14-452

UNORTHODOX LOCATION

RECEIVED
OCD Artesia
APR 08 2014
NMOCD ARTESIA

Form 3160-3
(March 2012)

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

# APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NM-054290

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
North Brushy Draw Federal 35-4H <38962>

2. Name of Operator RKI EXPLORATION & PRODUCTION, LLC. <246289>

9. API Well No.
30-015-42290

3a. Address 210 PARK AVENUE, SUITE 900
OKLAHOMA CITY, OKLAHOMA 73102

3b. Phone No. *(include area code)*
405-987-2138 (JOEL ACOSTA)

10. Field and Pool, or Exploratory
Corrall Canyon; Bone Spring, South <13354>

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 175 FSL & 2365 FWL
At proposed prod. zone 230 FNL & 2150 FWL

11. Sec., T. R. M. or Blk. and Survey or Area
SECTION 35, T. 25 S., R. 29 E.

14. Distance in miles and direction from nearest town or post office*
14 MILES SOUTHEAST OF MALAGA, NM

12. County or Parish
EDDY

13. State
NM

| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) | 16. No. of acres in lease | 17. Spacing Unit dedicated to this well |
|---|---|---|
| SHL:175' BHL: 230' | 480 | 160 |

| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. | 19. Proposed Depth | 20. BLM/BIA Bond No. on file |
|---|---|---|
| SHL: 25' BHL: 150' | TVD: 8890' MD: 13,612' | NLM-NMB-000460 |

| 21. Elevations (Show whether DF, KDB, RT, GL, etc.) | 22. Approximate date work will start* | 23. Estimated duration |
|---|---|---|
| 2997' GL | ASAP | 25 DAYS |

## 24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

| 25. Signature | Name *(Printed/Typed)* | Date |
|---|---|---|
| Barry W. Hunt | BARRY W. HUNT | 2/3/14 |

Title
PERMIT AGENT FOR RKI EXPLORATION & PRODUCTION, LLC.

| Approved by *(Signature)* | Name *(Printed/Typed)* | Date |
|---|---|---|
| /S/ STEPHEN J. CAFFEY | | APR 3 2014 |

| Title | Office |
|---|---|
| FIELD MANAGER | CARLSBAD FIELD OFFICE |

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached. APPROVAL FOR TWO YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

Operator must be in compliance with NMOCD Rule 5.9 prior to producing well.

*(Instructions on page 2)

Carlsbad Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
DISTRICT II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

# WELL LOCATION AND ACREAGE DEDICATION PLAT

| API Number | Pool Code | Pool Name |
|---|---|---|
| 30-015-42290 | 13354 | CORRAL CANYON: BONE SPRINGS, SOUTH |

| Property Code | Property Name | Well Number |
|---|---|---|
| 38962 | NORTH BRUSHY DRAW FEDERAL 35 | 4H |

| OGRID No. | Operator Name | Elevation |
|---|---|---|
| 246289 | RKI EXPLORATION & PRODUCTION | 2997' |

## Surface Location

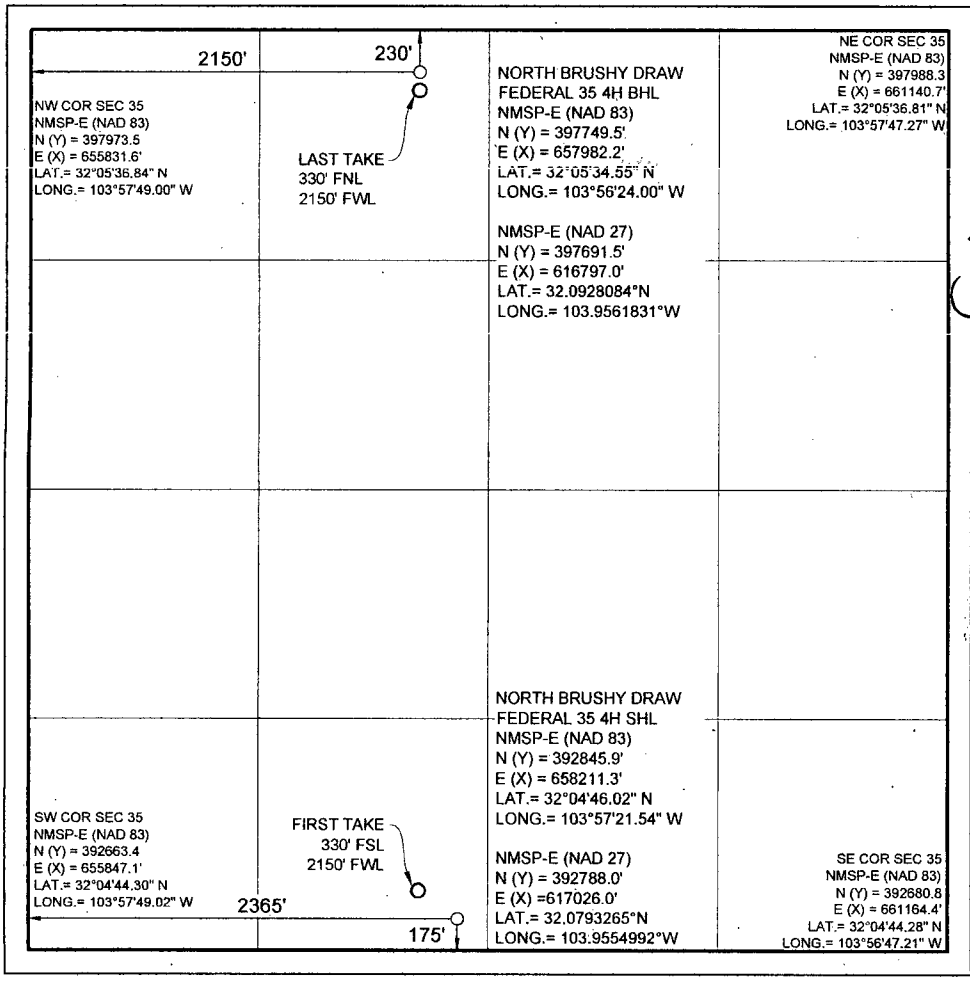
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| N | 35 | 25 S | 29 E | | 175 | SOUTH | 2365 | WEST | EDDY |

## Bottom Hole Location If Different From Surface

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| C | 35 | 25 S | 29 E | | 230 | NORTH | 2150 | WEST | EDDY |

| Dedicated Acres | Joint or Infill | Consolidated Code | Order No. |
|---|---|---|---|
| 160 | | | 13612 4/3 |

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.




## OPERATOR CERTIFICATION

*I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.*

Barry W. Hunt 2/5/14
Signature Date

Barry W. Hunt
Print Name

E-mail Address

## SURVEYORS CERTIFICATION

*I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.*

December 29, 2013
Date of Survey

Signature and Seal of Professional Surveyor:

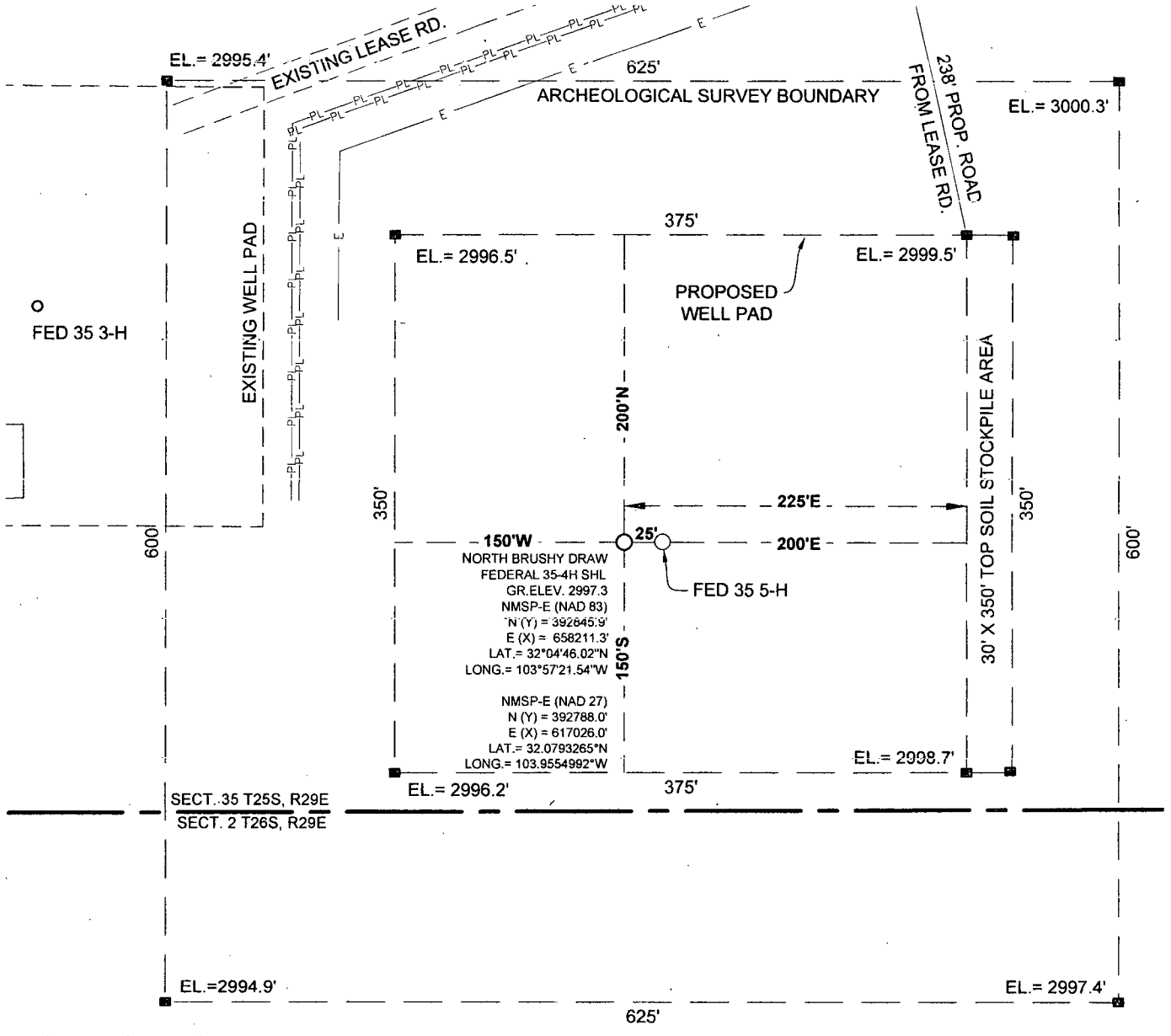
JAMES E. TOMPKINS NEW MEXICO 14729 REGISTERED PROFESSIONAL LAND SURVEYOR

James E. Tompkins

Job No.: WTC49483

JAMES E. TOMPKINS 14729
Certificate Number

# SITE LOCATION




0 50 100 200

GRAPHIC SCALE 1" = 100'

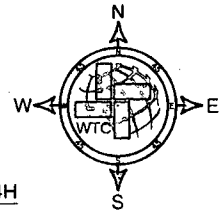
SECTION 35, T 25 S, R 29 E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 175' FSL & 2365' FWL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: NORTH BRUSHY DRAW FEDERAL 35-4H




DRIVING DIRECTIONS:

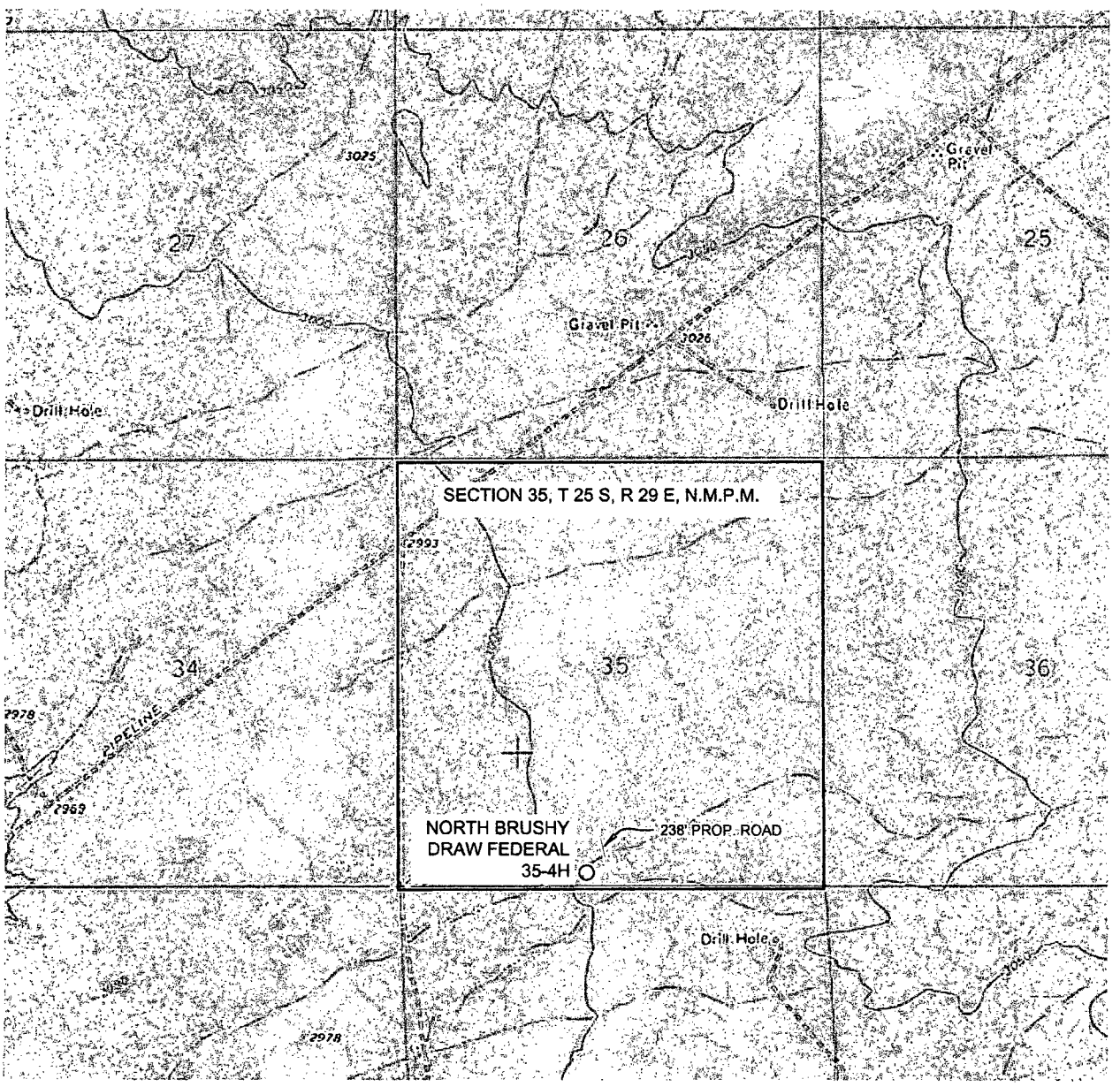
From the intersection of 285 and Longhorn County Road 725 go on 725 for 4.3 miles to a Lease Road. Go 3.7 miles Northeast turn and go South 0.2 mile. Go East 0.5 mile. Go South 1.0 mile to a lease road and go West 0.2 mile then go North 0.1 mile. Turn and go Southwest 0.3 mile to the location.


**W T C**, INC.
405 S.W. 1st. STREET
ANDREWS, TEXAS 79714
(432) 523-2181


**RKI EXPLORATION & PRODUCTION**

JOB No.: WTC49483

# LOCATION VERIFICATION MAP




0 1000 2000 4000

GRAPHIC SCALE 1" = 2000'

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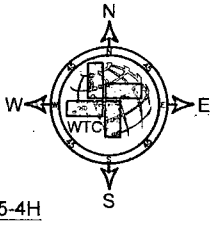


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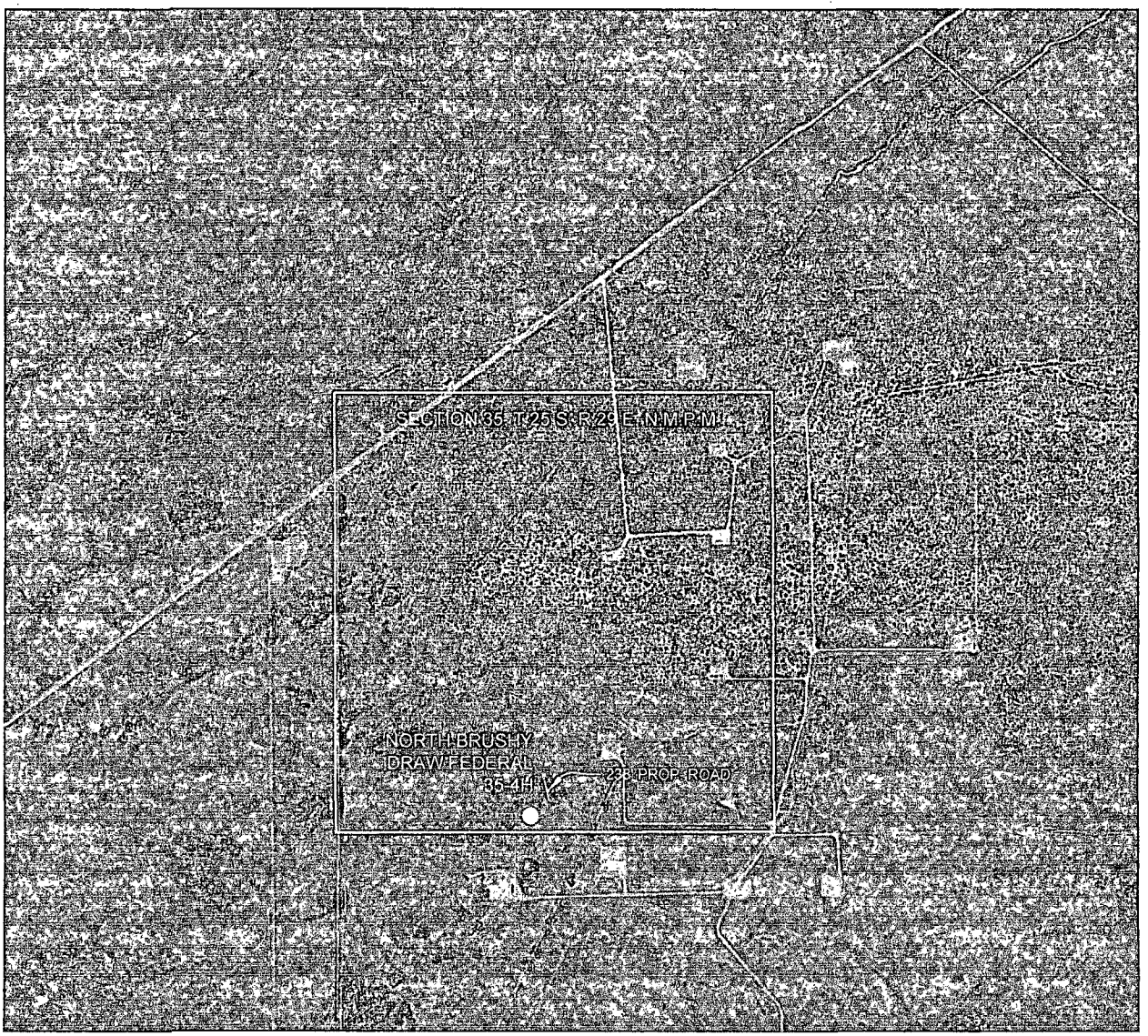
**WTC**, INC.
405 S.W. 1st. STREET
ANDREWS, TEXAS 79714
(432) 523-2181


RKI EXPLORATION & PRODUCTION

JOB No.: WTC49483

Z:\Projects\Oil & Gas Surveys\RKI Exploration & Production\49483-RKI Exploration, Stone & Pad 6 Brushy Draw Federal Wells, Sec 35, T25S, R29E, NMPM, Eddy Co, NM\Drawings\49483-NORTH BRUSHY DRAW 4H-STAKED.dwg

# AERIAL MAP

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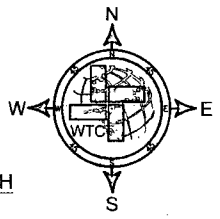


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WTC

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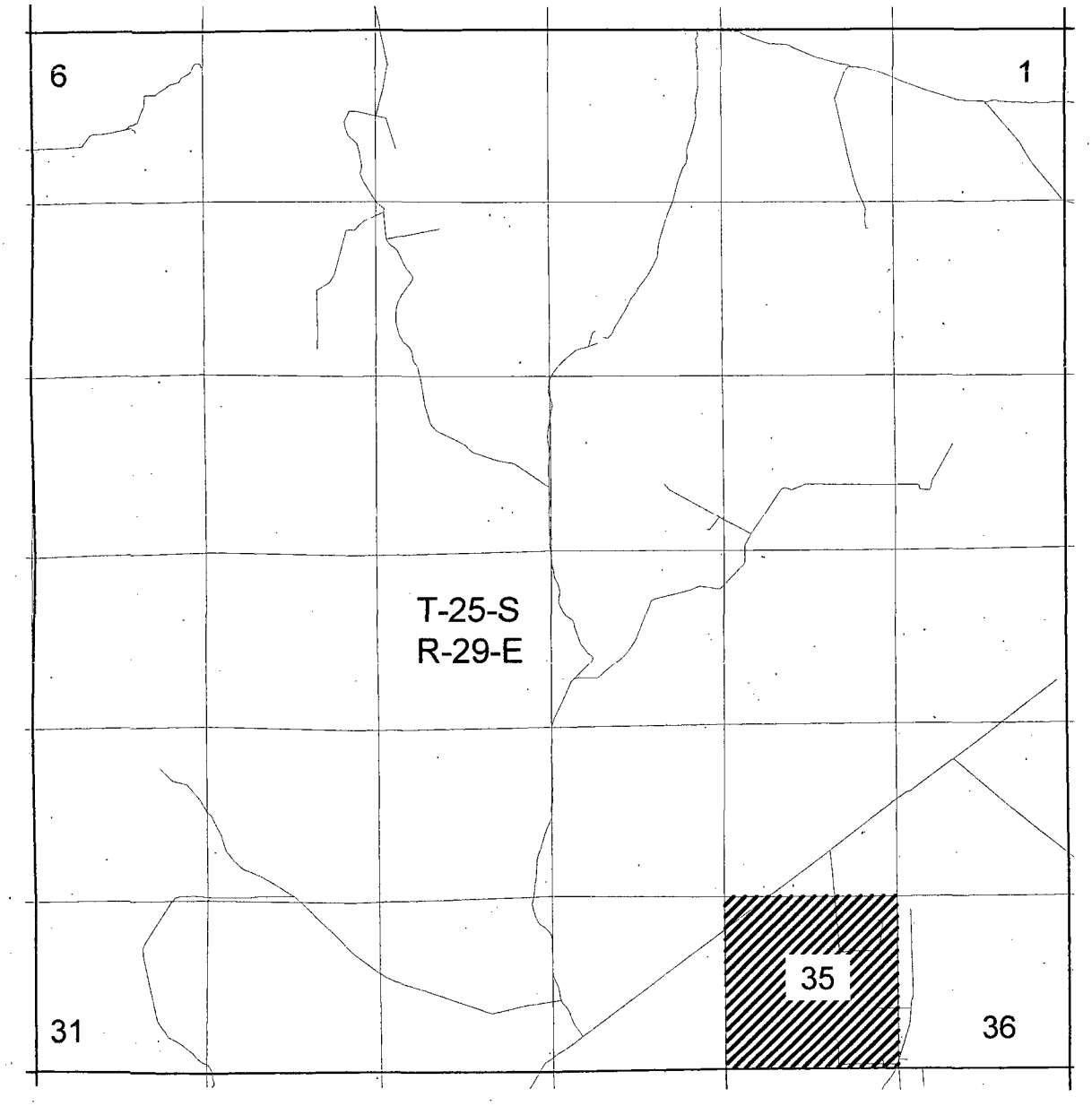
405 S.W. 1st. STREET
ANDREWS, TEXAS 79714
(432) 523-2181

**RKI EXPLORATION & PRODUCTION**

JOB No.: WTC49483

# VICINITY MAP




GRAPHIC SCALE 1" = 1 MILE

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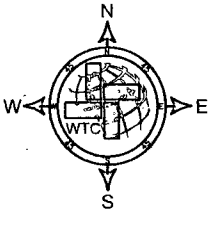


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**W T C**, INC.
405 S.W. 1st. STREET
ANDREWS, TEXAS 79714
(432) 523-218

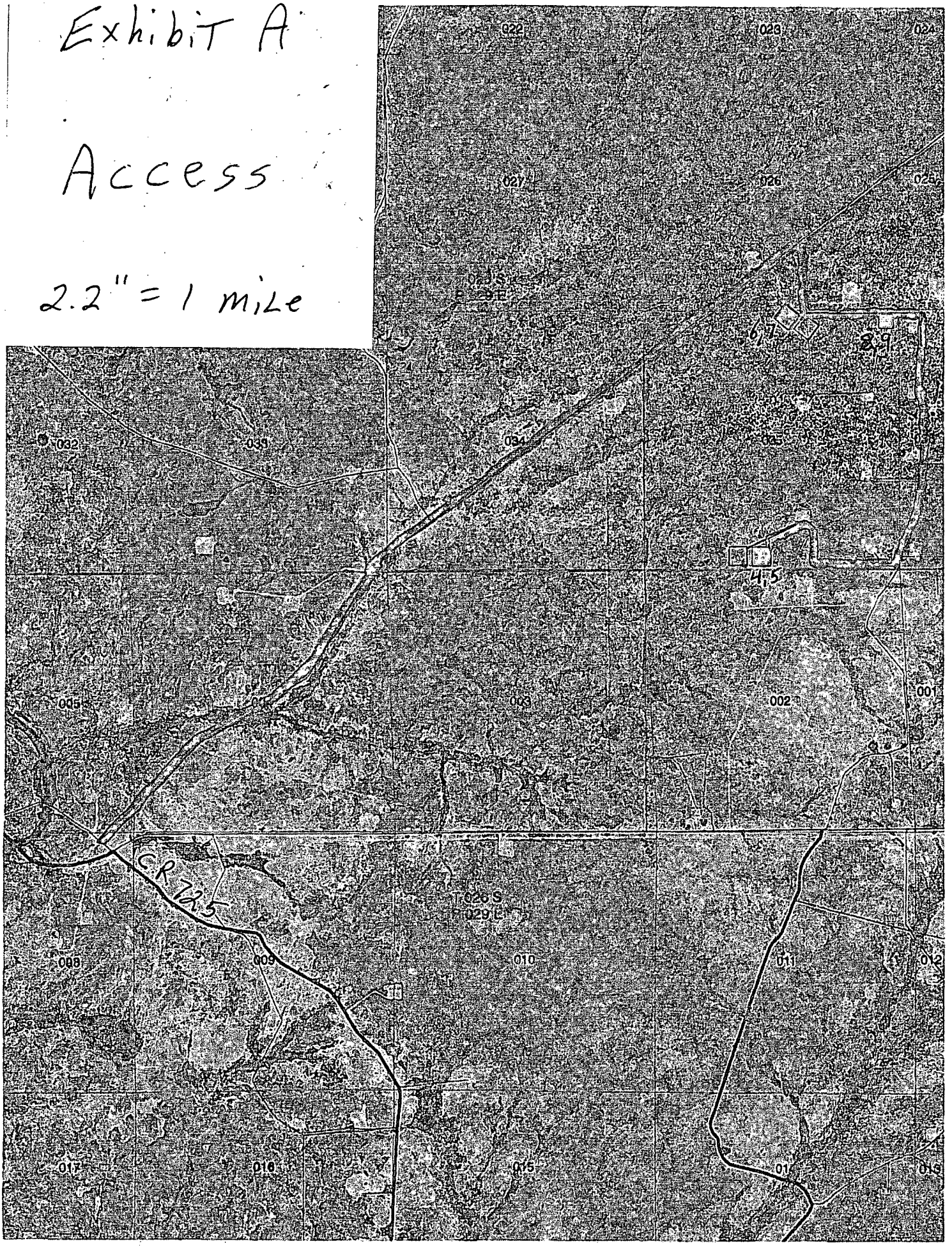

RKI EXPLORATION & PRODUCTION

JOB No.: WTC49483

# Exhibit A

## Access

2.2" = 1 mile



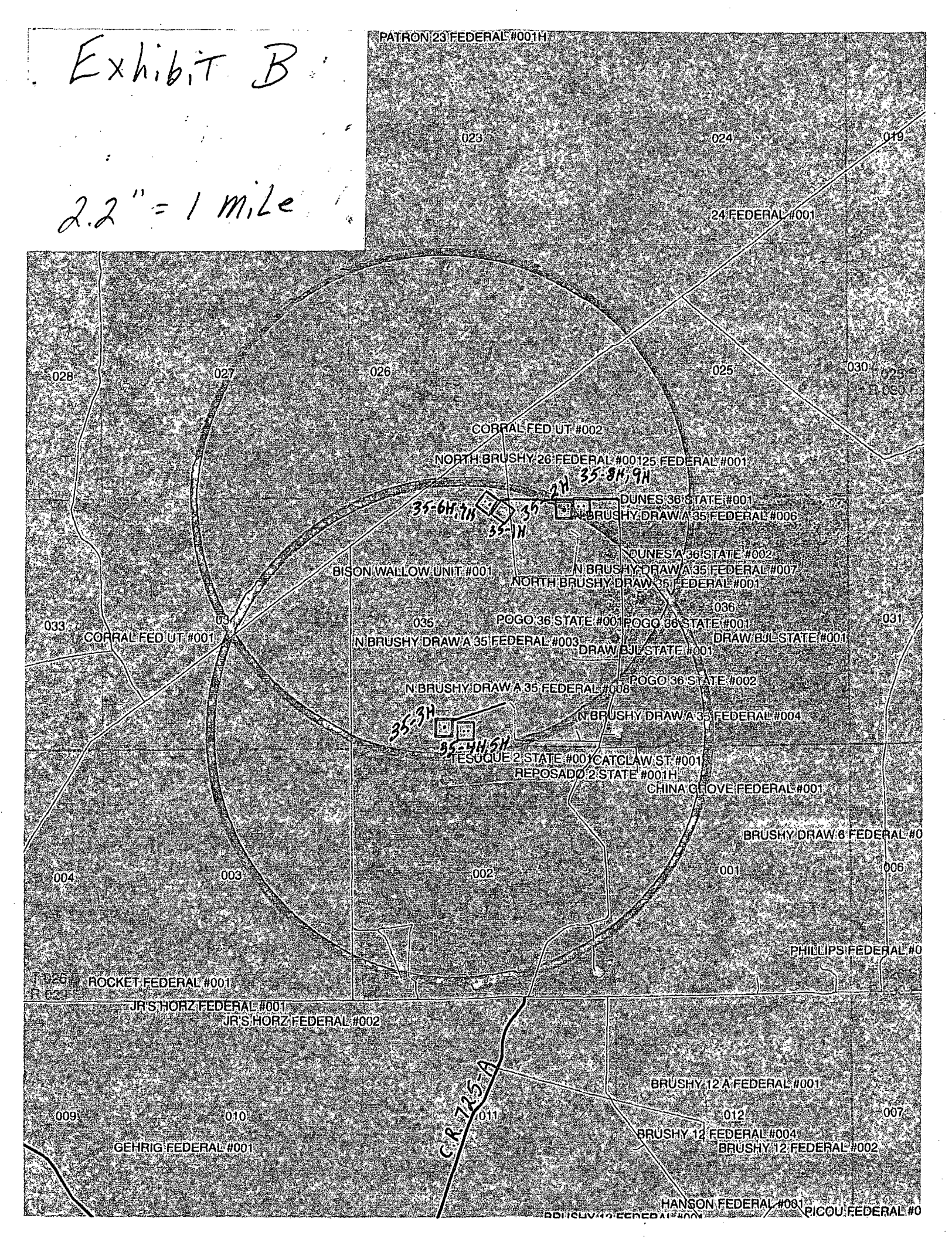
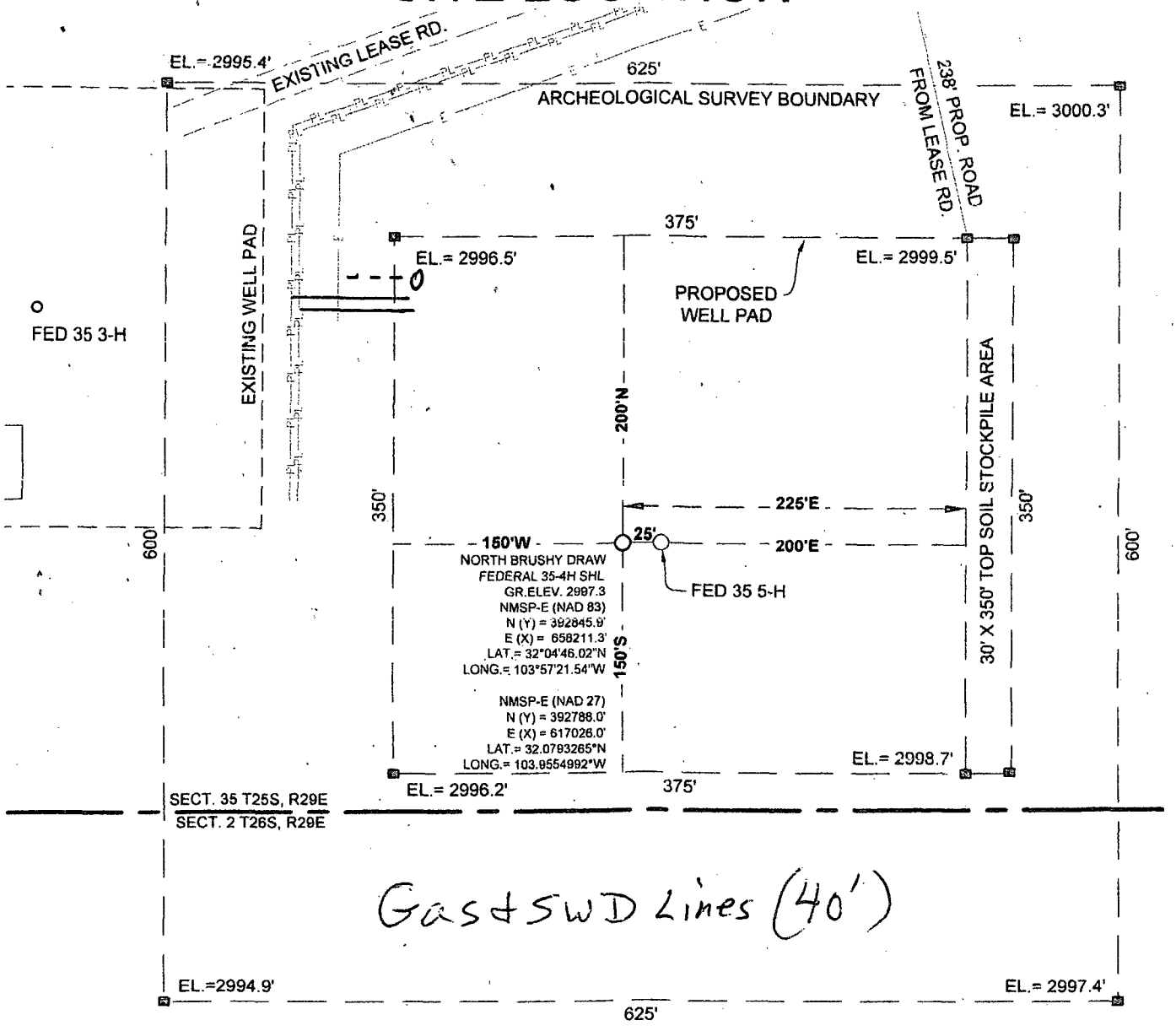


Exhibit B
2.2" = 1 Mile
PATRON 23 FEDERAL #001H
023
024
019
24 FEDERAL #001
028
027
026
025
030
CORRAL FED UT #002
NORTH BRUSHY 26 FEDERAL #001
25 FEDERAL #001
35-8H, 9H
2H
DUNES 36 STATE #001
35-6H, 7H
35
N BRUSHY DRAW A 35 FEDERAL #006
35-1H
DUNES A 36 STATE #002
BISON WALLOW UNIT #001
N BRUSHY DRAW A 35 FEDERAL #007
NORTH BRUSHY DRAW 35 FEDERAL #001
036
033
034
035
POGO 36 STATE #001
POGO 36 STATE #001
031
CORRAL FED UT #001
N BRUSHY DRAW A 35 FEDERAL #003
DRAW BJL STATE #001
DRAW BJL STATE #001
POGO 36 STATE #002
N BRUSHY DRAW A 35 FEDERAL #008
N BRUSHY DRAW A 35 FEDERAL #004
35-3H
35-4H,5H
TESUQUE 2 STATE #001
CATCLAW ST #001
REPOSADO 2 STATE #001H
CHINA GLOVE FEDERAL #001
BRUSHY DRAW 6 FEDERAL #0
004
003
002
001
006
PHILLIPS FEDERAL #0
T 02S
R 02E
ROCKET FEDERAL #001
JR'S HORZ FEDERAL #001
JR'S HORZ FEDERAL #002
BRUSHY 12 A FEDERAL #001
009
010
011
012
007
C.R. 215-A
BRUSHY 12 FEDERAL #004
BRUSHY 12 FEDERAL #002
GEHRIG FEDERAL #001
HANSON FEDERAL #001
PICOU FEDERAL #0

Exhibit E

# SITE LOCATION

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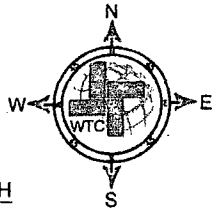


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WTC

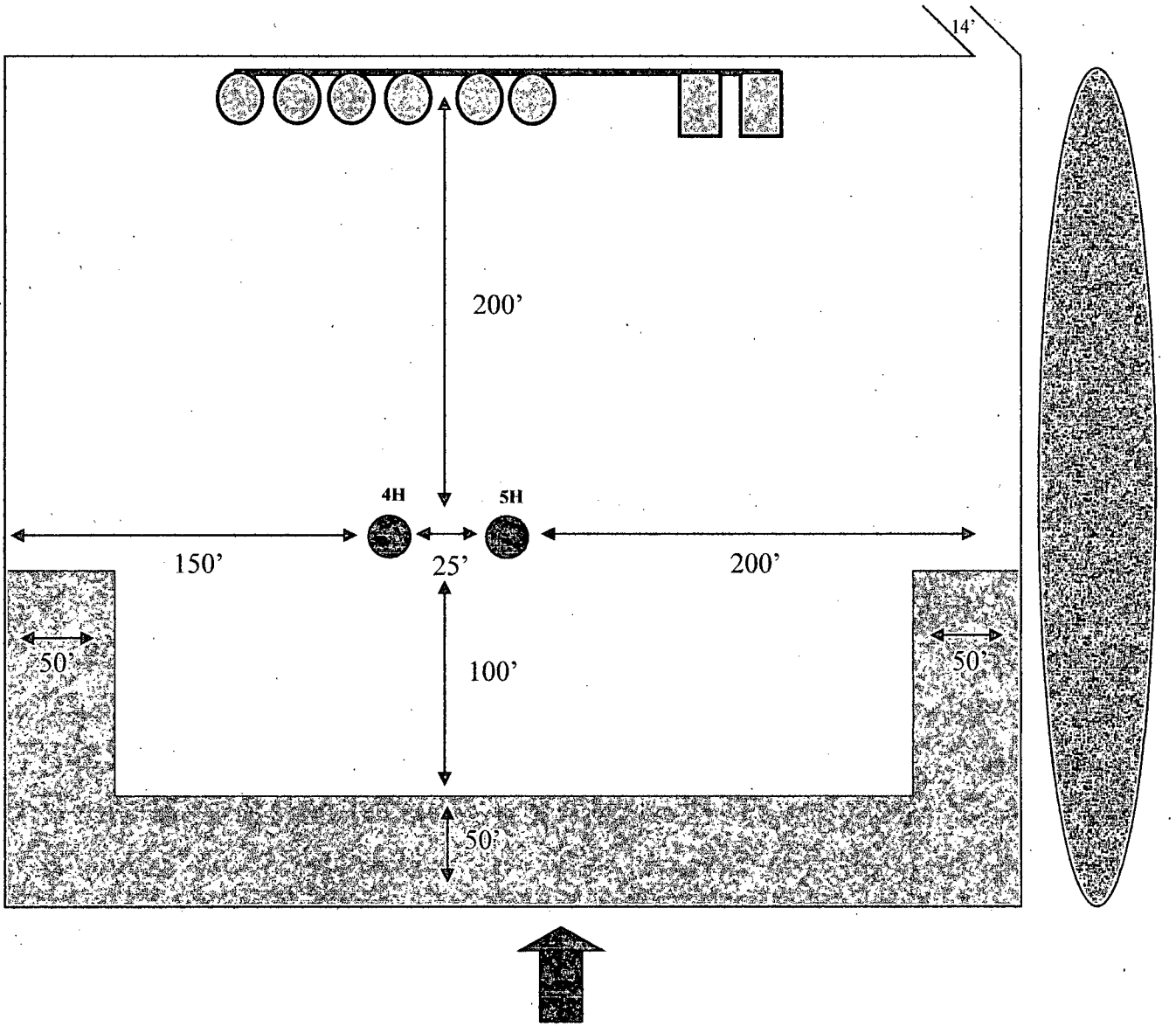
**W T C**, INC.
405 S.W. 1st. STREET
ANDREWS, TEXAS 79714
(432) 523-2181


RKI EXPLORATION & PRODUCTION

JOB No.: WTC49463

**EXHIBIT C**

# Interim Reclamation & Production Facilities
# NORTH BRUSHY DRAW FEDERAL 35-4H & 35-5H
# V-DOOR WEST




LEGEND

Well Bore

Berm

Topsoil

Production Facilities

Interim Reclamation

NORTH

RKI Exploration & Production, LLC

| | | | | | |
|---|---|---|---|---|---|
| Well | North Brushy Draw Federal 35-4H | | | | |
| Location | Surface: | 175 FSL | 2,365 FWL | | Sec. 35-25S-29E |
| | Bottom Hole: | 230 FNL | 2,150 FWL | | Sec. 35-25S-29E |
| County | Eddy | | | | |
| State | New Mexico | | | | |

**1)** The elevation of the unprepared ground is 2,997 feet above sea level.

**2)** The geologic name of the surface formation is Quaternary - Alluvium.

**3)** A rotary rig will be utilized to drill the well to 13,612 feet and run casing & cement.
This equipment will then be rigged down and the well will be completed with a workover rig.

**4)** Proposed depth is 13,612 feet

**5)** Estimated tops:

| | MD | TVD | | |
|---|---|---|---|---|
| Rustler | 800 | 800 | | |
| Salado | 1,100 | 1,100 | | |
| Castile | 1,450 | 1,450 | | |
| Lamar Lime | 3,118 | 3,118 | | |
| Base of Lime | 3,158 | 3,158 | | |
| Delaware Top | 3,560 | 3,560 | | BHP = .44 psi/ft x depth |
| Bell Canyon Sand | 3,560 | 3,560 | Oil | 1,566 psi |
| Cherry Canyon Sand | 4,242 | 4,242 | Oil | 1,866 psi |
| Brushy Canyon Sand | 5,554 | 5,554 | Oil | 2,444 psi |
| Bone Spring | 7,203 | 7,203 | Oil | 3,169 psi |
| KOP | 8,298 | 8,298 | Oil | 3,651 psi |
| Landing Point (Bone Spring Sand) | 9,375 | 8,970 | Oil | 3,947 psi |
| TD | 13,612 | 8,890 | | 3,912 psi |

Water anticipated at 200 feet. 130 degree F

**6)** Pressure control equipment:

The blowout preventer equipment (BOP) shown in Exhibit #1 will consist of a double ram type (3,000 psi WP) preventer, a bag-type annular preventer (3,000 psi WP), and rotating head. Both units will be hydraulically operated and the ram type preventer will be equipped with blind rams on top and pipe rams (sized to accommodate the drill pipe size being utilized) on bottom. A 13 3/8" SOW x 13 5/8" 3M multi-bowl casing head will be installed on the 13 3/8" casing and utilized until total depth is reached. All BOP and associated equipment will be tested to 3,000 psi and the annular will be tested to 1,500 psi after initial installation. The 13 3/8" and 9 5/8" casing will be tested to .22 psi per ft of casing string length or 1,500 psi whichever is greater, but not to exceed 70% of the minimum yield.
The 9 5/8" casing will be hung in the casing multi-bowl head and the stack will not be nippled down at this point. The stack will not be isolated and tested after running the 9 5/8" casing, but will be tested along with the 9 5/8" casing.
Pipe rams will be operated and checked each 24 hour period and each time the drill string is out of the hole.
These function test will be documented on the daily driller's log.
A drilling spool or blowout preventer with 2 side outlets (choke side shall be 3" minimum diameter, kill side shall be at least 2" diameter).
2 kill line valves, one of which will be a check valve.
2 chokes on the manifold along with a pressure gauge.
Upper kelly cock valve with handle available.
Safety valve and subs to fit all drill string connections in use.
All BOP equipment connections subjected to pressure will be flanged, welded, or clamped.
Fill up line above the upper most preventer.

**7)** Casing program: ALL NEW CASING

| Hole Size | Top | Bottom | OD Csg | Wt/Grade | Connection | Collapse Design Factor | Burst Design Factor | Tension Design Factor |
|---|---|---|---|---|---|---|---|---|
| 17 1/2" | 0 | 850 | 13 3/8" | 54.5#/J-55 | ST&C | 3.02 | 14.60 | 11.10 |
| 12 1/4" | 0 | 3,150 | 9 5/8" | 40#/J-55 | LT&C | 1.46 | 5.70 | 4.13 |
| 8 3/4" | 0 | 13,612 | 5 1/2" | 17#/HCP-110 | LT&C | 2.08 | 1.55 | 5.22 |

| | |
|---|---|
| Collapse | 1.125 |
| Burst | 1.0 |
| Tension | 2.0 |

**8)** Cement program:

| | | | | | |
|---|---|---|---|---|---|
| **Surface** | 17 1/2" hole | | | | |
| Pipe OD | 13 3/8" | | | | |
| Setting Depth | 850 ft | | | | |
| Annular Volume | 0.69462 cf/ft | | | | |
| Excess | 1 | | | 100 % | |
| Lead | 523 sx | 1.75 cf/sk | 9.13 gal/sk | | 13.5 ppg |
| Tail | 200 sx | 1.33 cf/sk | 6.32 gal/sk | | 14.8 ppg |

Lead: "C" + 4% PF20 + 2% PF1 + .125 pps PF29 + .2% PF46
Tail: "C" + 1% PF1

Top of cement: Surface

| | | | | | |
|---|---|---|---|---|---|
| **Intermediate** | 12 1/4" hole | | | | |
| Pipe OD | 9 5/8" | | | | |
| Setting Depth | 3,150 ft | | | | |
| Annular Volume | 0.31318 cf/ft | | | 0.3627 cf/ft | |
| Excess | 0.5 | | | 50 % | |
| Lead | 596 sx | 1.92 cf/sk | 9.95 gal/sk | | 12.6 ppg |
| Tail | 200 sx | 1.33 cf/sk | 6.32 gal/sk | | 14.8 ppg |

Lead: 35/65 Poz "C" + 5% PF44 + 6% PF20 + 3 pps PF42 + .125 pps PF29 + .2% PF46 +1% PF1
Tail: "C" + .2% PF13

Top of cement: Surface

| | | | | | |
|---|---|---|---|---|---|
| **Production** | 8 3/4" hole | | | | |
| Pipe OD | 5 1/2" | | | | |
| Setting Depth | 13,612 ft | | | | |
| Annular Volume | 0.2526 cf/ft | | 0.26074 cf/ft | 300 ft | |
| Excess | 0.32 | | 32 % | | |
| DV Tool Depth | 5,000 ft | | | | |

Stage 1

| | | | | | |
|---|---|---|---|---|---|
| Lead: | 673 sx | 2.08 cf/sk | 11.94 gal/sk | | 11.5 ppg |
| Tail: | 787 sx | 1.87 cf/sk | 9.53 gal/sk | | 13.0 ppg |

Lead: PVL + .5% CC + .3% PF79 (extender) + .25 pps PF46 (defoamer) + 3 pps PF42 (Kolite) + .125 pps + .125 pps PF29 (Cellophane) + .2% PF13 (retarder)

Tail: PVL + 30% PF151 (calcium carbonate) + .5% PF174 (expanding agent) + .7% PF606 + .7% PF606 (gel supressing agent) + .2% PF153 (antisettling agent) + .25 pps PF46 (antifoam) + .2% PF13 (retarder)

Top of cement: DV tool

Stage 2

| | | | | | |
|---|---|---|---|---|---|
| Lead: | 258 sx | 1.89 cf/sk | 10.06 gal/sk | | 12.9 ppg |
| Tail: | 175 sx | 1.33 cf/sk | 6.32 gal/sk | | 14.8 ppg |

Lead: 35/65 Poz "C" + 5% PF44 (salt) + 6% PF20 (gel) + .125 pps PF29 (cellophane) + .25 pps PF46 (antifoam) + .2% PF13 (retarder)

Tail: "C" + .2% PF13 (retarder)

Top of cement: 2,850 ft

**9)** Mud program:

| Top | Bottom | Mud Wt. | Vis | Fluid Loss | Type System |
|---|---|---|---|---|---|
| 0 | 850 | 8.5 to 8.9 | 32 to 36 | NC | Fresh Water |
| 850 | 3,150 | 9.8 to 10.0 | 28 to 30 | NC | Brine |
| 3,150 | 13,612 | 8.9 to 9.1 | 28 to 36 | NC | Fresh Water |

The necessary mud products for weight addition and fluid loss control will be on location at all times. Electronic pit monitoring equipment will be utilized with a Pason system. Electronic mud monitoring and mud logging will be utilized below the 9 5/8" casing.

**10)** Logging, coring, and testing program:

*No drill stem test are planned*
Total depth to intermediate: CNL, Caliper, GR, DLL,
Intermediate to surface: CNL, GR
No coring is planned

**11)** Potential hazards:

No abnormal pressure or temperature is expected. No H2S is known to exist in the area, although some form of H2S detection equipment will be utilized. If H2S is encountered the operator will comply with the provisions of Onshore Order No. 6. Lost circulation is not anticipated, but lost circulation material and weighting materials will be on location and readily available.

**12)** Anticipated start date ASAP
Duration 25 days

# RKI Exploration & Production

**Eddy County (NM83E)**
**Sec 35-T25S-R29E**
**North Brushy Draw Fed 35-4H**

**Wellbore #1**

**Plan: Prelim Plan**

# Standard Planning Report

**24 January, 2014**

# RKI Exploration & Production

Project: Eddy County (NM83E)
Site: Sec 35-T25S-R29E
Well: North Brushy Draw Fed 35-4H
Wellbore: Wellbore #1
Design: Prelim Plan

Azimuths to True North
Magnetic North: 7.43°

Magnetic Field
Strength: 48251.7snT
Dip Angle: 59.92°
Date: 01/24/2014
Model: IGRF2010

WOLVERINE DIRECTIONAL

## WELL DETAILS: North Brushy Draw Fed 35-4H

Ground Level: 0.0

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|---|---|---|---|---|---|
| 0.0 | 0.0 | 392845.90 | 658211.30 | 32° 4' 46.024 N | 103° 57' 21.535 W |

SHL: 175' FSL / 2365' FWL
BHL: 230' FNL / 2150' FWL

## SECTION DETAILS

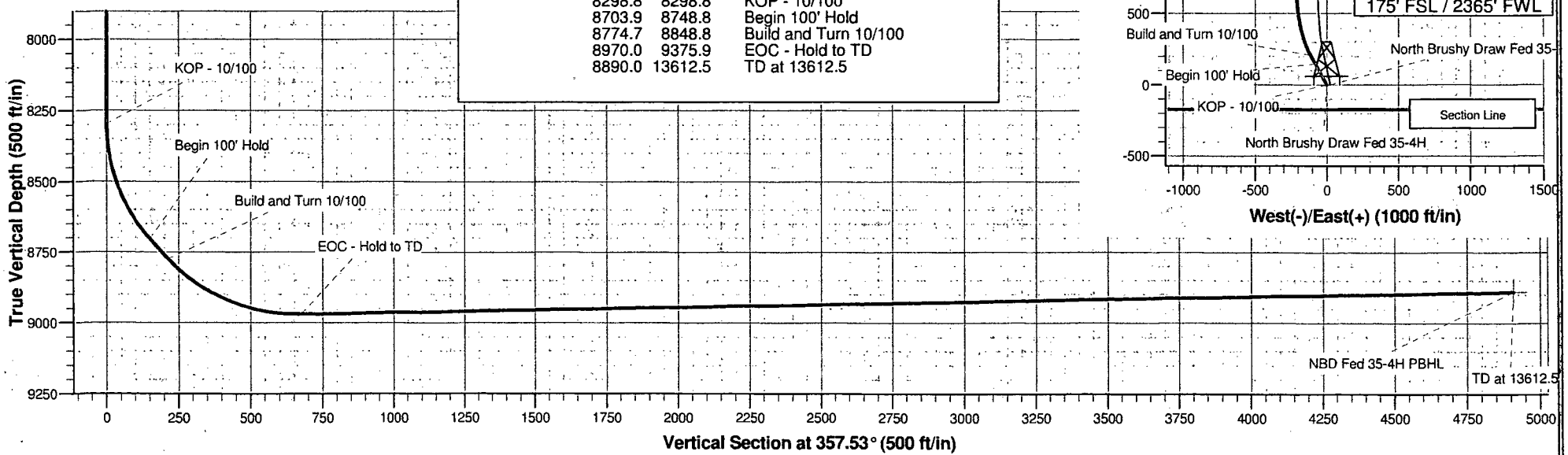
| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | DLeg | TFace | VSec | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 2 | 8298.8 | 0.00 | 0.00 | 8298.8 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 3 | 8748.8 | 45.00 | 331.15 | 8703.9 | 147.0 | -81.0 | 10.00 | 331.15 | 150.3 | |
| 4 | 8848.8 | 45.00 | 331.15 | 8774.7 | 208.9 | -115.1 | 0.00 | 0.00 | 213.7 | |
| 5 | 9375.9 | 91.08 | 360.00 | 8970.0 | 668.5 | -211.9 | 10.00 | 37.33 | 677.0 | |
| 6 | 13612.5 | 91.08 | 360.00 | 8890.0 | 4904.4 | -211.9 | 0.00 | -4.13 | 4909.0 | NBD Fed 35-4H PBHL |

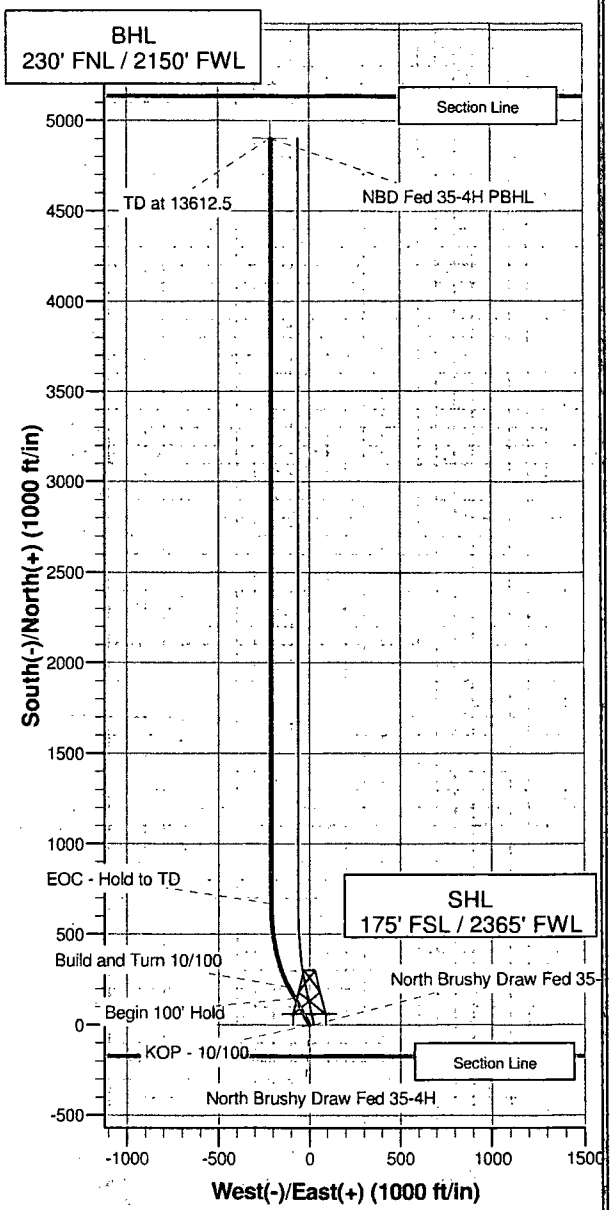
## Wellbore TARGET DETAILS (MAP CO-ORDINATES)

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Shape |
|---|---|---|---|---|---|---|
| NBD Fed 35-4H PBHL | 8890.0 | 4904.4 | -211.9 | 397749.50 | 657982.20 | Point |

## Annotations

| TVD | MD | Annotation |
|---|---|---|
| 8298.8 | 8298.8 | KOP - 10/100 |
| 8703.9 | 8748.8 | Begin 100' Hold |
| 8774.7 | 8848.8 | Build and Turn 10/100 |
| 8970.0 | 9375.9 | EOC - Hold to TD |
| 8890.0 | 13612.5 | TD at 13612.5 |



# Wolverine Directional, LLC
Planning Report

| | | | |
|---|---|---|---|
| **Database:** | EDM 2003.21 Single User Db | **Local Co-ordinate Reference:** | Well North Brushy Draw Fed 35-4H |
| **Company:** | RKI Exploration & Production | **TVD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Project:** | Eddy County (NM83E) | **MD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Site:** | Sec 35-T25S-R29E | **North Reference:** | True |
| **Well:** | North Brushy Draw Fed 35-4H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Prelim Plan | | |

**Project** Eddy County (NM83E)

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1983 | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | North American Datum 1983 | | |
| **Map Zone:** | New Mexico Eastern Zone | | |

**Site** Sec 35-T25S-R29E

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 397,657.00ft | **Latitude:** | 32° 5' 33.556 N |
| **From:** | Map | **Easting:** | 660,482.20ft | **Longitude:** | 103° 56' 54.941 W |
| **Position Uncertainty:** | 0.0 ft | **Slot Radius:** | " | **Grid Convergence:** | 0.20 ° |

**Well** North Brushy Draw Fed 35-4H

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | -4,803.1 ft | **Northing:** | 392,845.90 ft | **Latitude:** | 32° 4' 46.024 N |
| | **+E/-W** | -2,287.7 ft | **Easting:** | 658,211.30 ft | **Longitude:** | 103° 57' 21.535 W |
| **Position Uncertainty** | | 0.0 ft | **Wellhead Elevation:** | ft | **Ground Level:** | 0.0 ft |

**Wellbore** Wellbore #1

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF2010 | 01/24/14 | 7.43 | 59.92 | 48,252 |

**Design** Prelim Plan

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | | **Phase:** | PLAN | **Tie On Depth:** | 0.0 |

| Vertical Section: | Depth From (TVD) (ft) | +N/-S (ft) | +E/-W (ft) | Direction (°) |
|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 357.53 |

**Plan Sections**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 8,298.8 | 0.00 | 0.00 | 8,298.8 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 8,748.8 | 45.00 | 331.15 | 8,703.9 | 147.0 | -81.0 | 10.00 | 10.00 | 0.00 | 331.15 | |
| 8,848.8 | 45.00 | 331.15 | 8,774.7 | 208.9 | -115.1 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 9,375.9 | 91.08 | 360.00 | 8,970.0 | 668.5 | -211.9 | 10.00 | 8.74 | 5.47 | 37.33 | |
| 13,612.5 | 91.08 | 360.00 | 8,890.0 | 4,904.4 | -211.9 | 0.00 | 0.00 | 0.00 | -4.13 | NBD Fed 35-4H PE |

| | | | |
|---|---|---|---|
| **Database:** | EDM 2003.21 Single User Db | **Local Co-ordinate Reference:** | Well North Brushy Draw Fed 35-4H |
| **Company:** | RKI Exploration & Production | **TVD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Project:** | Eddy County (NM83E) | **MD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Site:** | Sec 35-T25S-R29E | **North Reference:** | True |
| **Well:** | North Brushy Draw Fed 35-4H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Prelim Plan | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 100.0 | 0.00 | 0.00 | 100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 200.0 | 0.00 | 0.00 | 200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 300.0 | 0.00 | 0.00 | 300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 400.0 | 0.00 | 0.00 | 400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 500.0 | 0.00 | 0.00 | 500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 600.0 | 0.00 | 0.00 | 600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 700.0 | 0.00 | 0.00 | 700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 800.0 | 0.00 | 0.00 | 800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 900.0 | 0.00 | 0.00 | 900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,000.0 | 0.00 | 0.00 | 1,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,100.0 | 0.00 | 0.00 | 1,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,200.0 | 0.00 | 0.00 | 1,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,300.0 | 0.00 | 0.00 | 1,300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,400.0 | 0.00 | 0.00 | 1,400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,500.0 | 0.00 | 0.00 | 1,500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,600.0 | 0.00 | 0.00 | 1,600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,700.0 | 0.00 | 0.00 | 1,700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,800.0 | 0.00 | 0.00 | 1,800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,900.0 | 0.00 | 0.00 | 1,900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,000.0 | 0.00 | 0.00 | 2,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,100.0 | 0.00 | 0.00 | 2,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,200.0 | 0.00 | 0.00 | 2,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,300.0 | 0.00 | 0.00 | 2,300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,400.0 | 0.00 | 0.00 | 2,400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,500.0 | 0.00 | 0.00 | 2,500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,600.0 | 0.00 | 0.00 | 2,600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,700.0 | 0.00 | 0.00 | 2,700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,800.0 | 0.00 | 0.00 | 2,800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,900.0 | 0.00 | 0.00 | 2,900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,000.0 | 0.00 | 0.00 | 3,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,100.0 | 0.00 | 0.00 | 3,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,200.0 | 0.00 | 0.00 | 3,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,300.0 | 0.00 | 0.00 | 3,300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,400.0 | 0.00 | 0.00 | 3,400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,500.0 | 0.00 | 0.00 | 3,500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,600.0 | 0.00 | 0.00 | 3,600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,700.0 | 0.00 | 0.00 | 3,700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,800.0 | 0.00 | 0.00 | 3,800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,900.0 | 0.00 | 0.00 | 3,900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,000.0 | 0.00 | 0.00 | 4,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,100.0 | 0.00 | 0.00 | 4,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,200.0 | 0.00 | 0.00 | 4,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,300.0 | 0.00 | 0.00 | 4,300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,400.0 | 0.00 | 0.00 | 4,400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,500.0 | 0.00 | 0.00 | 4,500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,600.0 | 0.00 | 0.00 | 4,600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,700.0 | 0.00 | 0.00 | 4,700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,800.0 | 0.00 | 0.00 | 4,800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,900.0 | 0.00 | 0.00 | 4,900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 5,000.0 | 0.00 | 0.00 | 5,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 5,100.0 | 0.00 | 0.00 | 5,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 5,200.0 | 0.00 | 0.00 | 5,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 5,300.0 | 0.00 | 0.00 | 5,300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |

# Wolverine Directional, LLC

Planning Report

| | | | |
|---|---|---|---|
| **Database:** | EDM 2003.21 Single User Db | **Local Co-ordinate Reference:** | Well North Brushy Draw Fed 35-4H |
| **Company:** | RKI Exploration & Production | **TVD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Project:** | Eddy County (NM83E) | **MD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Site:** | Sec 35-T25S-R29E | **North Reference:** | True |
| **Well:** | North Brushy Draw Fed 35-4H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Prelim Plan | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 5,400.0 | 0.00 | 0.00 | 5,400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 5,500.0 | 0.00 | 0.00 | 5,500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 5,600.0 | 0.00 | 0.00 | 5,600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 5,700.0 | 0.00 | 0.00 | 5,700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 5,800.0 | 0.00 | 0.00 | 5,800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 5,900.0 | 0.00 | 0.00 | 5,900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 6,000.0 | 0.00 | 0.00 | 6,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 6,100.0 | 0.00 | 0.00 | 6,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 6,200.0 | 0.00 | 0.00 | 6,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 6,300.0 | 0.00 | 0.00 | 6,300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 6,400.0 | 0.00 | 0.00 | 6,400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 6,500.0 | 0.00 | 0.00 | 6,500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 6,600.0 | 0.00 | 0.00 | 6,600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 6,700.0 | 0.00 | 0.00 | 6,700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 6,800.0 | 0.00 | 0.00 | 6,800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 6,900.0 | 0.00 | 0.00 | 6,900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 7,000.0 | 0.00 | 0.00 | 7,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 7,100.0 | 0.00 | 0.00 | 7,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 7,200.0 | 0.00 | 0.00 | 7,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 7,300.0 | 0.00 | 0.00 | 7,300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 7,400.0 | 0.00 | 0.00 | 7,400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 7,500.0 | 0.00 | 0.00 | 7,500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 7,600.0 | 0.00 | 0.00 | 7,600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 7,700.0 | 0.00 | 0.00 | 7,700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 7,800.0 | 0.00 | 0.00 | 7,800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 7,900.0 | 0.00 | 0.00 | 7,900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 8,000.0 | 0.00 | 0.00 | 8,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 8,100.0 | 0.00 | 0.00 | 8,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 8,200.0 | 0.00 | 0.00 | 8,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 8,298.8 | 0.00 | 0.00 | 8,298.8 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| **KOP - 10/100** | | | | | | | | | |
| 8,300.0 | 0.12 | 331.15 | 8,300.0 | 0.0 | 0.0 | 0.0 | 10.00 | 10.00 | 0.00 |
| 8,350.0 | 5.12 | 331.15 | 8,349.9 | 2.0 | -1.1 | 2.0 | 10.00 | 10.00 | 0.00 |
| 8,400.0 | 10.12 | 331.15 | 8,399.5 | 7.8 | -4.3 | 8.0 | 10.00 | 10.00 | 0.00 |
| 8,450.0 | 15.12 | 331.15 | 8,448.3 | 17.4 | -9.6 | 17.8 | 10.00 | 10.00 | 0.00 |
| 8,500.0 | 20.12 | 331.15 | 8,495.9 | 30.6 | -16.9 | 31.3 | 10.00 | 10.00 | 0.00 |
| 8,550.0 | 25.12 | 331.15 | 8,542.0 | 47.5 | -26.1 | 48.5 | 10.00 | 10.00 | 0.00 |
| 8,600.0 | 30.12 | 331.15 | 8,586.3 | 67.8 | -37.3 | 69.3 | 10.00 | 10.00 | 0.00 |
| 8,650.0 | 35.12 | 331.15 | 8,628.4 | 91.4 | -50.3 | 93.4 | 10.00 | 10.00 | 0.00 |
| 8,700.0 | 40.12 | 331.15 | 8,668.0 | 118.1 | -65.1 | 120.8 | 10.00 | 10.00 | 0.00 |
| 8,748.8 | 45.00 | 331.15 | 8,703.9 | 147.0 | -81.0 | 150.3 | 10.00 | 10.00 | 0.00 |
| **Begin 100' Hold** | | | | | | | | | |
| 8,800.0 | 45.00 | 331.15 | 8,740.1 | 178.7 | -98.4 | 182.8 | 0.00 | 0.00 | 0.00 |
| 8,848.8 | 45.00 | 331.15 | 8,774.7 | 208.9 | -115.1 | 213.7 | 0.00 | 0.00 | 0.00 |
| **Build and Turn 10/100** | | | | | | | | | |
| 8,850.0 | 45.10 | 331.25 | 8,775.5 | 209.7 | -115.5 | 214.5 | 10.00 | 7.96 | 8.56 |
| 8,900.0 | 49.15 | 335.25 | 8,809.5 | 242.4 | -131.9 | 247.9 | 10.00 | 8.10 | 8.00 |
| 8,950.0 | 53.32 | 338.78 | 8,840.8 | 278.3 | -147.1 | 284.4 | 10.00 | 8.35 | 7.06 |
| 9,000.0 | 57.59 | 341.95 | 8,869.2 | 317.1 | -160.9 | 323.7 | 10.00 | 8.54 | 6.33 |
| 9,050.0 | 61.93 | 344.82 | 8,894.4 | 358.4 | -173.3 | 365.6 | 10.00 | 8.68 | 5.75 |
| 9,100.0 | 66.33 | 347.48 | 8,916.2 | 402.1 | -184.0 | 409.7 | 10.00 | 8.79 | 5.30 |
| 9,150.0 | 70.76 | 349.95 | 8,934.5 | 447.7 | -193.1 | 455.6 | 10.00 | 8.87 | 4.95 |
| 9,200.0 | 75.23 | 352.30 | 8,949.1 | 495.0 | -200.5 | 503.2 | 10.00 | 8.94 | 4.69 |

# Wolverine Directional, LLC

Planning Report

| | | | |
|---|---|---|---|
| **Database:** | EDM 2003.21 Single User Db | **Local Co-ordinate Reference:** | Well North Brushy Draw Fed 35-4H |
| **Company:** | RKI Exploration & Production | **TVD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Project:** | Eddy County (NM83E) | **MD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Site:** | Sec 35-T25S-R29E | **North Reference:** | True |
| **Well:** | North Brushy Draw Fed 35-4H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Prelim Plan | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 9,250.0 | 79.72 | 354.55 | 8,959.9 | 543.4 | -206.0 | 551.8 | 10.00 | 8.98 | 4.50 |
| 9,300.0 | 84.23 | 356.74 | 8,966.9 | 592.8 | -209.8 | 601.3 | 10.00 | 9.01 | 4.38 |
| 9,350.0 | 88.74 | 358.89 | 8,970.0 | 642.6 | -211.7 | 651.2 | 10.00 | 9.03 | 4.31 |
| 9,375.9 | 91.08 | 360.00 | 8,970.0 | 668.5 | -211.9 | 677.0 | 10.00 | 9.03 | 4.29 |
| **EOC - Hold to TD** | | | | | | | | | |
| 9,400.0 | 91.08 | 360.00 | 8,969.5 | 692.6 | -211.9 | 701.1 | 0.00 | 0.00 | 0.00 |
| 9,500.0 | 91.08 | 360.00 | 8,967.7 | 792.6 | -211.9 | 801.0 | 0.00 | 0.00 | 0.00 |
| 9,600.0 | 91.08 | 360.00 | 8,965.8 | 892.6 | -211.9 | 900.9 | 0.00 | 0.00 | 0.00 |
| 9,700.0 | 91.08 | 360.00 | 8,963.9 | 992.6 | -211.9 | 1,000.8 | 0.00 | 0.00 | 0.00 |
| 9,800.0 | 91.08 | 360.00 | 8,962.0 | 1,092.6 | -211.9 | 1,100.7 | 0.00 | 0.00 | 0.00 |
| 9,900.0 | 91.08 | 360.00 | 8,960.1 | 1,192.5 | -211.9 | 1,200.6 | 0.00 | 0.00 | 0.00 |
| 10,000.0 | 91.08 | 360.00 | 8,958.2 | 1,292.5 | -211.9 | 1,300.5 | 0.00 | 0.00 | 0.00 |
| 10,100.0 | 91.08 | 360.00 | 8,956.4 | 1,392.5 | -211.9 | 1,400.4 | 0.00 | 0.00 | 0.00 |
| 10,200.0 | 91.08 | 360.00 | 8,954.5 | 1,492.5 | -211.9 | 1,500.2 | 0.00 | 0.00 | 0.00 |
| 10,300.0 | 91.08 | 360.00 | 8,952.6 | 1,592.5 | -211.9 | 1,600.1 | 0.00 | 0.00 | 0.00 |
| 10,400.0 | 91.08 | 360.00 | 8,950.7 | 1,692.5 | -211.9 | 1,700.0 | 0.00 | 0.00 | 0.00 |
| 10,500.0 | 91.08 | 360.00 | 8,948.8 | 1,792.4 | -211.9 | 1,799.9 | 0.00 | 0.00 | 0.00 |
| 10,600.0 | 91.08 | 360.00 | 8,946.9 | 1,892.4 | -211.9 | 1,899.8 | 0.00 | 0.00 | 0.00 |
| 10,700.0 | 91.08 | 360.00 | 8,945.0 | 1,992.4 | -211.9 | 1,999.7 | 0.00 | 0.00 | 0.00 |
| 10,800.0 | 91.08 | 360.00 | 8,943.1 | 2,092.4 | -211.9 | 2,099.6 | 0.00 | 0.00 | 0.00 |
| 10,900.0 | 91.08 | 360.00 | 8,941.3 | 2,192.4 | -211.9 | 2,199.5 | 0.00 | 0.00 | 0.00 |
| 11,000.0 | 91.08 | 360.00 | 8,939.4 | 2,292.3 | -211.9 | 2,299.4 | 0.00 | 0.00 | 0.00 |
| 11,100.0 | 91.08 | 360.00 | 8,937.5 | 2,392.3 | -211.9 | 2,399.2 | 0.00 | 0.00 | 0.00 |
| 11,200.0 | 91.08 | 360.00 | 8,935.6 | 2,492.3 | -211.9 | 2,499.1 | 0.00 | 0.00 | 0.00 |
| 11,300.0 | 91.08 | 360.00 | 8,933.7 | 2,592.3 | -211.9 | 2,599.0 | 0.00 | 0.00 | 0.00 |
| 11,400.0 | 91.08 | 360.00 | 8,931.8 | 2,692.3 | -211.9 | 2,698.9 | 0.00 | 0.00 | 0.00 |
| 11,500.0 | 91.08 | 360.00 | 8,929.9 | 2,792.3 | -211.9 | 2,798.8 | 0.00 | 0.00 | 0.00 |
| 11,600.0 | 91.08 | 360.00 | 8,928.0 | 2,892.2 | -211.9 | 2,898.7 | 0.00 | 0.00 | 0.00 |
| 11,700.0 | 91.08 | 360.00 | 8,926.2 | 2,992.2 | -211.9 | 2,998.6 | 0.00 | 0.00 | 0.00 |
| 11,800.0 | 91.08 | 360.00 | 8,924.3 | 3,092.2 | -211.9 | 3,098.5 | 0.00 | 0.00 | 0.00 |
| 11,900.0 | 91.08 | 360.00 | 8,922.4 | 3,192.2 | -211.9 | 3,198.4 | 0.00 | 0.00 | 0.00 |
| 12,000.0 | 91.08 | 360.00 | 8,920.5 | 3,292.2 | -211.9 | 3,298.2 | 0.00 | 0.00 | 0.00 |
| 12,100.0 | 91.08 | 360.00 | 8,918.6 | 3,392.1 | -211.9 | 3,398.1 | 0.00 | 0.00 | 0.00 |
| 12,200.0 | 91.08 | 360.00 | 8,916.7 | 3,492.1 | -211.9 | 3,498.0 | 0.00 | 0.00 | 0.00 |
| 12,300.0 | 91.08 | 360.00 | 8,914.8 | 3,592.1 | -211.9 | 3,597.9 | 0.00 | 0.00 | 0.00 |
| 12,400.0 | 91.08 | 360.00 | 8,912.9 | 3,692.1 | -211.9 | 3,697.8 | 0.00 | 0.00 | 0.00 |
| 12,500.0 | 91.08 | 360.00 | 8,911.0 | 3,792.1 | -211.9 | 3,797.7 | 0.00 | 0.00 | 0.00 |
| 12,600.0 | 91.08 | 360.00 | 8,909.1 | 3,892.1 | -211.9 | 3,897.6 | 0.00 | 0.00 | 0.00 |
| 12,700.0 | 91.08 | 360.00 | 8,907.3 | 3,992.0 | -211.9 | 3,997.5 | 0.00 | 0.00 | 0.00 |
| 12,800.0 | 91.08 | 360.00 | 8,905.4 | 4,092.0 | -211.9 | 4,097.4 | 0.00 | 0.00 | 0.00 |
| 12,900.0 | 91.08 | 360.00 | 8,903.5 | 4,192.0 | -211.9 | 4,197.2 | 0.00 | 0.00 | 0.00 |
| 13,000.0 | 91.08 | 360.00 | 8,901.6 | 4,292.0 | -211.9 | 4,297.1 | 0.00 | 0.00 | 0.00 |
| 13,100.0 | 91.08 | 360.00 | 8,899.7 | 4,392.0 | -211.9 | 4,397.0 | 0.00 | 0.00 | 0.00 |
| 13,200.0 | 91.08 | 360.00 | 8,897.8 | 4,492.0 | -211.9 | 4,496.9 | 0.00 | 0.00 | 0.00 |
| 13,300.0 | 91.08 | 360.00 | 8,895.9 | 4,591.9 | -211.9 | 4,596.8 | 0.00 | 0.00 | 0.00 |
| 13,400.0 | 91.08 | 360.00 | 8,894.0 | 4,691.9 | -211.9 | 4,696.7 | 0.00 | 0.00 | 0.00 |
| 13,500.0 | 91.08 | 360.00 | 8,892.1 | 4,791.9 | -211.9 | 4,796.6 | 0.00 | 0.00 | 0.00 |
| 13,600.0 | 91.08 | 360.00 | 8,890.2 | 4,891.9 | -211.9 | 4,896.5 | 0.00 | 0.00 | 0.00 |
| 13,612.5 | 91.08 | 360.00 | 8,890.0 | 4,904.4 | -211.9 | 4,909.0 | 0.00 | 0.00 | 0.00 |
| **TD at 13612.5 - NBD Fed 35-4H PBHL** | | | | | | | | | |

# Wolverine Directional, LLC
Planning Report

| | | | |
|---|---|---|---|
| **Database:** | EDM 2003.21 Single User Db | **Local Co-ordinate Reference:** | Well North Brushy Draw Fed 35-4H |
| **Company:** | RKI Exploration & Production | **TVD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Project:** | Eddy County (NM83E) | **MD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Site:** | Sec 35-T25S-R29E | **North Reference:** | True |
| **Well:** | North Brushy Draw Fed 35-4H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Prelim Plan | | |

**Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (ft) | Easting (ft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| NBD Fed 35-4H PBHl<br>- plan hits target<br>- Point | 0.00 | 0.00 | 8,890.0 | 4,904.4 | -211.9 | 397,749.50 | 657,982.20 | 32° 5' 34.558 N | 103° 57' 23.999 W |

**Plan Annotations**

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates +N/-S (ft) | Local Coordinates +E/-W (ft) | Comment |
|---|---|---|---|---|
| 8,298.8 | 8,298.8 | 0.0 | 0.0 | KOP - 10/100 |
| 8,748.8 | 8,703.9 | 147.0 | -81.0 | Begin 100' Hold |
| 8,848.8 | 8,774.7 | 208.9 | -115.1 | Build and Turn 10/100 |
| 9,375.9 | 8,970.0 | 668.5 | -211.9 | EOC - Hold to TD |
| 13,612.5 | 8,890.0 | 4,904.4 | -211.9 | TD at 13612.5 |

# RKI Exploration & Production

**Eddy County (NM83E)**
**Sec 35-T25S-R29E**
**North Brushy Draw Fed 35-4H**

**Wellbore #1**
**Prelim Plan**

# Anticollision Report

**24 January, 2014**

# Wolverine Directional, LLC

Anticollision Report

| | | | |
|---|---|---|---|
| **Company:** | RKI Exploration & Production | **Local Co-ordinate Reference:** | Well North Brushy Draw Fed 35-4H |
| **Project:** | Eddy County (NM83E) | **TVD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Reference Site:** | Sec 35-T25S-R29E | **MD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Site Error:** | 0.0ft | **North Reference:** | True |
| **Reference Well:** | North Brushy Draw Fed 35-4H | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDM 2003.21 Single User Db |
| **Reference Design:** | Prelim Plan | **Offset TVD Reference:** | Offset Datum |

**Reference** Prelim Plan

| | | | |
|---|---|---|---|
| **Filter type:** | NO GLOBAL FILTER: Using user defined selection & filtering criteria | | |
| **Interpolation Method:** | Stations | **Error Model:** | ISCWSA |
| **Depth Range:** | Unlimited | **Scan Method:** | Closest Approach 3D |
| **Results Limited by:** | Maximum center-center distance of 10,000.0ft | **Error Surface:** | Elliptical Conic |
| **Warning Levels Evaluated at:** | 2.00 **Sigma** | | |

**Survey Tool Program** **Date** 01/24/14

| From (ft) | To (ft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0.0 | 13,612.5 | Prelim Plan (Wellbore #1) | MWD | MWD - Standard |

**Summary**

| Site Name Offset Well - Wellbore - Design | Reference Measured Depth (ft) | Offset Measured Depth (ft) | Distance Between Centres (ft) | Distance Between Ellipses (ft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|
| Sec 35-T25S-R29E | | | | | | |
| North Brushy Draw Fed 35-5H - Wellbore #1 - Prelim Pla | 7,148.4 | 7,148.6 | 24.5 | -7.5 | 0.766 | Level 1, CC, ES, SF |

**Offset Design** Sec 35-T25S-R29E - North Brushy Draw Fed 35-5H - Wellbore #1 - Prelim Plan — **Offset Site Error:** 0.0ft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0ft

| Reference Measured Depth (ft) | Reference Vertical Depth (ft) | Offset Measured Depth (ft) | Offset Vertical Depth (ft) | Semi Major Axis Reference (ft) | Semi Major Axis Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | Offset Wellbore Centre +E/-W (ft) | Distance Between Centres (ft) | Distance Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 89.97 | 0.0 | 25.0 | 25.0 | | | | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.1 | 89.97 | 0.0 | 25.0 | 25.0 | 24.8 | 0.22 | 111.228 | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 0.3 | 89.97 | 0.0 | 25.0 | 25.0 | 24.3 | 0.67 | 37.076 | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.6 | 0.6 | 89.97 | 0.0 | 25.0 | 25.0 | 23.9 | 1.12 | 22.246 | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 0.8 | 89.97 | 0.0 | 25.0 | 25.0 | 23.4 | 1.57 | 15.890 | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 1.0 | 89.97 | 0.0 | 25.0 | 25.0 | 23.0 | 2.02 | 12.359 | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 1.2 | 89.97 | 0.0 | 25.0 | 25.0 | 22.5 | 2.47 | 10.112 | |
| 700.0 | 700.0 | 700.0 | 700.0 | 1.5 | 1.5 | 89.97 | 0.0 | 25.0 | 25.0 | 22.1 | 2.92 | 8.556 | |
| 800.0 | 800.0 | 800.0 | 800.0 | 1.7 | 1.7 | 89.97 | 0.0 | 25.0 | 25.0 | 21.6 | 3.37 | 7.415 | |
| 900.0 | 900.0 | 900.0 | 900.0 | 1.9 | 1.9 | 89.97 | 0.0 | 25.0 | 25.0 | 21.2 | 3.82 | 6.543 | |
| 1,000.0 | 1,000.0 | 1,000.0 | 1,000.0 | 2.1 | 2.1 | 89.97 | 0.0 | 25.0 | 25.0 | 20.7 | 4.27 | 5.854 | |
| 1,100.0 | 1,100.0 | 1,100.0 | 1,100.0 | 2.4 | 2.4 | 89.97 | 0.0 | 25.0 | 25.0 | 20.3 | 4.72 | 5.297 | |
| 1,200.0 | 1,200.0 | 1,200.0 | 1,200.0 | 2.6 | 2.6 | 89.97 | 0.0 | 25.0 | 25.0 | 19.8 | 5.17 | 4.836 | |
| 1,300.0 | 1,300.0 | 1,300.0 | 1,300.0 | 2.8 | 2.8 | 89.97 | 0.0 | 25.0 | 25.0 | 19.4 | 5.62 | 4.449 | |
| 1,400.0 | 1,400.0 | 1,400.0 | 1,400.0 | 3.0 | 3.0 | 89.97 | 0.0 | 25.0 | 25.0 | 18.9 | 6.07 | 4.120 | |
| 1,500.0 | 1,500.0 | 1,500.0 | 1,500.0 | 3.3 | 3.3 | 89.97 | 0.0 | 25.0 | 25.0 | 18.5 | 6.52 | 3.835 | |
| 1,600.0 | 1,600.0 | 1,600.0 | 1,600.0 | 3.5 | 3.5 | 89.97 | 0.0 | 25.0 | 25.0 | 18.0 | 6.97 | 3.588 | |
| 1,700.0 | 1,700.0 | 1,700.0 | 1,700.0 | 3.7 | 3.7 | 89.97 | 0.0 | 25.0 | 25.0 | 17.6 | 7.42 | 3.371 | |
| 1,800.0 | 1,800.0 | 1,800.0 | 1,800.0 | 3.9 | 3.9 | 89.97 | 0.0 | 25.0 | 25.0 | 17.1 | 7.87 | 3.178 | |
| 1,900.0 | 1,900.0 | 1,900.0 | 1,900.0 | 4.2 | 4.2 | 89.97 | 0.0 | 25.0 | 25.0 | 16.7 | 8.32 | 3.006 | |
| 2,000.0 | 2,000.0 | 2,000.0 | 2,000.0 | 4.4 | 4.4 | 89.97 | 0.0 | 25.0 | 25.0 | 16.2 | 8.77 | 2.852 | |
| 2,100.0 | 2,100.0 | 2,100.0 | 2,100.0 | 4.6 | 4.6 | 89.97 | 0.0 | 25.0 | 25.0 | 15.8 | 9.22 | 2.713 | |
| 2,200.0 | 2,200.0 | 2,200.0 | 2,200.0 | 4.8 | 4.8 | 89.97 | 0.0 | 25.0 | 25.0 | 15.3 | 9.66 | 2.587 | |
| 2,300.0 | 2,300.0 | 2,300.0 | 2,300.0 | 5.1 | 5.1 | 89.97 | 0.0 | 25.0 | 25.0 | 14.9 | 10.11 | 2.472 | |
| 2,400.0 | 2,400.0 | 2,400.0 | 2,400.0 | 5.3 | 5.3 | 89.97 | 0.0 | 25.0 | 25.0 | 14.4 | 10.56 | 2.367 | |
| 2,500.0 | 2,500.0 | 2,500.0 | 2,500.0 | 5.5 | 5.5 | 89.97 | 0.0 | 25.0 | 25.0 | 14.0 | 11.01 | 2.270 | |

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

# Wolverine Directional, LLC

Anticollision Report

| | | | |
|---|---|---|---|
| **Company:** | RKI Exploration & Production | **Local Co-ordinate Reference:** | Well North Brushy Draw Fed 35-4H |
| **Project:** | Eddy County (NM83E) | **TVD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Reference Site:** | Sec 35-T25S-R29E | **MD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Site Error:** | 0.0ft | **North Reference:** | True |
| **Reference Well:** | North Brushy Draw Fed 35-4H | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDM 2003.21 Single User Db |
| **Reference Design:** | Prelim Plan | **Offset TVD Reference:** | Offset Datum |

**Offset Design** Sec 35-T25S-R29E - North Brushy Draw Fed 35-5H - Wellbore #1 - Prelim Plan — **Offset Site Error:** 0.0 ft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 ft

| Reference Measured Depth (ft) | Reference Vertical Depth (ft) | Offset Measured Depth (ft) | Offset Vertical Depth (ft) | Semi Major Axis Reference (ft) | Semi Major Axis Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | Offset Wellbore Centre +E/-W (ft) | Distance Between Centres (ft) | Distance Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,600.0 | 2,600.0 | 2,600.0 | 2,600.0 | 5.7 | 5.7 | 89.97 | 0.0 | 25.0 | 25.0 | 13.5 | 11.46 | 2.181 | |
| 2,700.0 | 2,700.0 | 2,700.0 | 2,700.0 | 6.0 | 6.0 | 89.97 | 0.0 | 25.0 | 25.0 | 13.1 | 11.91 | 2.099 | |
| 2,800.0 | 2,800.0 | 2,800.0 | 2,800.0 | 6.2 | 6.2 | 89.97 | 0.0 | 25.0 | 25.0 | 12.6 | 12.36 | 2.022 | |
| 2,900.0 | 2,900.0 | 2,900.0 | 2,900.0 | 6.4 | 6.4 | 89.97 | 0.0 | 25.0 | 25.0 | 12.2 | 12.81 | 1.951 | |
| 3,000.0 | 3,000.0 | 3,000.0 | 3,000.0 | 6.6 | 6.6 | 89.97 | 0.0 | 25.0 | 25.0 | 11.7 | 13.26 | 1.885 | |
| 3,100.0 | 3,100.0 | 3,100.0 | 3,100.0 | 6.9 | 6.9 | 89.97 | 0.0 | 25.0 | 25.0 | 11.3 | 13.71 | 1.823 | |
| 3,200.0 | 3,200.0 | 3,200.0 | 3,200.0 | 7.1 | 7.1 | 89.97 | 0.0 | 25.0 | 25.0 | 10.8 | 14.16 | 1.766 | |
| 3,300.0 | 3,300.0 | 3,300.0 | 3,300.0 | 7.3 | 7.3 | 89.97 | 0.0 | 25.0 | 25.0 | 10.4 | 14.61 | 1.711 | |
| 3,400.0 | 3,400.0 | 3,400.0 | 3,400.0 | 7.5 | 7.5 | 89.97 | 0.0 | 25.0 | 25.0 | 9.9 | 15.06 | 1.660 | |
| 3,500.0 | 3,500.0 | 3,500.0 | 3,500.0 | 7.8 | 7.8 | 89.97 | 0.0 | 25.0 | 25.0 | 9.5 | 15.51 | 1.612 | |
| 3,600.0 | 3,600.0 | 3,600.0 | 3,600.0 | 8.0 | 8.0 | 89.97 | 0.0 | 25.0 | 25.0 | 9.0 | 15.96 | 1.567 | |
| 3,700.0 | 3,700.0 | 3,700.0 | 3,700.0 | 8.2 | 8.2 | 89.97 | 0.0 | 25.0 | 25.0 | 8.6 | 16.41 | 1.524 | |
| 3,800.0 | 3,800.0 | 3,800.0 | 3,800.0 | 8.4 | 8.4 | 89.97 | 0.0 | 25.0 | 25.0 | 8.1 | 16.86 | 1.483 | Level 3 |
| 3,900.0 | 3,900.0 | 3,900.0 | 3,900.0 | 8.7 | 8.7 | 89.97 | 0.0 | 25.0 | 25.0 | 7.7 | 17.31 | 1.445 | Level 3 |
| 4,000.0 | 4,000.0 | 4,000.0 | 4,000.0 | 8.9 | 8.9 | 89.97 | 0.0 | 25.0 | 25.0 | 7.2 | 17.76 | 1.408 | Level 3 |
| 4,100.0 | 4,100.0 | 4,100.0 | 4,100.0 | 9.1 | 9.1 | 89.97 | 0.0 | 25.0 | 25.0 | 6.8 | 18.21 | 1.373 | Level 3 |
| 4,200.0 | 4,200.0 | 4,200.0 | 4,200.0 | 9.3 | 9.3 | 89.97 | 0.0 | 25.0 | 25.0 | 6.3 | 18.66 | 1.340 | Level 3 |
| 4,300.0 | 4,300.0 | 4,300.0 | 4,300.0 | 9.6 | 9.6 | 89.97 | 0.0 | 25.0 | 25.0 | 5.9 | 19.11 | 1.309 | Level 3 |
| 4,400.0 | 4,400.0 | 4,400.0 | 4,400.0 | 9.8 | 9.8 | 89.97 | 0.0 | 25.0 | 25.0 | 5.4 | 19.55 | 1.278 | Level 3 |
| 4,500.0 | 4,500.0 | 4,500.0 | 4,500.0 | 10.0 | 10.0 | 89.97 | 0.0 | 25.0 | 25.0 | 5.0 | 20.00 | 1.250 | Level 2 |
| 4,600.0 | 4,600.0 | 4,600.0 | 4,600.0 | 10.2 | 10.2 | 89.97 | 0.0 | 25.0 | 25.0 | 4.5 | 20.45 | 1.222 | Level 2 |
| 4,700.0 | 4,700.0 | 4,700.0 | 4,700.0 | 10.5 | 10.5 | 89.97 | 0.0 | 25.0 | 25.0 | 4.1 | 20.90 | 1.196 | Level 2 |
| 4,800.0 | 4,800.0 | 4,800.0 | 4,800.0 | 10.7 | 10.7 | 89.97 | 0.0 | 25.0 | 25.0 | 3.6 | 21.35 | 1.171 | Level 2 |
| 4,900.0 | 4,900.0 | 4,900.0 | 4,900.0 | 10.9 | 10.9 | 89.97 | 0.0 | 25.0 | 25.0 | 3.2 | 21.80 | 1.147 | Level 2 |
| 5,000.0 | 5,000.0 | 5,000.0 | 5,000.0 | 11.1 | 11.1 | 89.97 | 0.0 | 25.0 | 25.0 | 2.7 | 22.25 | 1.124 | Level 2 |
| 5,100.0 | 5,100.0 | 5,100.0 | 5,100.0 | 11.4 | 11.4 | 89.97 | 0.0 | 25.0 | 25.0 | 2.3 | 22.70 | 1.101 | Level 2 |
| 5,200.0 | 5,200.0 | 5,200.0 | 5,200.0 | 11.6 | 11.6 | 89.97 | 0.0 | 25.0 | 25.0 | 1.8 | 23.15 | 1.080 | Level 2 |
| 5,300.0 | 5,300.0 | 5,300.0 | 5,300.0 | 11.8 | 11.8 | 89.97 | 0.0 | 25.0 | 25.0 | 1.4 | 23.60 | 1.059 | Level 2 |
| 5,400.0 | 5,400.0 | 5,400.0 | 5,400.0 | 12.0 | 12.0 | 89.97 | 0.0 | 25.0 | 25.0 | 1.0 | 24.05 | 1.040 | Level 2 |
| 5,500.0 | 5,500.0 | 5,500.0 | 5,500.0 | 12.2 | 12.2 | 89.97 | 0.0 | 25.0 | 25.0 | 0.5 | 24.50 | 1.020 | Level 2 |
| 5,600.0 | 5,600.0 | 5,600.0 | 5,600.0 | 12.5 | 12.5 | 89.97 | 0.0 | 25.0 | 25.0 | 0.1 | 24.95 | 1.002 | Level 2 |
| 5,700.0 | 5,700.0 | 5,700.0 | 5,700.0 | 12.7 | 12.7 | 89.97 | 0.0 | 25.0 | 25.0 | -0.4 | 25.40 | 0.984 | Level 1 |
| 5,800.0 | 5,800.0 | 5,800.0 | 5,800.0 | 12.9 | 12.9 | 89.97 | 0.0 | 25.0 | 25.0 | -0.8 | 25.85 | 0.967 | Level 1 |
| 5,900.0 | 5,900.0 | 5,900.0 | 5,900.0 | 13.1 | 13.1 | 89.97 | 0.0 | 25.0 | 25.0 | -1.3 | 26.30 | 0.951 | Level 1 |
| 6,000.0 | 6,000.0 | 6,000.0 | 6,000.0 | 13.4 | 13.4 | 89.97 | 0.0 | 25.0 | 25.0 | -1.7 | 26.75 | 0.935 | Level 1 |
| 6,100.0 | 6,100.0 | 6,100.0 | 6,100.0 | 13.6 | 13.6 | 89.97 | 0.0 | 25.0 | 25.0 | -2.2 | 27.20 | 0.919 | Level 1 |
| 6,200.0 | 6,200.0 | 6,200.0 | 6,200.0 | 13.8 | 13.8 | 89.97 | 0.0 | 25.0 | 25.0 | -2.6 | 27.65 | 0.904 | Level 1 |
| 6,300.0 | 6,300.0 | 6,300.0 | 6,300.0 | 14.0 | 14.0 | 89.97 | 0.0 | 25.0 | 25.0 | -3.1 | 28.10 | 0.890 | Level 1 |
| 6,400.0 | 6,400.0 | 6,400.0 | 6,400.0 | 14.3 | 14.3 | 89.97 | 0.0 | 25.0 | 25.0 | -3.5 | 28.55 | 0.876 | Level 1 |
| 6,500.0 | 6,500.0 | 6,500.0 | 6,500.0 | 14.5 | 14.5 | 89.97 | 0.0 | 25.0 | 25.0 | -4.0 | 28.99 | 0.862 | Level 1 |
| 6,600.0 | 6,600.0 | 6,600.0 | 6,600.0 | 14.7 | 14.7 | 89.97 | 0.0 | 25.0 | 25.0 | -4.4 | 29.44 | 0.849 | Level 1 |
| 6,700.0 | 6,700.0 | 6,700.0 | 6,700.0 | 14.9 | 14.9 | 89.97 | 0.0 | 25.0 | 25.0 | -4.9 | 29.89 | 0.836 | Level 1 |
| 6,800.0 | 6,800.0 | 6,800.0 | 6,800.0 | 15.2 | 15.2 | 89.97 | 0.0 | 25.0 | 25.0 | -5.3 | 30.34 | 0.824 | Level 1 |
| 6,900.0 | 6,900.0 | 6,900.0 | 6,900.0 | 15.4 | 15.4 | 89.97 | 0.0 | 25.0 | 25.0 | -5.8 | 30.79 | 0.812 | Level 1 |
| 7,000.0 | 7,000.0 | 7,000.0 | 7,000.0 | 15.6 | 15.6 | 89.97 | 0.0 | 25.0 | 25.0 | -6.2 | 31.24 | 0.800 | Level 1 |
| 7,100.0 | 7,100.0 | 7,100.2 | 7,100.2 | 15.8 | 15.8 | 88.34 | 0.7 | 24.8 | 24.9 | -6.8 | 31.69 | 0.784 | Level 1 |
| 7,148.4 | 7,148.4 | 7,148.6 | 7,148.4 | 16.0 | 16.0 | 77.98 | 5.1 | 23.9 | 24.5 | -7.5 | 31.91 | 0.766 | Level 1, CC, ES, SF |
| 7,200.0 | 7,200.0 | 7,199.0 | 7,198.0 | 16.1 | 16.1 | 57.85 | 13.9 | 22.0 | 26.1 | -6.0 | 32.13 | 0.813 | Level 1 |
| 7,300.0 | 7,300.0 | 7,290.7 | 7,285.4 | 16.3 | 16.3 | 21.95 | 40.6 | 16.3 | 46.1 | 13.5 | 32.56 | 1.416 | Level 3 |
| 7,400.0 | 7,400.0 | 7,372.0 | 7,358.4 | 16.5 | 16.5 | 6.74 | 75.4 | 8.9 | 86.6 | 53.6 | 32.98 | 2.625 | |
| 7,500.0 | 7,500.0 | 7,441.9 | 7,416.6 | 16.7 | 16.6 | 0.43 | 113.1 | 0.9 | 140.5 | 107.2 | 33.37 | 4.212 | |
| 7,600.0 | 7,600.0 | 7,500.0 | 7,461.1 | 17.0 | 16.8 | -2.65 | 149.6 | -6.9 | 204.2 | 170.5 | 33.73 | 6.056 | |

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

# Wolverine Directional, LLC

Anticollision Report

| | | | |
|---|---|---|---|
| **Company:** | RKI Exploration & Production | **Local Co-ordinate Reference:** | Well North Brushy Draw Fed 35-4H |
| **Project:** | Eddy County (NM83E) | **TVD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Reference Site:** | Sec 35-T25S-R29E | **MD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Site Error:** | 0.0ft | **North Reference:** | True |
| **Reference Well:** | North Brushy Draw Fed 35-4H | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDM 2003.21 Single User Db |
| **Reference Design:** | Prelim Plan | **Offset TVD Reference:** | Offset Datum |

**Offset Design** Sec 35-T25S-R29E - North Brushy Draw Fed 35-5H - Wellbore #1 - Prelim Plan — **Offset Site Error:** 0.0 ft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 ft

| Reference Measured Depth (ft) | Reference Vertical Depth (ft) | Offset Measured Depth (ft) | Offset Vertical Depth (ft) | Semi Major Axis Reference (ft) | Semi Major Axis Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | Offset Wellbore Centre +E/-W (ft) | Distance Between Centres (ft) | Distance Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,700.0 | 7,700.0 | 7,564.4 | 7,507.0 | 17.2 | 17.1 | -4.83 | 193.9 | -16.4 | 274.1 | 240.0 | 34.10 | 8.037 | |
| 7,800.0 | 7,800.0 | 7,630.1 | 7,553.3 | 17.4 | 17.4 | -6.22 | 239.3 | -26.1 | 344.7 | 310.2 | 34.48 | 9.995 | |
| 7,900.0 | 7,900.0 | 7,670.8 | 7,580.7 | 17.6 | 17.6 | -6.74 | 268.9 | -31.8 | 418.7 | 383.9 | 34.81 | 12.027 | |
| 8,000.0 | 8,000.0 | 7,700.0 | 7,599.0 | 17.9 | 17.7 | -6.97 | 291.4 | -35.6 | 496.9 | 461.8 | 35.11 | 14.152 | |
| 8,100.0 | 8,100.0 | 7,736.1 | 7,620.1 | 18.1 | 17.9 | -7.13 | 320.4 | -40.1 | 578.4 | 543.0 | 35.44 | 16.323 | |
| 8,200.0 | 8,200.0 | 7,750.0 | 7,627.7 | 18.3 | 18.0 | -7.16 | 331.8 | -41.7 | 662.9 | 627.2 | 35.70 | 18.569 | |
| 8,298.8 | 8,298.8 | 7,785.1 | 7,645.7 | 18.5 | 18.2 | -7.16 | 361.7 | -45.5 | 748.0 | 712.0 | 36.01 | 20.768 | |
| 8,300.0 | 8,300.0 | 7,785.3 | 7,645.8 | 18.5 | 18.2 | 21.61 | 361.9 | -45.5 | 749.0 | 713.4 | 35.66 | 21.005 | |
| 8,350.0 | 8,349.9 | 7,800.0 | 7,652.8 | 18.7 | 18.3 | 18.84 | 374.7 | -47.0 | 791.9 | 756.1 | 35.72 | 22.169 | |
| 8,400.0 | 8,399.5 | 7,800.0 | 7,652.8 | 18.8 | 18.3 | 16.62 | 374.7 | -47.0 | 833.1 | 797.5 | 35.58 | 23.411 | |
| 8,450.0 | 8,448.3 | 7,820.9 | 7,662.2 | 18.9 | 18.5 | 15.18 | 393.3 | -49.0 | 872.2 | 836.9 | 35.30 | 24.710 | |
| 8,500.0 | 8,495.9 | 7,833.9 | 7,667.7 | 19.0 | 18.6 | 14.00 | 405.0 | -50.1 | 909.5 | 874.7 | 34.82 | 26.117 | |
| 8,550.0 | 8,542.0 | 7,850.0 | 7,674.1 | 19.1 | 18.7 | 13.13 | 419.7 | -51.5 | 944.7 | 910.5 | 34.19 | 27.634 | |
| 8,600.0 | 8,586.3 | 7,850.0 | 7,674.1 | 19.2 | 18.7 | 12.16 | 419.7 | -51.5 | 977.8 | 944.5 | 33.35 | 29.316 | |
| 8,650.0 | 8,628.4 | 7,875.3 | 7,683.4 | 19.4 | 18.9 | 11.83 | 443.1 | -53.5 | 1,008.3 | 975.9 | 32.44 | 31.087 | |
| 8,700.0 | 8,668.0 | 7,900.0 | 7,691.6 | 19.5 | 19.1 | 11.62 | 466.4 | -55.3 | 1,036.8 | 1,005.4 | 31.40 | 33.015 | |
| 8,748.8 | 8,703.9 | 7,900.0 | 7,691.6 | 19.7 | 19.1 | 11.05 | 466.4 | -55.3 | 1,061.9 | 1,031.7 | 30.23 | 35.122 | |
| 8,800.0 | 8,740.1 | 7,918.5 | 7,697.0 | 19.9 | 19.2 | 11.41 | 484.0 | -56.4 | 1,087.7 | 1,057.4 | 30.39 | 35.792 | |
| 8,848.8 | 8,774.7 | 7,932.0 | 7,700.6 | 20.1 | 19.4 | 11.67 | 497.1 | -57.2 | 1,113.5 | 1,083.0 | 30.53 | 36.469 | |
| 8,850.0 | 8,775.5 | 7,932.4 | 7,700.7 | 20.1 | 19.4 | 11.64 | 497.4 | -57.3 | 1,114.2 | 1,083.7 | 30.51 | 36.518 | |
| 8,900.0 | 8,809.5 | 7,950.0 | 7,704.9 | 20.3 | 19.5 | 10.49 | 514.5 | -58.2 | 1,140.0 | 1,110.5 | 29.53 | 38.608 | |
| 8,950.0 | 8,840.8 | 7,950.0 | 7,704.9 | 20.6 | 19.5 | 9.34 | 514.5 | -58.2 | 1,163.6 | 1,135.2 | 28.44 | 40.915 | |
| 9,000.0 | 8,869.2 | 7,975.0 | 7,710.1 | 20.9 | 19.7 | 8.75 | 538.9 | -59.3 | 1,184.5 | 1,157.1 | 27.40 | 43.223 | |
| 9,050.0 | 8,894.4 | 8,000.0 | 7,714.1 | 21.2 | 20.0 | 8.26 | 563.6 | -60.3 | 1,203.2 | 1,176.9 | 26.38 | 45.618 | |
| 9,100.0 | 8,916.2 | 8,000.0 | 7,714.1 | 21.6 | 20.0 | 7.69 | 563.6 | -60.3 | 1,219.1 | 1,193.8 | 25.30 | 48.182 | |
| 9,150.0 | 8,934.5 | 8,020.1 | 7,716.7 | 21.9 | 20.2 | 7.39 | 583.5 | -60.9 | 1,232.5 | 1,208.1 | 24.37 | 50.572 | |
| 9,200.0 | 8,949.1 | 8,050.0 | 7,719.1 | 22.3 | 20.5 | 7.21 | 613.3 | -61.5 | 1,243.4 | 1,219.8 | 23.59 | 52.714 | |
| 9,250.0 | 8,959.9 | 8,050.0 | 7,719.1 | 22.8 | 20.5 | 6.97 | 613.3 | -61.5 | 1,251.1 | 1,228.3 | 22.86 | 54.733 | |
| 9,300.0 | 8,966.9 | 8,066.7 | 7,719.8 | 23.2 | 20.6 | 6.88 | 630.0 | -61.7 | 1,256.4 | 1,234.0 | 22.38 | 56.130 | |
| 9,350.0 | 8,970.0 | 8,094.2 | 7,720.0 | 23.6 | 20.9 | 6.85 | 657.4 | -61.8 | 1,259.0 | 1,236.9 | 22.17 | 56.799 | |
| 9,375.9 | 8,970.0 | 8,094.2 | 7,720.0 | 23.9 | 20.9 | 6.85 | 657.4 | -61.8 | 1,259.0 | 1,236.9 | 22.11 | 56.958 | |
| 9,400.0 | 8,969.5 | 8,106.5 | 7,719.8 | 24.1 | 21.0 | 6.85 | 669.7 | -61.8 | 1,259.0 | 1,236.8 | 22.21 | 56.692 | |
| 9,500.0 | 8,967.7 | 8,206.5 | 7,717.9 | 25.1 | 22.1 | 6.85 | 769.7 | -61.8 | 1,258.9 | 1,236.1 | 22.83 | 55.146 | |
| 9,600.0 | 8,965.8 | 8,306.5 | 7,716.1 | 26.2 | 23.3 | 6.85 | 869.7 | -61.8 | 1,258.9 | 1,235.3 | 23.53 | 53.494 | |
| 9,700.0 | 8,963.9 | 8,406.5 | 7,714.3 | 27.3 | 24.5 | 6.85 | 969.7 | -61.8 | 1,258.8 | 1,234.5 | 24.31 | 51.777 | |
| 9,800.0 | 8,962.0 | 8,506.5 | 7,712.4 | 28.5 | 25.8 | 6.85 | 1,069.6 | -61.8 | 1,258.8 | 1,233.6 | 25.16 | 50.031 | |
| 9,900.0 | 8,960.1 | 8,606.4 | 7,710.6 | 29.8 | 27.2 | 6.85 | 1,169.6 | -61.8 | 1,258.7 | 1,232.7 | 26.07 | 48.284 | |
| 10,000.0 | 8,958.2 | 8,706.4 | 7,708.8 | 31.2 | 28.6 | 6.85 | 1,269.6 | -61.8 | 1,258.7 | 1,231.6 | 27.03 | 46.561 | |
| 10,100.0 | 8,956.4 | 8,806.4 | 7,706.9 | 32.6 | 30.1 | 6.85 | 1,369.6 | -61.8 | 1,258.6 | 1,230.6 | 28.05 | 44.877 | |
| 10,200.0 | 8,954.5 | 8,906.4 | 7,705.1 | 34.0 | 31.7 | 6.85 | 1,469.6 | -61.8 | 1,258.6 | 1,229.5 | 29.10 | 43.244 | |
| 10,300.0 | 8,952.6 | 9,006.4 | 7,703.3 | 35.5 | 33.2 | 6.85 | 1,569.6 | -61.8 | 1,258.5 | 1,228.3 | 30.20 | 41.672 | |
| 10,400.0 | 8,950.7 | 9,106.4 | 7,701.4 | 37.0 | 34.8 | 6.85 | 1,669.5 | -61.8 | 1,258.5 | 1,227.1 | 31.33 | 40.165 | |
| 10,500.0 | 8,948.8 | 9,206.4 | 7,699.6 | 38.5 | 36.4 | 6.85 | 1,769.5 | -61.8 | 1,258.4 | 1,225.9 | 32.50 | 38.725 | |
| 10,600.0 | 8,946.9 | 9,306.4 | 7,697.8 | 40.0 | 38.1 | 6.85 | 1,869.5 | -61.8 | 1,258.4 | 1,224.7 | 33.69 | 37.353 | |
| 10,700.0 | 8,945.0 | 9,406.4 | 7,695.9 | 41.6 | 39.7 | 6.85 | 1,969.5 | -61.8 | 1,258.3 | 1,223.4 | 34.91 | 36.049 | |
| 10,800.0 | 8,943.1 | 9,506.4 | 7,694.1 | 43.2 | 41.4 | 6.85 | 2,069.5 | -61.8 | 1,258.3 | 1,222.1 | 36.15 | 34.810 | |
| 10,900.0 | 8,941.3 | 9,606.4 | 7,692.3 | 44.8 | 43.1 | 6.85 | 2,169.4 | -61.8 | 1,258.2 | 1,220.8 | 37.41 | 33.635 | |
| 11,000.0 | 8,939.4 | 9,706.4 | 7,690.4 | 46.5 | 44.8 | 6.85 | 2,269.4 | -61.8 | 1,258.1 | 1,219.5 | 38.69 | 32.521 | |
| 11,100.0 | 8,937.5 | 9,806.4 | 7,688.6 | 48.1 | 46.5 | 6.85 | 2,369.4 | -61.8 | 1,258.1 | 1,218.1 | 39.98 | 31.466 | |
| 11,200.0 | 8,935.6 | 9,906.4 | 7,686.7 | 49.8 | 48.3 | 6.85 | 2,469.4 | -61.8 | 1,258.0 | 1,216.7 | 41.29 | 30.465 | |
| 11,300.0 | 8,933.7 | 10,006.4 | 7,684.9 | 51.4 | 50.0 | 6.85 | 2,569.4 | -61.8 | 1,258.0 | 1,215.4 | 42.62 | 29.516 | |
| 11,400.0 | 8,931.8 | 10,106.4 | 7,683.1 | 53.1 | 51.8 | 6.85 | 2,669.3 | -61.8 | 1,257.9 | 1,214.0 | 43.96 | 28.616 | |

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

# Wolverine Directional, LLC

Anticollision Report

| | | | |
|---|---|---|---|
| **Company:** | RKI Exploration & Production | **Local Co-ordinate Reference:** | Well North Brushy Draw Fed 35-4H |
| **Project:** | Eddy County (NM83E) | **TVD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Reference Site:** | Sec 35-T25S-R29E | **MD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Site Error:** | 0.0ft | **North Reference:** | True |
| **Reference Well:** | North Brushy Draw Fed 35-4H | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDM 2003.21 Single User Db |
| **Reference Design:** | Prelim Plan | **Offset TVD Reference:** | Offset Datum |

**Offset Design** Sec 35-T25S-R29E - North Brushy Draw Fed 35-5H - Wellbore #1 - Prelim Plan — **Offset Site Error:** 0.0ft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0ft

| Reference Measured Depth (ft) | Reference Vertical Depth (ft) | Offset Measured Depth (ft) | Offset Vertical Depth (ft) | Semi Major Axis Reference (ft) | Semi Major Axis Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | Offset Wellbore Centre +E/-W (ft) | Distance Between Centres (ft) | Distance Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11,500.0 | 8,929.9 | 10,206.4 | 7,681.2 | 54.8 | 53.5 | 6.85 | 2,769.3 | -61.8 | 1,257.9 | 1,212.6 | 45.31 | 27.763 | |
| 11,600.0 | 8,928.0 | 10,306.4 | 7,679.4 | 56.5 | 55.3 | 6.85 | 2,869.3 | -61.8 | 1,257.8 | 1,211.2 | 46.67 | 26.952 | |
| 11,700.0 | 8,926.2 | 10,406.4 | 7,677.6 | 58.2 | 57.1 | 6.85 | 2,969.3 | -61.9 | 1,257.8 | 1,209.7 | 48.04 | 26.183 | |
| 11,800.0 | 8,924.3 | 10,506.4 | 7,675.7 | 59.9 | 58.8 | 6.85 | 3,069.3 | -61.9 | 1,257.7 | 1,208.3 | 49.42 | 25.451 | |
| 11,900.0 | 8,922.4 | 10,606.4 | 7,673.9 | 61.6 | 60.6 | 6.85 | 3,169.3 | -61.9 | 1,257.7 | 1,206.9 | 50.80 | 24.755 | |
| 12,000.0 | 8,920.5 | 10,706.4 | 7,672.1 | 63.3 | 62.4 | 6.85 | 3,269.2 | -61.9 | 1,257.6 | 1,205.4 | 52.20 | 24.093 | |
| 12,100.0 | 8,918.6 | 10,806.4 | 7,670.2 | 65.1 | 64.2 | 6.85 | 3,369.2 | -61.9 | 1,257.6 | 1,204.0 | 53.60 | 23.462 | |
| 12,200.0 | 8,916.7 | 10,906.4 | 7,668.4 | 66.8 | 66.0 | 6.85 | 3,469.2 | -61.9 | 1,257.5 | 1,202.5 | 55.01 | 22.861 | |
| 12,300.0 | 8,914.8 | 11,006.4 | 7,666.5 | 68.5 | 67.8 | 6.85 | 3,569.2 | -61.9 | 1,257.5 | 1,201.0 | 56.42 | 22.287 | |
| 12,400.0 | 8,912.9 | 11,106.4 | 7,664.7 | 70.3 | 69.6 | 6.85 | 3,669.2 | -61.9 | 1,257.4 | 1,199.6 | 57.84 | 21.740 | |
| 12,500.0 | 8,911.0 | 11,206.4 | 7,662.9 | 72.0 | 71.4 | 6.85 | 3,769.1 | -61.9 | 1,257.4 | 1,198.1 | 59.26 | 21.216 | |
| 12,600.0 | 8,909.1 | 11,306.4 | 7,661.0 | 73.8 | 73.2 | 6.85 | 3,869.1 | -61.9 | 1,257.3 | 1,196.6 | 60.69 | 20.716 | |
| 12,700.0 | 8,907.3 | 11,406.4 | 7,659.2 | 75.5 | 75.1 | 6.85 | 3,969.1 | -61.9 | 1,257.3 | 1,195.1 | 62.13 | 20.237 | |
| 12,800.0 | 8,905.4 | 11,506.4 | 7,657.4 | 77.3 | 76.9 | 6.85 | 4,069.1 | -61.9 | 1,257.2 | 1,193.6 | 63.56 | 19.779 | |
| 12,900.0 | 8,903.5 | 11,606.4 | 7,655.5 | 79.1 | 78.7 | 6.85 | 4,169.1 | -61.9 | 1,257.2 | 1,192.1 | 65.00 | 19.340 | |
| 13,000.0 | 8,901.6 | 11,706.4 | 7,653.7 | 80.8 | 80.5 | 6.85 | 4,269.0 | -61.9 | 1,257.1 | 1,190.6 | 66.45 | 18.918 | |
| 13,100.0 | 8,899.7 | 11,806.4 | 7,651.8 | 82.6 | 82.3 | 6.85 | 4,369.0 | -61.9 | 1,257.0 | 1,189.1 | 67.90 | 18.514 | |
| 13,200.0 | 8,897.8 | 11,906.4 | 7,650.0 | 84.4 | 84.2 | 6.85 | 4,469.0 | -61.9 | 1,257.0 | 1,187.6 | 69.35 | 18.126 | |
| 13,300.0 | 8,895.9 | 12,006.4 | 7,648.2 | 86.1 | 86.0 | 6.85 | 4,569.0 | -61.9 | 1,256.9 | 1,186.1 | 70.80 | 17.753 | |
| 13,400.0 | 8,894.0 | 12,106.4 | 7,646.3 | 87.9 | 87.8 | 6.85 | 4,669.0 | -61.9 | 1,256.9 | 1,184.6 | 72.26 | 17.394 | |
| 13,500.0 | 8,892.1 | 12,206.4 | 7,644.5 | 89.7 | 89.7 | 6.85 | 4,769.0 | -61.9 | 1,256.8 | 1,183.1 | 73.72 | 17.049 | |
| 13,600.0 | 8,890.2 | 12,306.4 | 7,642.6 | 91.5 | 91.5 | 6.86 | 4,868.9 | -61.9 | 1,256.8 | 1,181.6 | 75.18 | 16.717 | |
| 13,612.5 | 8,890.0 | 12,318.9 | 7,642.4 | 91.7 | 91.7 | 6.86 | 4,881.4 | -61.9 | 1,256.8 | 1,181.4 | 75.36 | 16.676 | |

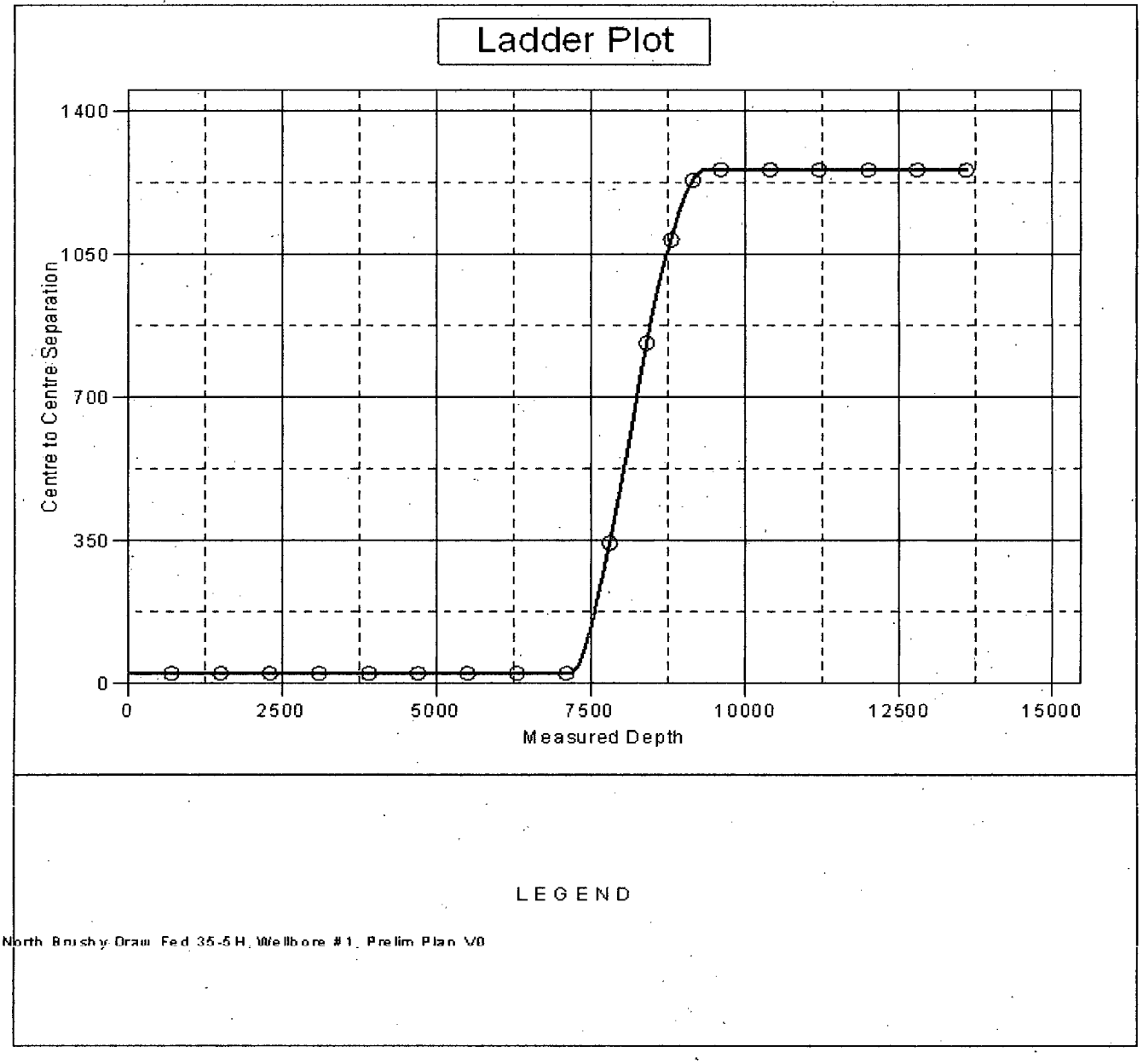
# Wolverine Directional, LLC

Anticollision Report

| | | | |
|---|---|---|---|
| **Company:** | RKI Exploration & Production | **Local Co-ordinate Reference:** | Well North Brushy Draw Fed 35-4H |
| **Project:** | Eddy County (NM83E) | **TVD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Reference Site:** | Sec 35-T25S-R29E | **MD Reference:** | WELL @ 0.0ft (Original Well Elev) |
| **Site Error:** | 0.0ft | **North Reference:** | True |
| **Reference Well:** | North Brushy Draw Fed 35-4H | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDM 2003.21 Single User Db |
| **Reference Design:** | Prelim Plan | **Offset TVD Reference:** | Offset Datum |

Reference Depths are relative to WELL @ 0.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W °

Coordinates are relative to: North Brushy Draw Fed 35-4H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.20°




CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

# Wolverine Directional, LLC

Anticollision Report

| | | | |
|---|---|---|---|
| **Company:** | RKI Exploration & Production | **Local Co-ordinate Reference:** | Well North Brushy Draw Fed 35-4H |
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| **Well Error:** | 0.0ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDM 2003.21 Single User Db |
| **Reference Design:** | Prelim Plan | **Offset TVD Reference:** | Offset Datum |

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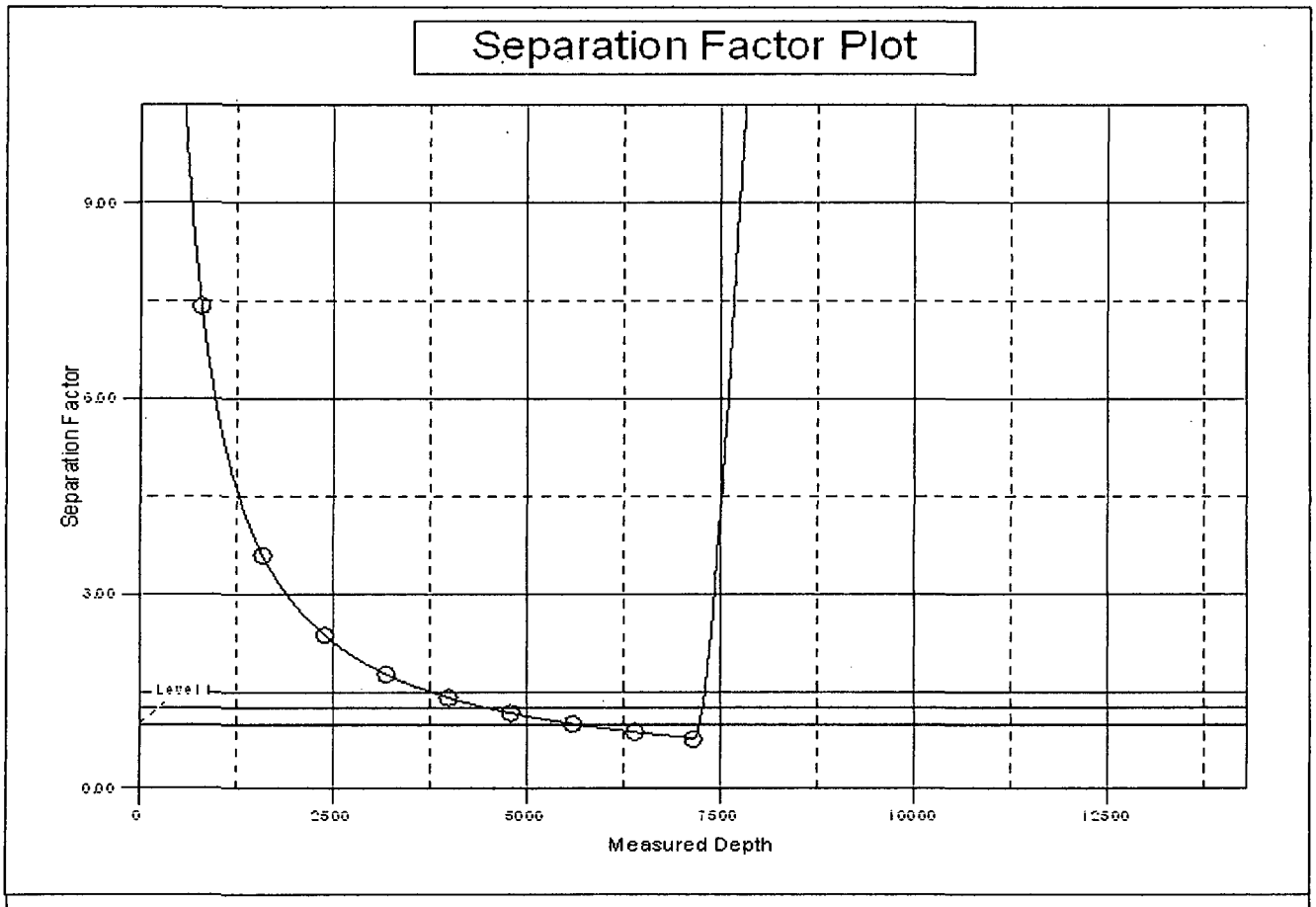
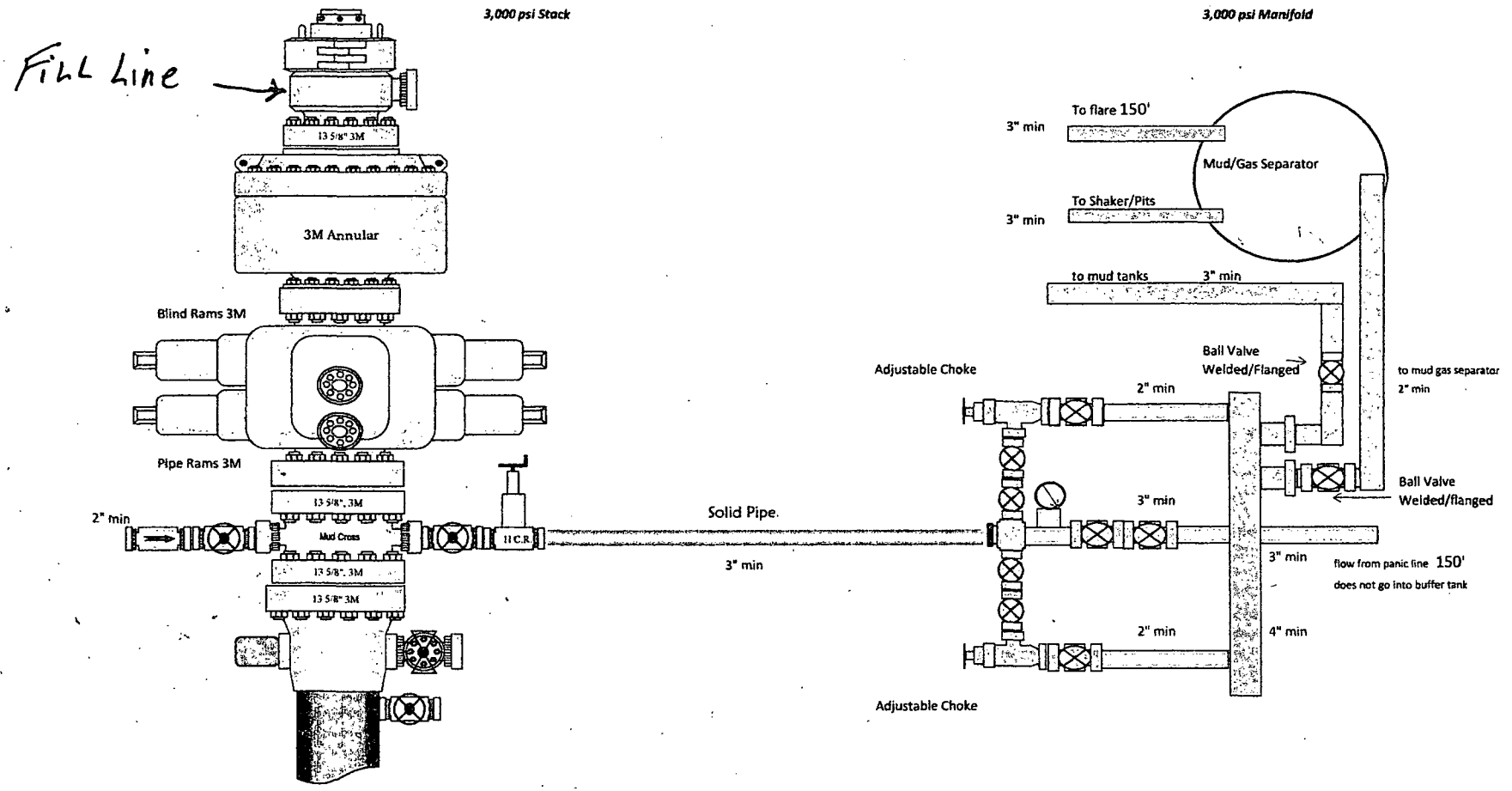
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W °

Coordinates are relative to: North Brushy Draw Fed 35-4H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.20°



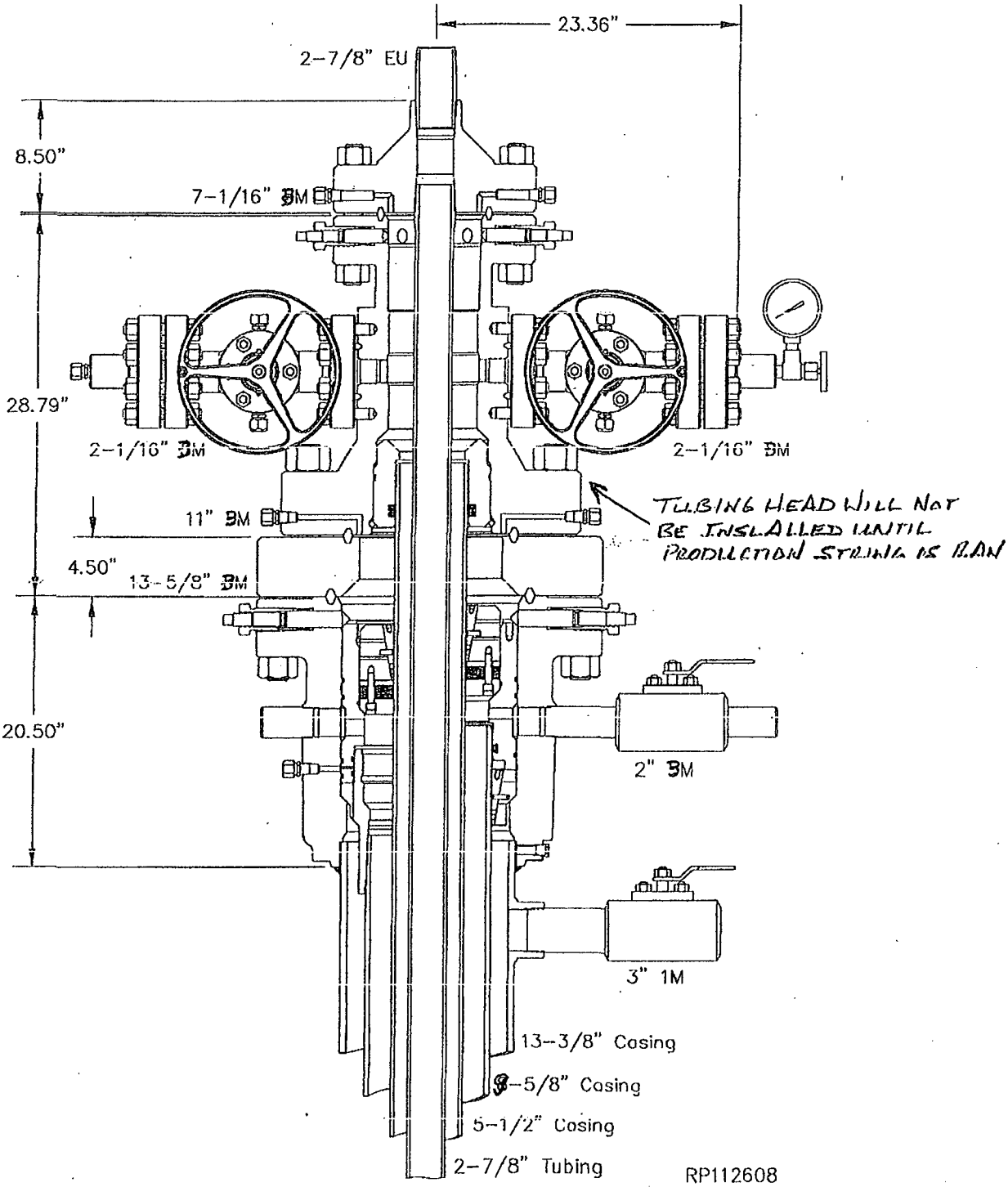

LEGEND

North Brushy Draw Fed 35-5H, Wellbore #1, Prelim Plan V0


Fill Line
3,000 psi Stack
13 5/8" 3M
3M Annular
Blind Rams 3M
Pipe Rams 3M
13 5/8", 3M
2" min
Mud Cross
H C.R.
13 5/8", 3M
13 5/8" 3M
Solid Pipe.
3" min
3,000 psi Manifold
To flare 150'
3" min
Mud/Gas Separator
To Shaker/Pits
3" min
to mud tanks
3" min
Ball Valve
Welded/Flanged
to mud gas separator
2" min
Adjustable Choke
2" min
3" min
Ball Valve
Welded/flanged
3" min
flow from panic line 150'
does not go into buffer tank
2" min
4" min
Adjustable Choke

G.E Oil+Gas multi-bowl wellhead

## System Drawing



# Plat for Closed Loop System

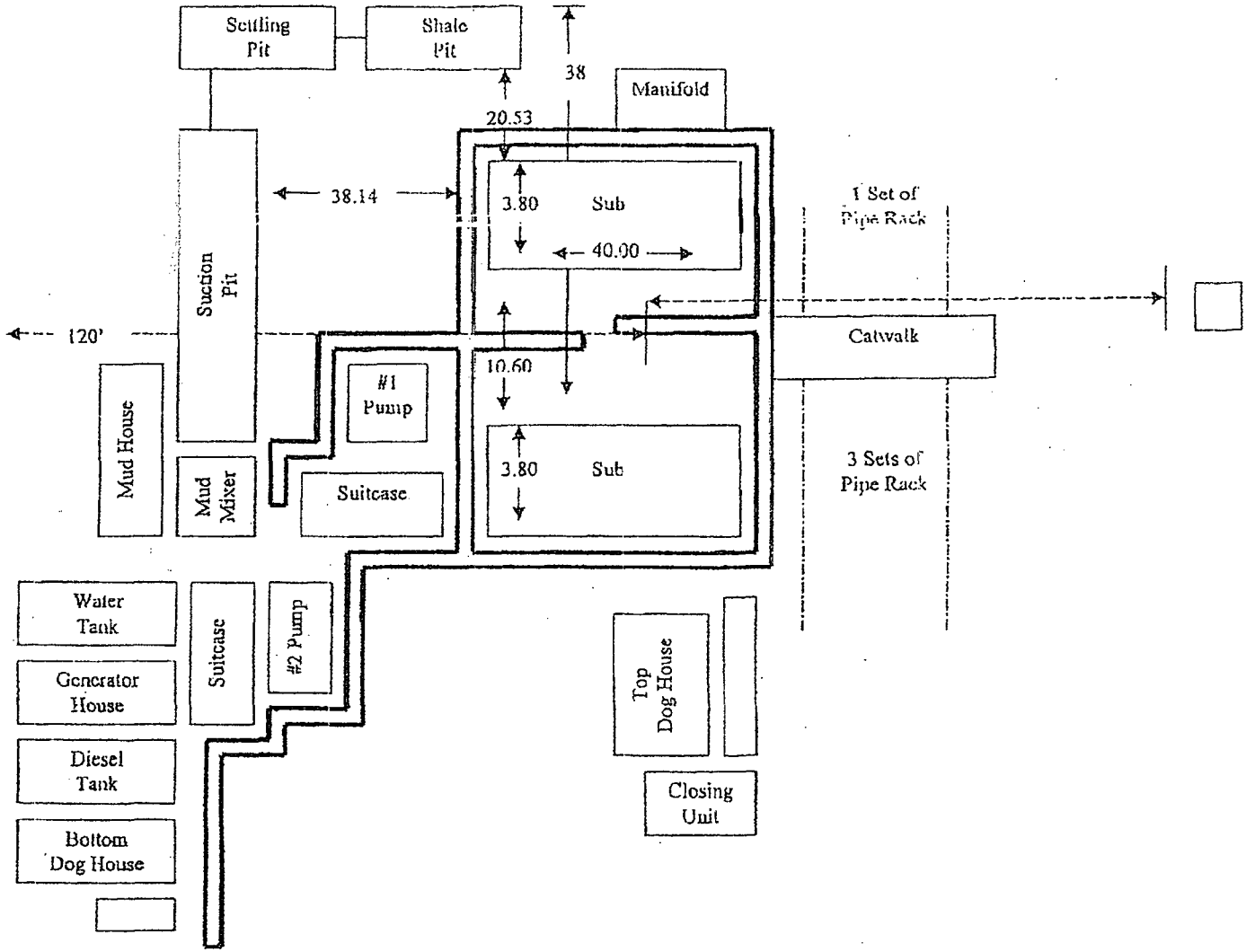
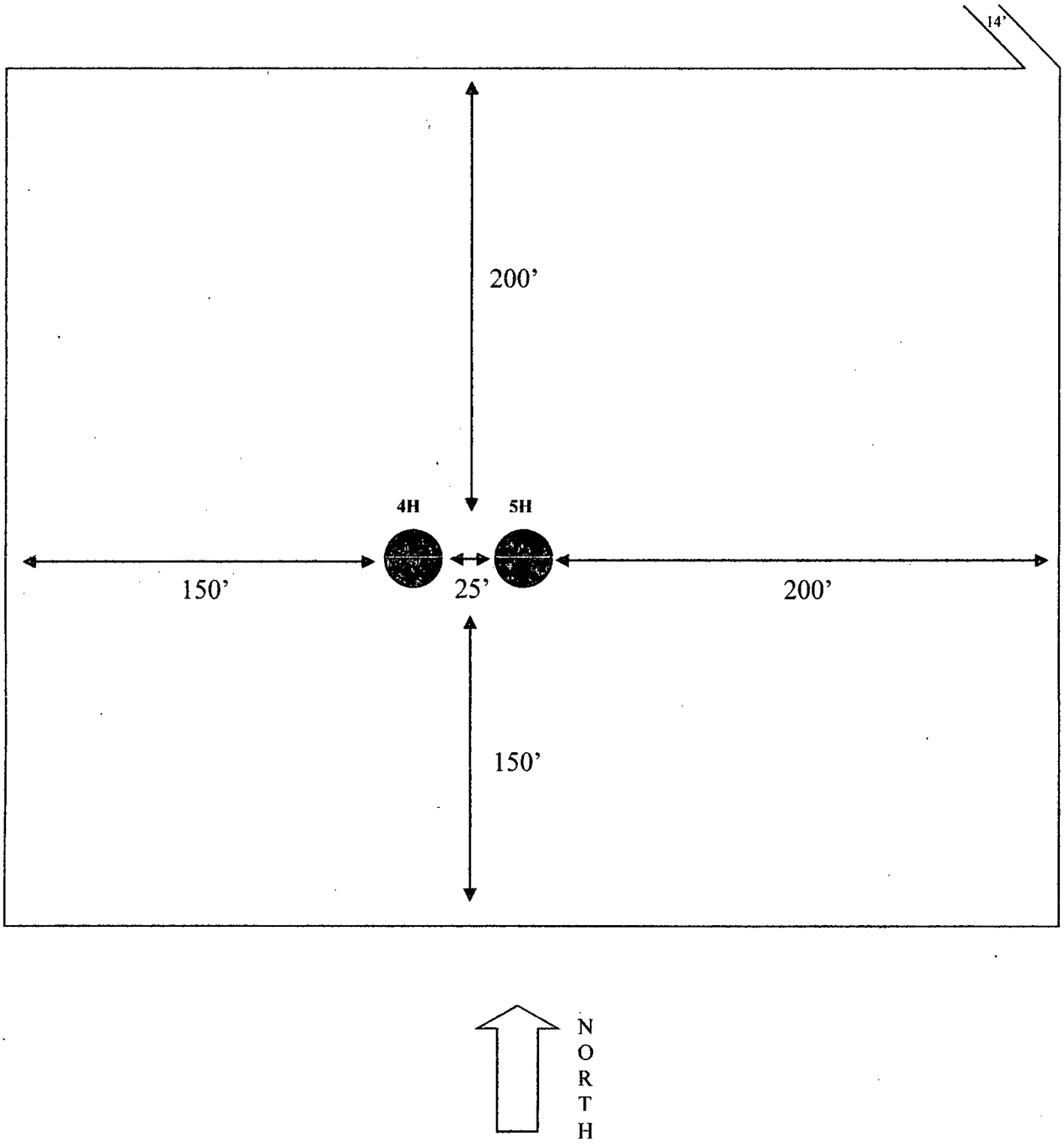


**EXHIBIT D**

# Rig Plat Only
# NORTH BRUSHY DRAW FEDERAL 35-4H & 35-5H
# V-DOOR WEST



## SURFACE USE PLAN

**RKI Exploration & Production, LLC**
**North Brushy Draw Federal 35-4H**
**Surface Hole: 175 FSL & 2365 FWL**
**Bottom Hole: 230 FSL & 2150 FWL**
**Section 35, T. 25 S., R. 29 E**
**Eddy County, New Mexico**

This plan is submitted with form 3160-3, Application for Permit to Drill, covering the above described well. The purpose of this plan is to describe the location of the proposed well, the proposed construction activities and operations plan, the magnitude of the surface disturbance involved and the procedures to be followed in rehabilitating the surface after completion of the operations, so that a complete appraisal can be made of the environmental effect associated with the operations.

1. EXISTING ROADS:

   A. DIRECTIONS: Go south of Carlsbad, NM, on Highway 285, for 30 miles. Turn east onto the Longhorn road (County Road 725) for 4.3 miles. Turn northeast off C. R. 725 on El Paso Natural Gas pipeline lease road for 3.7 miles. Turn south on lease road for 0.2 mile to the NBD Federal 35-1H. Turn east for 0.5 mile. Turn south for 1.0 mile. Turn west for 0.2 mile, then north for 0.1 mile, then southwest for 0.3 mile to beginning road to location. All existing roads are either paved or a caliche lease road.

   B. See attached plats and maps provided by WTC Surveys.

   C. The access routes from Eddy County Road 725 to the well location is depicted on **Exhibit A.** The route highlighted in red has been authorized under a ROW permit.

   D. Existing roads on the access route will be improved and maintained to the standard set forth in Section 2 of this Surface Use Plan of Operations.

2. NEW OR RECONSTRUCTED ACCESS ROADS:

   A. The new road will begin at the northeast corner of the well location, north, for 238 ft. to existing lease road..

   B. The maximum width of the driving surface will be 14 feet. The road will be crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 1 foot deep with 3:1 slopes. The driving surface will be made of 6" rolled and compacted caliche.


**Level Ground Section**

   C. Surface material will be native caliche. The average grade of the entire road will be approximately 3%.
   D. Fence Cuts: No
   E. Cattle guards: No

F. Turnouts: No
G. Culverts: No
H. Cuts and Fills: Not significant
I. Approximately 6 inches of topsoil (root zone) will be stripped from the proposed access road prior to any further construction activity. The topsoil that was stripped will be spread along the edge of the road and within the ditch. The topsoil will be seeded with the proper seed mix designated by the BLM.
J. The access road will be constructed and maintained as necessary to prevent soil erosion and accommodate all-weather traffic. The road will be crowned and ditched with water turnouts installed as necessary to provide for proper drainage along the access road route.
K. The access road and associated drainage structures will be constructed and maintained in accordance with road guidelines contained in the joint BLM/USFS publication: Surface Operating Standards for Oil and Gas Exploration and Development, The Gold Book, Fourth Edition and/or BLM Manual Section 9113 concerning road construction standards on projects subject to federal jurisdiction.

3. LOCATION OF EXISTING WELLS:

See attached map **(Exhibit B)** showing all wells within a one-mile radius.

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES:

A. In the event the well is found productive a battery will be placed on the north portion of the pad **(SEE EXHIBIT C).** There is power at the 35-3H and the line is on west edge of this location, which will tie-in this well. A 6" buried, steel, gas pipeline, of 250 psi, will be laid to the existing gas line to the north. A 4", surface poly, SWD line of 90 psi, will be laid to the existing line to the north. Both lines will be about 40 ft. in length. **(SEE EXHIBIT E).**
B. All permanent (on site six months or longer) aboveground structures constructed or installed on location and not subject to safety requirements will be painted to BLM specifications.
C. Containment berms will be constructed completely around production facilities designed to hold fluids. The containment berns will be constructed or compacted subsoil, be sufficiently impervious, hold 1 ½ times the capacity of the largest tank and away from cut or fill areas.

5. LOCATION AND TYPE OF WATER SUPPLY:

The well will be drilled using a combination of water mud systems as outlined in the Drilling Program. The water will be obtained from commercial water stations in the area and hauled to the location by transport truck using the existing and proposed roads shown in the attached survey plats. If a commercial water well is nearby, a temporary, surface poly line, will be laid along existing roads or other ROW easements and the water pumped to the well. No water well will be drilled on the location.

6. SOURCE OF CONSTRUCTION MATERIALS:

Any construction material that may be required for surfacing of the drill pad and access road will be from a contractor having a permitted source of materials within the general area. No construction materials will be removed from Federal lands without prior approval from the appropriate surface management agency. All roads will be constructed of 6" rolled and compacted caliche.

7. METHODS OF HANDLING WASTE DISPOSAL:

A. The well will be drilled utilizing a closed loop mud system. Drill cuttings will be held in roll-off style mud boxes and taken to an NMOCD approved disposal site.
B. Drilling fluids will be contained in steel mud pits.
C. Water produced from the well during completion will be held temporarily in steel tanks and then taken to an NMOCD approved commercial disposal facility.
D. Oil produced during operations will be stored in tanks until sold.
E. Portable, self-contained chemical toilets will be provided for human waste disposal. Upon completion of operations, or as required, the toilet holding tanks will be pumped and the contents thereof disposed of in an approved sewage disposal facility. All state and local laws and regulations pertaining to disposal of human and solid waste will be complied with. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete.
F. All trash, junk, and other waste materials will be contained in trash cages or bins to prevent scattering and will be removed and deposited in an approved sanitary landfill. Immediately after drilling all debris and other waste materials on and around the well location, not contained in the trash cage will be cleaned up and removed from the location. No potentially adverse materials or substances will be left on the location.

8. ANCILLARY FACILITIES:

No campsite, airstrip, or other facilities will be built as a result of the operation of this well. No staging areas are needed.

9. WELL SITE LAYOUT:

A. **Exhibit D** shows the dimensions of the proposed well pad.
B. The proposed, 2 well pad location, (with the 35-4H 25 ft. west of the 35-5H), well pad size will be 350' x 375' **(See Exhibit D).** There will be no reserve pit due to the well being drilled utilizing a closed loop mud system. The closed loop system will meet the NMOCD requirements 19.15.17 .
C. The WTC Surveyor's plat, Form C-102 and **Exhibit D**, shows how the well will be turned to a V-Door West.
D. A 600' x 600' area has been staked and flagged.
E. All equipment and vehicles will be confined to the approved disturbed areas of this APD (i.e., access road, well pad, and topsoil storage areas)

10. PLANS FOR SURFACE RECLAMATION:

A. After concluding the drilling and/or completion operations, if the well is found non-commercial, all the equipment will be removed, the surface material, caliche, will be removed from the well pad and road and transported to the original caliche pit or used for other roads. The original stock piled top soil will be returned to the pad and contoured, as close as possible, to the original topography. The access road will have the caliche removed and the road ripped, barricaded and seeded as directed by the BLM.
B. If the well is a producer, the portions of the location not essential to production facilities or space required for workover operations, will be reclaimed and seeded as per BLM requirements. **(SEE EXHIBIT C FOR INTERIM RECLAMATION PLAT FOR THIS WELL)**
C. Reclamation Performance Standards
The following reclamation performance standards will be met:

*Interim Reclamation* – Includes disturbed areas that may be redisturbed during operations and will be redisturbed at final reclamation to achieve restoration of the original landform and a natural vegetative community.

- Disturbed areas not needed for active, long-term production operations or vehicle travel will be recontoured, protected from erosion, and revegetated with a self-sustaining, vigorous, diverse, native (or as otherwise approved) plant community sufficient to minimize visual impacts, provide forage, stabilize soils, and impede the invasion of noxious, invasive, and non-native weeds.

*Final Reclamation* – Includes disturbed areas where the original landform and a natural vegetative community will be restored and it is anticipated the site will not be redisturbed for future development.

- The original landform will be restored for all disturbed areas including well pads, production facilities, roads, pipelines, and utility corridors.
- A self-sustaining, vigorous, diverse, native (or otherwise approved) plant community will be established on the site, with a density sufficient to control erosion and invasion by non-native plants and to re-establish wildlife habitat or forage production. At a minimum, the established plant community will consist of species included in the seed mix and/or desirable species occurring in the surrounding natural vegetation.
- Erosion features are equal to or less than surrounding area and erosion control is sufficient so that water naturally infiltrates into the soil and gullying, headcutting, slumping, and deep or excessive rills (greater than 3 inches) are not observed.
- The site will be free of State- or county-listed noxious weeds, oil field debris and equipment, and contaminated soil. Invasive and non-native weeds are controlled.

D. Reclamation Actions

Earthwork for interim and final reclamation will be completed within 6 months of well completion or plugging unless a delay is approved in writing by the BLM authorized officer.

The following minimum reclamation actions will be taken to ensure that the reclamation objectives and standards are met. It may be necessary to take additional reclamation actions beyond the minimum in order to achieve the Reclamation Standards.

Reclamation – General

Notification:

- The BLM will be notified at least 3 days prior to commencement of any reclamation operations.

Housekeeping:

- Within 30 days of well completion, the well location and surrounding areas(s) will be cleared of, and maintained free of, all debris, materials, trash, and equipment not required for production.

- No hazardous substances, trash, or litter will be buried or placed in pits.

Topsoil Management:

- Operations will disturb the minimum amount of surface area necessary to conduct safe and efficient operations.
- Topsoil depth is defined as the top layer of soil that contains 80% of the roots. In areas to be heavily disturbed, the topsoil will be stripped and stockpiled around the perimeter of the well location and along the perimeter of the access road to control run-on and run-off, to keep topsoil viable, and to make redistribution of topsoil more efficient during interim reclamation. Stockpiled topsoil will include vegetative material. Topsoil will be clearly segregated and stored separately from subsoils.
- Salvaging and spreading topsoil will not be performed when the ground or topsoil is frozen or too wet to adequately support construction equipment or so dry that dust clouds greater than 30 feet tall are created. If such equipment creates ruts in excess of four (4) inches deep, the soil will be deemed too wet.
- No major depressions will be left that would trap water and cause ponding unless the intended purpose is to trap runoff and sediment.

Seeding:

- Seedbed Preparation. Initial seedbed preparation will consist of recontouring to the appropriate interim or final reclamation standard. All compacted areas to be seeded will be ripped to a minimum depth of 18 inches with a minimum furrow spacing of 2 feet, followed by recontouring the surface and then evenly spreading the stockpiled topsoil. Prior to seeding, the seedbed will be scarified to a depth of no less than 4 – 6 inches. If the site is to be broadcast seeded, the surface will be left rough enough to trap seed and snow, control erosion, and increase water infiltration.
- If broadcast seeding is to be used and is delayed, final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.
- Seed Application. Seeding will be conducted no more than two weeks following completion of final seedbed preparation. A certified weed-free seed mix designed by the BLM to meet reclamation standards will be used.
- If the site is harrowed or dragged, seed will be covered by no more than 0.25 inch of soil.

11. SURFACE OWNERSHIP:

A. The surface is owned by the U. S. Government and administered by the Bureau of Land Management. The surface is multiple use with the primary uses of the region for the grazing of livestock and the production of oil and gas.

12. OTHER INFORMATION:

A. The area surrounding the well site is in a very flat, shallow sandy loam, within a rolling hills type area. The vegetation consists of Mesquite, Yucca, with three-awns and some dropseed species.
B. There is no permanent or live water in the immediate area.
C. There are no dwellings within 2 miles of this location.
D. RKI is a participant with the Permian Basin MOA and a check for $1507 is attached with this application.

13. BOND COVERAGE:

Bond Coverage is Nationwide; Bond Number NMB-000460.

OPERATORS REPRESENTATIVE:

The RKI Exploration and Production, LLC representatvies responsible for ensuring compliance of the surface use plan are listed below:

Surface:
Barry W. Hunt – Permitting Agent
1403 Springs Farm Place
Carlsbad, NM 88220
(575) 885-1417 (Home)
(575) 361-4078 (Cell)

Drilling & Production:
Ken Fairchild – RKI Exploration and Production, LLC.
210 Park Avenue, Suite 900
Oklahoma City, Ok.73102
(405) 996-5764 (Office)
(469) 693-6051 (Cell)

**ON-SITE PERFORMED ON 12/5/13 RESULTED IN PROPOSED LOCATION BEING MOVED 235 FT. EAST DUE TO POWER LINE AND THE 35-3H FACILITIES. IT WAS AGREED TO TURN THE LOCATION TO A V-DOOR WEST. BATTERY WILL BE ON THE NORTH SIDE AND TOP SOIL TO THE EAST. INTERIM RECLAMATION WOULD BE THE SOUTH, EAST, AND WEST PORTIONS OF PAD.**

**PRESENT AT ON-SITE:**
**BARRY HUNT – PERMIT AGENT FOR RKI EXPLORATION & PRODUCTION**
**INDRA DAHAL – BLM**
**WTC SURVEYORS**
**BECKIE HILL - BOONE ARCHAEOLOGICAL SERVICES**

**CERTIFICATION**

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct, and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or RKI Exploration and Production, LLC am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U. S. C. 1001 for the filing of false statements. Executed this 3rd. day of February 2014.

Signed: Barry W. Hunt

Printed Name: Barry Hunt
Position: Agent for RKI Exploration & Production, LLC.
Address: 1403 Springs Farm Place, Carlsbad, NM 88220
Telephone: (575) 361-4078
E-mail: specialtpermitting@gmail.com

RKI Exploration & Production, LLC

| | | | | |
|---|---|---|---|---|
| Well | North Brushy Draw Federal 35-4H | | | |
| Location | Surface: | 175 FSL | 2,365 FWL | Sec. 35-25S-29E |
| | Bottom Hole: | 230 FNL | 2,150 FWL | Sec. 35-25S-29E |
| County | Eddy | | | |
| State | New Mexico | | | |

**1)** The elevation of the unprepared ground is 2,997 feet above sea level.

**2)** The geologic name of the surface formation is Quaternary - Alluvium.

**3)** A rotary rig will be utilized to drill the well to 13,612 feet and run casing & cement.
This equipment will then be rigged down and the well will be completed with a workover rig.

**4)** Proposed depth is 13,612 feet

**5)** Estimated tops:

| | MD | TVD | | |
|---|---|---|---|---|
| Rustler | 800 | 800 | | |
| Salado | 1,100 | 1,100 | | |
| Castile | 1,450 | 1,450 | | |
| Lamar Lime | 3,118 | 3,118 | | |
| Base of Lime | 3,158 | 3,158 | | |
| Delaware Top | 3,560 | 3,560 | | BHP = .44 psi/ft x depth |
| Bell Canyon Sand | 3,560 | 3,560 | Oil | 1,566 psi |
| Cherry Canyon Sand | 4,242 | 4,242 | Oil | 1,866 psi |
| Brushy Canyon Sand | 5,554 | 5,554 | Oil | 2,444 psi |
| Bone Spring | 7,203 | 7,203 | Oil | 3,169 psi |
| KOP | 8,298 | 8,298 | Oil | 3,651 psi |
| Landing Point (Bone Spring Sand) | 9,375 | 8,970 | Oil | 3,947 psi |
| TD | 13,612 | 8,890 | | 3,912 psi |

Water anticipated at 200 feet. 130 degree F

**6)** Pressure control equipment:

The blowout preventer equipment (BOP) shown in Exhibit #1 will consist of a double ram type (3,000 psi WP) preventer, a bag-type annular preventer (3,000 psi WP), and rotating head. Both units will be hydraulically operated and the ram type preventer will be equipped with blind rams on top and pipe rams (sized to accommodate the drill pipe size being utilized) on bottom. A 13 3/8" SOW x 13 5/8" 3M multi-bowl casing head will be installed on the 13 3/8" casing and utilized until total depth is reached. All BOP and associated equipment will be tested to 3,000 psi and the annular will be tested to 1,500 psi after initial installation. The 13 3/8" and 9 5/8" casing will be tested to .22 psi per ft of casing string length or 1,500 psi whichever is greater, but not to exceed 70% of the minimum yield.
The 9 5/8" casing will be hung in the casing multi-bowl head and the stack will not be nippled down at this point.
The stack will not be isolated and tested after running the 9 5/8" casing, but will be tested along with the 9 5/8" casing.
Pipe rams will be operated and checked each 24 hour period and each time the drill string is out of the hole.
These function test will be documented on the daily driller's log.
A drilling spool or blowout preventer with 2 side outlets (choke side shall be 3" minimum diameter, kill side shall be at least 2" diameter).
2 kill line valves, one of which will be a check valve.
2 chokes on the manifold along with a pressure gauge.
Upper kelly cock valve with handle available.
Safety valve and subs to fit all drill string connections in use.
All BOP equipment connections subjected to pressure will be flanged, welded, or clamped.
Fill up line above the upper most preventer.

**7)** Casing program: ALL NEW CASING

See COA

| Hole Size | Top | Bottom | OD Csg | Wt/Grade | Connection | Collapse Design Factor | Burst Design Factor | Tension Design Factor |
|---|---|---|---|---|---|---|---|---|
| 17 1/2" | 0 | ~~850~~ 600' | 13 3/8" | 54.5#/J-55 | ST&C | 3.02 | 14.60 | 11.10 |
| 12 1/4" | 0 | 3,150 | 9 5/8" | 40#/J-55 | LT&C | 1.46 | 5.70 | 4.13 |
| 8 3/4" | 0 | 13,612 | 5 1/2" | 17#/HCP-110 | LT&C | 2.08 | 1.55 | 5.22 |

| | |
|---|---|
| Collapse | 1.125 |
| Burst | 1.0 |
| Tension | 2.0 |

**8)** Cement program:

**Surface** 17 1/2" hole
Pipe OD 13 3/8"
Setting Depth ~~850~~ 600' ft
Annular Volume 0.69462 cf/ft
Excess 1 100 %

| | | | | |
|---|---|---|---|---|
| Lead | 523 sx | 1.75 cf/sk | 9.13 gal/sk | 13.5 ppg |
| Tail | 200 sx | 1.33 cf/sk | 6.32 gal/sk | 14.8 ppg |

Lead: "C" + 4% PF20 + 2% PF1 + .125 pps PF29 + .2% PF46
Tail: "C" + 1% PF1

Top of cement: Surface

**Intermediate** 12 1/4" hole
Pipe OD 9 5/8"
Setting Depth 3,150 ft
Annular Volume 0.31318 cf/ft 0.3627 cf/ft
Excess 0.5 50 %

| | | | | |
|---|---|---|---|---|
| Lead | 596 sx | 1.92 cf/sk | 9.95 gal/sk | 12.6 ppg |
| Tail | 200 sx | 1.33 cf/sk | 6.32 gal/sk | 14.8 ppg |

Lead: 35/65 Poz "C" + 5% PF44 + 6% PF20 + 3 pps PF42 + .125 pps PF29 + .2% PF46 +1% PF1
Tail: "C" + .2% PF13

Top of cement: Surface

**Production** 8 3/4" hole
Pipe OD 5 1/2"
Setting Depth 13,612 ft
Annular Volume 0.2526 cf/ft 0.26074 cf/ft 300 ft
Excess 0.32 32 %
DV Tool Depth 5,000 ft

See COA

Stage 1

| | | | | |
|---|---|---|---|---|
| Lead: | 673 sx | 2.08 cf/sk | 11.94 gal/sk | 11.5 ppg |
| Tail: | 787 sx | 1.87 cf/sk | 9.53 gal/sk | 13.0 ppg |

Lead: PVL + .5% CC + .3% PF79 (extender) + .25 pps PF46 (defoamer) + 3 pps PF42 (Kolite) + .125 pps + .125 pps PF29 (Cellophane) + .2% PF13 (retarder)
Tail: PVL + 30% PF151 (calcium carbonate) + .5% PF174 (expanding agent) + .7% PF606 + .7% PF606 (gel supressing agent) + .2% PF153 (antisettling agent) + .25 pps PF46 (antifoam) + .2% PF13 (retarder)
Top of cement: DV tool

Stage 2

| | | | | |
|---|---|---|---|---|
| Lead: | 258 sx | 1.89 cf/sk | 10.06 gal/sk | 12.9 ppg |
| Tail: | 175 sx | 1.33 cf/sk | 6.32 gal/sk | 14.8 ppg |

Lead: 35/65 Poz "C" + 5% PF44 (salt) + 6% PF20 (gel) + .125 pps PF29 (cellophane) + .25 pps PF46 (antifoam) + .2% PF13 (retarder)
Tail: "C" + .2% PF13 (retarder)
Top of cement: 2,850 ft

See COA

**9)** Mud program:

| Top | Bottom | Mud Wt. | Vis | Fluid Loss | Type System |
|---|---|---|---|---|---|
| 0 | ~~850~~ 600' | 8.5 to 8.9 | 32 to 36 | NC | Fresh Water |
| ~~850~~ | 3,150 | 9.8 to 10.0 | 28 to 30 | NC | Brine |
| 3,150 | 13,612 | 8.9 to 9.1 | 28 to 36 | NC | Fresh Water |

The necessary mud products for weight addition and fluid loss control will be on location at all times. Electronic pit monitoring equipment will be utilized with a Pason system. Electronic mud monitoring and mud logging will be utilized below the 9 5/8" casing.

**10)** Logging, coring, and testing program:

No drill stem test are planned
Total depth to intermediate: CNL, Caliper, GR, DLL,
Intermediate to surface: CNL, GR
No coring is planned

**11)** Potential hazards:

No abnormal pressure or temperature is expected. No H2S is known to exist in the area, although some form of H2S detection equipment will be utilized. If H2S is encountered the operator will comply with the provisions of Onshore Order No. 6. Lost circulation is not anticipated, but lost circulation material and weighting materials will be on location and readily available.

**12)** Anticipated start date ASAP
Duration 25 days

# PECOS DISTRICT
# CONDITIONS OF APPROVAL

| | |
|---|---|
| OPERATOR'S NAME: | RKI EXPLORATION & PRODUCTION LLC |
| LEASE NO.: | NM054290 |
| WELL NAME & NO.: | North Brusy Draw Federal 35 - 4H |
| SURFACE HOLE FOOTAGE: | [175] ' F [S] L [2365] ' F [W] L |
| BOTTOM HOLE FOOTAGE: | [230] ' F [N] L [2150] ' F [W] L |
| LOCATION: | Section 035, T025. S., R 029 E., NMPM |
| COUNTY: | Eddy County, New Mexico |

## TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

☐ **Final Abandonment & Reclamation**

## I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

## V. SPECIAL REQUIREMENT(S)

## Cave and Karst

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

### Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production.

**Construction:**
In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

**No Blasting:**
No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

**Pad Berming:**
The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g. caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

**Tank Battery Liners and Berms:**
Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

**Leak Detection System:**

A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

**Automatic Shut-off Systems**:
Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

## Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and ground water concerns:

**Rotary Drilling with Fresh Water:**
Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

**Directional Drilling:**
Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

**Lost Circulation:**
ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

**Abandonment Cementing:**
Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

**Pressure Testing:**
Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

# VI. CONSTRUCTION

## A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

## B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

## C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

## D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

## E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

## F. EXCLOSURE FENCING (CELLARS & PITS)

**Exclosure Fencing**
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

## G. ON LEASE ACCESS ROADS

**Road Width**
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

**Surfacing**
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

**Crowning**
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

**Ditching**
Ditching shall be required on both sides of the road.

**Turnouts**
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

**Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

**Cross Section of a Typical Lead-off Ditch**

All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

**Formula for Spacing Interval of Lead-off Ditches**

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

**Cattleguards**

An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattleguards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguards that are in place and are utilized during lease operations.

**Fence Requirement**

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

**Public Access**

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

# VII. DRILLING

## A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, report measured amounts and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

## B. CASING

**Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).**

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**
**Wait on cement (WOC) time prior to drilling out for a primary cement job will be a**

**minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.**

**No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.**

**High Cave/Karst**
**Possibility of water flows in the Salado and Castile.**
**Possibility of lost circulation in the Delaware.**

1. The **13-3/8** inch surface casing shall be set at approximately **600** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    **b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

    ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

**If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.**

**Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.**

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

**Operator has proposed DV tool at depth of 5000'. Operator is to submit sundry if DV tool depth varies by more than 100' from approved depth.**

a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve approved top of cement on the next stage.

b. Second stage above DV tool:

☒ Cement should tie-back at least 300 feet into previous casing string. Operator shall provide method of verification.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

## C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. **Operator has proposed a multi-bowl wellhead assembly that has a weld on head with no o-ring seals. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 3000 (3M) psi.**

   a. **Wellhead manufacturer is supplying the test plug/retrieval tool for the operator's third party tester to use during the BOP/BOPE test. Operator shall use the supplied test plug/retrieval tool.**
   b. **Operator shall install the wear bushing required by the wellhead manufacturer. This wear bushing shall be installed by using the test plug/retrieval tool.**
   c. **Wellhead manufacturer representative shall be on location when the intermediate casing mandrel is landed. Operator shall submit copy of manufacturer's wellsite report with subsequent report.**
   d. **Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.**
   e. **If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.**

3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

a. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

b. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

c. The results of the test shall be reported to the appropriate BLM office.

d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

## D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

## E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

**JAM 030614**

# VIII. PRODUCTION (POST DRILLING)

## A. WELL STRUCTURES & FACILITIES

**Placement of Production Facilities**
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

**Exclosure Netting (Open-top Tanks)**
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

**Chemical and Fuel Secondary Containment and Exclosure Screening**
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

**Open-Vent Exhaust Stack Exclosures**
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

**Containment Structures**
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

**Painting Requirement**
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

**VRM Facility Requirement**
Low-profile tanks not greater than eight-feet-high shall be used.

**B. PIPELINES**

**C. ELECTRIC LINES**

## IX. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

## X. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Seed Mixture 2, for Sandy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

| Species | lb/acre |
|---|---|
| Sand dropseed (Sporobolus cryptandrus) | 1.0 |
| Sand love grass (Eragrostis trichodes) | 1.0 |
| Plains bristlegrass (Setaria macrostachya) | 2.0 |

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed