



02419781

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

**RECEIVED**

OCT 15 2013

**COGCC**

IN THE MATTER OF THE APPLICATION OF ) CAUSE NO. TBD  
MUSTANG CREEK HOLDINGS, LLC FOR AN )  
ORDER ESTABLISHING ONE APPROXIMATE ) DOCKET NO. 1307-SP-1114  
635.6-ACRE EXPLORATORY DRILLING AND )  
SPACING UNIT FOR THE S½ OF SECTION )  
32, TOWNSHIP 12 SOUTH, RANGE 59 WEST, )  
AND N½ OF SECTION 5, TOWNSHIP 13 )  
SOUTH, RANGE 59 WEST, 6th P.M., FOR )  
MULTIPLE FORMATIONS IN AN UNNAMED )  
FIELD, ELBERT COUNTY, COLORADO )

ORIGINAL

REQUEST FOR RECOMMENDATION OF  
APPROVAL OF APPLICATION WITHOUT A HEARING

Mustang Creek Operating, LLC ("Applicant"), by and through its undersigned attorneys, hereby requests pursuant to Rule 511.a. of the Rules and Regulations of the Colorado Oil and Gas Conservation Commission for the Director to recommend approval of its September 26, 2013 verified amended application ("Amended Application") and the supporting exhibits without a hearing.

Applicant requests that the above-captioned matter be approved based upon: (i) the merits of the Amended Application, and (ii) Applicant's sworn written testimony verifying sufficient facts along with exhibits that adequately support the relief requested in the Amended 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 Amended Application without a hearing be granted.

DATED this 15th day of October, 2013.

Respectfully submitted,

**Mustang Creek Operating, LLC.**

By: Theresa M. Sauer  
William E. Sparks  
Jamie L. Jost  
Theresa M. Sauer  
Beatty & Wozniak, P.C.  
Attorneys for Applicant  
216 16<sup>th</sup> Street, Suite 1100  
Denver, Colorado 80202  
(303) 407-4499

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

RECEIVED

OCT 15 2013

COGCC

IN THE MATTER OF THE APPLICATION OF ) CAUSE NO. TBD  
MUSTANG CREEK HOLDINGS, LLC FOR AN )  
ORDER ESTABLISHING ONE APPROXIMATE ) DOCKET NO. 1307-SP-1114  
635.6-ACRE EXPLORATORY DRILLING AND )  
SPACING UNIT FOR THE S½ OF SECTION )  
32, TOWNSHIP 12 SOUTH, RANGE 59 WEST, )  
AND N½ OF SECTION 5, TOWNSHIP 13 )  
SOUTH, RANGE 59 WEST, 6th P.M., FOR )  
MULTIPLE FORMATIONS IN AN UNNAMED )  
FIELD, ELBERT COUNTY, COLORADO )

REQUEST FOR RECOMMENDATION OF  
APPROVAL OF APPLICATION WITHOUT A HEARING

Mustang Creek Operating, LLC ("Applicant"), by and through its undersigned attorneys, hereby requests pursuant to Rule 511.a. of the Rules and Regulations of the Colorado Oil and Gas Conservation Commission for the Director to recommend approval of its September 26, 2013 verified amended application ("Amended Application") and the supporting exhibits without a hearing.

Applicant requests that the above-captioned matter be approved based upon: (i) the merits of the Amended Application, and (ii) Applicant's sworn written testimony verifying sufficient facts along with exhibits that adequately support the relief requested in the Amended 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 Amended Application without a hearing be granted.

DATED this 15th day of October, 2013.

Respectfully submitted,

**Mustang Creek Operating, LLC.**

By: Theresa M. Sauer

William E. Sparks  
Jamie L. Jost  
Theresa M. Sauer  
Beatty & Wozniak, P.C.  
Attorneys for Applicant  
216 16<sup>th</sup> Street, Suite 1100  
Denver, Colorado 80202  
(303) 407-4499

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

**RECEIVED**

OCT 15 2013

**COGCC**

IN THE MATTER OF THE APPLICATION OF ) CAUSE NO. TBD  
MUSTANG CREEK HOLDINGS, LLC FOR AN )  
ORDER ESTABLISHING ONE APPROXIMATE ) DOCKET NO. 1307-SP-1114  
635.6-ACRE EXPLORATORY DRILLING AND )  
SPACING UNIT FOR THE S½ OF SECTION )  
32, TOWNSHIP 12 SOUTH, RANGE 59 WEST, )  
AND N½ OF SECTION 5, TOWNSHIP 13 )  
SOUTH, RANGE 59 WEST, 6th P.M., FOR )  
MULTIPLE FORMATIONS IN AN UNNAMED )  
FIELD, ELBERT COUNTY, COLORADO )

REQUEST FOR RECOMMENDATION OF  
APPROVAL OF APPLICATION WITHOUT A HEARING

Mustang Creek Operating, LLC ("Applicant"), by and through its undersigned attorneys, hereby requests pursuant to Rule 511.a. of the Rules and Regulations of the Colorado Oil and Gas Conservation Commission for the Director to recommend approval of its September 26, 2013 verified amended application ("Amended Application") and the supporting exhibits without a hearing.

Applicant requests that the above-captioned matter be approved based upon: (i) the merits of the Amended Application, and (ii) Applicant's sworn written testimony verifying sufficient facts along with exhibits that adequately support the relief requested in the Amended 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 Amended Application without a hearing be granted.

DATED this 15th day of October, 2013.

Respectfully submitted,

**Mustang Creek Operating, LLC.**

By: Theresa M. Sauer

William E. Sparks  
Jamie L. Jost  
Theresa M. Sauer  
Beatty & Wozniak, P.C.  
Attorneys for Applicant  
216 16<sup>th</sup> Street, Suite 1100  
Denver, Colorado 80202  
(303) 407-4499

# **Mustang Creek Operating, LLC**

Cause No. TBD  
Docket No. 1307-SP-1114



**Land Testimony – Bob Davis**  
Cause No. TBD  
Docket No. 1307-SP-1114  
Spacing Application  
Unnamed Field

September 2013 Colorado Oil and Gas Conservation Commission Hearing

My name is Bob Davis. I am the Vice President of Land for Mustang Creek Operating, LLC. I have a BBA in Petroleum Land Management from The University of Oklahoma, and a MBA from California State University-Bakersfield. I have over 34 years of experience in oil and gas exploration and development throughout North America. I have worked directly or in a supervisory role with the properties that are the subject of this matter.

In support of Mustang Creek's Application, I am submitting four (4) exhibits. This testimony and exhibits are attached to my sworn testimony and outline the parameters for this application to establish one approximate 635.6-acre exploratory drilling and spacing unit, and authorizing one well, for the following described lands (the "Application Lands"):

**Township 12 South, Range 59 West, 6th P.M.**  
Section 32: S½

**Township 13 South, Range 59 West, 6th P.M.**  
Section 5: N½

Elbert County, Colorado

**Exhibit No. L-1: Surface Ownership**

Exhibit L-1 shows the surface ownership of the Application Lands. 100% of the surface ownership of the Application Lands is owned in fee.

**Exhibit No. L-2: Mineral Ownership**

Exhibit L-2 shows the mineral ownership of the Application Lands. 100% of the mineral ownership of the Application Lands is owned in fee.

Exhibit No. I-3: Leasehold Ownership

Exhibit L-3 shows the leasehold interests held by Mustang Creek Holdings, LLC, an affiliate of Mustang Creek Operating, LLC, in the Application Lands. Mustang Creek Holdings, LLC holds 100% of the leasehold interest in the Application Lands.

Exhibit No. L-4: Topography

Exhibit L-4 shows the topography of the Application Lands. The contour interval for the Application Lands is 20 feet.

Based upon our examination of the relevant public documents, and under my direction and control, all of the interested parties identified on Exhibit "A" attached to the Application received proper notice. As of the date of this testimony, Mustang Creek has not received any protests or objections to the Application.

Affirmation

The matters described herein were conducted under my direction and control. To the best of my knowledge and belief all matters set forth herein and in the exhibits are true, correct and accurate.

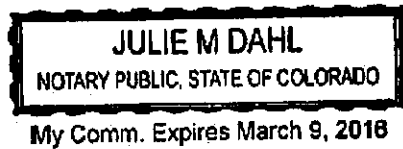
Bob Davis  
Bob Davis

State of Colorado     )  
                                  ) ss.  
County of Arapahoe    )

The foregoing instrument was subscribed and sworn to before me this 2<sup>nd</sup> day of August, 2013, by Bob Davis, Vice President of Land, Mustang Creek Operating, LLC.

Witness my hand and official seal.

[SEAL]



Julie M Dahl  
Notary Public

My commission expires: 3/9/16

Exhibit L-1

Surface Ownership Map

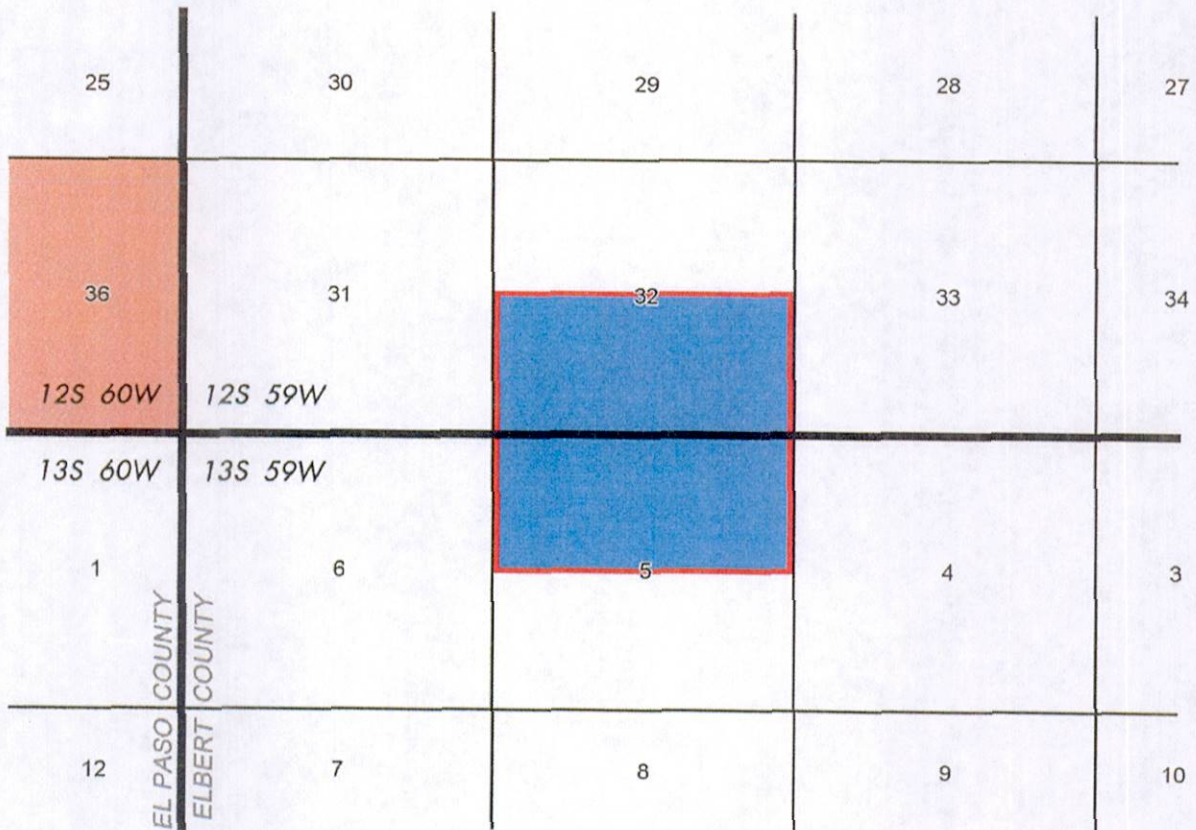
*Proposed 635.60 Acre Spacing Unit*

Township 12 South, Range 59 West, 6th P.M.  
Section 32: S2

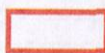


&

Township 13 South, Range 59 West, 6th P.M.  
Section 5: N2

ELBERT COUNTY, COLORADO



Legend

-  Spacing Unit
-  Federal Surface Ownership
-  State Surface Ownership
-  Fee Surface Ownership

**mustang**  **creek**  
OPERATING, LLC



Exhibit L-2

Mineral Ownership Map

*Proposed 635.60 Acre Spacing Unit*

Township 12 South, Range 59 West, 6th P.M.

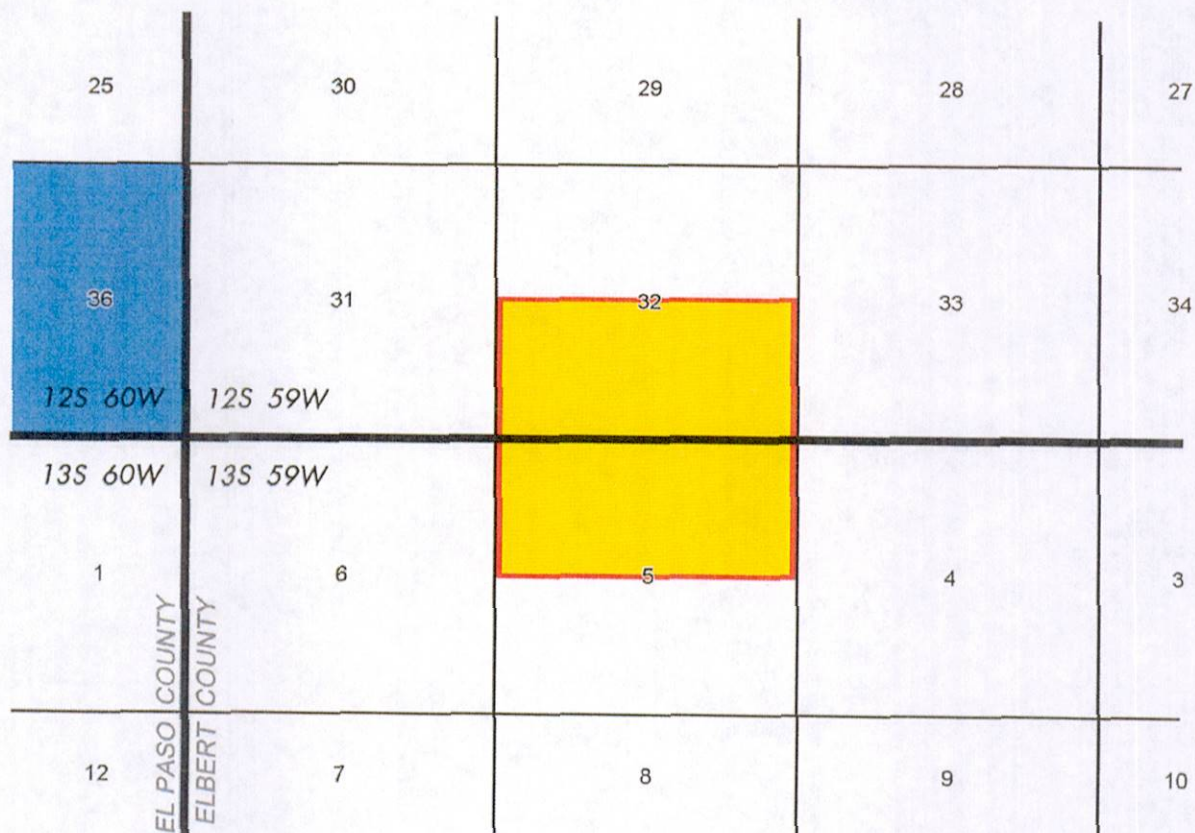
Section 32: S2

&

Township 13 South, Range 59 West, 6th P.M.

Section 5: N2

ELBERT COUNTY, COLORADO



Legend

-  Spacing Unit
-  Fee Mineral Ownership
-  Federal Mineral Ownership
-  State Mineral Ownership

**mustang**  **creek**  
OPERATING, LLC



Exhibit L-3

Lease Ownership Map

*Proposed 635.60 Acre Spacing Unit*

Township 12 South, Range 59 West, 6th P.M.

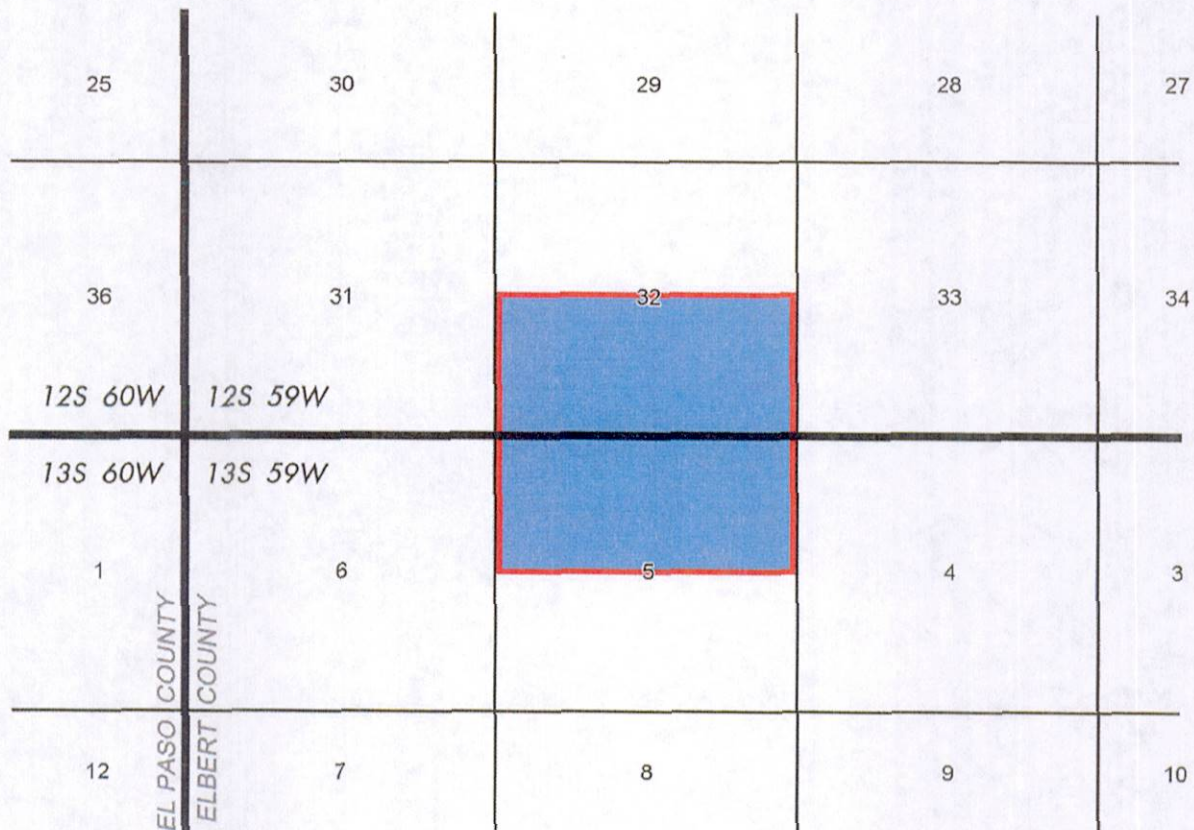
Section 32: S2

&

Township 13 South, Range 59 West, 6th P.M.


Section 5: N2

ELBERT COUNTY, COLORADO



Legend

 Spacing Unit

 Mustang Creek 100% Leasehold

**mustang**  **creek**  
OPERATING, LLC



Exhibit L-4

Topographic Map

*Proposed 635.60 Acre Spacing Unit*

Township 12 South, Range 59 West, 6th P.M.

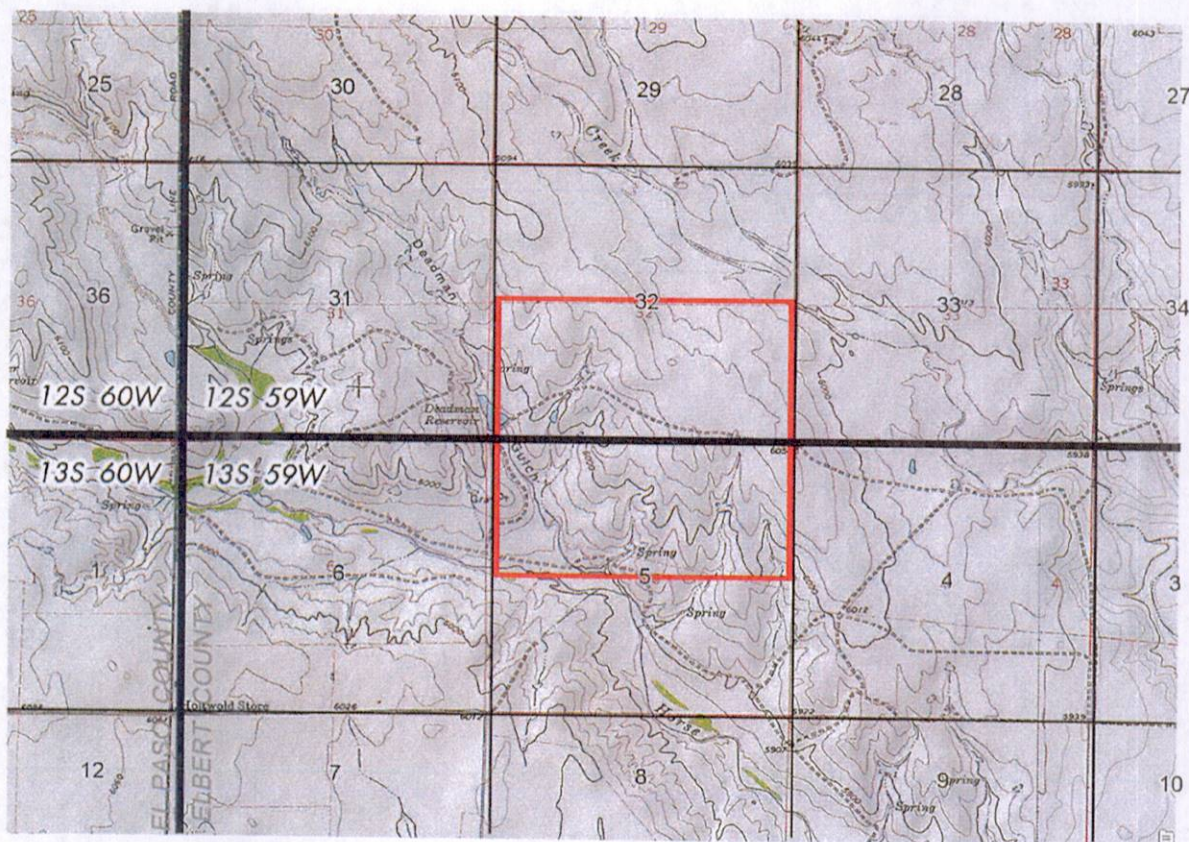
Section 32: S2

&

Township 13 South, Range 59 West, 6th P.M.

Section 5: N2

ELBERT COUNTY, COLORADO



Legend

 Spacing Unit

**mustang**  **creek**  
OPERATING, LLC

## **ROBERT G. DAVIS, CPL**

### **Summary**

I am a Landman with 35 years of industry experience working with majors, large independents and private companies. I am currently Vice President of Land at NexGen Oil and Gas, LLC. Experience has spanned several U.S. Basins, including a majority of Rocky Mountain Basins and California.

### **Experience**

#### **NexGen Oil & Gas, LLC (January 2012 – Current)**

Title: Vice President, Land

#### **Patara Oil & Gas, LLC (August 2012 – December 2011)**

Title: Vice President, Land

#### **Rosetta Resources, Inc. (September 2005 – July 2010)**

Title: Land Manager

#### **EOG Resources, Inc. (February 2000 – August 2005)**

Title: Senior Landman

#### **Venoco, Inc. (1998 – 2000)**

Title: Landman

#### **Tom Brown, Inc. (1996 – 1998)**

Title: Landman

#### **Mobil Corporation (1984 – 1996)**

Title: Landman

#### **Superior Oil Company (1978 – 1984)**

Title: Landman

### **Education**

#### **University of Oklahoma**

BBA, Petroleum Land Management

1973 – 1978

#### **California State University-Bakersfield**

MBA, Finance, General



### **Professional Certifications / Memberships**

American Association of Professional Landman (AAPL)

Denver Association of Professional Landman (DAPL)

Certified Professional Landman (CPL)

Former President of DAPL

Mustang Creek Operating, LLC

Prescott Ranches 32-34 Geologic Testimony – Roger Falk

Cause No. TBD

Docket No. 1307-SP-1114

Spacing Application

Lower Pennsylvanian, Mississippian, Ordovician, and Cambrian Geologic Intervals

Unnamed Field

October 2013 Colorado Oil and Gas conservation Commission Hearing

My name is Roger Falk. I am the Vice President of Exploration for Mustang Creek Operating, LLC. I have a BS and a MS in Geology from Colorado State University. I have 22 years of experience in oil and gas exploration and development working mainly in the Rocky Mountain basins and the Gulf of Mexico. I have extensive experience working in Rocky Mountain basin resource plays. I have worked directly with the properties that are the subject of this matter. My resume is attached.

In support of Mustang Creek's application, I am submitting 8 Exhibits. This testimony and attached Exhibits are my sworn testimony and outline the parameters for the application filed in the above referenced dockets ("Applications") to establish an approximate 635.60 acres drilling and proposed spacing unit with up to 4 wells allowed in said unit, comprised of the following lands ("Application Lands"):

Township 12 South, Range 59 West, south half Section 32

Township 13 South, Range 59 West, north half Section 5

(635.6 acres – Docket No. 1307-SP-1114)

Elbert County, Colorado

Summary

Mustang Creek Operating has proposed a drilling location called the Prescott Ranches 32-34 in the southern DJ Basin. The well is an exploratory test of the lower Pennsylvanian, Mississippian, Ordovician, and the Cambrian stratigraphic intervals. It is in a very lightly drilled area and is 17 miles from the nearest well that penetrated any of the Prescott Ranches 32-34 target formations. The drilling location was picked using proprietary 3D seismic that is tied to distant well control to the east using 2D seismic data. The proposed well is located on the crest of a structural closure in the lower Penn aged Cherokee formation. The crest of the closure is near a section line boundary which is the reason for the spacing unit request.

### Exhibit 1: Prospect Area

Exhibit 1 displays Mustang Creek's Prescott Ranches 32-34 location in T12S-R59W-32. It is in Elbert County near the intersection of Elbert, El Paso, and Lincoln counties. One of the nearest towns is 13 miles northwest at Simla. The nearest larger town is 28 miles to the northeast at Limon. The eastern edge of Colorado Springs is 30 miles due west.

The proposed unit is for a proposed exploratory well with prospective formations in lower Pennsylvanian, Mississippian, Ordovician, and Cambrian stratigraphic intervals. It is 17 miles to the nearest well that penetrated the target formations at the Celsius, Celsius-Jones 14-1. The nearest productive well in the lower Pennsylvanian is the Nighthawk, Knoss 6-21. It is located 19 miles east and had an IP of 50 bopd in the Cherokee formation. The largest field in the immediate area is 27 miles northeast at Wiepking Fullerton's Great Plains Field. It has produced more than 1 MMBO mainly from the lower Penn aged Marmaton and Cherokee formations. A recent Mississippian discovery found by Nighthawk at Arikaree Creek field is 52 miles to the northeast. The discovery well is the Steamboat Hansen 8-10 and had an IP of 230 bopd in a Mississippian interval.

The nearest well to the proposed Prescott 32-34 location is the Milinda Oil, State #1 located in T13S-R60W-11. It is 1.1 miles southwest and had a total depth of 5,942' in the Cretaceous Dakota formation. The objectives of the proposed Prescott 32-34 were not penetrated.

Looking at Exhibit 1, it should be clear that the proposed Prescott 32-34 is an exploratory location with very limited nearby offset data. The well and production data used to create this prospect are in general 17-28 miles east.

### Exhibit 2: Spacing Locator Map

Exhibit 2 displays the area around the proposed spacing unit. The red outlined area represents the proposed unit. The outline of the Mustang Creek 3D as seen in Exhibit 7 is labeled and in Blue. The location of the type log well seen in Exhibit 3 is labeled on this exhibit. The type well is the nearest penetration of the prospective interval and is 17 miles away. The path of the cross-section in Exhibit 4 is also labeled on this map as A to A'. The map itself shows an aerial view of all of the active, inactive, and permitted wells in the area of interest as of July 2013. Wells that penetrate the prospective lower Penn interval are shown as red dots (top of the Penn Morrow Formation).

### Exhibit 3: Type Log

Exhibit 3 is the type log used for the area surrounding the proposed spacing unit location. The log is from the Celsius Jones 14-1 (API 05 073 06114), located in T14S R57W Section 14. It is the most appropriate log due to its proximity to the proposed spacing unit location. It is the nearest well that penetrates the prospective Pennsylvanian, Mississippian, and Ordovician aged strata and is 17 miles away. The Marmaton, Cherokee, Atoka, Morrow, Mississippian, and Ordovician Arbuckle stratigraphic tops are displayed to the right of the type log and in black. Lithologies of the prospective intervals are indicated with red arrows. The Penn to the top of the Precambrian basement is considered prospective.

Log curves are labeled on the type log. Track 1 of the log displays the Spontaneous Potential and Gamma Ray curves. Track 2 of the log displays the Resistivity Curve. The scales are presented at the bottom of the type log. A depth track (in feet) is seen in the center between track 1 and 2. Depths in increments of 500' are indicated to the left of track 1.

#### Exhibit 4: Stratigraphic Cross-Section

Exhibit 4 is a four well stratigraphic cross-section incorporating some of the stratigraphically deepest and nearest wells to the proposed spacing unit. The cross-section extends from the southwest (A) to the northeast (A') along a path labeled in Exhibit 2. The logs are correlated using the Gamma Ray and Resistivity curves present in each of the cross-section logs. The cross section is stratigraphically flattened on the top of the Morrow formation. Stratigraphic correlation lines that are sinuous indicate that the top is an unconformity. The exhibit shows that the interval from the Marmaton to Morrow is thinning from southwest to northeast, but is present across the entire area.

The second well in the cross-section (Nighthawk, Jolly Ranch 2-1) is the stratigraphically deepest well in the area around the proposed spacing unit. It is the closest well that encountered the Ordovician Arbuckle formation and the Cambrian Reagan sandstone. It reached TD in Precambrian basement. It shows that Mississippian, Ordovician, and Cambrian strata should be present in the proposed spacing unit area.

#### Exhibit 5: Gross Thickness Isopach

Exhibit 5 shows the gross thickness of the Cherokee to Morrow interval (Lower Penn) in the area of the Prescott 32-34. The Cherokee and Atoka formations are primary targets included in this mapped isopach interval. The contour interval spacing is 50 feet. Hot colors (red) are thick and cool colors (blue) are thin. This map shows that the stratigraphic interval of interest should be present across the entire area. Isopach values are posted above the well control (red dots). The average thickness in the area of the proposed spacing unit is approximately 1000 feet.

To create this map, sparse well control to the north and south (beyond the limits of the map) were used to project into the area of the proposed spacing unit. Lack of deep well control makes it difficult to make isopach maps of the Mississippian and older units.

#### Exhibit 6: Regional Subsea Structure Map

Exhibit 6 shows the top of the Morrow subsea structure map. Contour interval spacing is 100 feet. Hot colors (red) are structurally high and cool colors (blue) are structurally low. The structure gently dips to the northwest across the entire area of interest. Top of Morrow structural tops are posted above the well control (red dots). Sparse well control to the north and south, (beyond the limits of the map) were used to project into the area of the proposed spacing unit in order to create this map.

#### Exhibit 7: 3D Seismic Time Structure Map

Exhibit 7 is a time structure map based on Mustang Creek's proprietary 3D seismic in the Lower Cherokee formation. The prospect is located on a seismically defined structural closure. Hot colors (red) are high and cool colors (blue/green) are low. It shows a Lower Cherokee structural closure located within the limits of the proposed unit, and outlined by the dashed black line. No other seismic considerations beyond structure mapping were used to pick the Prescott Ranches 32-34 location. The shape and size of the structural closure were used to define the proposed spacing unit.

South to north seismic line (inline 235) is located through the location and it shows the path of the seismic line seen in Exhibit 8 in blue.

#### Exhibit 8: South-North Seismic Line – Inline 235

Exhibit 8 is a south to north oriented seismic line through the proposed Prescott Ranches 32-34. It is labeled as Inline 235 on Exhibit 7. On the left side of the display is depth in time, and on the right are the formation names. At the bottom of the display, basement faults are indicated that bracket an up thrown fault block called a horst. These basement faults are the core of a northwest plunging structural nose that crosses the proposed spacing unit. The plunging nose is present through the Penn to basement interval sometimes with structural closure. Potential reservoirs in the Penn to basement interval are prospective since hydrocarbons will be focused towards the crest of this structure, and it may enhance fracturing in any reservoirs that are present.

The structural closure as seen in exhibit 7 is mapped on the top of the Lower Cherokee reflector (light brown seismic pick) and indicated with a white arrow. The proposed well will penetrate the lower Cherokee target at approximately 1.845 seconds.

Within the lower Cherokee interval, seismic reflectors form a lens shaped anomaly that is indicated by a white arrow and a white dashed circle. It is hoped that this is an indicator of porosity development in a carbonate shoal or bioherm.

Based on the foregoing testimony and attached Exhibits, I conclude that the Pennsylvanian, Mississippian, Ordovician, and Cambrian stratigraphic intervals are present under the proposed unit.

Affirmation

The matters described herein were conducted under my direction and control. To the best of my knowledge and belief all matters set forth herein and in the exhibits are true, correct and accurate.

Roger Falk  
Roger Falk  
Mustang Creek Operating, LLC

State of Colorado     )  
                                  ) ss.  
County of Arapahoe    )

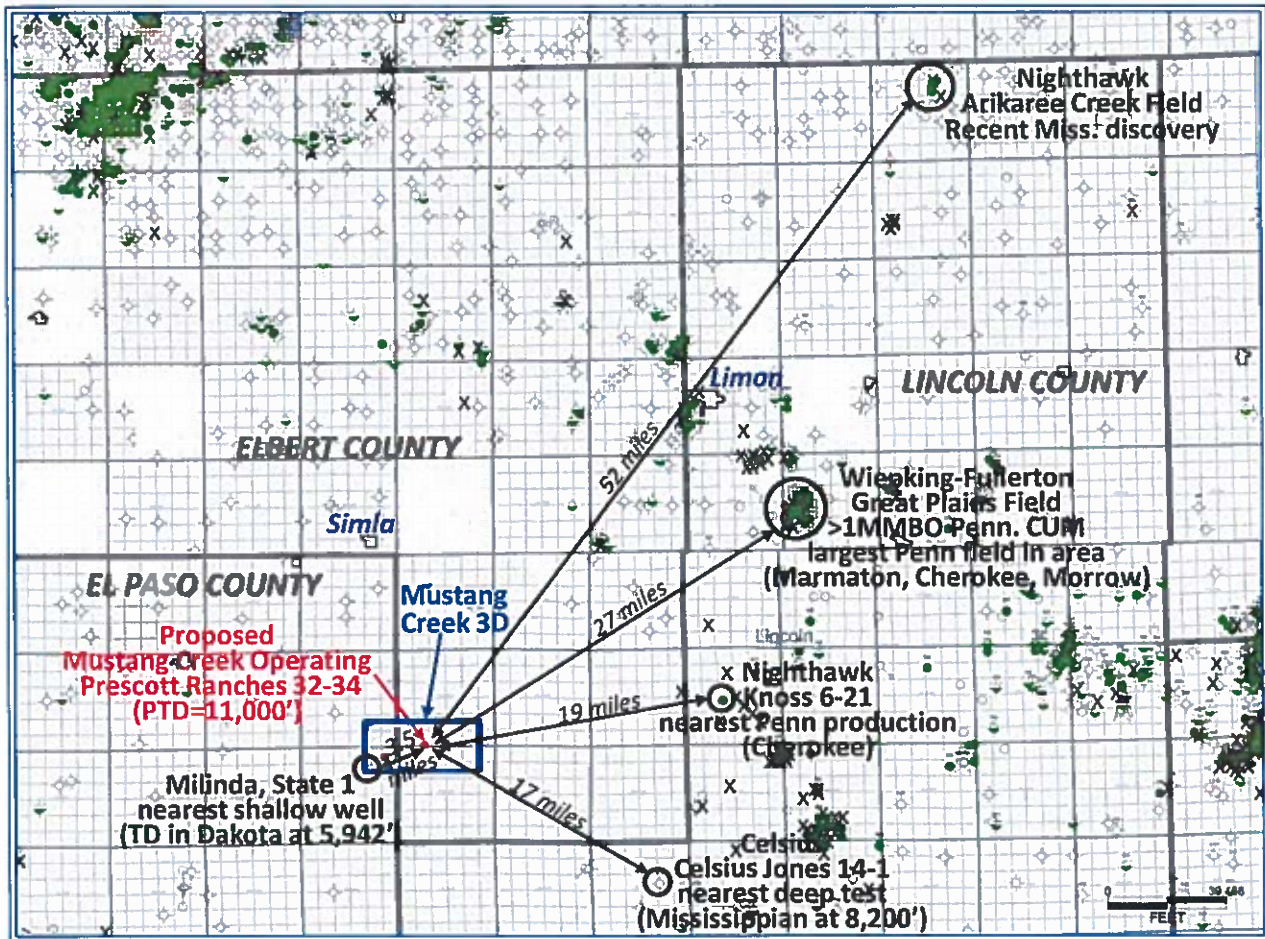
The foregoing instrument was subscribed and sworn to before me this 2nd day of October, 2013, by Roger Falk, Vice President of Exploration, Mustang Creek Operating, LLC.

Witness my hand and official seal.

[SEAL] JULIE M DAHL  
NOTARY PUBLIC STATE OF COLORADO  
My Comm. Expires March 9, 2016

Julie M Dahl  
Notary Public

My commission expires: 3/9/16



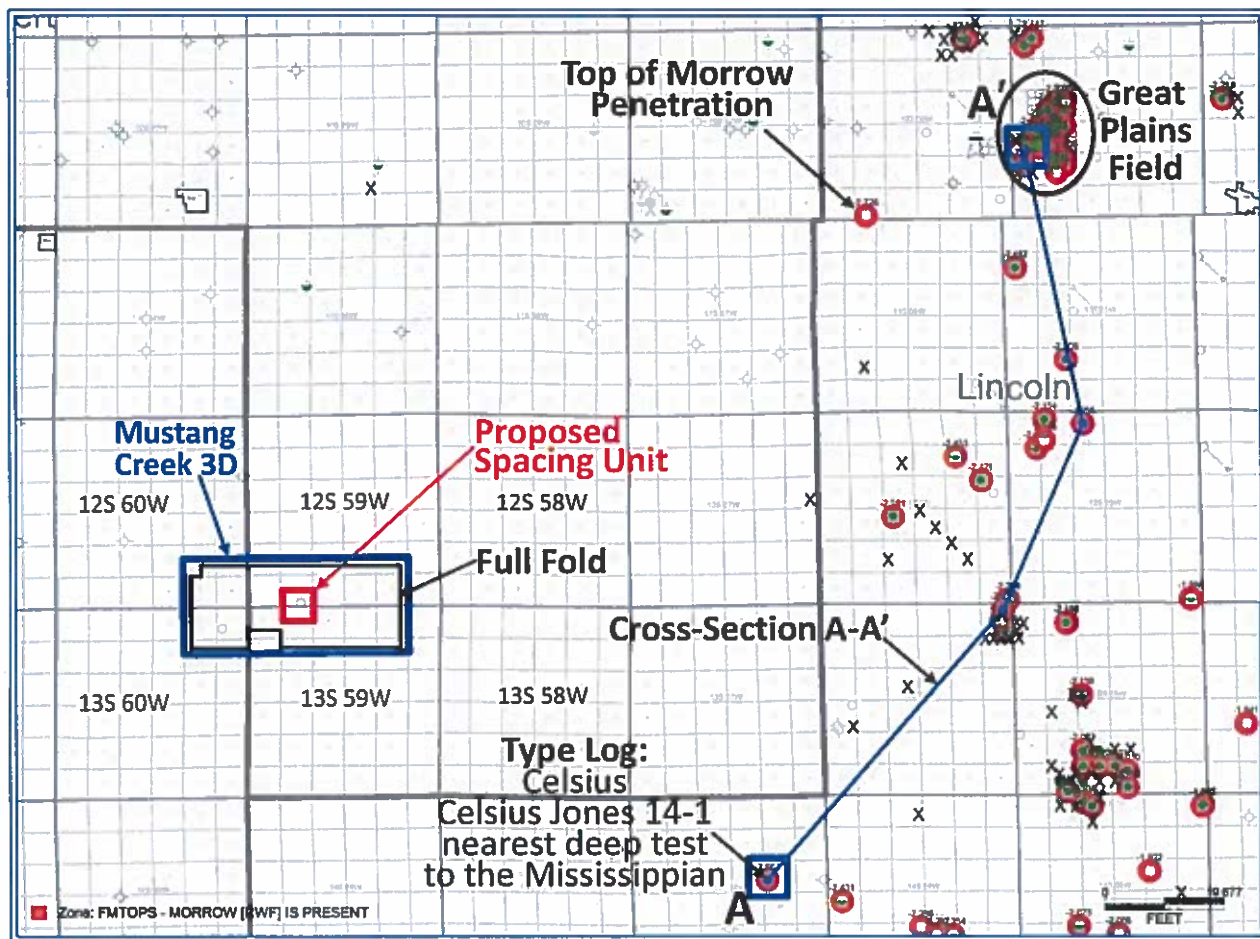
**Geologic Exhibit 1:  
Prospect Area**

Docket #:1307-SP-1114

Mustang Creek Operating

Sept. 26, 2013

**Prescott Ranches 32-34**  
T12S - R59W - Sec. 32



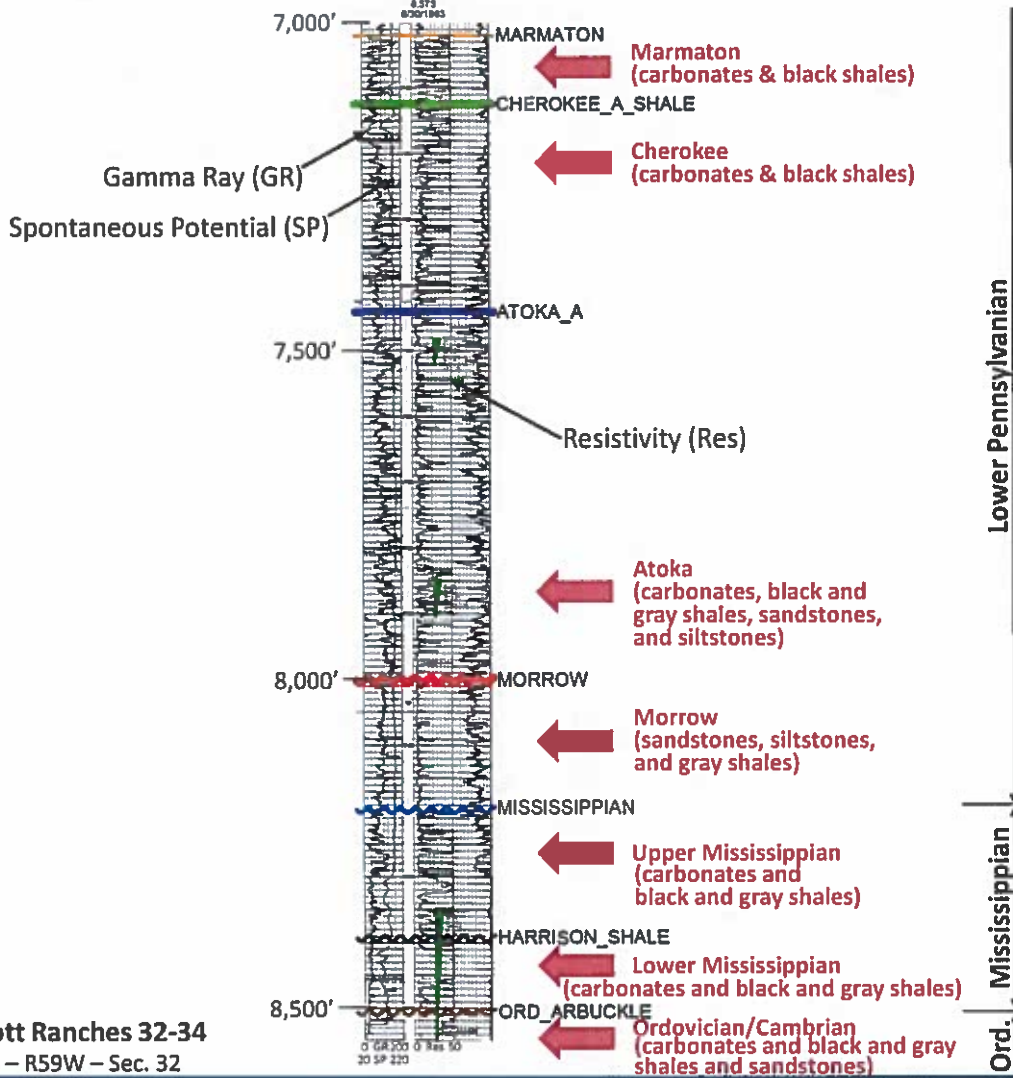
PETROL 0/25/2013 12:46:57 PM

Prescott Ranches 32-34  
T12S - R59W - Sec. 32

<b>Geologic Exhibit 2:</b>
<b>Spacing Locator Map</b>
Docket #:1307-SP-1114
Mustang Creek Operating
Sept. 26, 2013

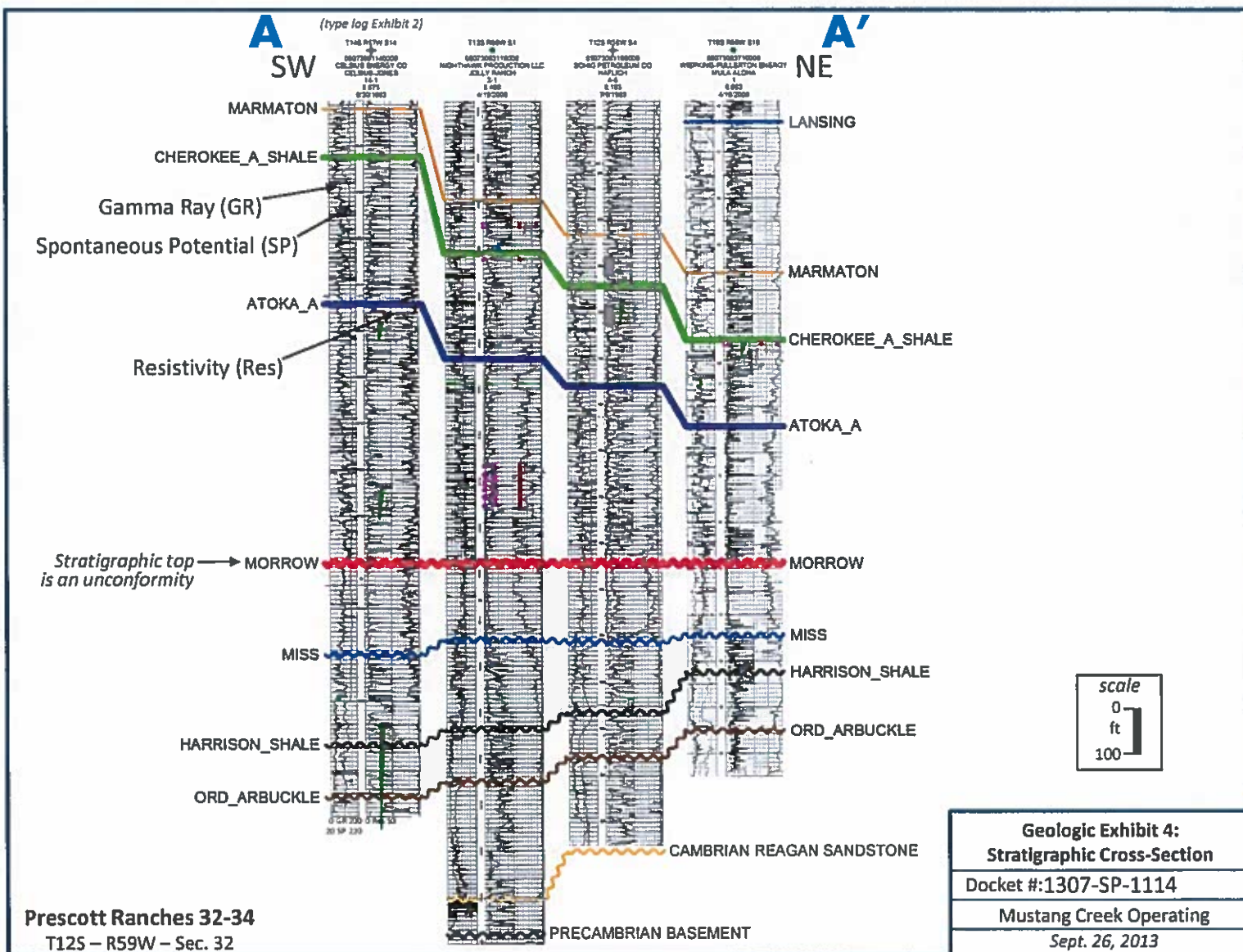


T14S R57W S14  
 03073061140000  
 CELSIUS ENERGY CO  
 CELSIUS-JONES  
 14-1  
 8.573  
 8/20/1943



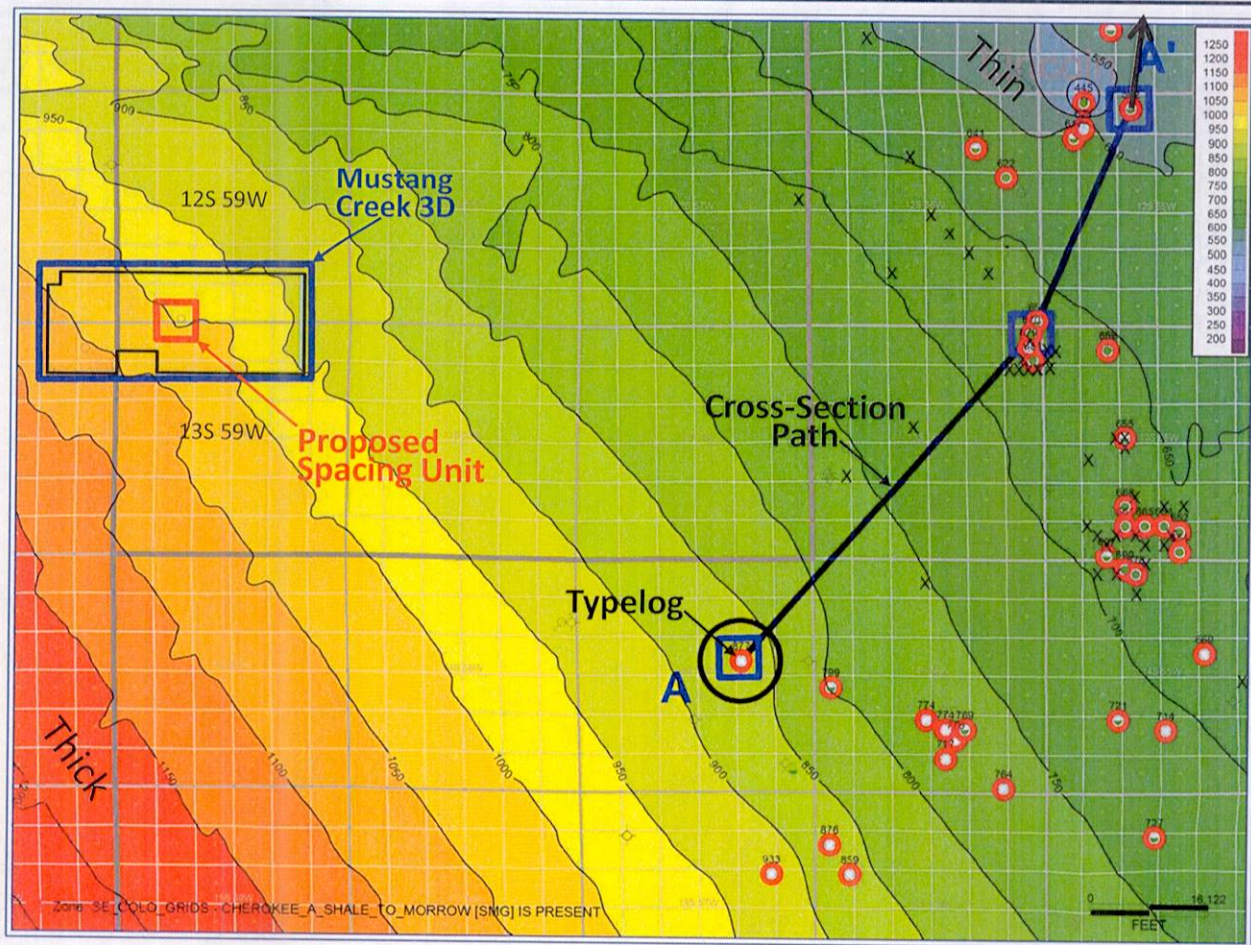
**Prescott Ranches 32-34**  
 T12S - R59W - Sec. 32

<b>Geologic Exhibit 3:</b>
<b>Type Log</b>
Docket #:1307-SP-1114
Mustang Creek Operating
Sept. 26, 2013



Prescott Ranches 32-34  
T12S - R59W - Sec. 32





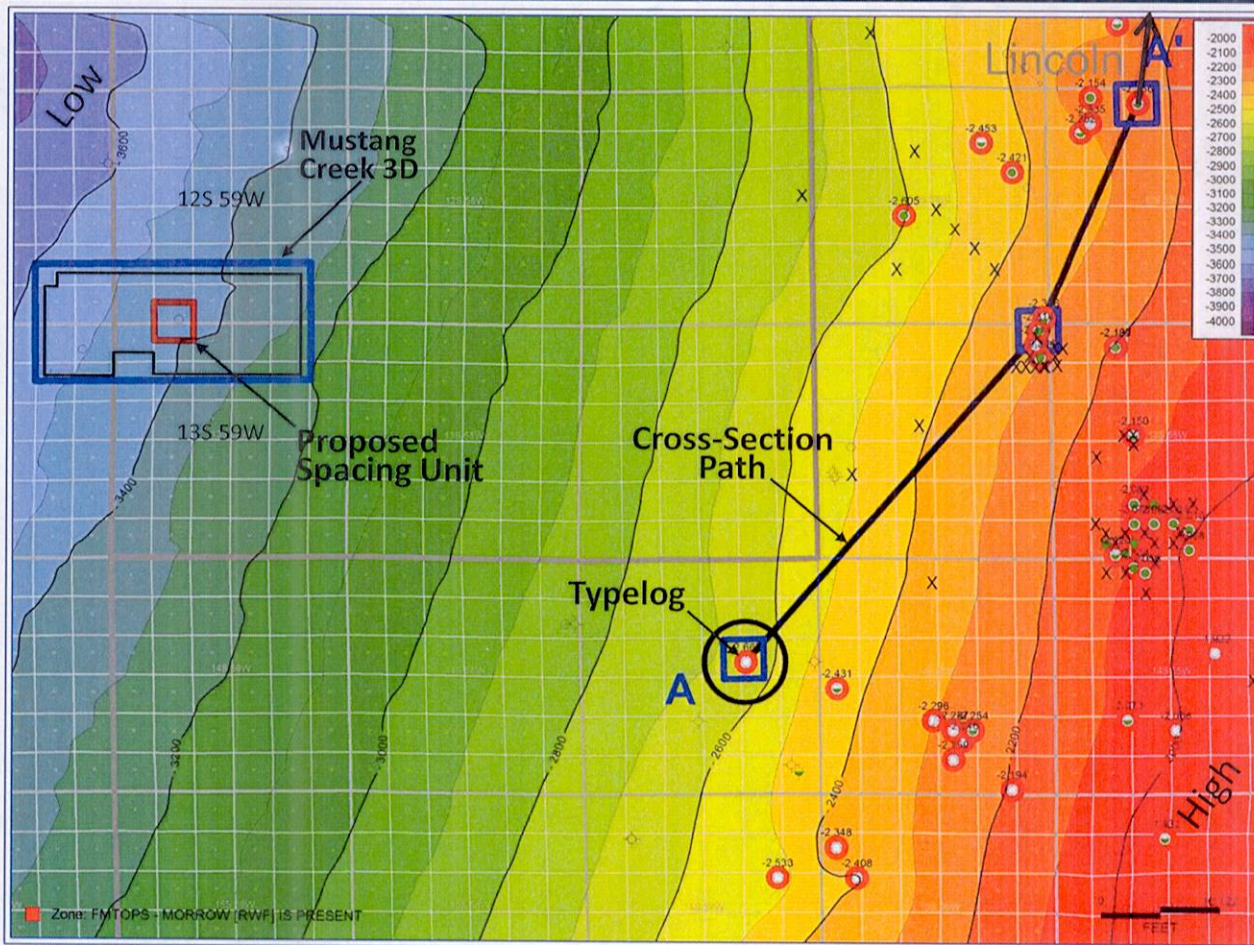
Prescott Ranches 32-34  
T12S - R59W - Sec. 32

Geologic Exhibit 5: Gross Thickness  
Isopach Cherokee to Morrow Interval

Docket #:1307-SP-1114

Mustang Creek Operating  
Sept. 26, 2013





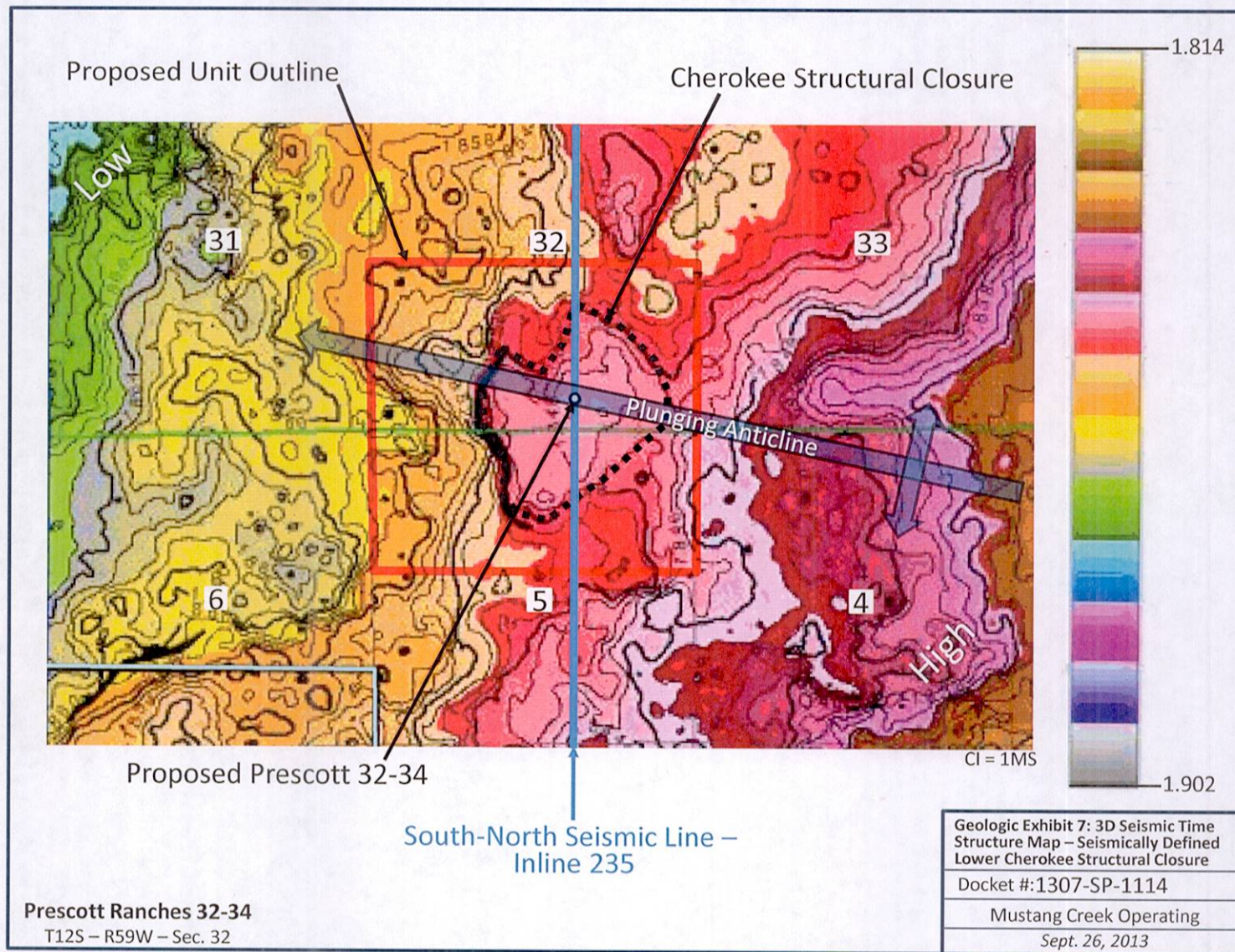
Prescott Ranches 32-34  
T12S - R59W - Sec. 32

Geologic Exhibit 6: Subsea Structure  
Map Top of Morrow Formation

Docket #:1307-SP-1114

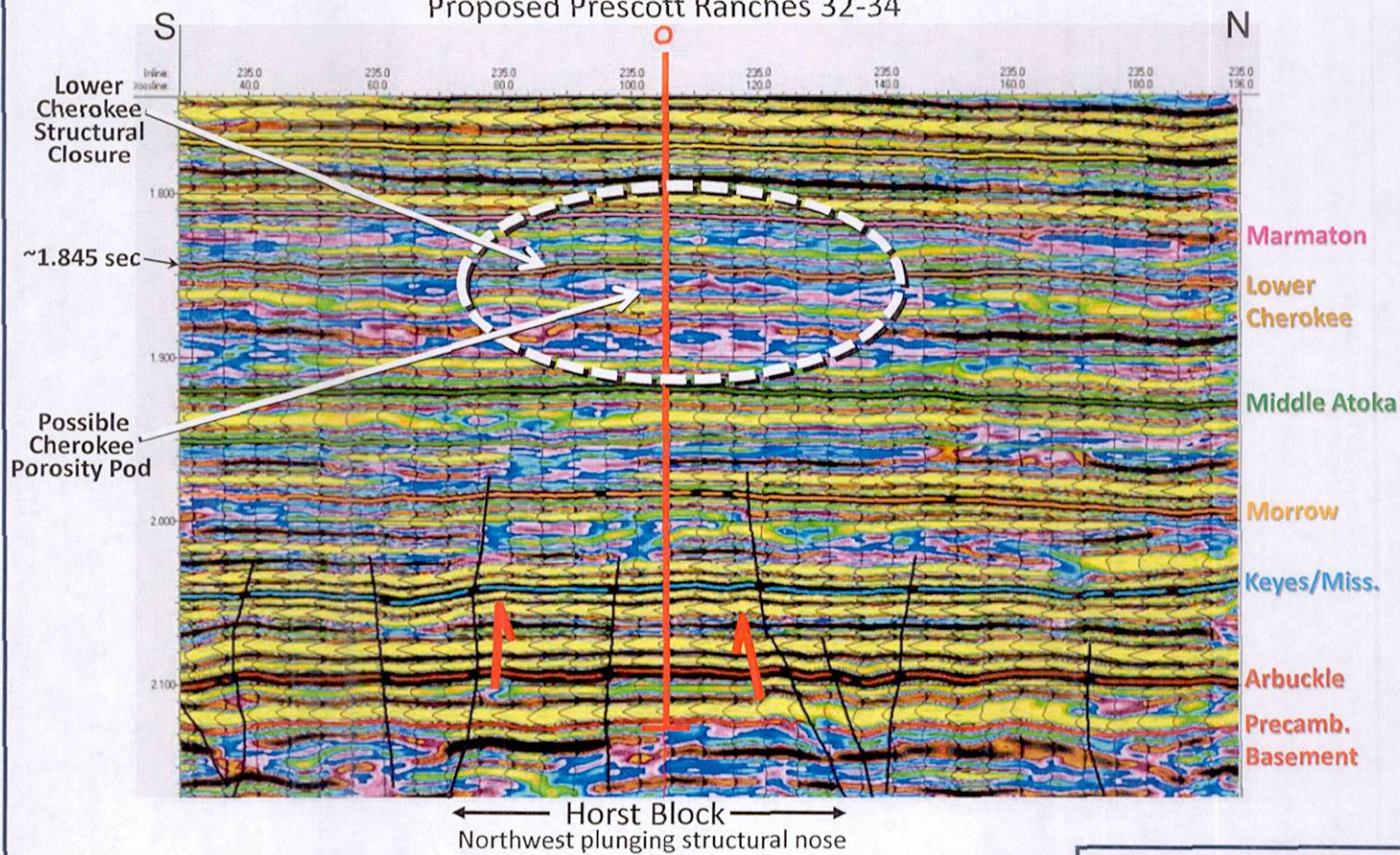
Mustang Creek Operating  
Sept. 26, 2013







# Proposed Prescott Ranches 32-34



Prescott Ranches 32-34  
T12S - R59W - Sec. 32

Geologic Exhibit 8: South-North  
seismic line - inline 235

Docket #:1307-SP-1114

Mustang Creek Operating

Sept. 26, 2013

## **Roger W. Falk**

8033 Coventry Drive, Castle Rock, CO. 80108  
(H) 303-688-0146 (W) 303-923-2487 (C) 970-480-9701

### **Summary**

I am geologist with 22 years of industry experience working with majors, large independents and small family owned companies. I am currently Vice President of Exploration at NexGen Oil and Gas. Previously I was an Exploration Manager with EOG Resources in Denver. For the past 10 years I have been focused primarily on resource play exploration and development.

### **Experience**

#### **NexGen Oil and Gas, LLC. 5/2010-Current**

5251 DTC Parkway, Suite 800, Greenwood Village, CO 80111

##### Title: Vice President, Exploration

Manage a small team of experienced oil and gas professionals. Coordinate all exploration and development activities in the western US with emphasis on regional resource plays.

##### **-Currently active in the following areas**

- Southern DJ Basin, Pennsylvanian and Mississippian resource plays
- DJ Basin, Niobrara resource play
- Sand Wash Basin, Niobrara resource play
- Big Horn Basin, Mowry resource play
- Uinta Basin, Moenkopi resource play
- Paradox Basin, Gothic and Hovenweep resource play

- Define Exploration goals and develop the prospect inventory
- Help market those prospects to other oil companies and private equity groups
- Coordinate employee and consultant activities
- Screen outside deals

#### **EOG Resources, Inc. 10/2000-5/2010**

600 Seventeenth Street, Suite 1100N, Denver, CO 80202

##### Title: Exploration Manager (2007 – Current)

Manage a team of 30 geologists, geophysicists, geotechs, and secretaries. Coordinate both development and exploration activity in the Western US with emphasis on regional shale plays. Focused on Oil exploration in source rocks of the DJ, Powder River, and Williston Basins

##### **-Actively explore in areas unassigned to other teams (technical role)**

- Evaluated the 2<sup>nd</sup> White Specks in the Alberta Basin
- Evaluated the Heath and Bakken in the Central Montana Trough
- Evaluated the Niobrara, Mowry, and Turner/Frontier ss in the Powder River and DJ Basin
- Evaluate maturity data and integrate with oil saturation mapping for multiple areas

##### **-Define Strategic Exploration goals**

- Develop Division's prospect inventory and populate rig schedule
- Delegate work and make staff assignments
- Maintain quality control for prospects
- Help coordinate training for all G+G staff.
- Coordinate meetings between the various technical disciplines such as G+G, Res Eng, Land...
- Prepare displays for various presentations including Analysts and Board of Director slides.
- Review deals offered by other companies
- Interview and hire candidates for Geology and Geo-tech positions
- Technical Support for EOG International (Canada, Hungary, Argentina, Turkey, China)

##### Title: Unconventional Resource Plays Team Leader (2006 - 2007)

Coordinated a team of explorationists, reservoir engineers, and petro physicists focused on the exploration for unconventional resource plays in the Rocky Mountain basins. Primarily concerned with oil / gas shale plays and tight gas sands. This group generated most of the prospects drilled in the 2007 – 2008 drilling seasons which resulted in high impact Niobrara discoveries in the DJ and North Park Basins, and in the Turner Sandstone in the southern Powder River Basin (Cross Bow Field).

Title: Geological Specialist / Advisor (2000 – 2005)

Rocky Mountain regional exploration, field development and appraisal of recent discoveries, Federal and State lease sale evaluation, screen outside deals. Bring self generated prospects to the drill stage and do analog field studies. Petra work station user.

- Stratigraphic traps in the Powder River Basin, WYO
- Basin Centered Gas accumulations in the NW Green River Basin, WYO
- Basin Centered Gas accumulations in the Uinta Basin, Utah
- Drilled 40 development wells 7000' – 12500' deep.
- Drilled 25 exploratory wells 11,000' - 14,500' deep.

**ARCO / Vastar Resources, Inc. 3/92 – 9/2000**

15375 Memorial Dr., Houston, TX 77079

Title: Senior Geologist - Deepwater Gulf of Mexico Exploration group (1998 – 2000)

Regional exploration, lease sale property evaluation and screen outside deals. Bring prospects to the drill stage and do analog field studies. I am a geophysical workstation user (Geoquest IESX GeoFrame) and have a good understanding of exploration geophysics.

- Exploration geologist for Green Canyon and surrounding areas
- 100 million barrel oil discovery at GC 243 Aspen Field

New Ventures Onshore Exploration Group (1996-1998)

Frontier Exploration looking for new play types in lightly explored basins or under explored stratigraphic intervals in mature basins. Generate prospects and present to outside companies, evaluate and screen deals, work with partners on drilling wells.

- Horizontal drilling plays in stratigraphically trapped carbonate res, Williston and Alliance Basins.
- Lodge pole Waulsortian type mud mounds, Williston Basin.
- Pre-Cambrian rift related sandstones of the Central Montana Trough.
- Sub-thrust structural traps in the Front Range of Colorado.
- Mixed clastic/carbonic Permian aged sediments in the Marfa Basin, West, Texas.
- Fractured gas productive black shales in the Illinois and Michigan Basins.
- Coal Bed Methane in the Uinta, Piceance and Illinois Basins.
- Drilled 2 operated and 5 non-operated onshore wells.

Offshore Texas Development Group, Miocene Trend (1992-1996)

New field development and redevelopment of mature field, regional trend exploration generate prospects for lease sales, evaluate and screen outside deals, detailed field studies of competitor fields for possible acquisition and worked in integrated teams.

- Miocene Trend in Texas State and Federal waters in Mustang, Matagorda, and High Islands.
- Fields Developed: MU 789, 805, 806, and HI 467, 24L, 323.
- Drilled 9 operated and 3 non-operated development and exploratory offshore wells.

Colorado College Campus Recruiter (1997-1998 Fall Recruiting Seasons)

Intern Geologist: ARCO Oil and Gas Company (summer 1991)

Lafayette, LA 70505

- Mapped regional geopressure trends using mud weights in the Gulf Coast of LA

Intern Geologist: Chevron U.S.A. (summer 1990)

205 Bender Street, Hobbs, N.M. 80424

- Detailed field study of a 1960's vintage oil field (Southeast Good Field) producing from Silurian carbonates in the Midland Basin of west Texas. Resulted in one development well being drilled.

**Education:**

Colorado State University, Fort Collins, Colorado

Masters in Geology 5/92, GPA 3.51

Bachelor of Science in Geology 5/89, GPA 3.7

Minor in Anthropology



**Applicable Geologic Skills:**

Petra geologic workstation user. 3D Seismic workstation user, Geoquest GeoFrame. Dwight's production database user. Microsoft Word, Excel, PowerPoint user. Subsurface structure mapping (2D/3D seismic and/or well log based), and stratigraphic or structural cross-section building. Generate net sand, net coal, net porosity, and net pay isopach maps. Have done detailed field studies and reserve calculation. Have explored geologic trends on a basin wide level and made detailed regional facies maps. Understand petroleum systems and source rock geochemistry. Understand seismic rock properties. Assist in the design of vertical and directional well plans. I am a team player and work well with all personality types.

**Professional Certifications / Memberships**

American Association of Petroleum Geologists

Rocky Mountain Association of Geologists

Board Licensed Professional Geologists, States of Texas and Utah

**Publications:**

-May, J.A., Anderson, D.S., Falk, R.W., Grau, A., January 2008, Outcrop-to-subsurface

Correlation of the Blackhawk Formation, Uinta Basin: Shoreline Trends, Para sequence

Distributions, and Gas Production: Extended Abstract, RMAG Outcrop, Vol. 57, No. 1. P.36

-Kidney, R., Williams, M., Falk, R.W., Sharp, D., 2004, *Theory and Application of Using Seismic Residual Velocity for Over-Pressured Tight Gas Sand Exploration in the Hoback Basin, Wyoming*: Extended Abstract, 10<sup>th</sup> Annual 3-D Seismic Symposium, Denver, Colorado.

-Davison, F.C., Falk R. W., 1993, *Graphical Representation of Horizon Continuity Across Normal Faults: A quick – Look Technique*: Arco Exploration Technology Conference, Plano, TX. Poster Session Guide Book, P. 103.

-McCallum, M.F., Huntley, P.M., Falk, R.W., Otter, M.L., 1991, *Morphology, Resorption and Etch Features of Diamonds From Kimberlites Within The Colorado-Wyoming State Line District, USA*: Extended Abstract, 5<sup>th</sup> International Kimberlite Conference, M.G., Brazil, P. 261-263.

Mustang Creek Operating, LLC

Prescott Ranches 32-34 Engineering Testimony – Christian Hansen

Cause No. TBD

Docket No. 1307-SP-1114

Spacing Application – Lower Pennsylvanian, Mississippian, Ordovician, and Cambrian

Geologic Intervals

Unnamed Field

My name is Christian Hansen, I am a consulting petroleum engineer currently providing contract engineering services to Mustang Creek Operating, LLC. I am the president of Hansen Petroleum Engineering, Inc.

I have B.S. and M.S. degrees in Petroleum Engineering from the Colorado School of Mines, and am a registered Professional Engineer in the State of Colorado (License No. 33353). I have over 28 years of experience in the oil and gas industry, and have previously provided testimony before the COGCC on similar matters. My primary career specialization has been in the areas of reservoir engineering and formation evaluation, and I have extensive experience in most of the producing basins in the Rocky Mountain region. This includes the area which is the subject of this application. My résumé is attached.

In support of Mustang Creek Operating's Application, I am submitting several exhibits. These exhibits, attached to my sworn testimony, provide the engineering bases and outline the parameters for the above-referenced docket ("Application") to establish a 635.6 acre drilling and spacing unit, comprised of the following lands ("Application Lands"):

Township 12 South, Range 59 West, 6th P.M  
Section 32: S½

Township 13 South, Range 59 West, 6th P.M  
Section 5: N½

Elbert County, Colorado.

As discussed in the following sections, a thorough review of the wells located in the region of the proposed spacing area, which have produced measurable quantities of oil and gas from any of the targeted formations, has been conducted. This review includes projections of estimated ultimate recovery (EUR) for each well that is still active. Additionally, for each potential formation within the Pennsylvanian and Mississippian geologic intervals, an estimate of drainage area has been made using a sampling of the best wells, where good open-hole log data was also

available, such that reservoir properties could be evaluated. By use of the best wells, the intent of this analysis is to show the maximum areas being drained within each formation. Note that no wells have been completed in either the Ordovician and Cambrian intervals, and there are a small number of wells in the region have penetrated these formations.

#### Exhibits 1 – 2: Regional Well Review

Exhibit 1 is a regional map which shows the Application Area, and the well control within several townships which surround the Area. Specifically, contained within the map area (comprised of 88 townships) are wells that have produced measurable quantities of oil and gas from any of the targeted formations (Lower Pennsylvanian through Mississippian). These wells have been evaluated for estimated ultimate recovery, as summarized on Exhibit 2. Note that the data is sorted by formation, then by EUR to quickly identify the best wells. For each formation that has produced in the region, several of the best wells have been evaluated for estimated drainage area; these wells are hilited in yellow.

#### Exhibit 3: Reservoir Parameters, Original Oil-in-Place, and Estimated Drainage Areas

Exhibit 3 shows the calculations of OOIP and estimated drainage area for the wells identified on Exhibit 2. The calculations are based on petrophysically derived reservoir parameters of net pay, porosity, and water saturation as also shown on the exhibit. Recovery factors are estimated for each formation based on the geologic characteristics and reservoir drive mechanisms present, where recovery factors of 10 – 35% are estimated as shown.

Note that wells completed in the Marmaton and Cherokee formations appear to be capable of relatively large drainage areas, up to 656 acres in the case of the Aloha Mula #1 well completed in a Cherokee bench. Most of the wells in these two formations are draining less than 200 acres, from 48 – 197 acres for the wells evaluated. The deeper Atoka, Morrow, and Spergen formations are draining smaller areas, from 4 – 41 acres as shown on Exhibit 3.

The implications of these findings are that the present Spacing Application for a 635.6 acre unit is appropriate given that the Marmaton and Cherokee formations are capable of draining significant areas, at times in excess of 160 acres. Furthermore, higher well densities are also indicated for several of the other formations (Atoka, Morrow, and Mississippian), which is accommodated with the current request for 160-acre density. It is anticipated that application for increased density beyond 160 acres could be necessary in the future to fully develop these formations depending on the results of Mustang Creek's exploration program.

#### Exhibits 4 – 6: Reservoir Parameters and Potential Oil-in-Place for Ordovician and Cambrian

The Ordovician and Cambrian intervals are included as targeted formations given positive indications of reservoir quality as determined from the analysis of well logs in the region, and the

expectation that hydrocarbon generating kerogens are also present. Exhibit 4 shows the reservoir parameters for two nearby wells (Haflich #4-6-4 and Harris #3-19) which penetrated these formations, along with the potential hydrocarbon resource assuming a fully charged reservoir system, where water saturations of 20% are assumed. Note that a significant resource of over 20 MMBO per section is potentially present in these formations. Given the lower reservoir quality of these formations, it is unlikely that the drainage area for a vertical well is greater than expected for the other formations.

Exhibit 5 shows the petrophysical analysis display for the Haflich #4-6-4 well in the lower Mississippian section thru the Ordovician Arbuckle, while Exhibit 6 shows the analysis for the Harris #3-19 well for the Ordovician Arbuckle and Cambrian Reagan Sand. Exhibit 4 was generated from these petrophysical analyses.

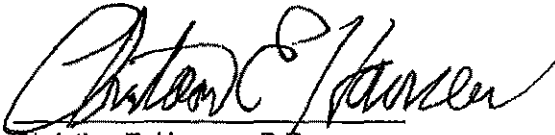
#### Supplemental Exhibit 7: Well Performance Curves

Exhibits 7A – 7L show the production performance charts and projections of future recovery (where applicable) for the wells also analyzed for drainage area, as identified on Exhibits 2 and 3.

Based on the foregoing testimony and exhibits, I have concluded that drilling a test well within the proposed Drilling and Spacing Unit will protect correlative rights, prevent waste, and facilitate efficient and economic development within the Application Lands in the future.

**VERIFICATION**

The matters described herein were all conducted under my direction and control. To the best of my knowledge and belief, all of the matters set forth herein and in the exhibits are true, correct, and accurate.



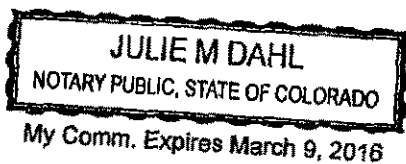
Christian E. Hansen, P.E.  
Consulting Engineer for  
Mustang Creek Operating, LLC

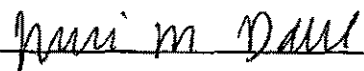
State of Colorado       )  
                                      ) ss.  
County of Arapahoe    )

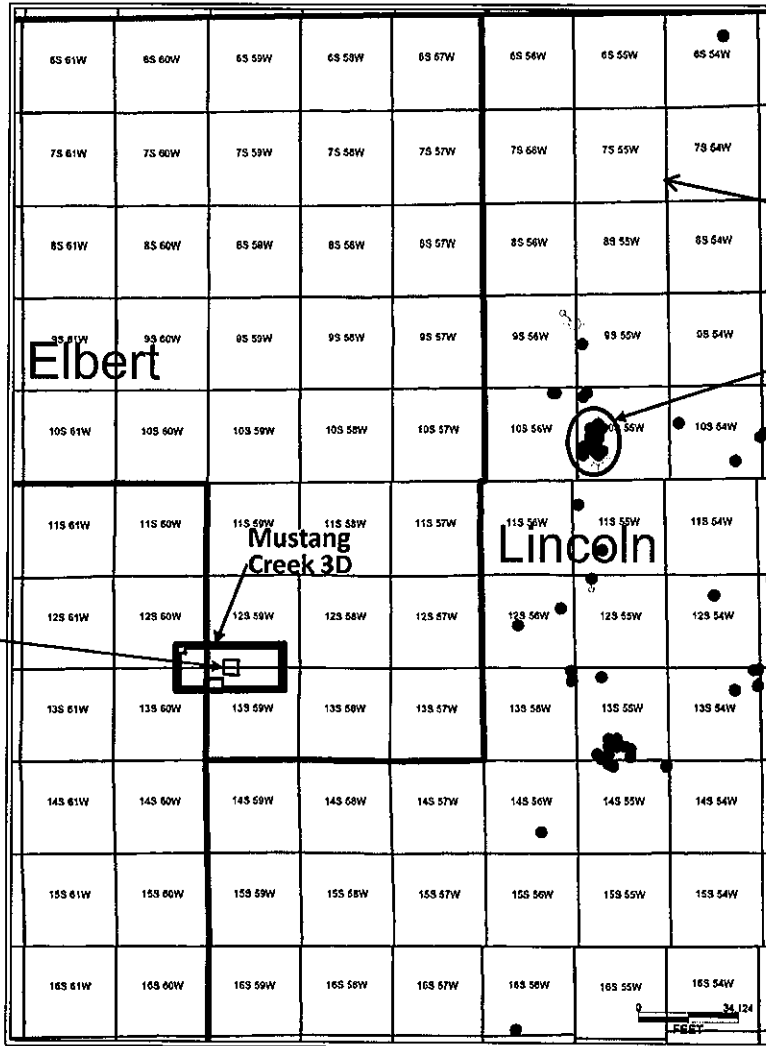
Subscribed and sworn to before me this 2nd <sup>October</sup> day of ~~August~~, 2013.

Witness my hand and official seal.

My commission expires: 3/9/16



  
\_\_\_\_\_  
Notary Public



Study Area  
6S/61W -  
16S/54W

Great Plains Field

Proposed Spacing Unit

• wells with Pennsylvanian or deeper production

Prescott Ranches 32-34  
T12S - R59W - Sec. 32

Engineering Exhibit 1:  
Wells with Pennsylvanian or  
Deeper Production  
Docket #: 1307-SP-1114  
Mustang Creek Operating  
Sept. 26, 2013

**Regional Well Review**  
**Offset to Mustang Creek Operating, LLC Acreage**  
 Effective Date: August 1, 2013  
 By: C. Hanson, P.E.

Indicates well with log evaluation and drainage area estimation

Sort (1)

Sort (2)

PROPERTY	OPERATOR	LOCATION	RES CAT	WELL TYPE	COMP DATE	PROD RESVR	CUMULATIVE PRODUCTION			GROSS ULTIMATE		REM LIFE YRS
							AS OF DATE	OIL (Bbls)	GAS (MCF)	OIL (Bbls)	GAS (MCF)	
MAHALO 1 (A014104)	WEPKING-FULLERTON ENERGY	10S 55W 29 NW NW	PDP	OL	6/1/2011	LANSING	7/1/2013	11,301	1,329	14,678	10,631	2.9
NAPALI 8 (A024025)	WEPKING-FULLERTON ENERGY	10S 55W 17 SE NW	PDP	OL	6/1/2012	LANSING	2/1/2013	1,282	0	1,498	297	0.1
JUCE 1 (1050010730626800MRTN)	RITCHE EXPLORATION NC	10S 54W 24 C SE NE	PDP	OL	1/1/1993	MARMATON	7/1/2013	173,166	9,941	279,919	19,549	43.0
FALLOW 32-18 1 1 (1050010730626200MRTN)	CITATION OIL & GAS CORPORATION	10S 54W 18 C SW NE	PDP	OL	9/1/1992	MARMATON	7/1/2013	142,857	52,213	230,729	151,021	43.0
BUBBA-STATE 2 (A013461)	WEPKING-FULLERTON ENERGY	10S 55W 20 SW NW	PDP	OL	2/1/2011	MARMATON	7/1/2013	45,038	80,745	81,648	152,930	11.4
KERRY 2 (A013464)	WEPKING-FULLERTON ENERGY	10S 55W 20 SW SW	PDP	OL	3/1/2011	MARMATON	7/1/2013	68,323	127,547	69,804	135,159	2.1
BUBBA-STATE 4 (A013463)	WEPKING-FULLERTON ENERGY	10S 55W 20 NE NW	PDP	OL	4/1/2011	MARMATON	7/1/2013	20,323	8,744	22,005	9,707	1.3
ALOHA MULA 11 (A013460)	WEPKING-FULLERTON ENERGY	10S 55W 19 NE NE	PDP	OL	2/1/2011	MARMATON	7/1/2013	8,800	2,946	12,216	4,587	3.3
HARRIS #19-3 3 (105001039438)	SOHO PETROLEUM COMPANY	9S 55W 19 S2 NE NW	PDP	OL	9/1/1993	MARMATON	10/1/1984	4,303	1,786	4,303	1,786	3.0
SAFRANEK 04-1296H (A022669)	CASCADE PETROLEUM LLC	9S 56W 12 NW	PDP	OL	3/1/2012	MARMATON	2/1/2013	1,751	1,035	5,168	3,265	3.0
CRAIG 4-33 (A025157)	NIGHTHAWK PRODUCTION LLC	13S 55W 33 NW NW	PDP	OL	5/1/2012	MARMATON	6/1/2013	1,246	4,009	1,663	4,013	0.1
STUM 06-0715 (A022667)	CASCADE PETROLEUM LLC	11S 55W 7 W2	PDP	OL	4/1/2012	MARMATON	1/1/2013	303	76	1,279	662	3.0
SMOKER 22-11 1 (1050010730625900MRTN)	NEWFIELD PRODUCTION COMPANY	13S 54W 11 SE NW	PDP	OL	8/1/2005	MARMATON	11/1/2005	919	0	919	0	3.0
JOLLY RANCH 10-5 (A016899)	NIGHTHAWK PRODUCTION LLC	13S 55W 5 NW SE	PDP	OL	6/1/2010	MARMATON	10/1/2012	787	1,605	787	1,605	0.1
JOHN CRAIG 7-2 (A024945)	NIGHTHAWK PRODUCTION LLC	10S 56W 2 SW NE	PDP	OL	4/1/2012	MARMATON	4/1/2012	143	0	143	0	0.1
JOLLY RANCH 16-1 (A026024)	NIGHTHAWK PRODUCTION LLC	13S 56W 1 SE SE	PDP	OL	9/1/2012	MARMATON	9/1/2012	20	0	20	0	0.1
ALOHA MULA 9 (A022079)	WEPKING-FULLERTON ENERGY	10S 55W 19 NE SE	PDP	OL	2/1/2012	TORCH	7/1/2013	9,094	4,462	11,192	7,838	1.0
ALOHA MULA 3 (A019285)	WEPKING-FULLERTON ENERGY	10S 55W 19 NE SW	PDP	OL	10/1/2011	PAWNEE	7/1/2013	11,430	9,742	19,426	17,228	4.0
ALOHA MULA 9 (A007785)	WEPKING-FULLERTON ENERGY	10S 55W 19 NE SE	PDP	OL	7/1/2010	PAWNEE B	1/1/2012	8,889	1,868	8,889	1,868	0.1
KERRY #5 (A025649)	WEPKING-FULLERTON ENERGY	10S 55W 20 NW NE	PDP	OL	9/1/2012	PAWNEE	7/1/2013	2,105	0	2,231	172	0.1
WININGER-DAVIS 12 (105001023589)	CHEVRON U S A INCORPORATED	16S 56W 33 C NW SW	PDP	OL	9/1/1976	PENNA-TOKA	11/1/1976	221	0	221	0	3.0
ALOHA MULA 1 (A001844)	WEPKING-FULLERTON ENERGY	10S 55W 19 SE SW	PDP	OL	5/1/2009	CHEROKEE	7/1/2013	331,247	243,262	417,600	361,738	14.5
ALOHA MULA 2 (A005446)	WEPKING-FULLERTON ENERGY	10S 55W 19 SW SE	PDP	OL	3/1/2010	CHEROKEE	7/1/2013	144,800	119,281	160,060	141,013	4.8
MAHALO #3 (A028122)	WEPKING-FULLERTON ENERGY	10S 55W 29 NW NE	PDP	OL	10/1/2012	CHEROKEE	7/1/2013	40,328	46,084	112,712	209,151	11.3
ALOHA MULA 12 (A009286)	WEPKING-FULLERTON ENERGY	10S 55W 19 SE SE	PDP	OL	10/1/2010	CHEROKEE	7/1/2013	73,639	52,690	79,246	57,329	2.4
FORRISTAL RANCH STATE 21-30 #5 (A000881)	WEPKING-FULLERTON ENERGY	10S 55W 30 NE NW	PDP	OL	1/1/2009	CHEROKEE	7/1/2013	72,965	15,247	73,583	15,479	0.7
CRAIG 18-32 (A013113)	NIGHTHAWK PRODUCTION LLC	13S 55W 32 SE SE	PDP	OL	5/1/2010	CHEROKEE	6/1/2013	36,107	9,882	66,809	59,296	10.2
MOSHER 1-1H (A007363)	PINE RIDGE OIL & GAS LLC	13S 54W 1 SE SE	PDP	OL	7/1/2010	CHEROKEE	6/1/2013	45,471	52,282	66,260	77,263	8.9
STATE MONK 23-6 1 (1050010730624900CHRK)	WEPKING-FULLERTON ENERGY	10S 55W 6 NE NE SW	PDP	OL	4/1/2008	CHEROKEE	7/1/2013	54,217	15,372	62,848	35,010	6.9
KERRY 1 (A013462)	WEPKING-FULLERTON ENERGY	10S 55W 20 NW SW	PDP	OL	1/1/2011	CHEROKEE	7/1/2013	43,674	75,394	61,725	104,056	6.1
FORRISTAL RANCH STATE 22-30 (1050010730625200CHRK)	WEPKING-FULLERTON ENERGY	10S 55W 30 SE NW	PDP	OL	8/1/2007	CHEROKEE	11/1/2009	61,237	1,057	61,237	1,057	0.1
BUBBA-STATE 3 (A017606)	WEPKING-FULLERTON ENERGY	10S 55W 20 SE NW	PDP	OL	10/1/2011	CHEROKEE	7/1/2013	34,772	81,627	45,312	109,171	3.9
WITHERS 10-12 (1050010730615600CHRK)	WEPKING-FULLERTON ENERGY	12S 54W 10 NE SW NW	PDP	OL	8/1/2005	CHEROKEE	7/1/2013	36,974	15,172	40,576	25,220	3.8

**Prescott Ranches 32-34**  
 T12S – R59W – Sec. 32

**Engineering Exhibit 2: Summary of  
 Productive Pennsylvanian-  
 Mississippian Wells**  
**Docket #: 1307-SP-1114**  
**Mustang Creek Operating**  
 Sept. 26, 2013

							Sort (1)			Sort (2)		
PROPERTY	OPERATOR	LOCATION	RES CAT	WELL TYPE	COMP DATE	PROD RESVR	CUMULATIVE PRODUCTION			GROSS ULTIMATE		REM LIFE YRS
							AS OF DATE	OIL (Bbls)	GAS (MCF)	OIL (Bbls)	GAS (MCF)	
KAUAI 2 (A019045)	WIEPKING-FULLERTON ENERGY	10S 55W 6 SW NE	PDP	OL	11/1/2011	CHEROKEE	7/1/2013	10,811	5,190	36,374	42,010	16.2
CRAIG 4-4 (A003862)	NIGHTHAWK PRODUCTION LLC	14S 55W 4 NW NW	PDP	OL	1/1/2009	CHEROKEE	6/1/2013	26,777	2,430	34,349	34,285	4.8
CRAIG WH #4-34 4 (105001046031)	KABER-FRANCIS OIL COMPANY	13S 55W 34 C NW NW	PDP	OL	10/1/1985	CHEROKEE	12/1/1988	22,674	17,143	22,674	17,143	3.0
RAPTOR #2 (A029158)	WIEPKING-FULLERTON ENERGY	10S 55W 18 NE SE	PDP	OL	12/1/2012	CHEROKEE	7/1/2013	9,691	9,380	19,462	37,573	3.8
NAPALI 2 (A015214)	WIEPKING-FULLERTON ENERGY	10S 55W 17 SE SW	PDP	OL	7/1/2011	CHEROKEE	7/1/2013	11,465	21,412	18,355	32,238	4.9
CRAIG #11 1 (105001043346)	MULL DRILLING COMPANY INCORPOR	13S 55W 33 C NW NE	PDP	OL	12/1/1984	CHEROKEE	5/1/1986	18,229	0	18,229	0	3.0
BUBBA-STATE 1 (A014103)	WIEPKING-FULLERTON ENERGY	10S 55W 20 NW NW	PDP	OL	6/1/2011	CHEROKEE	4/1/2013	12,387	12,861	15,976	19,209	2.9
MAHALO #8 (A029123)	WIEPKING-FULLERTON ENERGY	10S 55W 29 NE SW	PDP	OL	10/1/2012	CHEROKEE	7/1/2013	8,987	16,560	9,798	18,442	0.8
MAHALO #7 (A024904)	WIEPKING-FULLERTON ENERGY	10S 55W 28 SE NW	PDP	OL	8/1/2012	CHEROKEE	7/1/2013	6,813	13,302	7,578	15,738	0.7
CRAIG 15-32 (A013973)	NIGHTHAWK PRODUCTION LLC	13S 55W 32 SW SE	PDP	OL	3/1/2010	CHEROKEE	6/1/2013	7,262	8,910	7,446	10,427	0.1
SAFRANEK 04-1296H (A022658)	CASCADE PETROLEUM LLC	9S 56W 12 NW	PDP	GAS	3/1/2012	CHEROKEE	2/1/2013	5,688	3,115	5,688	4,176	6.7
SELLON 29-8 (1050010730815200CHRK)	WIEPKING-FULLERTON ENERGY	11S 55W 29 C SE NE	PDP	OL	5/1/2008	CHEROKEE	7/1/2009	4,550	0	4,550	0	3.0
JOHN CRAIG 6-2 (A026985)	NIGHTHAWK PRODUCTION LLC	10S 56W 2 SE NW	PDP	OL	9/1/2012	CHEROKEE	12/1/2012	2,316	1,460	2,316	1,460	0.1
JOLLY RANCH 10-5 (A001863)	NIGHTHAWK PRODUCTION LLC	13S 55W 5 NW SE	PDP	OL	5/1/2009	CHEROKEE	5/1/2011	1,993	0	1,993	0	0.1
CRAIG 12-33 (A025658)	NIGHTHAWK PRODUCTION LLC	13S 55W 33 NW SW	PDP	OL	4/1/2012	CHEROKEE	6/1/2013	1,374	3,338	1,620	3,340	0.1
KNOS 6-21 (A029324)	NIGHTHAWK PRODUCTION LLC	12S 56W 21 SE NW	PDP	OL	12/1/2012	CHEROKEE	5/1/2013	1,145	40	1,411	43	0.1
CRAIG 15-34 (A017842)	NIGHTHAWK PRODUCTION LLC	13S 55W 34 SW SE	PDP	OL	8/1/2011	CHEROKEE	4/1/2013	786	0	921	192	0.1
SMOKER 22-11 1 (1050010730625900CHRK)	NEUFELD PRODUCTION COMPANY	13S 54W 11 SE NW	PDP	OL	5/1/2005	CHEROKEE	7/1/2006	838	0	838	0	3.0
STUM 06-0715 (A022685)	CASCADE PETROLEUM LLC	11S 55W 7 W2	PDP	OL	4/1/2012	CHEROKEE	1/1/2013	574	81	574	81	3.0
CRAIG 6-4 (A024267)	NIGHTHAWK PRODUCTION LLC	14S 55W 4 SE NW	PDP	OL	5/1/2012	CHEROKEE	6/1/2013	246	363	255	375	0.1
CRAIG 4-33 (A025153)	NIGHTHAWK PRODUCTION LLC	13S 55W 33 NW NW	PDP	OL	5/1/2012	CHEROKEE	7/1/2012	139	0	139	0	0.1
CRAIG 12-28 (A020835)	NIGHTHAWK PRODUCTION LLC	13S 55W 28 NW SW	PDP	OL	1/1/2012	CHEROKEE	1/1/2012	113	0	113	0	0.1
CRAIG 8-1 (A024172)	NIGHTHAWK PRODUCTION LLC	14S 55W 1 SE NE	PDP	OL	4/1/2012	CHEROKEE	4/1/2012	40	0	40	0	0.1
FROG POND 13-54-12-1 (A030317)	PINE RIDGE OIL & GAS LLC	13S 54W 12 NE NE	PDP	OL	1/1/2013	CHEROKEE	1/1/2013	0	0	0	0	3.0
CRAIG 10-28 (A025686)	NIGHTHAWK PRODUCTION LLC	13S 55W 28 NW SE	PDP	OL	5/1/2012	CHEROKEE	5/1/2012	0	0	0	0	0.1
CRAIG 4-4 (A001318)	NIGHTHAWK PRODUCTION LLC	14S 55W 4 NW NW	PDP	OL	1/1/2009	ATOKA	12/1/2009	10,425	0	10,425	0	0.1
CRAIG 4-33 (A003173)	NIGHTHAWK PRODUCTION LLC	13S 55W 33 NW NW	PDP	OL	11/1/2009	ATOKA	1/1/2012	5,952	0	5,952	0	0.1
CRAIG 12-33 (A003251)	NIGHTHAWK PRODUCTION LLC	13S 55W 33 NW SW	PDP	OL	12/1/2009	ATOKA	1/1/2012	4,683	0	4,683	0	0.1
JOLLY RANCH 4-13 (A000860)	NIGHTHAWK PRODUCTION LLC	12S 56W 13 NW NW	PDP	OL	11/1/2008	ATOKA	3/1/2010	2,715	0	2,715	0	0.1
CRAIG 15-32 (A001957)	RUNNING FOXES PETROLEUM	13S 55W 32 SW SE	PDP	OL	12/1/2008	ATOKA	12/1/2009	2,492	0	2,492	0	3.0
JOLLY RANCH 2-1 (A001315)	NIGHTHAWK PRODUCTION LLC	13S 56W 1 NW NE	PDP	OL	9/1/2008	ATOKA	7/1/2011	1,648	0	1,648	0	0.1
JOLLY RANCH 16-1 (A000879)	NIGHTHAWK PRODUCTION LLC	13S 56W 1 SE SE	PDP	OL	9/1/2008	ATOKA	7/1/2011	1,214	0	1,214	0	0.1
CRAIG 8-1 (A001319)	NIGHTHAWK PRODUCTION LLC	14S 55W 1 SE NE	PDP	OL	2/1/2009	ATOKA	10/1/2011	810	0	810	0	0.1
WILLIAMS 1 (205001049181)	WILLIAMS ROBERT G	14S 56W 27 C NW SE	PDP	GAS	9/1/1986	ATOKA	8/1/1987	587	25,240	587	25,240	6.7
CRAIG 5-4 (A013114)	NIGHTHAWK PRODUCTION LLC	14S 55W 4 SE NW	PDP	OL	8/1/2010	ATOKA	8/1/2011	352	0	352	0	0.1
HUBBARD 1H (A016999)	UNIT PETROLEUM COMPANY	12S 55W 5 SW SW	PDP	OL	12/1/2010	ATOKA	4/1/2011	310	0	310	0	3.0
CRAIG 12-26 (A006059)	NIGHTHAWK PRODUCTION LLC	13S 55W 28 NW SW	PDP	OL	3/1/2010	ATOKA	12/1/2010	176	0	176	0	0.1
CRAIG 15-34 (A001316)	NIGHTHAWK PRODUCTION LLC	13S 55W 34 SW SE	PDP	OL	4/1/2009	ATOKA	6/1/2009	123	0	123	0	0.1
CRAIG 10-26 (A005140)	NIGHTHAWK PRODUCTION LLC	13S 55W 28 NW SE	PDP	OL	3/1/2010	ATOKA	12/1/2010	97	0	97	0	0.1
WILLIAMS 10-27 (A015506)	NIGHTHAWK PRODUCTION LLC	14S 56W 27 C NW SE	PDP	OL	4/1/2011	ATOKA	6/1/2011	84	0	84	0	0.1
MAHALO 2 (A024247)	WIEPKING-FULLERTON ENERGY	10S 55W 29 NE NW	PDP	OL	8/1/2011	MORROW	7/1/2013	40,545	10,784	83,417	161,704	12.0
NAPALI #4 (A025453)	WIEPKING-FULLERTON ENERGY	10S 55W 17 NE SW	PDP	OL	12/1/2011	MORROW	3/1/2013	51,334	0	51,474	198	0.1
ALOHA MULA 10 (A012641)	WIEPKING-FULLERTON ENERGY	10S 55W 19 SE NE	PDP	OL	9/1/2010	MORROW	7/1/2013	28,224	27,603	30,884	31,689	1.8
JOHN CRAIG 7-2 (A017000)	NIGHTHAWK PRODUCTION LLC	10S 56W 2 SW NE	PDP	OL	6/1/2011	MORROW	1/1/2012	345	0	345	0	0.1

Prescott Ranches 32-34  
T12S - R59W - Sec. 32

Engineering Exhibit 2: Summary of  
Productive Pennsylvanian-  
Mississippian Wells (cont.)  
Docket #: 1307-SP-1114  
Mustang Creek Operating  
Sept. 26, 2013



							Sort (1)			Sort (2)		
PROPERTY	OPERATOR	LOCATION	RES CAT	WELL TYPE	COMP DATE	PROD RESVR	CUMULATIVE PRODUCTION			GROSS ULTIMATE		REM LIFE YRS
							AS OF DATE	OIL (Bbls)	GAS (MCF)	OIL (Bbls)	GAS (MCF)	
CRAIG 8-1X (1050010730627900MR-AT)	ANSCHUTZ EXPLORATION CORPORA	14S 55W 1 NW SE NE	PDP	OIL	5/1/1994	MORROW / ATOKA	1/1/1997	14,622	5,051	14,622	5,051	3.0
NAPALI# 6 (A025650)	WEPKING-FULLERTON ENERGY	10S 55W 17 NW SW	PDP	OIL	8/1/2012	MORROW V-11	7/1/2013	23,473	2,310	33,855	3,776	4.8
NAPALI# 5 (A025454)	WEPKING-FULLERTON ENERGY	10S 55W 17 NW SE	PDP	OIL	5/1/2012	MORROW V-11	7/1/2013	6,475	0	6,521	64	0.1
YOUNGREN RANCH #1 1 (105001051872)	ANSCHUTZ CORPORATION	10S 54W 26 S2 S2 SW	PDP	OIL	6/1/1985	KEYES	9/1/1993	2,994	9	2,994	9	3.0
CRAIG 7-34 (A001317)	NIGHTHAWK PRODUCTION LLC	13S 55W 34 SW NE	PDP	OIL	2/1/2009	MISSISSIPPIAN	5/1/2009	106	0	106	0	0.1
STEAMBOAT HANSEN 8-10 (A029450)	NIGHTHAWK PRODUCTION LLC	6S 54W 10 NE	PDP	OIL	11/1/2012	SPERGEN	6/1/2013	56,552	350	335,921	2,026	30.8
GRAND TOTALS			3P			83		1,897,276	1,222,330	2,819,035	2,181,380	
AVERAGES			PDP	OIL		81		22,859	14,727	34,725	26,567	
TOTALS BY FORMATION												
LANSING						2		12,583	1,329	16,176	10,929	
MARMATON						14		465,979	290,647	710,399	484,283	
PAWNEE						2		13,535	9,742	21,657	17,400	
PAWNEE B						1		8,889	1,868	8,889	1,868	
CHEROKEE						37		1,130,639	842,935	1,458,697	1,429,505	
ATOKA						15		31,666	25,240	31,666	25,240	
MORROW V-11						2		29,948	2,310	40,376	3,840	
MORROW						4		120,448	38,387	166,120	193,591	
SPERGEN						1		56,552	350	335,921	2,026	
MISSISSIPPIAN						1		106	0	106	0	
AVERAGES BY FORMATION												
LANSING						2		6,292	665	8,088	5,464	
MARMATON						14		33,284	20,761	50,743	34,592	
PAWNEE						2		6,768	4,871	10,828	8,700	
PAWNEE B						1		8,889	1,868	8,889	1,868	
CHEROKEE						37		30,558	22,782	39,424	38,635	
ATOKA						15		2,111	1,683	2,111	1,683	
MORROW V-11						2		14,974	1,155	20,188	1,920	
MORROW						4		30,112	9,597	41,530	48,398	
SPERGEN						1		56,552	350	335,921	2,026	
MISSISSIPPIAN						1		106	0	106	0	

Prescott Ranches 32-34  
T12S – R59W – Sec. 32

Engineering Exhibit 2: Summary of  
Productive Pennsylvanian-  
Mississippian Wells (cont.)  
Docket #: 1307-SP-1114  
Mustang Creek Operating  
Sept. 26, 2013

Well Information				Reservoir Properties			Drainage Area Parameters				
WELL	LOCATION	FORMATION NAME	GEOLOGIC PERIOD	Net Pay (FT)	Porosity $\phi$ (FRAC)	Water Saturation $S_w$ (FRAC)	OOIP per Section (STBO)	Est Recovery Factor	Estimated Ultimate Recovery (STBO)	Recovery Mechanism	Estimated Drainage Area (ACRES)
Juice #1-24	10S 54W 24 C SE NE	Marmaton	PENN	23	0.178	0.367	10,722,599	0.35	279,919	Sol Gas-Water Drive	48
Fallow 32-18 1	10S 54W 18 C SW NE	Marmaton	PENN	15	0.150	0.226	7,205,630	0.35	230,729	Sol Gas-Water Drive	59
Bubba State #2	10S 55W 20 SW NW	Marmaton	PENN	5	0.072	0.373	933,939	0.35	81,646	Sol Gas-Water Drive	160
Kerry #2	10S 55W 20 SW SW	Marmaton	PENN	4	0.067	0.334	646,198	0.35	69,604	Sol Gas-Water Drive	197
Aloha Mula #1	10S 55W 19 SE SW	Cherokee	PENN	6	0.073	0.314	1,163,890	0.35	417,600	Sol Gas-Water Drive	656
Aloha Mula #2	10S 55W 19 SW SE	Cherokee	PENN	9	0.087	0.300	2,141,829	0.35	160,060	Sol Gas-Water Drive	137
Forristal Ranch State 21-30 #5	10S 55W 30 NE NW	Cherokee	PENN	5	0.133	0.375	1,719,690	0.35	73,583	Sol Gas-Water Drive	78
Craig 16-32	13S 55W 32 SE SE	Cherokee	PENN	3	0.137	0.436	959,112	0.35	66,809	Sol Gas-Water Drive	127
Craig 4-33	13S 55W 33 NW NW	Atoka	PENN	32	0.123	0.388	9,252,674	0.1	5,952	Sol Gas Drive	4
Craig 12-33	13S 55W 33 NW SW	Atoka	PENN	32	0.085	0.374	6,566,624	0.1	4,683	Sol Gas Drive	5
Mahalo #2	10S 55W 29 NE NW	Morrow	PENN	8	0.156	0.417	6,566,624	0.2	83,417	Sol Gas Drive	41
Steamboat Hansen 8-10	6S 54W 10 NE	Spergen	MISS	35	0.146	0.177	18,638,629	0.35	335,921	Sol Gas-Water Drive	33

Prescott Ranches 32-34  
T12S – R59W – Sec. 32

Engineering Exhibit 3: Reservoir  
Parameters, OOIP, and  
Estimated Drainage Area  
Docket #: 1307-SP-1114  
Mustang Creek Operating  
Sept. 26, 2013

Well Information				Reservoir Properties			Drainage Area Parameters		
WELL	LOCATION	FORMATION NAME	GEOLOGIC PERIOD	Net Pay (FT)	Porosity $\phi$ (FRAC)	Water Saturation $S_w$ (FRAC)	OOIP per Section (STBO)	Est Recovery Factor	Estimated Ultimate Recovery (STBO)
Haffich #4-6-4	12S 55W 4	Arbuckle	Ordovician	45	0.054	0.200	8,043,494	0.05	402,175
Harris #3-19	9S 55W 19	Arbuckle	Ordovician	71	0.061	0.200	14,335,956	0.05	716,798
		Reagan Sand	Cambrian	60	0.074	0.200	14,696,755	0.05	734,838

Prescott Ranches 32-34  
T12S – R59W – Sec. 32

Engineering Exhibit 4: Reservoir  
Parameters and Potential Resource in  
Ordovician and Cambrian  
Docket #: **1307-SP-1114**  
Mustang Creek Operating  
Sept. 26, 2013









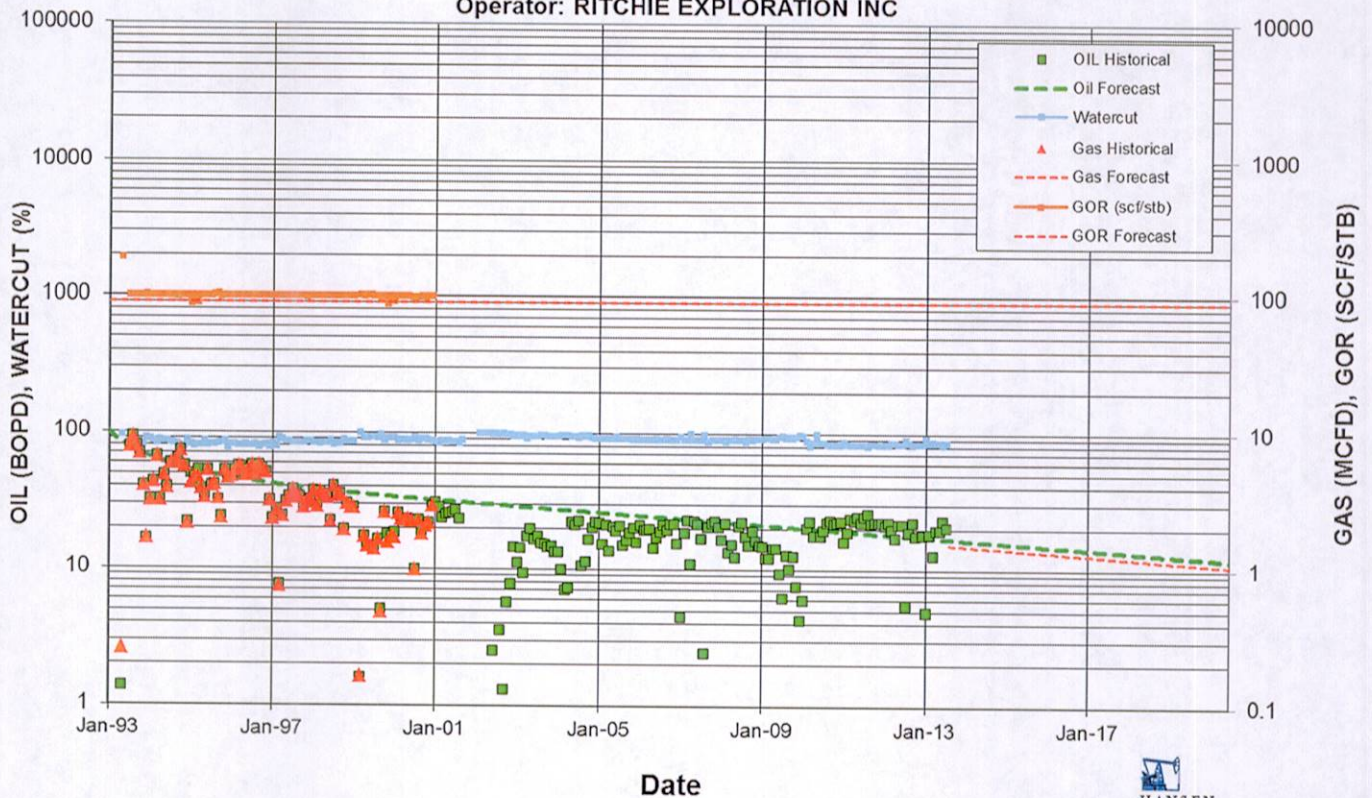


# Well: JUICE 1 (1050010730626800MRTN)

Field: HUGO Reservoir: MARMATON

Location: 10S 54W 24 C SE NE

Operator: RITCHIE EXPLORATION INC



HANSEN  
PETROLEUM ENGINEERING, INC.

Prescott Ranches 32-34

T12S - R59W - Sec. 32

Engineering Exhibit 7A

Docket #: 1307-SP-1114

Mustang Creek Operating

Sept. 26, 2013

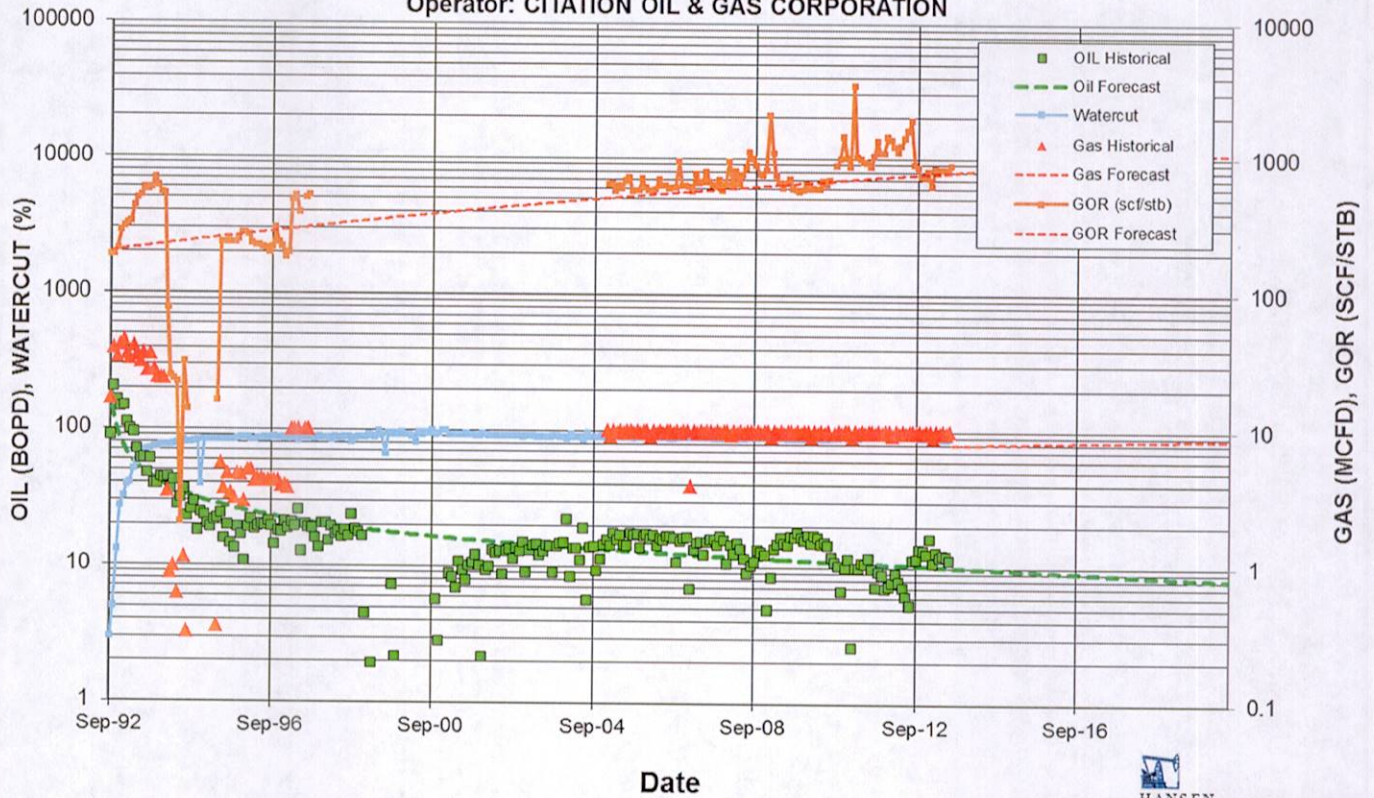


# Well: FALLOW 32-18 1 1 (1050010730626200MRTN)

Field: FALLOW Reservoir: MARMATON

Location: 10S 54W 18 C SW NE

Operator: CITATION OIL & GAS CORPORATION



HANSEN  
PETROLEUM ENGINEERING, INC.

Engineering Exhibit 7B

Docket #: 1307-SP-1114

Mustang Creek Operating

Sept. 26, 2013

Prescott Ranches 32-34

T12S - R59W - Sec. 32

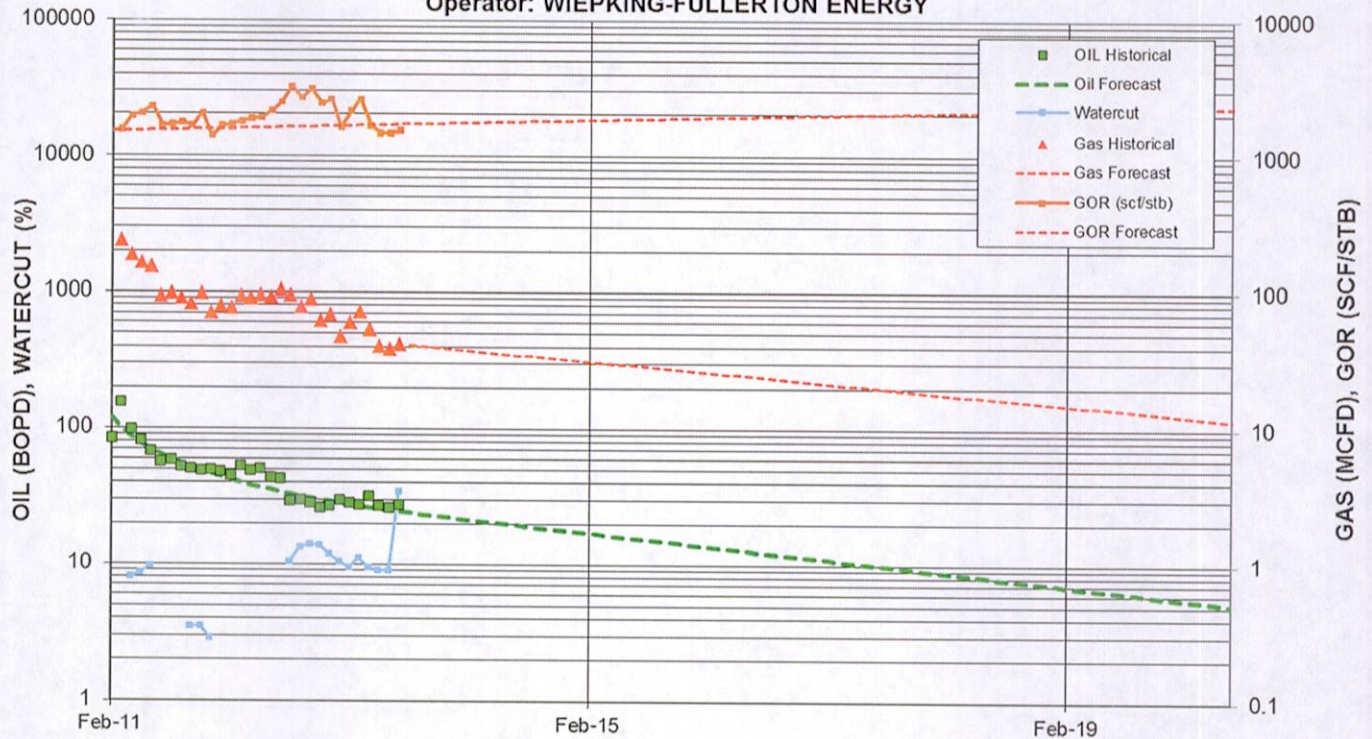


# Well: BUBBA-STATE 2 (A013461)

Field: GREAT PLAINS Reservoir: MARMATON

Location: 10S 55W 20 SW NW

Operator: WIEPKING-FULLERTON ENERGY



HANSEN  
PETROLEUM ENGINEERING, INC.

Engineering Exhibit 7C

Docket #: 1307-SP-1114

Mustang Creek Operating

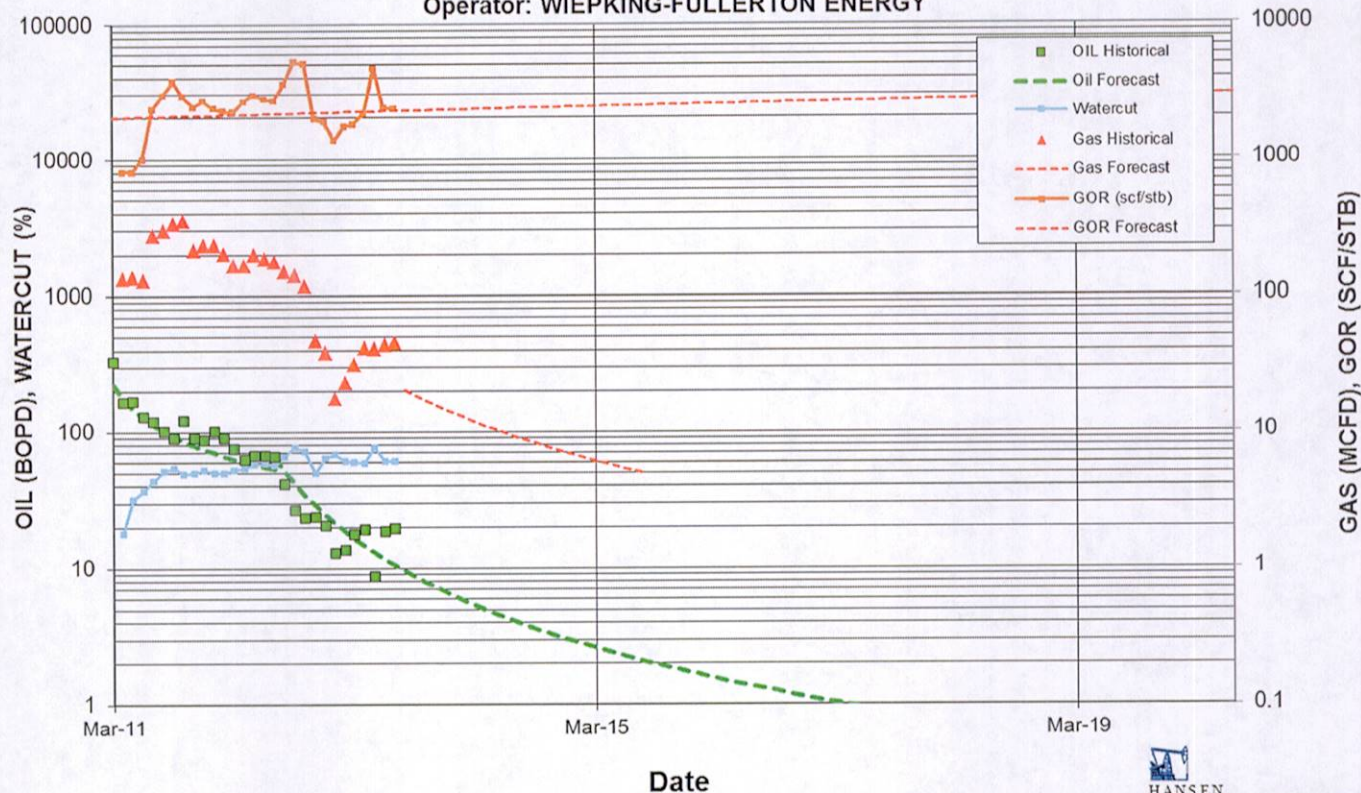
Sept. 26, 2013

Prescott Ranches 32-34

T12S - R59W - Sec. 32



**Well: KERRY 2 (A013464)**  
 Field: GREAT PLAINS Reservoir: MARMATON  
 Location: 10S 55W 20 SW SW  
 Operator: WIEPKING-FULLERTON ENERGY



HANSEN  
 PETROLEUM ENGINEERING, INC.

Prescott Ranches 32-34  
 T12S - R59W - Sec. 32

Engineering Exhibit 7D

Docket #: 1307-SP-1114

Mustang Creek Operating

Sept. 26, 2013

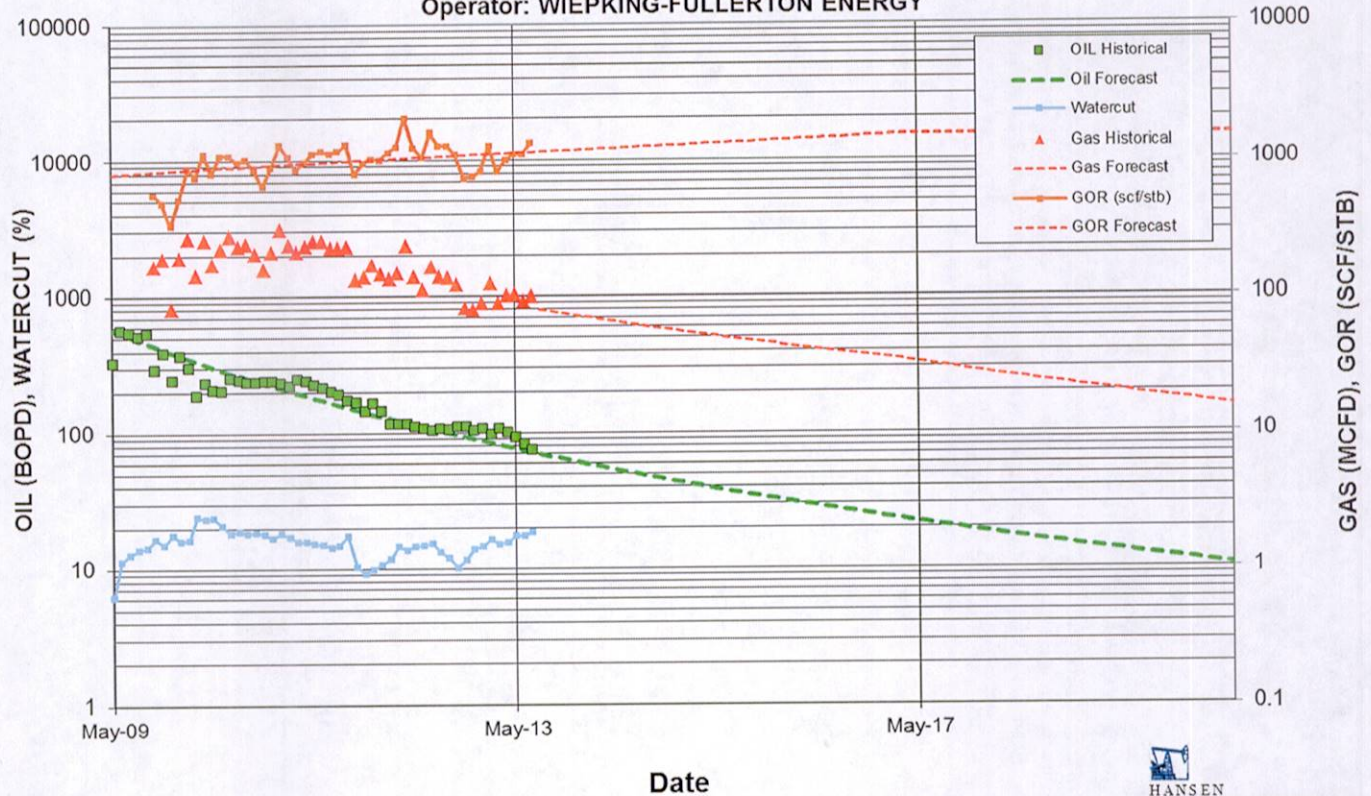


# Well: ALOHA MULA 1 (A001844)

Field: GREAT PLAINS Reservoir: CHEROKEE

Location: 10S 55W 19 SE SW

Operator: WIEPKING-FULLERTON ENERGY



HANSEN  
PETROLEUM ENGINEERING, INC.

Prescott Ranches 32-34  
T12S - R59W - Sec. 32

Engineering Exhibit 7E

Docket #: 1307-SP-1114

Mustang Creek Operating

Sept. 26, 2013

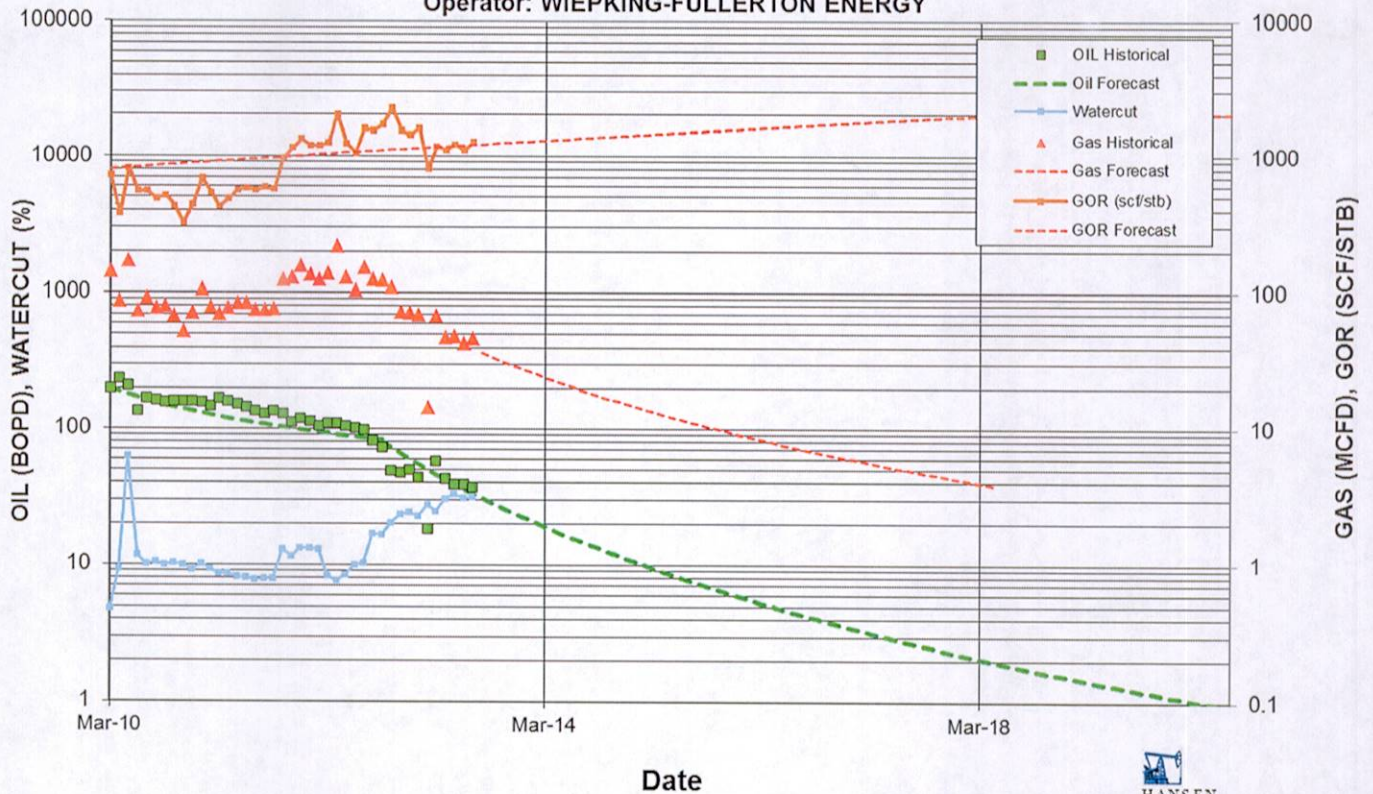


# Well: ALOHA MULA 2 (A005446)

Field: GREAT PLAINS Reservoir: CHEROKEE

Location: 10S 55W 19 SW SE

Operator: WIEPKING-FULLERTON ENERGY



HANSEN  
PETROLEUM ENGINEERING, INC.

Prescott Ranches 32-34  
T12S - R59W - Sec. 32

Engineering Exhibit 7F

Docket #: 1307-SP-1114

Mustang Creek Operating

Sept. 26, 2013

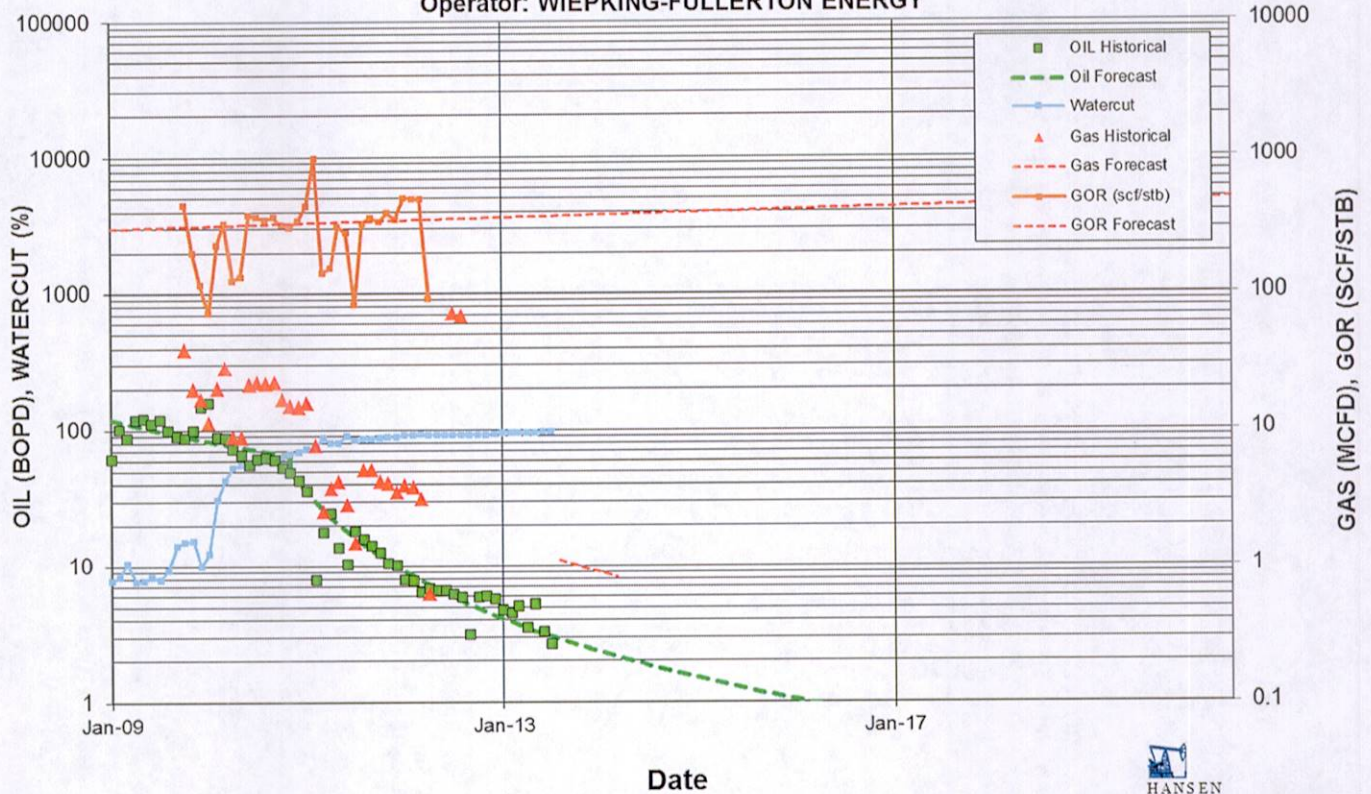


# Well: FORRISTAL RANCH STATE 21-30 #5 (A000881)

Field: GREAT PLAINS Reservoir: CHEROKEE

Location: 10S 55W 30 NE NW

Operator: WIEPKING-FULLERTON ENERGY



HANSEN  
PETROLEUM ENGINEERING, INC.

Prescott Ranches 32-34  
T12S - R59W - Sec. 32

Engineering Exhibit 7G

Docket #: 1307-SP-1114

Mustang Creek Operating

Sept. 26, 2013

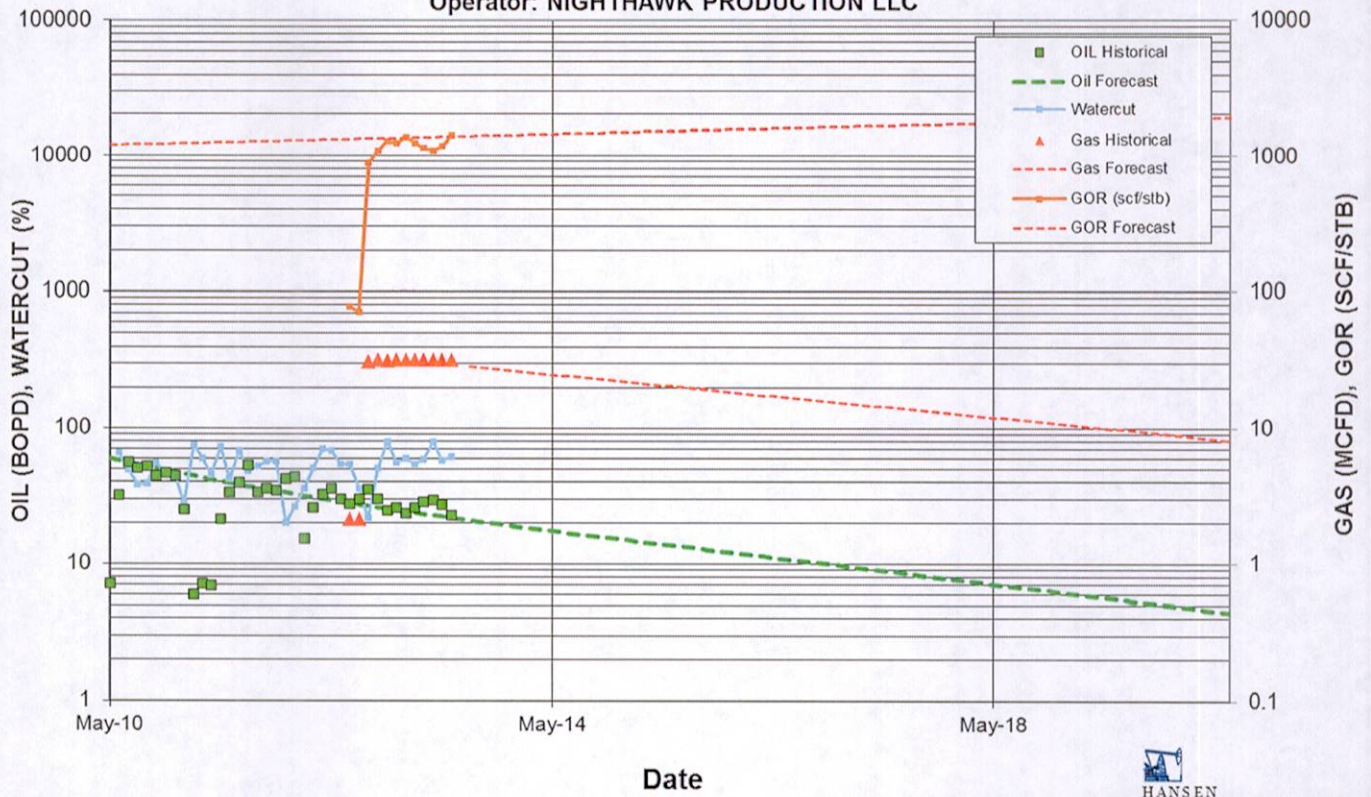


# Well: CRAIG 16-32 (A013113)

Field: BOLERO Reservoir: CHEROKEE

Location: 13S 55W 32 SE SE

Operator: NIGHTHAWK PRODUCTION LLC



HANSEN  
PETROLEUM ENGINEERING, INC.

Prescott Ranches 32-34  
T12S - R59W - Sec. 32

Engineering Exhibit 7H

Docket #: 1307-SP-1114

Mustang Creek Operating

Sept. 26, 2013

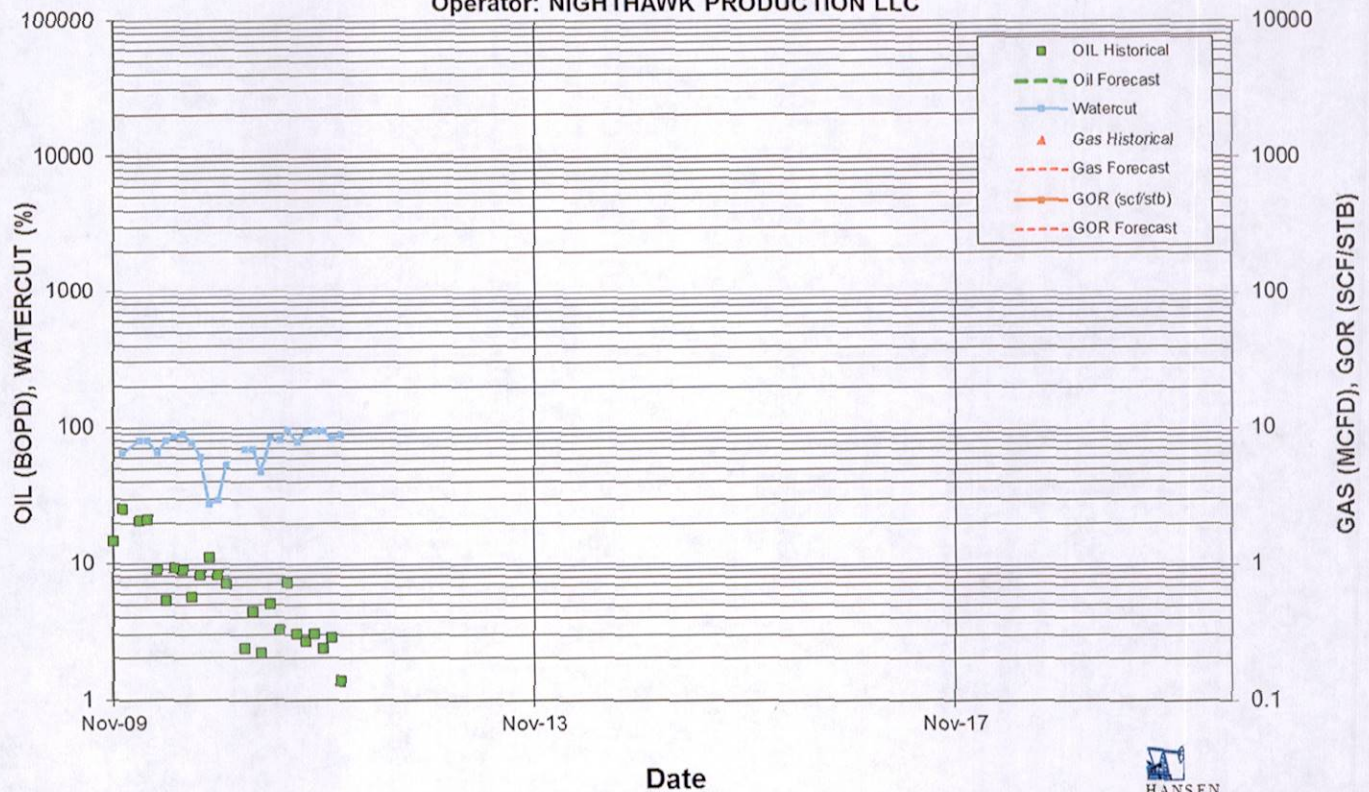


# Well: CRAIG 4-33 (A003173)

Field: BOLERO Reservoir: ATOKA

Location: 13S 55W 33 NW NW

Operator: NIGHTHAWK PRODUCTION LLC



HANSEN  
PETROLEUM ENGINEERING, INC.

Prescott Ranches 32-34  
T12S - R59W - Sec. 32

Engineering Exhibit 71

Docket #: 1307-SP-1114

Mustang Creek Operating

Sept. 26, 2013

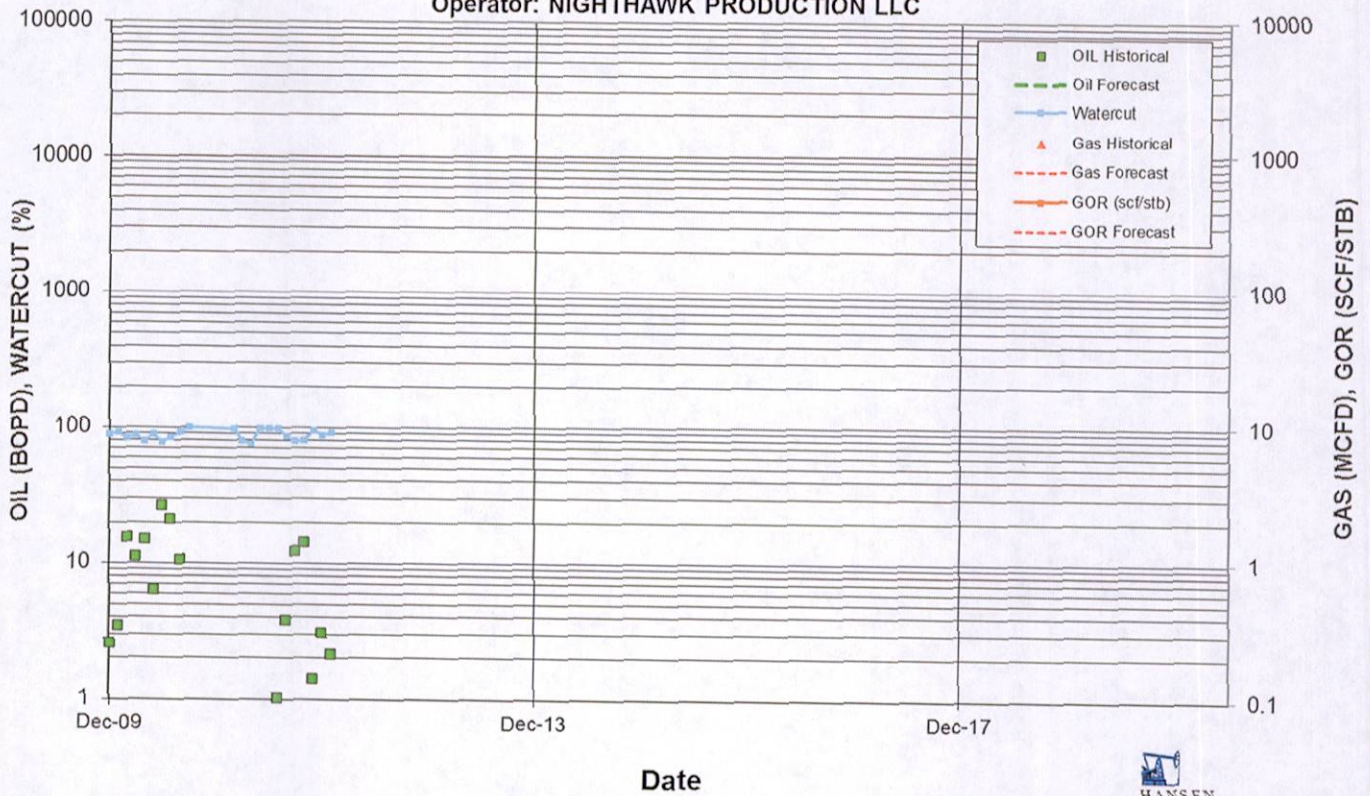


# Well: CRAIG 12-33 (A003251)

Field: UNNAMED Reservoir: ATOKA

Location: 13S 55W 33 NW SW

Operator: NIGHTHAWK PRODUCTION LLC



HANSEN  
PETROLEUM ENGINEERING, INC.

Prescott Ranches 32-34  
T12S - R59W - Sec. 32

Engineering Exhibit 7J

Docket #: 1307-SP-1114

Mustang Creek Operating

Sept. 26, 2013

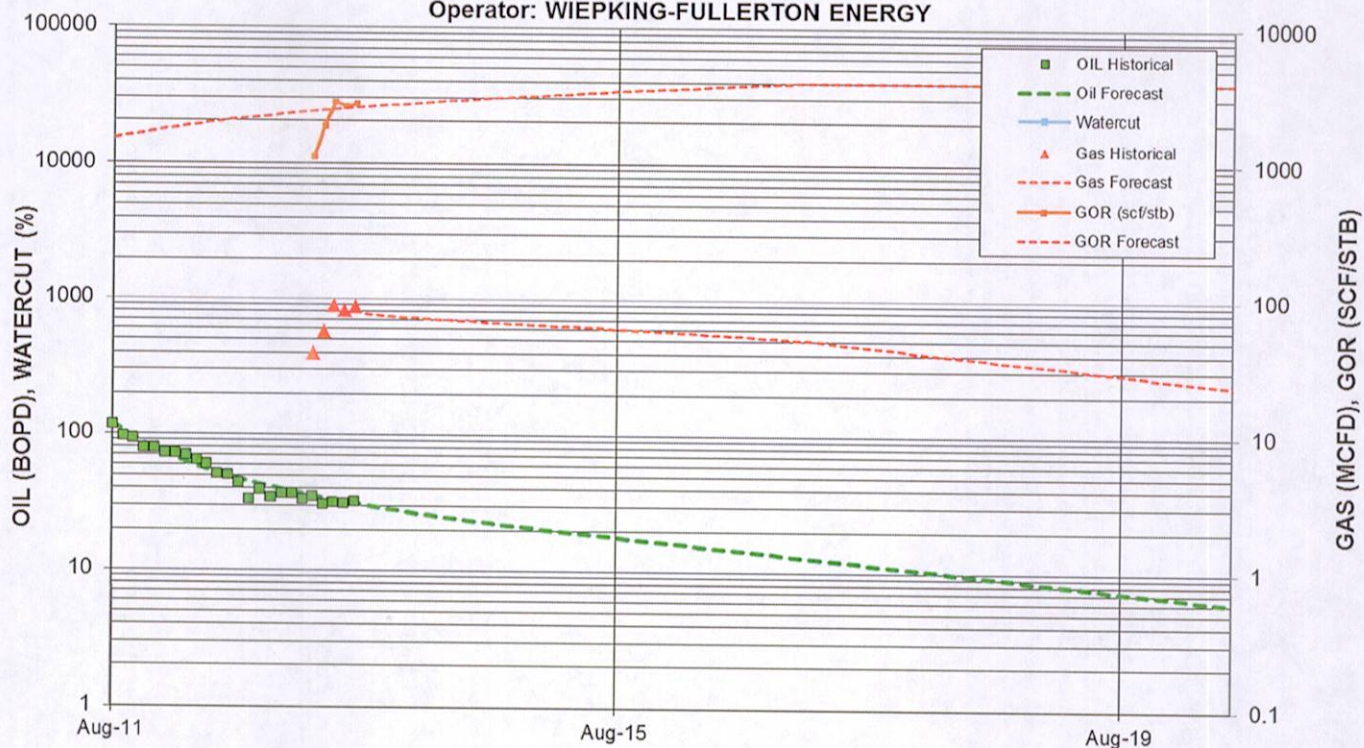


# Well: MAHALO 2 (A024247)

Field: GREAT PLAINS Reservoir: MORROW

Location: 10S 55W 29 NE NW

Operator: WIEPKING-FULLERTON ENERGY



HANSEN  
PETROLEUM ENGINEERING, INC.

Prescott Ranches 32-34  
T12S - R59W - Sec. 32

Engineering Exhibit 7K

Docket #: 1307-SP-1114

Mustang Creek Operating

Sept. 26, 2013

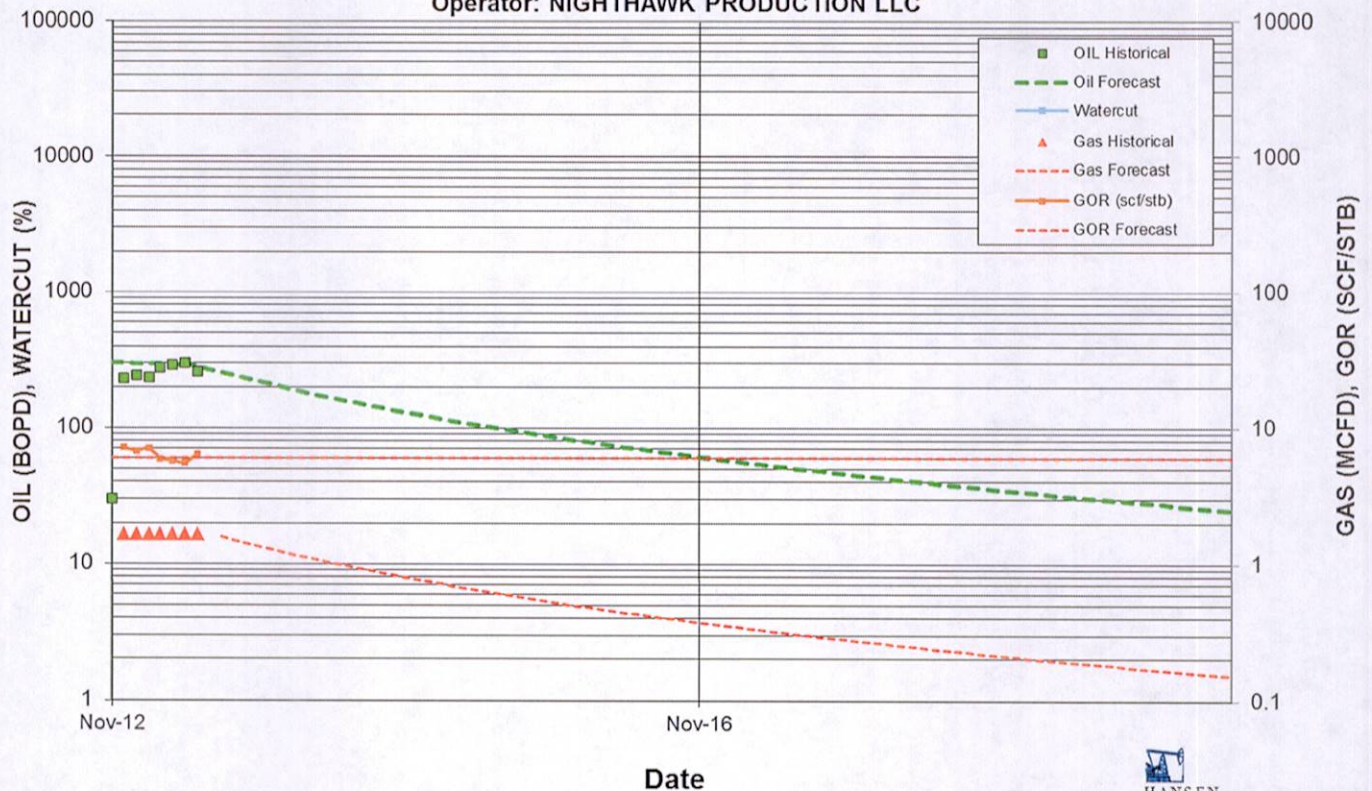


## Well: STEAMBOAT HANSEN 8-10 (A029450)

Field: UNNAMED Reservoir: SPERGEN

Location: 6S 54W 10 NE

Operator: NIGHTHAWK PRODUCTION LLC



HANSEN  
PETROLEUM ENGINEERING, INC.

Prescott Ranches 32-34  
T12S - R59W - Sec. 32

Engineering Exhibit 7L

Docket #: 1307-SP-1114

Mustang Creek Operating

Sept. 26, 2013

**CHRISTIAN E. HANSEN, P.E.**  
1059 BUFFALO RIDGE ROAD, CASTLE PINES, COLORADO 80108  
PHONE: (303) 513-9963 • EMAIL: CHRIS@HANSENPE.COM

---

**Summary**

Registered petroleum engineer with broad based experience in reservoir, completions, and production engineering capacities. Primary career focus and specialization has been reservoir description, property evaluation and recovery optimization in conventional and unconventional oil and gas projects. Experience has spanned several U.S. Basins, including the Permian Basin, a majority of Rocky Mountain Basins, and California. Currently engaged with several clients in reservoir appraisal, economic evaluation, and development planning in a wide variety of projects, including Rockies oil shale prospects.

**Credentials**

M.S. (2001, GPA 4.0) & B.S. (1985, GPA 3.4) Petroleum Engineering, Colorado School of Mines  
Registered Petroleum Engineer in Colorado, Wyoming, and Texas.

**Experience**

**2007 to Present: Petroleum Engineering Consultant.** Provide consulting services to domestic and international clients involving a broad range of engineering functions including property evaluations, acquisitions and divestitures, reservoir description, petrophysical analyses, prospect generation, development planning, drilling and completion recommendations, and workover evaluations. Recent projects located in Piceance Basin (Mesaverde, Mancos, Niobrara, Dakota, Morrison, Entrada), Uinta Basin (Green River, Wasatch, Mesaverde, Mancos, Moenkopi, Kaibab), Williston Basin (Bakken, Three-Forks, Madison), Wyoming (Mowry, Muddy, Niobrara, Sussex), Sand Wash Basin (Niobrara), Denver-Julesburg Basin (Niobrara, Muddy), and Paradox Basin (Gothic, Hovenweep).

**2004 to 2007: Bill Barrett Corp., Denver, CO – Asset Manager.** Managed large unconventional gas field development (Mesaverde - Piceance Basin) comprising a three rig drilling program (110 wells/year), extensive facilities expansion, water management, regulatory compliance, landowner negotiations, budgeting and reserves. Managed a team of 12 professionals and 10 field personnel. Project provided 35% of company reserves and production in 2007. Conducted evaluations of large property acquisitions and divestitures in UT and ND, which included forecasts of existing wells and estimations of upside recovery potential.

**1998 to 2004: EOG Resources, Inc., Denver, Colorado – Project Reservoir Engineer.** Identified drilling opportunities and optimized field development in oil & gas fields in several Rockies Basins and California. Job responsibilities included continual economic evaluation of operated wells and prospective acquisitions & deal structures in operated and non-operated fields. Led multi-disciplinary studies of the Bakken Shale (Williston) and Monterey Shale (San Joaquin, CA) for reservoir description which included determination of economically optimum horizontal well spacing through reservoir modeling. Recommended successful Almy waterflood (ORB, Wyoming) based on reservoir simulation forecasts, investments, and economic evaluation. Evaluated reservoir and investment feasibility of tertiary ASP recovery process through core work and modeling. Optimized well development in 30 BCF, tight gas field (Almond 12,500', Washakie Basin, WY) through formation evaluation, reservoir modeling, and economic forecasts. Identified oil reservoir in existing shallow gas field (GRB, WY) and recommended successful 100 well development program. Conducted feasibility study for the successful waterflooding of a deep (12,000') Frontier volatile oil reservoir (PRB, WY), and provided exhibits and expert testimony for secondary unit approval before the Wyoming Oil and Gas Commission. Identified infill and exploratory drilling locations for successful expansion of Wasatch tight gas program (Uinta Basin, UT).

**1995 to 1998: Bass Enterprises Production Co., Denver, Colorado – Division Reservoir Specialist.** Responsible for large acid-fracturing re-stimulation program in Cottonwood Creek Phosphoria Field (Bighorn Basin, WY), which involved candidate selection based on reservoir and fracture modeling, and predicted re-stimulation production response and project economics. Conducted on-site QC and real-time frac job monitoring. Implemented several design improvements based on post-frac analyses.

**1991 to 1995: Bass Enterprises Production Co., Midland, Texas – Senior Production Engineer.** Responsible for reservoir and production engineering in several oil & gas fields located in West Texas and SE New Mexico. For example, conducted detailed reservoir study of Wolfcamp Chert oil reservoir (Permian Basin) and made several recommendations to optimize recovery from field. Recommended successful program of tubing size increases in competitive Devonian gas field based on nodal analysis, reservoir simulation and economic evaluation.

**1988 to 1991: Mobil E&P U.S., Midland, Texas – Senior Reservoir Engineer.** Provided reservoir engineering support for the Salt Creek Field, a large Canyon Reef waterflood (Permian Basin). Leader of Reservoir Management Team. Recommended successful pattern realignment program that increased secondary recovery rate and reserves, and increase reservoir pressure to prepare field for CO<sub>2</sub> injection. Implemented several reservoir management surveillance procedures for waterflood.

**1985 to 1988: Mobil E&P U.S., Snyder, Texas – Production Engineer.** Responsible for workover initiation, design and oversight, and artificial lift (beam pump and submersible pump) design and optimization for several fields in West Texas.

### Publications

Authored Journal paper SPE 86574: "Producer/Injector Ratio: The Key to Understanding Pattern Flow Performance and Optimizing Waterflood Design," *SPE Reservoir Evaluation & Engineering Journal*, October, 2003.

Co-authored Journal paper SPE 73002: "A New Two-Dimensional Model for Acid-Fracturing Design," *SPE Production and Facilities Journal*, November, 2001.

### Affiliations

Society of Petroleum Engineers (25-year member)  
Denver Well Logging Society

### References

Excellent references made available upon request.

CEH 18-Dec-2012

## Summary of Expert Witness Testimony

### North Dakota Industrial Commission

9/28/2011	Fram Operating, LLC	Temp. Spacing hearing, South Greene (Bluell) Field; Case 15698, Order 17953
11/15/2000	EOG Resources, Inc.	Pooling of Interests, Charlson (Devonian) Field; Case 7517, Order 8783

### Colorado Oil and Gas Conservation Commission

2/2/2005	Bill Barrett Corp.	New location setback rules, Mamm Creek (Mesaverde) Field; Cause 191-9
----------	--------------------	---

### Wyoming Oil & Gas Conservation Commission

9/16/2003	EOG Resources, Inc.	Spacing application, Merna (Mesaverde) Field; Docket #412-2003
7/9/2003	EOG Resources, Inc.	320-acre spacing application, Snake Charmer (Frontier) Field; Docket #292-2003
4/15/2003	EOG Resources, Inc.	10-acre density application, Triple B (Mesaverde) Field; Docket #222-2003
1/14/2003	EOG Resources, Inc.	Spacing application, N. Ruger (Almond) Unit; Docket #22-2003
11/12/2002	EOG Resources, Inc.	Secondary recovery unit application, Diamondback (Frontier) Unit; Docket #370-2002
11/12/2002	EOG Resources, Inc.	Aquifer exemption application, Diamondback (Frontier) Unit; Docket #362-2002
2/15/2002	EOG Resources, Inc.	10-acre density application, Triple B (Transition) Field; Docket #63-2002
5/9/2000	EOG Resources, Inc.	10-acre density application, Triple B (Transition) Field; Docket #126-2000