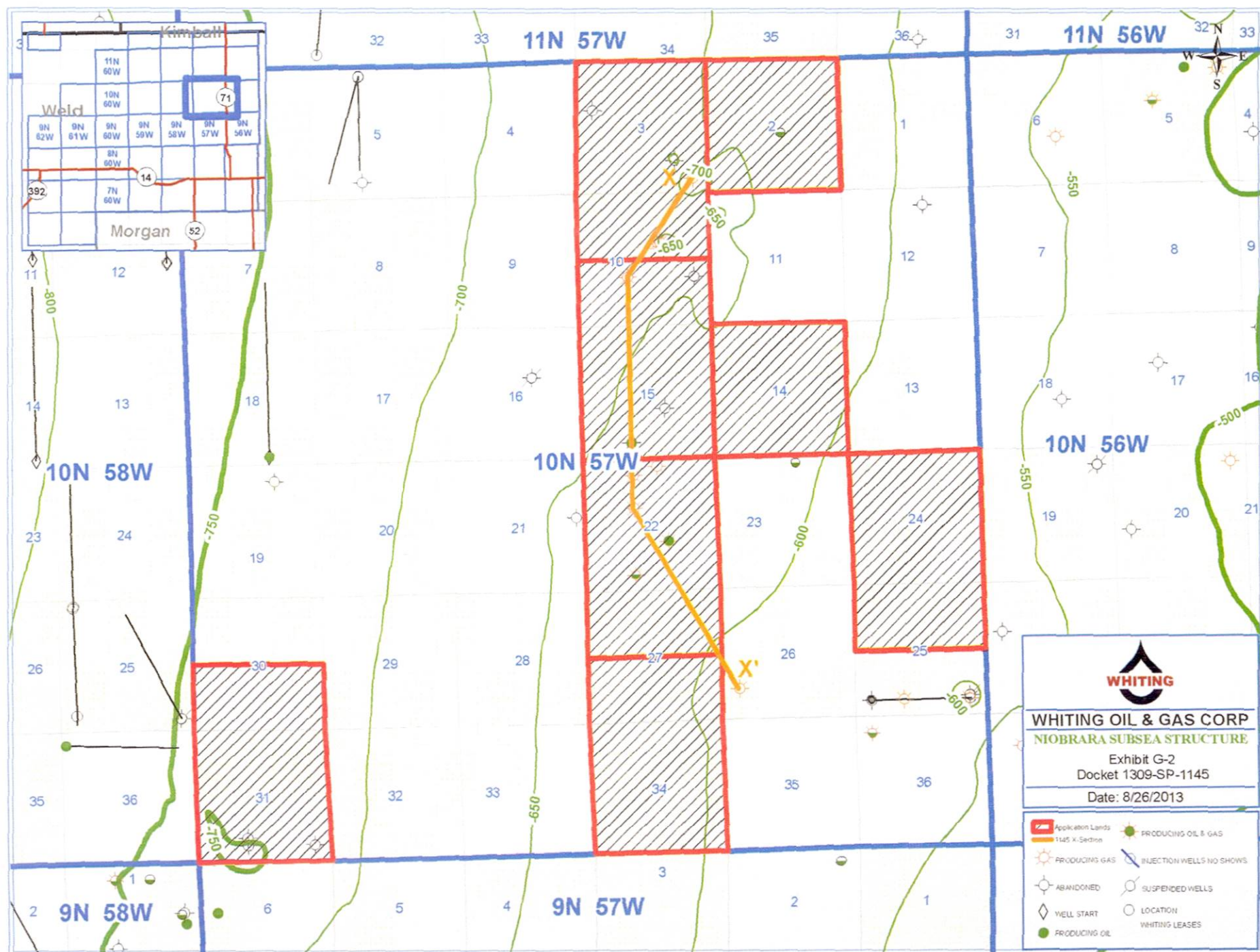


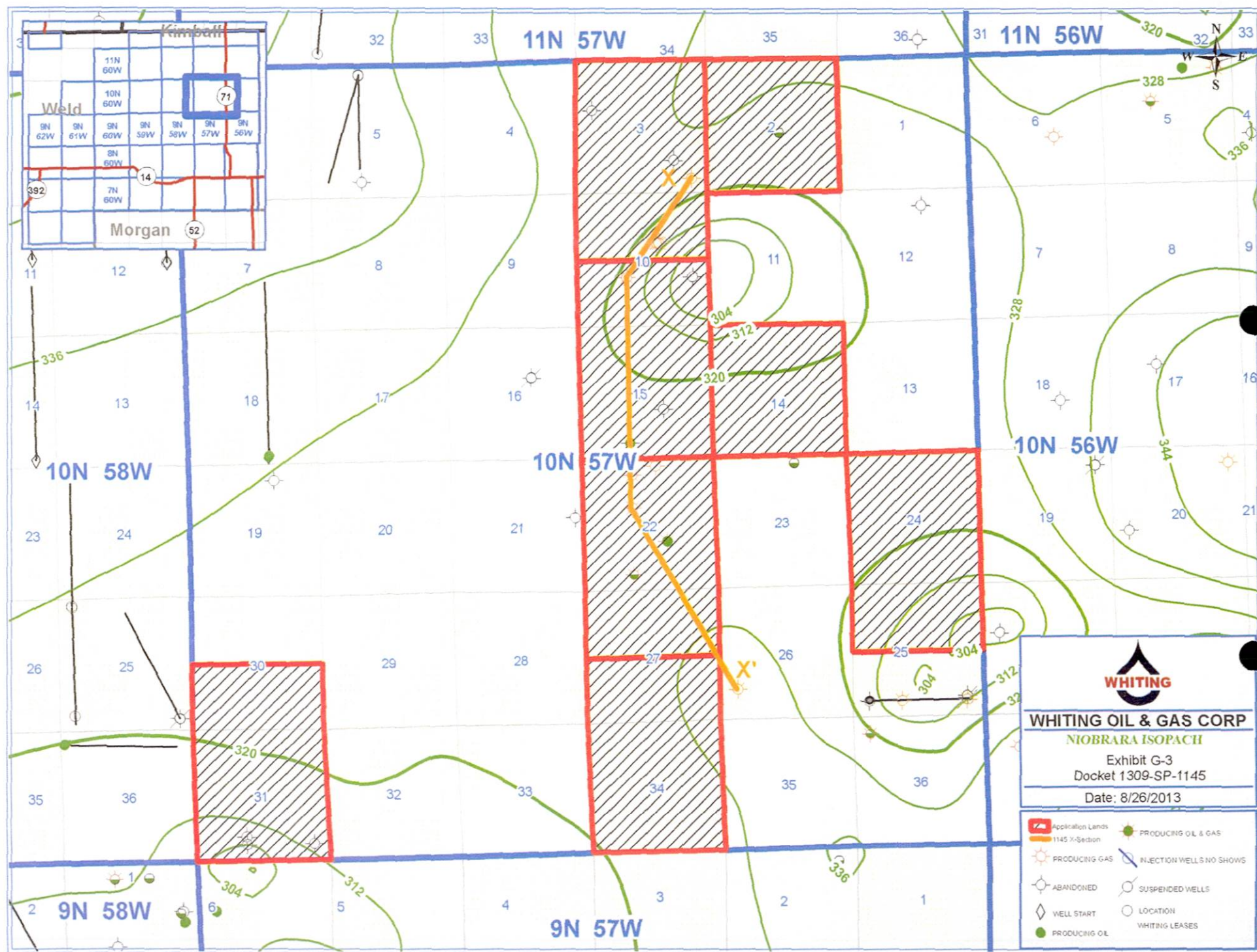
051233249100
WHITING OIL & GAS CORP.
TERRACE 36-32M
T10N R59W S36

KB : 4,905
TD : 6,928



WHITING OIL & GAS CORP.
EXHIBIT G-1
CAUSE No. 535
DOCKET 1309-SP-1145





X

X'

051231124800
TXO PROD CORP
TOEDTLI-B 1
T10N R57W S3


KB: 4,771
TD: 6,380
7/29/1983

051231538500
NERDLHC CO INC
TOEDTLI 1-10
T10N R57W S10

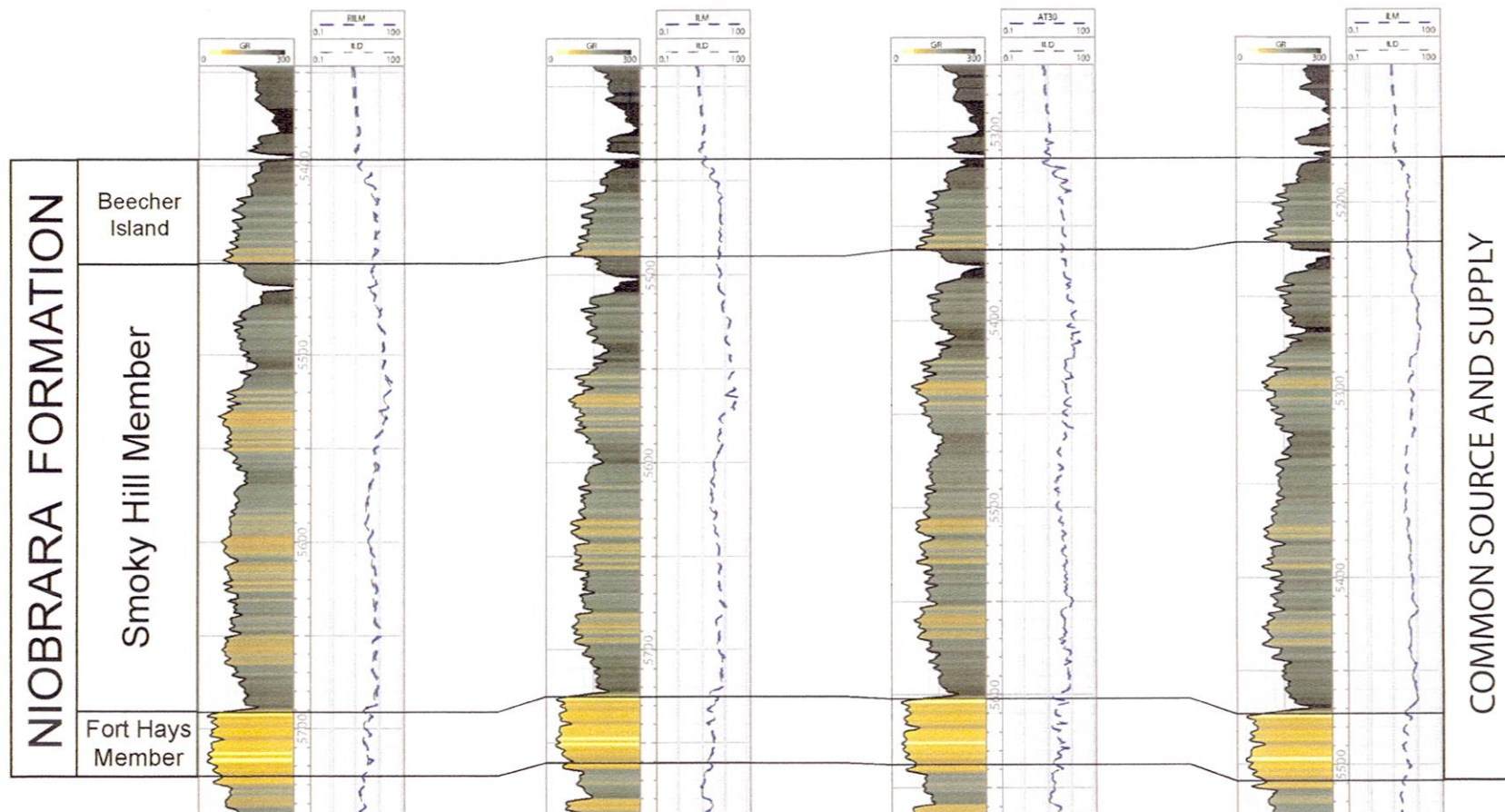

KB: 4,791
TD: 9,175
1/11/1992

051231988700
INTERMOUNTAIN OIL CO
TOEDTLI 22-3
T10N R57W S22


KB: 4,676
TD: 6,498
4/25/2000

051231941800
HUNTFORD RES
TOEDTLI 26-M
T10N R57W S26


KB: 4,603
TD: 6,201
7/31/1997



WHITING OIL & GAS CORP.
EXHIBIT G-4
CAUSE No. 535
DOCKET 1309-SP-1145

JOHN R FORSTER

PERSONAL:

Date of Birth: December 21, 1952
Marital Status: Married, 2 children
Colorado family since 1867

EDUCATION:

MS - Geology, University of Montana, 1977
BA - Geology, The Colorado College, 1975

PERSONAL:

1995-1997

President, The Knolls Homeowners Association

Littleton Soccer Association, Soccer Coach, 1993-2003
Littleton Soccer Association, Coach of the year 2003-2004
Prop Master, Arapahoe Color Guard and Marching Band
2002-2006

- **2004 – Present;** Whiting Oil and Gas Corporation, Regional Geological Manager, Central Rocky Mountain Region. Oversee and direct the Exploration and Exploitation activities in the Rocky Mountain Region and California.
- **2001-2004 - Consulting Geologist, Denver, CO;** Consultant on Basin Centered Gas Exploration in the Rocky Mountain Region, Clients included ExxonMobil Exploration, Anadarko Production Company, Shell International EP Inc., Burlington Resources Inc;
- **2001-2004 Yellowstone Solutions Incorporated, Littleton, CO;** Vice President; Developing software solutions for 3-dimensional modeling for the Oil and Gas Industry. Introduced a new software product, StrataPlay™
- **1995-1997, 2001-2004 – The Wetterhorn Company, Littleton, CO;** Owner; Developed and licensed Drill Stem Test and Operations Databases with supporting software for the Oil and Gas Industry.
- **1997-2001 – IHS Energy Group, Englewood, CO;** Product Manager, Geology and Exploration; Develop and support Enhanced Databases and Software for the Oil and gas Industry.
- **1992-1995 – Intera Information Technologies, Lakewood, CO;** Senior Exploration Geologist; Oversee the development of geologic studies in the Rocky Mountain Region, Mexico, and South America. This included developing studies of the Frontier and Dakota Formations, Green River Basin Wyoming that became a major part in several GRI Studies on tight gas sands.
- **1979 – 1991 – Dekalb Energy Incorporated, Denver, CO ; Rocky Mountain Exploration Manager;** Managed exploration of tight gas sands, coal bed methane as well as conventional reservoirs in the Powder River, Big Horn, Wind River, Green River, Piceance, Uinta, San Juan, and Denver Basins.
- **1977-1979 – Texaco Incorporated, Denver, CO; Exploration Geologist;** Developed exploration prospects in Wyoming and Montana.

MEMBERSHIPS and CERTIFICATIONS:

AAPG, RMAG, WGA; Wyoming

Professional Geologist #989

PUBLICATIONS:

Forster, J.R., and John C. Horne, "The Interpretation of Fluids and Pressures in Determining Conventional and Unconventional Gas Resources in the Rocky Mountain Region", in: "Gas in Low Permeability Reservoirs in the Rocky Mountain Region", 2005 RMAG Guidebook.

Forster, J.R., 2005, Hydrocarbon Distributions in Over and Under-Pressured Regions of the Muddy Formation, Powder River Basin, Rocky Mountain Association of Geologists.

Forster, J.R., 2004, "Gas Plumes and Their Importance in Exploration of the Cretaceous Rocks of the Rocky Mountain Region", 2004 Abstracts, AAPG Rocky Mountain Section Meeting, Denver.

Forster, J.R., and Mary M. Forster, "The Spatial Relationships of Basin Centered Gas Cells, Pressure Cells and Lithologic Surfaces in the Rocky Mountain Region, Canada and U.S., Proceedings, RMAG 2000 Basin Centered Gas Symposium, October, 2000.

Forster, J.R., with Horne, J.C.: "Depositional, diagenetic, and tectonic controls on Frontier Formation reservoir characteristics: Moxa Arch, Southwestern Wyoming," Paper SPE 29556, March 1995.

Forster, J.R., with E. Gomez, J.C. Horne and S.D. Sturm, "Stratigraphic Framework and Facies Distribution of the Frontier Formation, Moxa Arch", GRI Symposium on Geological Characterizations of the Cretaceous Gas Plays in the Greater Green River Basin, November, 1995.

John R. Forster and John C. Horne, "Where traditional GIS concentrates on the surface of the Earth, a Geodigital Framework allows the petroleum geologist to analyze what lies under the Earth's surface." Earth Observation Magazine, April, 1995.

Forster, J.R., and J.C. Horne, "Controls on Natural Gas Distribution: Frontier Formation, Green River Basin, Wyoming", Proceedings: The First Biennial Conference, Natural Gas in the Western United States, March 1994.

Forster, J.R., J. C. Horne, A. J. Scott, and E. Gomez: "The Opal Hinge, Green River Basin, Wyoming: lineament controls on facies and thickness variations", 1994, AAPG Abstracts with Convention, p. 15 1.

Forster, J.R. and J.C. Horne: "The Wright Fault Zone, Powder River Basin: An example of lineament control on hydrocarbon distribution", 1994, AAPG Abstracts with Convention, p. 15 1.

Forster, J.R., with Horne, J.C., A. J. Scott, and E. Gomez: "The Effects of contemporaneous tectonism on sediment distribution: Frontier Formation, Green River Basin, Wyoming", 1994, AAPG Abstracts with Convention, p. 174.

Forster, J.R., with Horne, J.C., and A.J. Scott: "Reservoir potential of low stand shore face sandstones: an example from the Green River Basin, Wyoming," 1994, AAPG Abstracts with Convention, p. 174.

Forster, J.R. with Horne, J.C., A. J. Scott, E. Gomez, S. Sturm, and L.T. Shannon: "Frontier Formation Study, Green River Basin, Wyoming," Technical Report Intera Information Technologies Inc., 1992 141p.

Forster, J.R., "Middle Ordovician subaerial exposure and deep weathering of the Lower Ordovician Manitou Formation along the Ute Pass Fault Zone, El Paso County, Colorado", Abstract with Convention, Rocky Mountain Section, GSA, 30th Annual Meeting, Vol 9, Number 6, March, 1977, p. 722.

Forster, J.R., "Solution of time mud at or near the mud water interface results in resistant thin limestone beds with recessive shaly residue partings", Abstract with Convention, Rocky Mountain Section, GSA, 30th Annual Meeting, Vol 9, Number 6, March, 1977 p. 722.

Forster, J.R., "Diagenesis Of The Lower Ordovician Manitou Formation, El Paso County, Colorado", M.S. Thesis, University of Montana, Missoula, Montana, 1977, 111p.

Whiting Petroleum Corporation
and it's wholly owned subsidiary
Whiting Oil and Gas Corporation

Engineering Testimony
Weld County, Colorado
Cause No. 535
Docket 1309-SP-1145

My name is Ralph L. Nelms. I am currently employed as a Senior Reservoir Engineer with Whiting Oil and Gas Corporation and am a licensed professional petroleum engineer in the states of Colorado and Wyoming. I have previously testified as an expert witness regarding Engineering before the Hearing Officers of the COGCC. I have over 30 years' experience in reservoir, production and drilling engineering and am familiar with the reservoir engineering characteristics on the Applications Lands, and the matters set forth in Docket 1309-SP-1145 application. A copy of my resume is contained in the exhibit booklet submitted by Whiting.

In support of Whiting's Application in the above referenced docket, I have prepared and am submitting eight exhibits (E-1 through E-10). The exhibits are attached to my sworn testimony and form the basis for Whiting's Application to gain approval to drill and complete on increased well density up to 16 wells in the requested 640-acre and 960-acre drilling and spacing units for the Niobrara Formation covering the Application Lands.

Exhibit E-1 presents Niobrara formation reservoir characteristics and a volumetric calculation showing the estimated oil recovery from increased density wells drilled on 640-acre spacing on the Application Lands.

Exhibit E-2 presents the favorable economics for Niobrara formation increased density wells drilled on 640-acre spacing on the Application Lands.

Exhibit E-3 presents Niobrara formation reservoir characteristics and a volumetric calculation showing the estimated oil recovery from increased density wells drilled on 960-acre spacing on the Application Lands.

Exhibit E-4 presents the favorable economics for Niobrara formation increased density wells drilled on 960-acre spacing on the Application Lands.

Exhibit E-5 presents the downhole pressure response recorded in a shut in horizontal Niobrara B producing well during a hydraulic fracture treatment of an offset horizontal Niobrara B well. Distance between the two horizontal Niobrara B wells was 1,270 feet representing approximately 160-acre well spacing within a 640-acre spacing unit

Exhibit E-6 presents the downhole pressure response recorded in a shut in horizontal Niobrara B producing well during a hydraulic fracture treatment of an offset horizontal Niobrara B well. Distance between the two horizontal Niobrara B wells was 630 feet representing approximately 80-acre well spacing within a 640-acre spacing unit.

Exhibit E-7 presents the downhole pressure response recorded in a shut in horizontal Niobrara B producing well during a hydraulic fracture treatment of an offset horizontal Niobrara A well. Distance between the horizontal Niobrara B and horizontal Niobrara A well was 650 feet representing approximately 80-acre well spacing within a 640-acre spacing unit.

Exhibit E-8 presents a summary of the findings from four oil production rate and downhole producing pressure transient analyses (aka RTA) performed on two 640-acre Niobrara B spacing unit wells, and two 960-acre spacing unit Niobrara B wells, in the immediate area of the Application Lands.

Exhibit E-9 presents cross section views of the horizontal multi-well, multi-layer infill and lease boundary well drilling program with well to well distances.

Exhibit E-10 presents a type log for the Niobrara formation showing both density and neutron porosity values used for the volumetric calculations.

Findings from the engineering analyses presented in exhibits E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9 and E-10 are summarized below:

- (1) Rate transient analysis (RTA) calculations performed on horizontal wells completed in the Niobrara formation indicate that the hydraulic fracture half-length (X_f) is a maximum of 105 feet in the area of the Application Lands.
- (2) Downhole pressure gauge responses recorded between shut in Niobrara producing wells and offset hydraulically fractured horizontal Niobrara wells ranged from 110 psi to 430 psi at distances of 630 feet to 1,270 feet between the horizontal laterals. These recorded pressure responses in the shut in production wells were only 2% to 7.5% of the equivalent bottom hole hydraulic fracture treatment pressures in the offset horizontal stimulated wells.
- (3) The very limited hydraulic fracture pressure communication, and calculated short hydraulic fracture half-lengths in the Niobrara formation, indicate drainage areas in horizontal Niobrara wells in the immediate area of the Application Lands are less than 80 acres per well.

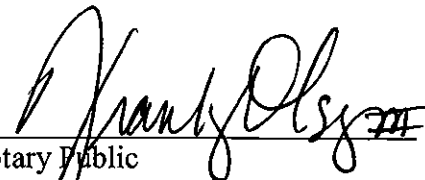
Engineering exhibits E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8, E-9, and E-10 were prepared by me and to the best of my knowledge, all of the matters set forth are true, correct, and accurate.



Ralph L. Nelms
Colorado License #18063
Wyoming License # 9380

BEFORE ME, the undersigned, on this day personally appeared Mr. Ralph L. Nelms in his capacity as Senior Reservoir Engineer for Whiting Petroleum Corporation and its wholly owned subsidiary Whiting Oil and Gas Corporation.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 20th day of August, 2013.


Notary Public

My Commission Expires 8-31-2014

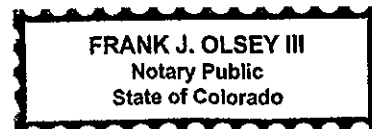


Exhibit E-1

640-acre Original and Recoverable Volumetric Oil In Place Calculations

Niobrara Formation Reservoir Parameter Description	Value	Units
Depth (True Vertical Depth Below Ground Level)	6,200	feet
Porosity	12%	percent
Swi (Initial Water Saturation Percent of Pore Space)	35%	percent
Net Pay Thickness	150	feet
Initial Reservoir Pressure	2,800	psi
Initial Reservoir Temperature	230	deg F
Gas Oil Ratio (Initial)	900	std. cubic feet/stock tank barrel
Oil Gravity	34	deg API
Gas Gravity	0.83	Air = 1.0
Initial Formation Volume Factor		
Carrizo Oil and Gas Cause 535 Order 535-1 Weld County (640-acres)	1.20	reservoir bbls/stock tank barrel
Continental Resources Cause 10 Order 10-11 Weld County (1280-acres)	1.25	
EOG Resources Cause 421 Order 421-3 Hereford Field (640-acres)	1.40	
Used for Whiting 640-acre calculations	1.28	
Recovery Factor		
Carrizo Oil and Gas Cause 535 Order 535-1 Weld County (640-acres)	5.0	% of volumetric oil in place
Continental Resources Cause 10 Order 10-11 Weld County (1280-acres)	6.0	
EOG Resources Cause 421 Order 421-3 Hereford Field (640-acres)	5.0	
Used for Whiting 640-acre calculations	5.0	
Area of Spacing Unit	640	acres
Drainage Area For 16 Wells in 640-acre Spacing Unit	40	acres
Recoverable Oil In Place Calculation		
OOIP = $7758 \times 640 \times 150 \times 0.12 \times (1-0.35) / 1.28$ (640 acres) (estimated)	45,384,300	stock tank barrels
EUR = OOIP x RF (640 acres estimated)	2,269,215	stock tank barrels
EUR for 16 horizontal wells drilled in 640 acre spacing unit (estimated)	141,826	stock tank barrels per well
EUR (stock tank barrels per acre ft) (estimated)	23.6	stock tank barrels/acre-ft
EQUATIONS USED:		
OOIP = $7758 \times \text{AREA} \times \text{HEIGHT} \times \text{POROSITY} \times (1-\text{Swi})/\text{Boi}$ (stock tank barrels)		
EUR = OOIP X RF (stock tank barrels)		
OOIP = Original Oil In place (stock tank barrels)		
EUR = Estimated Ultimate Oil Recovery (stock tank barrels)		
AREA = (acres) HEIGHT = NET PAY (feet)		
POROSITY = Pore space in the Total Rock Volume (fraction)		
Swi = Initial Water Saturation (fraction)		
RF = Recovery Factor of OOIP (fraction)		
Boi = Initial Oil Formation Volume Factor (reservoir barrels / stock tank barrels)		

Exhibit E-2

Niobrara Formation 640-acre Spacing Drilling and Completion Economics

Drilling and Completion Costs:	\$4.5MM
Oil Price:	\$80/bbl
Gas Price:	\$3.00/Mcf
Operating Expenses Monthly:	\$12,000/month + \$0.50/Mcf
Working Interest:	100%
Net Revenue Interest:	80%
State Severance Oil:	5%
State Severance Gas:	5%
County Ad Valorem:	4.95%
Gas Shrink	0.90
Gas Oil Ratio:	900 scf/stb
Initial Oil Rate:	8,000 barrels of oil per month (267 bopd)
Gross EUR Oil	142 Mbo (for each of 16 wells drilled on 640-acre spacing)
Gross EUR Gas	128 MMcf
Net EUR Oil	114 Mbo
Net EUR Gas	92 MMcf

Un-risked Economics:

Economics shown below are for each individual well assuming 16 horizontal wells are drilled in a 640-acre spacing unit:

Un-risked Gross EUR Oil:	142 Mbo
Un-risked Gross EUR Gas:	128 MMcf
NPV 10	\$0.76MM
DCFROR	21%
Discounted ROI	1.17
Discounted Payout	3.85 years

Conclusion: Project economics are favorable

Exhibit E-3

960-acre Original and Recoverable Volumetric Oil In Place Calculations

Niobrara Formation Reservoir Parameter Description	Value	Units
Depth { True Vertical Depth Below Ground Level)	6,200	feet
Porosity	12%	percent
Swi { Initial Water Saturation Percent of Pore Space)	35%	percent
Net Pay Thickness	150	feet
Initial Reservoir Pressure	2,800	psi
Initial Reservoir Temperature	230	deg F
Gas Oil Ratio (Initial)	900	std. cubic feet/stock tank barrel
Oil Gravity	34	deg API
Gas Gravity	0.83	Air = 1.0
Initial Formation Volume Factor		
Carrizo Oil and Gas Cause 535 Order 535-1 Weld County (640-acres)	1.20	reservoir bbls/stock tank barrel
Continental Resources Cause 10 Order 10-11 Weld County (1280-acres)	1.25	
EOG Resources Cause 421 Order 421-3 Hereford Field (640-acres)	1.40	
Used for Whiting 960-acre calculations	1.28	
Recovery Factor		
Carrizo Oil and Gas Cause 535 Order 535-1 Weld County (640-acres)	5.0	% of volumetric oil In place
Continental Resources Cause 10 Order 10-11 Weld County (1280-acres)	6.0	
EOG Resources Cause 421 Order 421-3 Hereford Field (640-acres)	5.0	
Used for Whiting 960-acre calculations	5.0	
Area of Spacing Unit	960	acres
Drainage Area For 16 Wells in 960-acre Spacing Unit	60	acres
Recoverable Oil In Place Calculation		
OOIP = $7758 \times 960 \times 150 \times 0.12 \times (1-0.35) / 1.28$ (960 acres) (estimated)	68,076,450	stock tank barrels
EUR = OOIP x RF (960 acres estimated)	3,403,823	stock tank barrels
EUR for 16 horizontal wells drilled in 960 acre spacing unit (estimated)	212,739	stock tank barrels per well
EUR (stock tank barrels per acre ft) (estimated)	23.6	stock tank barrels/acre-ft
EQUATIONS USED:		
OOIP = $7758 \times \text{AREA} \times \text{HEIGHT} \times \text{POROSITY} \times (1-\text{Swi})/\text{Boi}$ (stock tank barrels)		
EUR = OOIP X RF (stock tank barrels)		
OOIP = Original Oil In place (stock tank barrels)		
EUR = Estimated Ultimate Oil Recovery (stock tank barrels)		
AREA = (acres) HEIGHT = NET PAY (feet)		
POROSITY = Pore space in the Total Rock Volume (fraction)		
Swi = Initial Water Saturation (fraction)		
RF = Recovery Factor of OOIP (fraction)		
Boi = Initial Oil Formation Volume Factor (reservoir barrels / stock tank barrels)		

Exhibit E-4

Niobrara Formation 960-acre Spacing Drilling and Completion Economics

Drilling and Completion Costs:	\$5.8MM
Oil Price:	\$80/bbl
Gas Price:	\$3.00/Mcf
Operating Expenses Monthly:	\$12,000/month + \$0.50/Mcf
Working Interest:	100%
Net Revenue Interest:	80%
State Severance Oil:	5%
State Severance Gas:	5%
County Ad Valorem:	4.95%
Gas Shrink	0.90
Gas Oil Ratio:	900 scf/stb
Initial Oil Rate:	11,000 barrels of oil per month (366 bopd)
Gross EUR Oil	212 Mbo (for each of 16 wells drilled on 960-acre spacing)
Gross EUR Gas	191 MMcf
Net EUR Oil	170 Mbo
Net EUR Gas	137 MMcf

Un-risked Economics:

Economics shown below are for each individual well assuming 16 horizontal wells are drilled in a 960-acre spacing unit:

Un-risked Gross EUR Oil:	212 Mbo
Un-risked Gross EUR Gas:	191 MMcf
NPV 10	\$2.04MM
DCFROR	32%
Discounted ROI	1.35
Discounted Payout	2.71 years

Conclusion: Project Economics are Favorable

EXHIBIT E-5

Downhole Pressure Response in the Niobrara B Formation on Approximately 160-acre Well Spacing:

Well with downhole pressure gauges:	Wildhorse 02-0224H Niobrara B
Well that was fracture treated:	Wildhorse 02-0214H Niobrara B
Location:	Section 2 T9N R59W
Dates of fracture treatment:	Start on 10/3/2012 at 2:04 pm End on 10/4/2012 at 10:05 am
Distance between horizontal wells:	1,270 feet
Number of fracture stages:	18
Incremental pressure response:	110 psi
Gauge depth	5,303 feet
TVD Niobrara B	6,135 feet (832 feet below gauges)
Surface treatment pressure:	2,600 psi to 6,835 psi Wildhorse 02-0214H
Equivalent bottom hole pressure:	5,400 psi to 9,005 psi Wildhorse 02-0214H
Percent of fracture pressure observed	2.0% to 1.2% of equivalent bottom hole pressure

Figure E-5-1: Graph of Downhole Pressure Measurements Recorded in Shut In Wildhorse 02-0224H Niobrara B Producing Well During Wildhorse 02-0214H Niobrara B Hydraulic Fracture Treatment

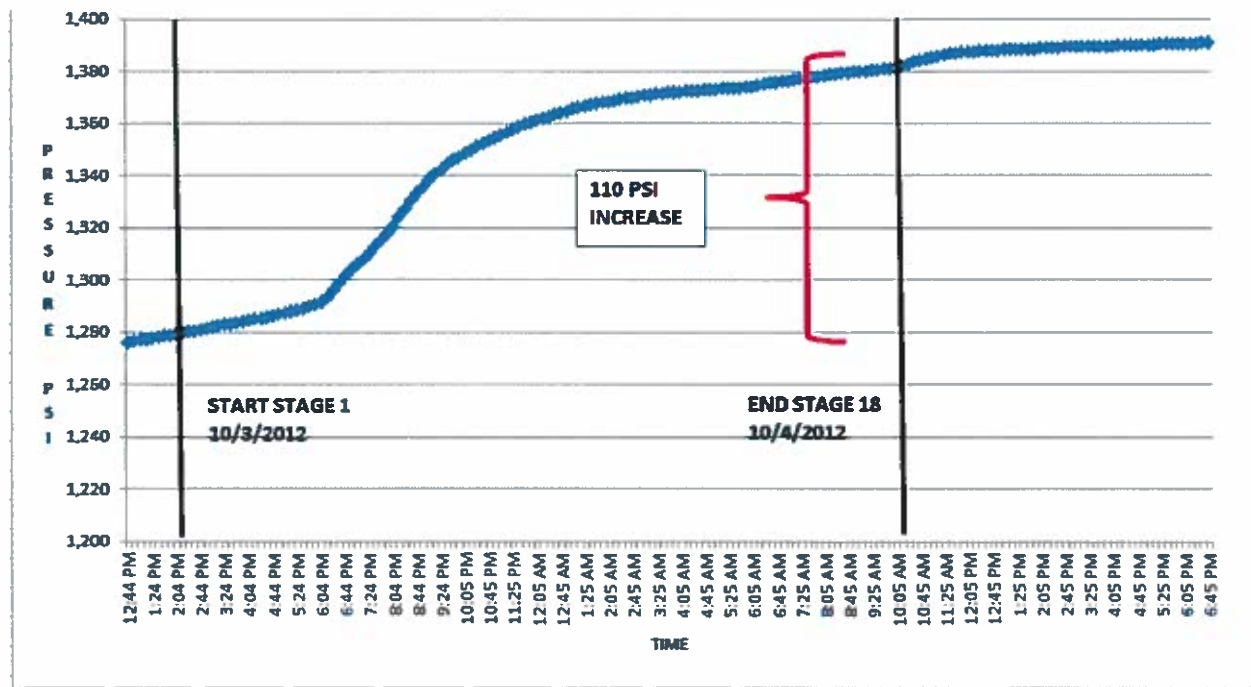


Figure E-5-2: Well Location Map Section 2 T9N R59W

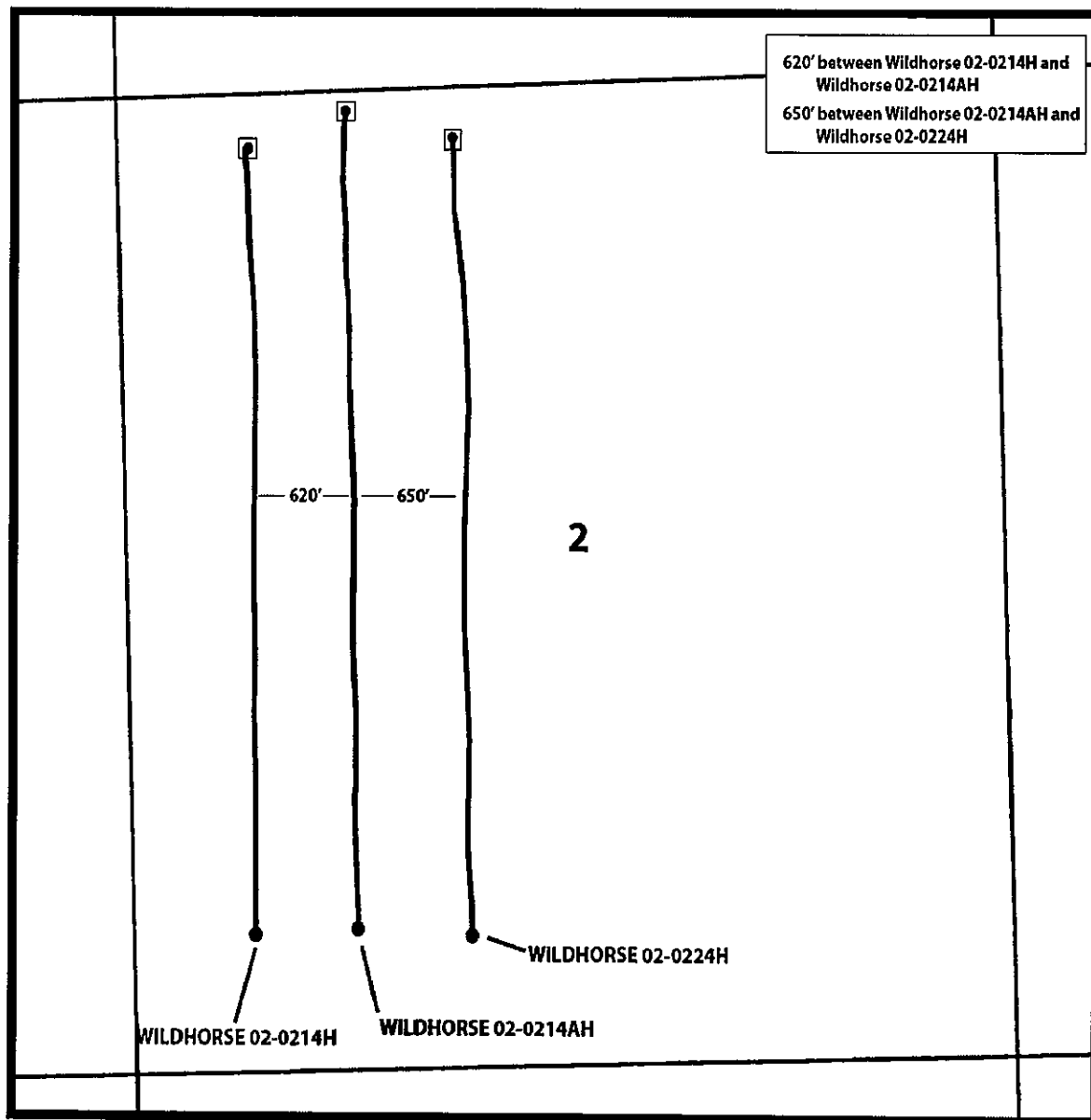


EXHIBIT E-6

Downhole Pressure Response in the Niobrara B Formation on Approximately 80-acre Well Spacing:

Well with downhole pressure gauges:	Wildhorse 16-42H	Niobrara B
Well that was fracture treated:	Wildhorse 16-13BH	Niobrara B
Location:	Section 16 T9N R59W	
Dates of fracture treatment:	Start on 12/17/2012 at 6:30 am End on 12/19/2012 at 8:50 am	
Distance between horizontal wells:	630 feet	
Number of fracture stages:	24	
Incremental pressure response:	320 psi	
Depth of gauge	5,533 feet	
TVD Niobrara B	6,277 feet (744 feet below gauges)	
Surface treatment pressure:	2,446 psi to 5,554 psi Wildhorse 16-1613BH	
Equivalent bottom hole pressure:	5,300 psi to 8,100 psi Wildhorse 16-1613BH	
Percent of fracture pressure observed	6.0% to 4.0% of equivalent bottom hole pressure	

Figure E-6-1 Graph of Downhole Pressure Measurements Recorded in Shut In Wildhorse 16-42H Niobrara B Producing Well During Wildhorse 16-13BH Niobrara B Hydraulic Fracture Treatment

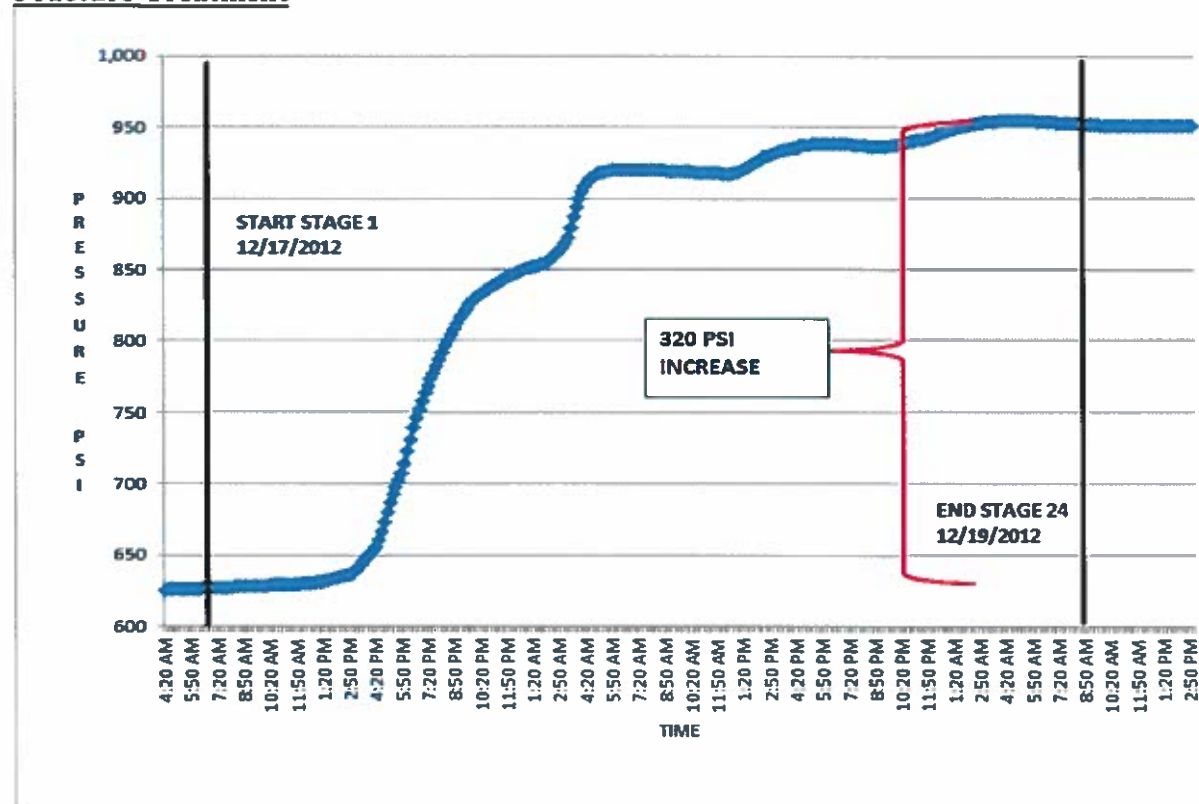


Figure E-6-2 Well Location Map Section 16 T9N R59W

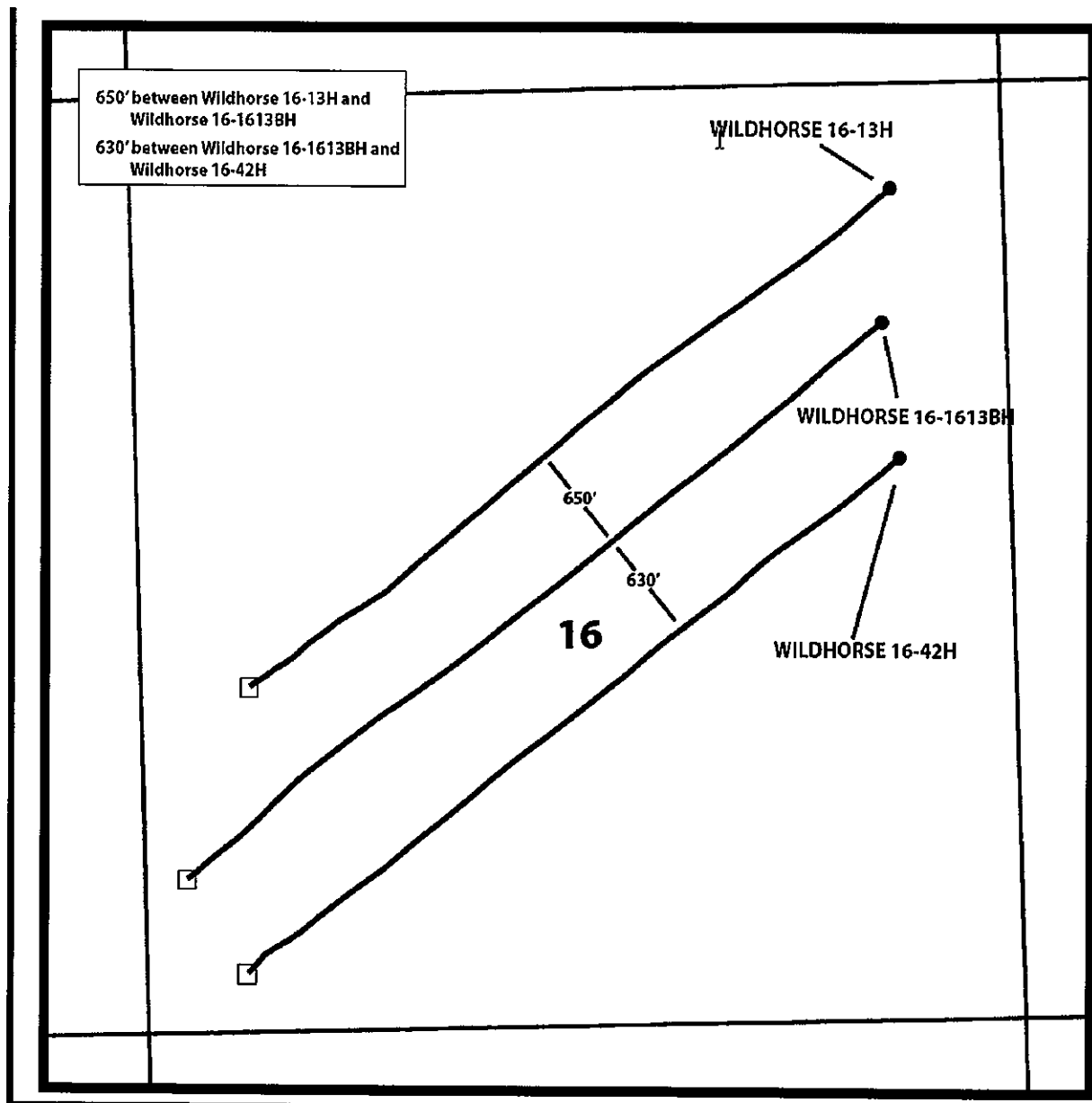


Exhibit E-7

Downhole Pressure Response Between the Niobrara B and the Niobrara A Formations on Approximately 80-acre Well Spacing:

Well with downhole pressure gauges:	Wildhorse 02-0224H	Niobrara B
Well that was fracture treated:	Wildhorse 02-0214AH	Niobrara A
Location:	Section 2 T9N R59W	
Dates of fracture treatment:	Start on 10/27/2012 at 8:07 am End on 10/28/2012 at 10:07 am.	
Distance between horizontal wells:	650 feet	
Number of fracture stages:	18	
Incremental pressure response:	430 psi	
Depth of gauge	5,303 feet	
TVD Niobrara B	6,135 feet (832 feet below gauges)	
Surface treatment pressure:	2,700 psi to 5,902 psi Wildhorse 02-0214AH	
Equivalent bottom hole pressure:	5,701 psi to 8,595 psi Wildhorse 02-0214AH	
Percent of fracture pressure observed	7.5% to 5.0% of equivalent bottom hole pressure	

Figure E-7-1 Graph of Downhole Pressure Measurements Recorded in Shut In Wildhorse 02-0224H Niobrara B Formation Producing Well During Wildhorse 02-0214AH Niobrara A Formation Hydraulic Fracture Treatment

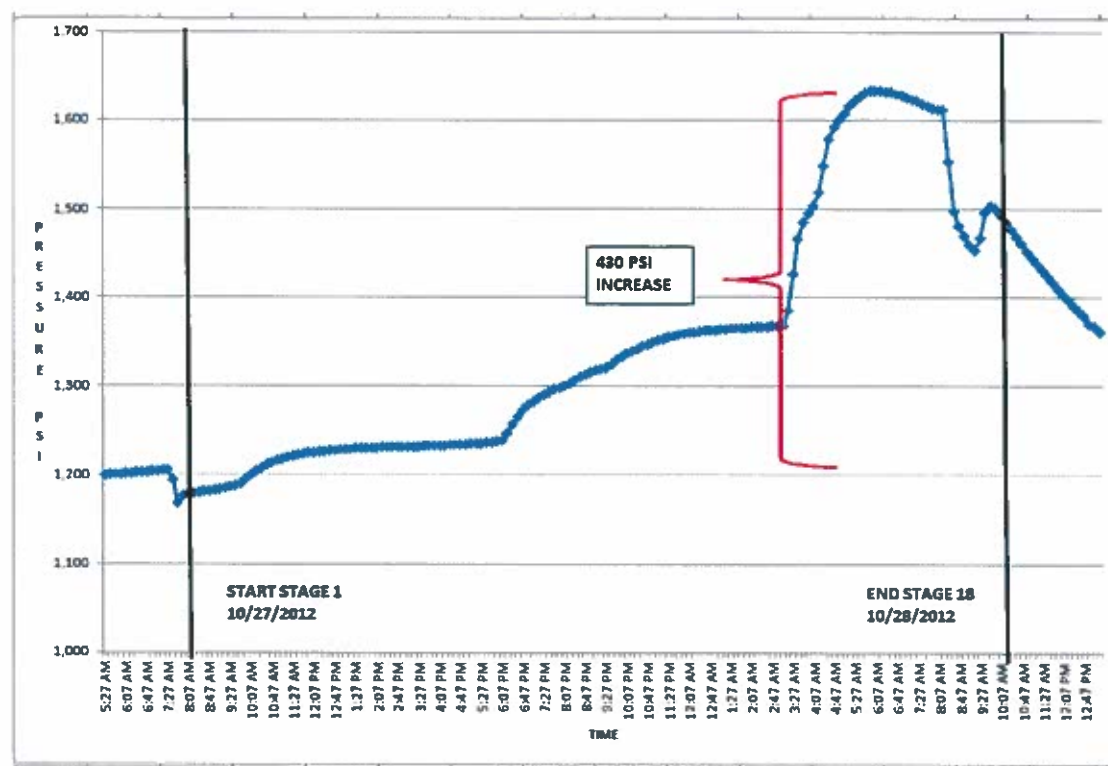


Figure E-7-2 Well Location Map Section 2 T9N R59W

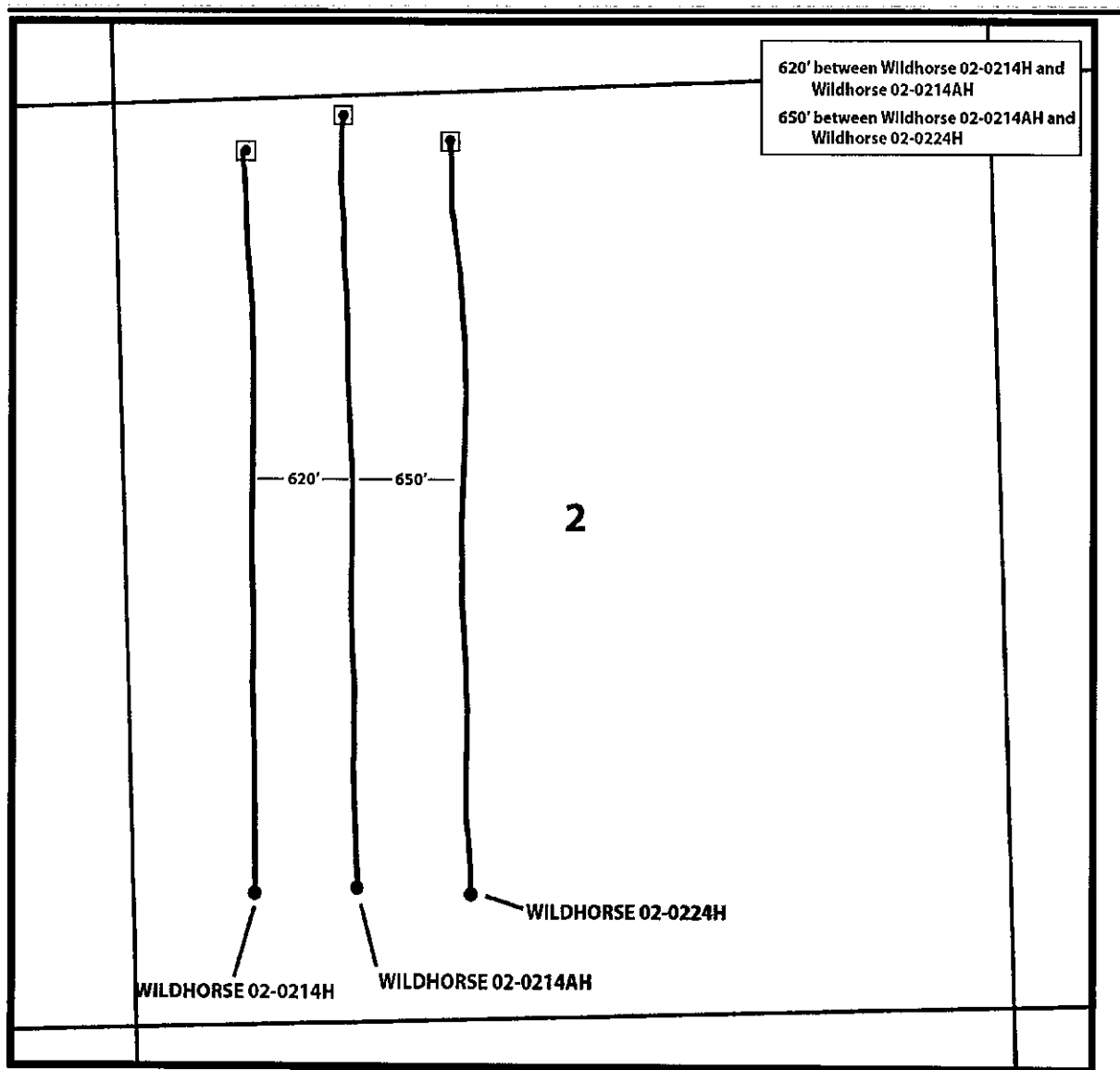


Exhibit E-8

Figure E-8-1: Example of Rate Transient Analysis Production and Pressure History Plot for 640-acre Wildhorse 16-13H Niobrara B Horizontal Well in Section 16 T9N R59W.

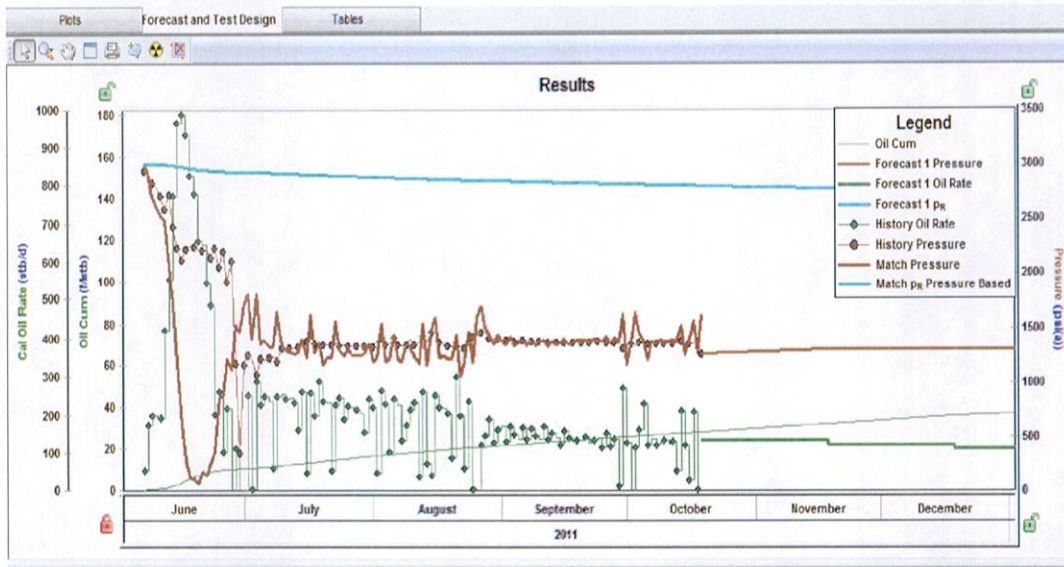


Figure E-8-2: Summary of Whiting Rate Transient Analysis on four Niobrara B Wells Showing Fracture Half Length (X_f) of 105 feet or less

Whiting Niobrara B RTA Results Summary					
R NELMS 1 21 2013					
WELL NAME	Drilling Unit	WELL LOCATION	DATE of TEST	Keff Oil Micro-Darcies	X_f Feet
Wildhorse 16-13H	640	SEC 16 T9N R59W	6/30/2011	17	50
Two Mile 22-13H	640	SEC 22 T11N R57W	8/16/2011	17	85
Horsetail 18-0733H	960	SEC 18 T10N R57W	2/7/2012	12	105
Wolf 35-2623H	960	SEC 35 T10N R59W	2/29/2012	3	100
X_f = Effective Hydraulic Fracture Half Length in feet (See Drawing below published by Fekete and Associates)					

Fracture Half-Length (X_f)

A hydraulic fracture is typically modeled by assuming it extends in a straight line equally on each side of the wellbore as shown in the following diagram.



As shown, the fracture half-length is the distance from the well to the tip of the fracture.

Exhibit E-9

Figure E-9-1 Cross Section View of Possible Multi-Layer Niobrara Horizontal Well Minimum Spacing Drilling Program on Application Lands

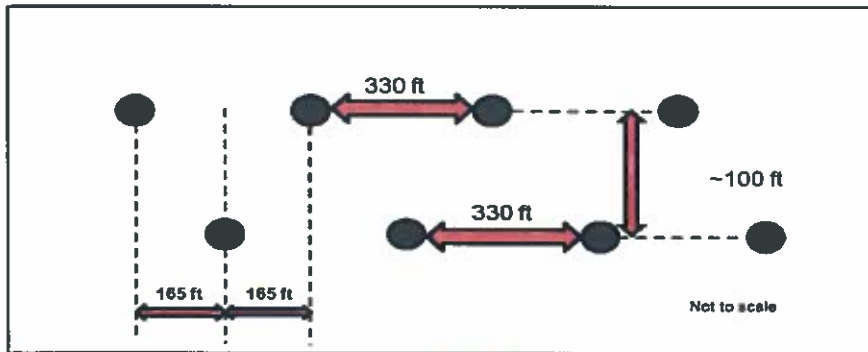


Figure E-9-2 Cross Section View of Internal Horizontal Well Spacing Showing Drilling Maximum Ellipse of Uncertainty of 65 feet.

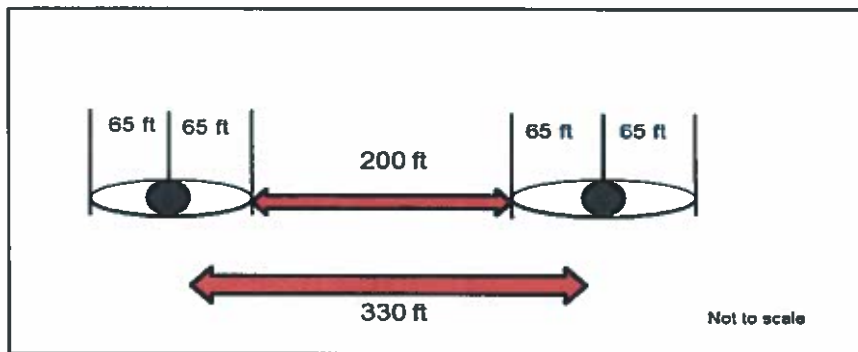


Figure E-9-3 Cross Section View of Future Full Development Scenario Lease Line Horizontal Well Spacing Showing Drilling Maximum Ellipse of Uncertainty of 65 feet.

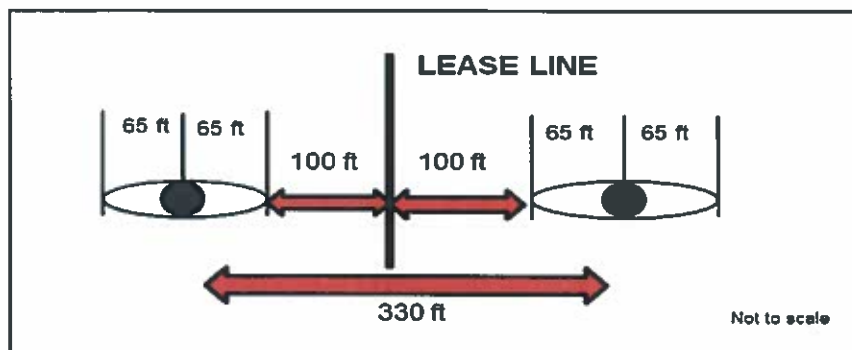
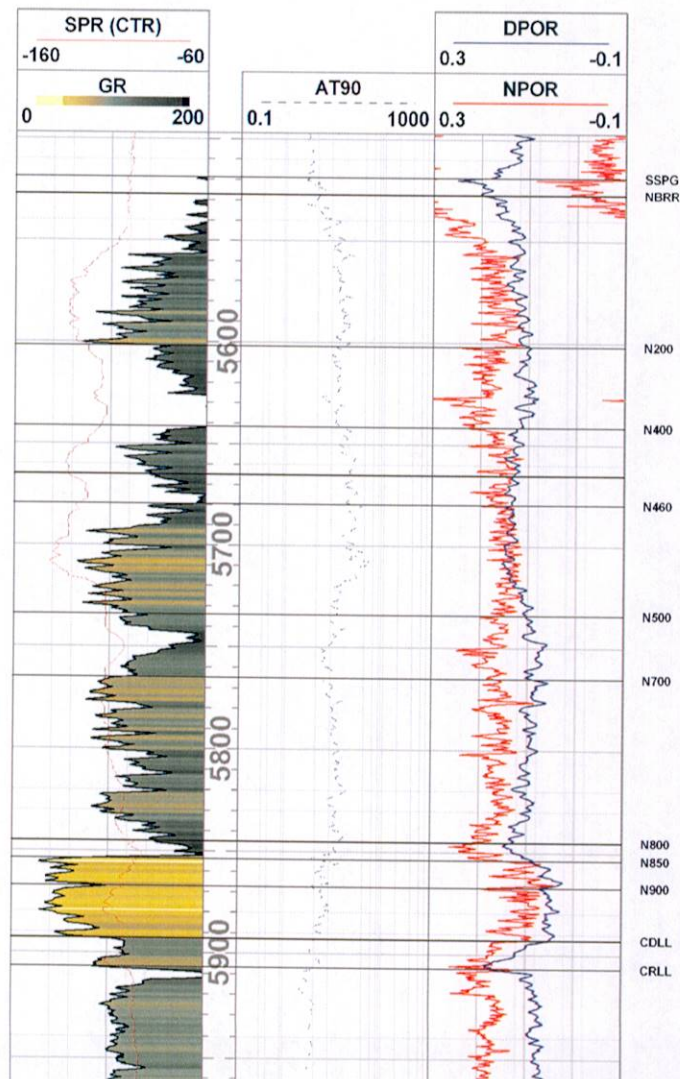


Exhibit E-10

Type Log Showing Density and Neutron Porosity for Niobrara Formation in Twomile Creek 22-33M
Well T11N R57W Section 22.

051233310500
WHITING OIL & GAS CORP.
TWOMILE 22-33M
T11N R57W S22

KB : 4,897
TD : 6,627



RALPH L. NELMS

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PROFESSIONAL EXPERIENCE

WHITING PETROLEUM CORPORATION, Denver, Colorado <i>Senior Reservoir Engineer.</i>	2008 to present
ST. MARY LAND AND EXPLORATION, Billings, Montana <i>Consulting Reservoir Engineer</i>	2007- 2008
ANADARKO PETROLEUM/KERR MCGEE ONSHORE, Denver, Colorado <i>Senior Staff Reservoir Engineer</i>	2004- 2007
WESTPORT OIL AND GAS COMPANY, Denver, Colorado <i>Senior Reservoir Engineer</i>	2001-2004
BURLINGTON RESOURCES, INC., Farmington, New Mexico <i>Senior Staff Reservoir Engineer/Team Leader</i>	1998- 2000
PETROGLYPH OPERATING COMPANY, Hutchinson, Kansas <i>Manager of Engineering and Development</i>	1996-1998
FORELAND CORPORATION, Lakewood, Colorado <i>Senior Petroleum Engineer</i>	1994-1996
WINDSOR GAS PROCESSING, Loveland, Colorado <i>Vice President</i>	1988-1994
COORS ENERGY COMPANY, Golden, Colorado <i>Petroleum Engineer</i>	1980-1988
SCIENCE APPLICATIONS, INC., Golden, Colorado <i>Petroleum/Mining Engineer</i>	1978-1980
SUN OIL COMPANY, Lafayette, Louisiana <i>Associate Drilling Engineer</i>	1975-1976

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Colorado School of Mines	M.S.	Petroleum Engineering	1997
	B.S.	Mining Engineering	1977
	B.S.	Petroleum Engineering	1974
Regis University	M.B.A.	Finance and Accounting	1987

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