

Form 3160-3  
(March 2012)

# Split Estate

OCD Artesia

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

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

UNORTHODOX  
LOCATION

## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		7. If Unit or CA Agreement, Name and No.
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		8. Lease Name and Well No. EAST PECOS FEDERAL COM 22-8H <i>&lt;39386&gt;</i>
2. Name of Operator RKI EXPLORATION & PRODUCTION, LLC. <i>&lt;246289&gt;</i>		9. API Well No. <i>30-015-42288</i>
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 <i>Corral Canyon B.S., S</i> <del>UNDESIGNATED BONE SPRING</del>
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 250 FSL & 965 FEL At proposed prod. zone 230 FNL & 660 FEL		11. Sec., T. R. M. or Blk. and Survey or Area SECTION 22, T. 26 S., R. 29 E. <i>&lt;13354&gt;</i>
14. Distance in miles and direction from nearest town or post office* 15 MILES SOUTHEAST OF MALAGA, NM		12. County or Parish EDDY
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 230'		13. State NM
16. No. of acres in lease SHL: 480 BHL: 200		17. Spacing Unit dedicated to this well 160
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 25' BHL: 330'		20. BLM/BIA Bond No. on file NLM-NMB-000460
19. Proposed Depth TVD: 7150' MD: 11,734'		21. Elevations (Show whether DF, KDB, RT, GL, etc.) 2881.6' GL
22. Approximate date work will start* <i>ASAP</i>		23. Estimated duration 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:

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

25. Signature <i>Barry W. Hunt</i>	Name (Printed/Typed) BARRY W. HUNT	Date <i>11/17/14</i>
Title PERMIT AGENT FOR RKI EXPLORATION & PRODUCTION, LLC.		
Approved by (Signature) <i>IS/ STEPHEN J. CAFFEY</i>	Name (Printed/Typed)	Date <i>APR 2 2014</i>
Title FIELD MANAGER	Office 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.

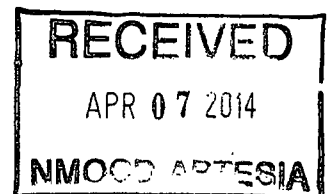
(Continued on page 2)

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

Carlsbad Controlled Water Basin

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

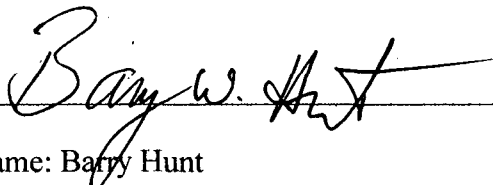
Approval Subject to General Requirements  
& Special Stipulations Attached



## 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 17th. day of January 2014.

Signed: \_\_\_\_\_



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

## **SURFACE USE AGREEMENT**

RKI EXPLORATION & PRODUCTION, LLC. has reached an agreement with the private surface owner for the following wells to be drilled in section 22, T. 26 S., R. 29 E.

EAST PECOS FEDERAL 22-3H

EAST PECOS FEDERAL 22-4H

EAST PECOS FEDERAL COM 22-7H

EAST PECOS FEDERAL COM 22-8H

The surface owner and mailing address is listed below:

GEORGE ROSS RANCH, LLC. 3710 RAWLINS STREET, SUITE 850,  
DALLAS, TEXAS 75219. THE RANCH MANAGER IS WORTH ROSS.

The proposed 4 wells, access roads, and pipelines have been viewed by Worth Ross in the field and all issues resolved.

DISTRICT I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-6720

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 <b>30-015-42288</b>	Pool Code <b>13354</b>	Pool Name <b>Corral Canyon</b> <del>UNDESIGNATED BONE SPRING</del>	Well Number <b>8H</b>
Property Code <b>39386</b>	Property Name <b>EAST PECOS FEDERAL COM 22</b>		Elevation <b>2881.6</b>
OGRID No. <b>246289</b>	Operator Name <b>RKI Exploration &amp; Production, LLC.</b>		

Surface Location

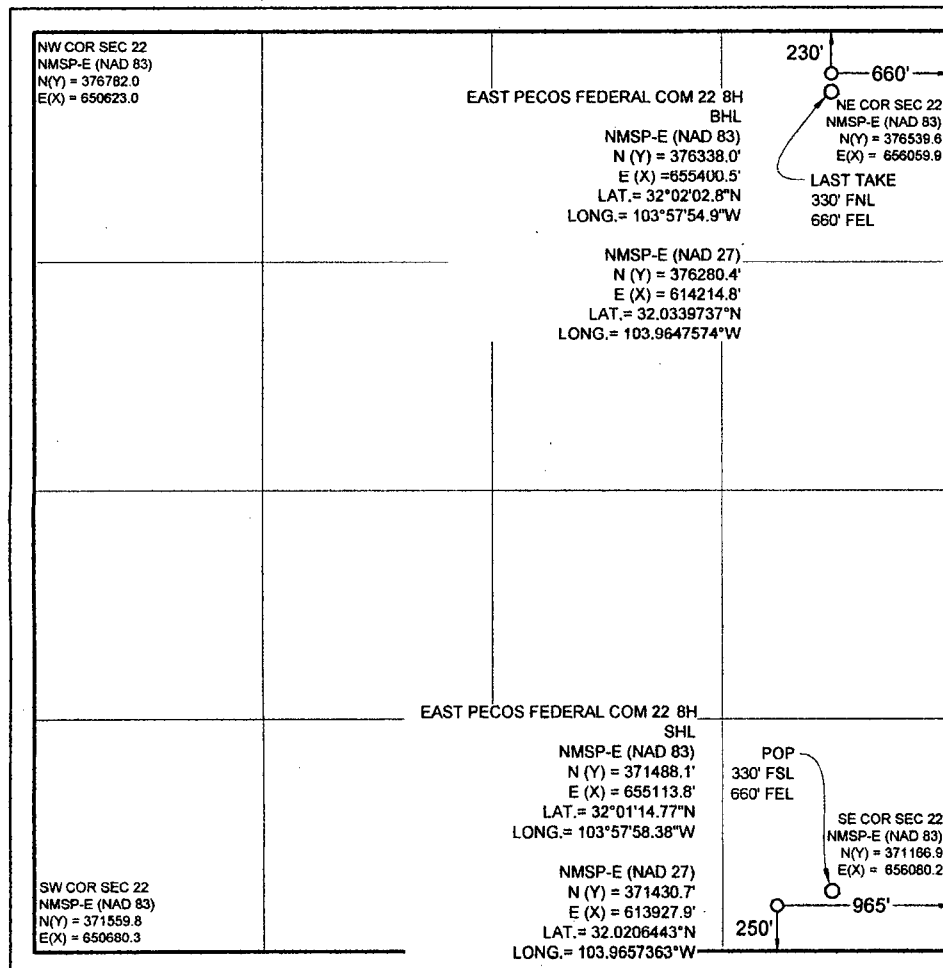
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	22	26S	29E		250	S	965	E	EDDY

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
A	22	26S	29E		230	N	660	E	EDDY

Dedicated Acres	Joint or Infill	Consolidated Code	Order No.
160			11734 4-2

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.

Signature: *Barry W. Hunt* Date: 11/17/14  
Print Name: Barry W. Hunt

E-mail Address

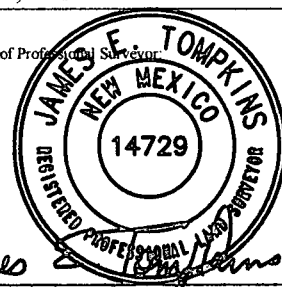
SURVEYORS CERTIFICATION

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 6, 2013

Date of Survey

Signature and Seal of Professional Surveyor

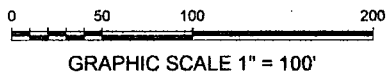
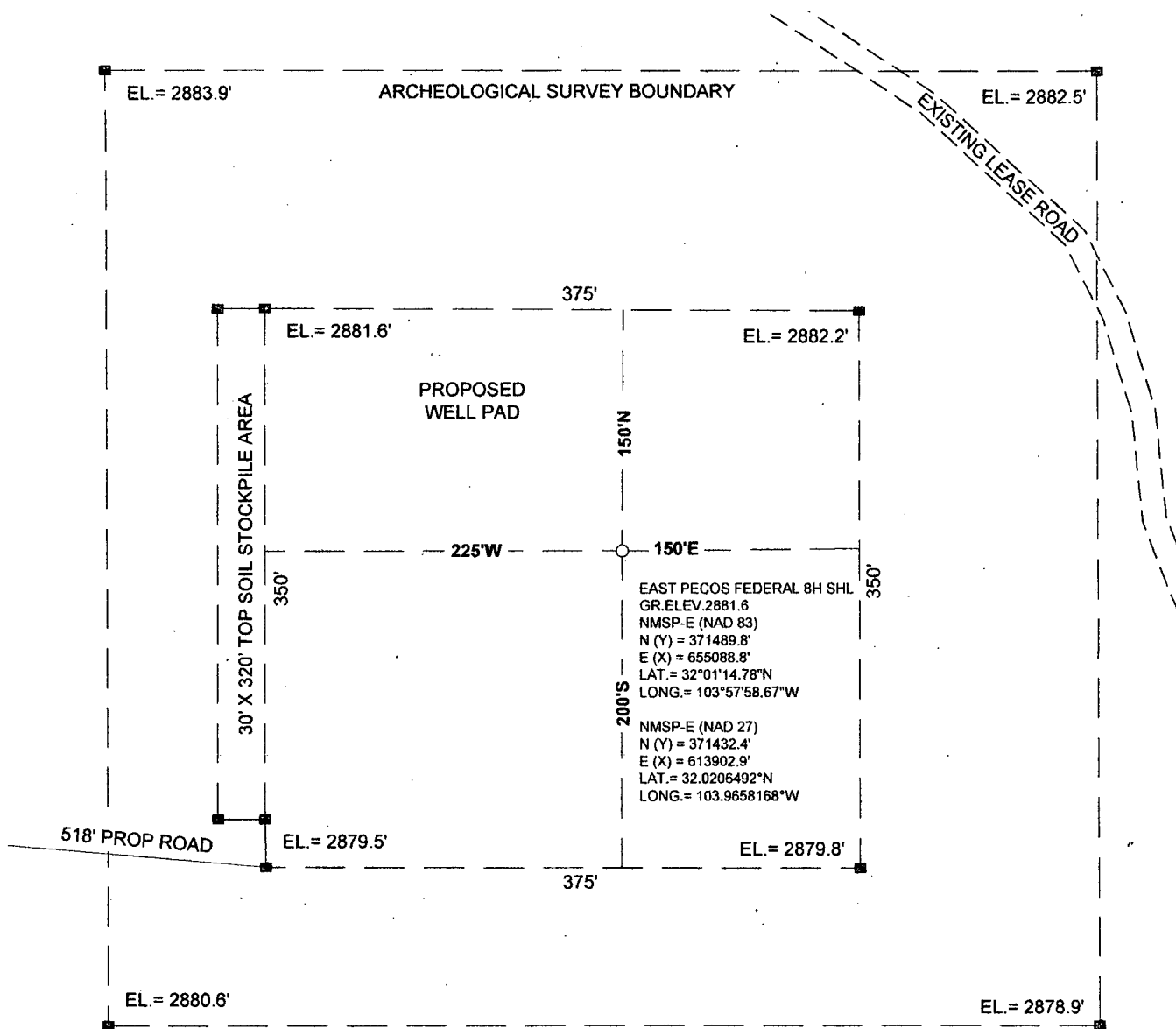


Job No.: WTC49484

JAMES E. TOMPKINS 14729

Certificate Number

# SITE LOCATION



SECTION 22, T 26S, R 29E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 250' FSL & 965' FEL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: EAST PECOS FEDERAL COM  
22-8H

## DRIVING DIRECTIONS:

FROM THE INTERSECTION OF STATE HIGHWAY 285 AND LONGHORN COUNTY ROAD 725. GO EAST/ NORTHEAST ON LONGHORN COUNTY ROAD 725 FOR 7.8 MILES TO A Y. GO RIGHT THROUGH GATE 0.1 MILE, THEN SOUTHEAST 0.6 MILE TO BEGINNING ROAD.

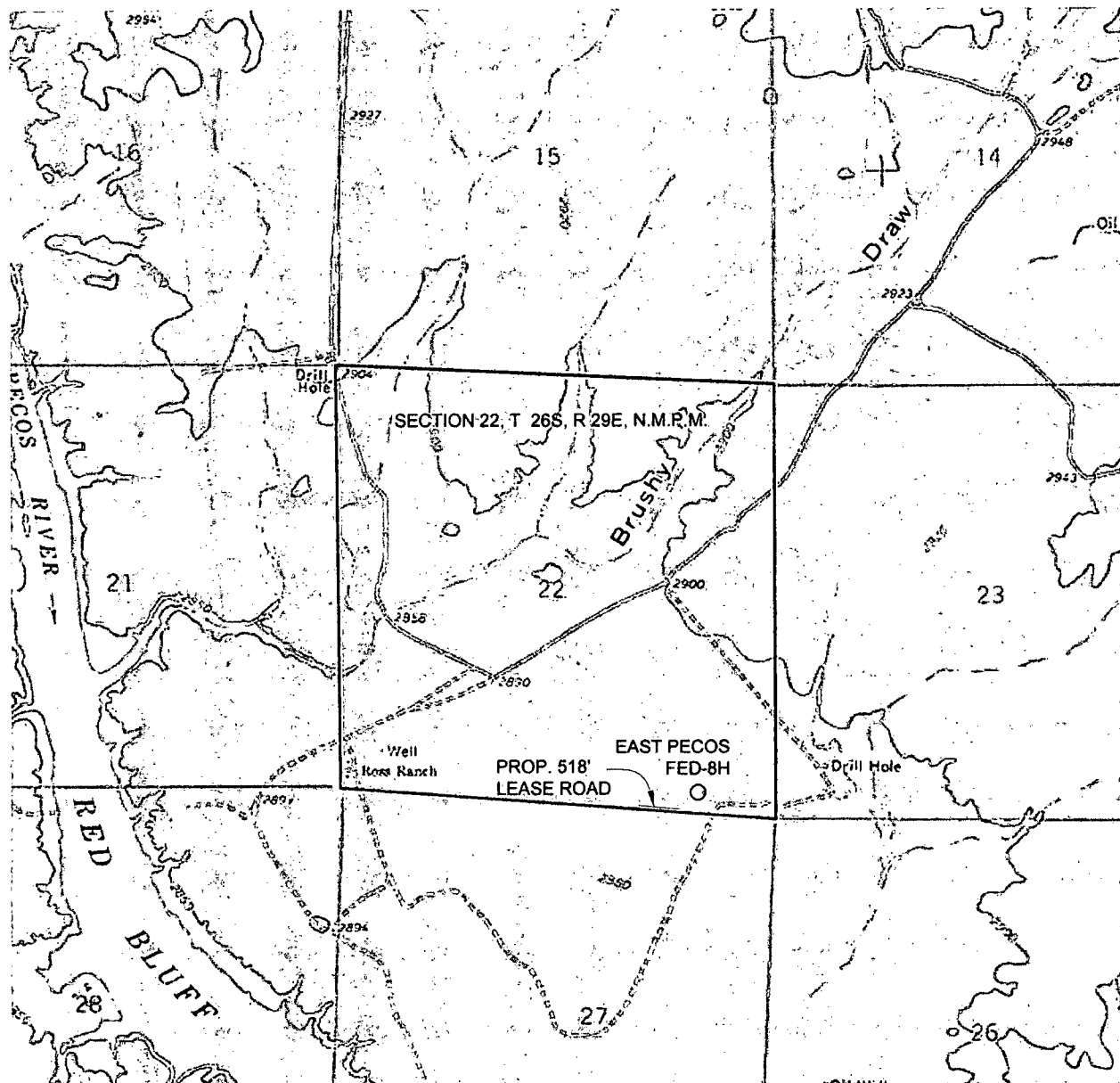


**WTC, Inc.**  
ENGINEERS • SURVEYORS  
405 S.W. 1st STREET  
ANDREWS, TEXAS 79714  
(432) 523-2181

**RKI EXPLORATION & PRODUCTION**

JOB No.: WTC49484

# LOCATION VERIFICATION MAP



0 1000 2000 4000

GRAPHIC SCALE 1" = 2000'

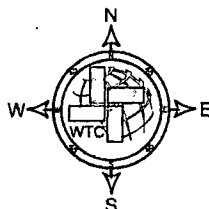
SECTION 22, T 26S, R 29E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 250' FSL & 965' FEL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: EAST PECOS FEDERAL COM  
22-8H



## DRIVING DIRECTIONS:

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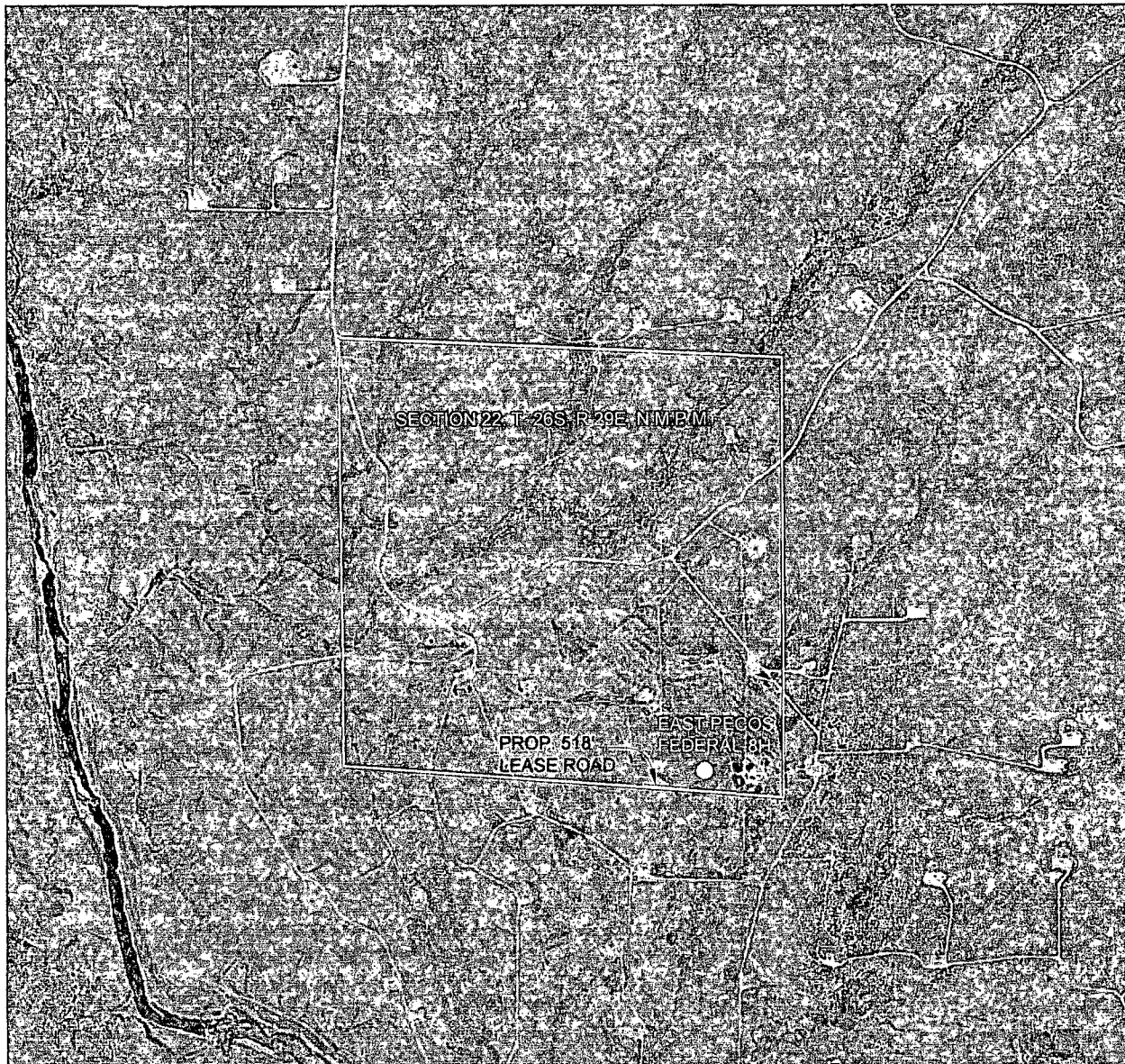


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**RKI EXPLORATION & PRODUCTION**

JOB No.: WTC49484

# AERIAL MAP



0 1000 2000 4000

GRAPHIC SCALE 1" = 2000'

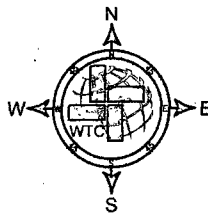
SECTION 22, T. 26S, R. 29E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 250' FSL & 965' FEL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: EAST PECOS FEDERAL COM  
22-8H



## DRIVING DIRECTIONS:

FROM THE INTERSECTION OF STATE HIGHWAY 285 AND LONGHORN COUNTY ROAD 725. GO EAST/NORTHEAST ON LONGHORN COUNTY ROAD 725 FOR 7.8 MILES TO A Y. GO RIGHT THROUGH GATE 0.1 MILE, THEN SOUTHEAST 0.6 MILE TO BEGINNING ROAD.

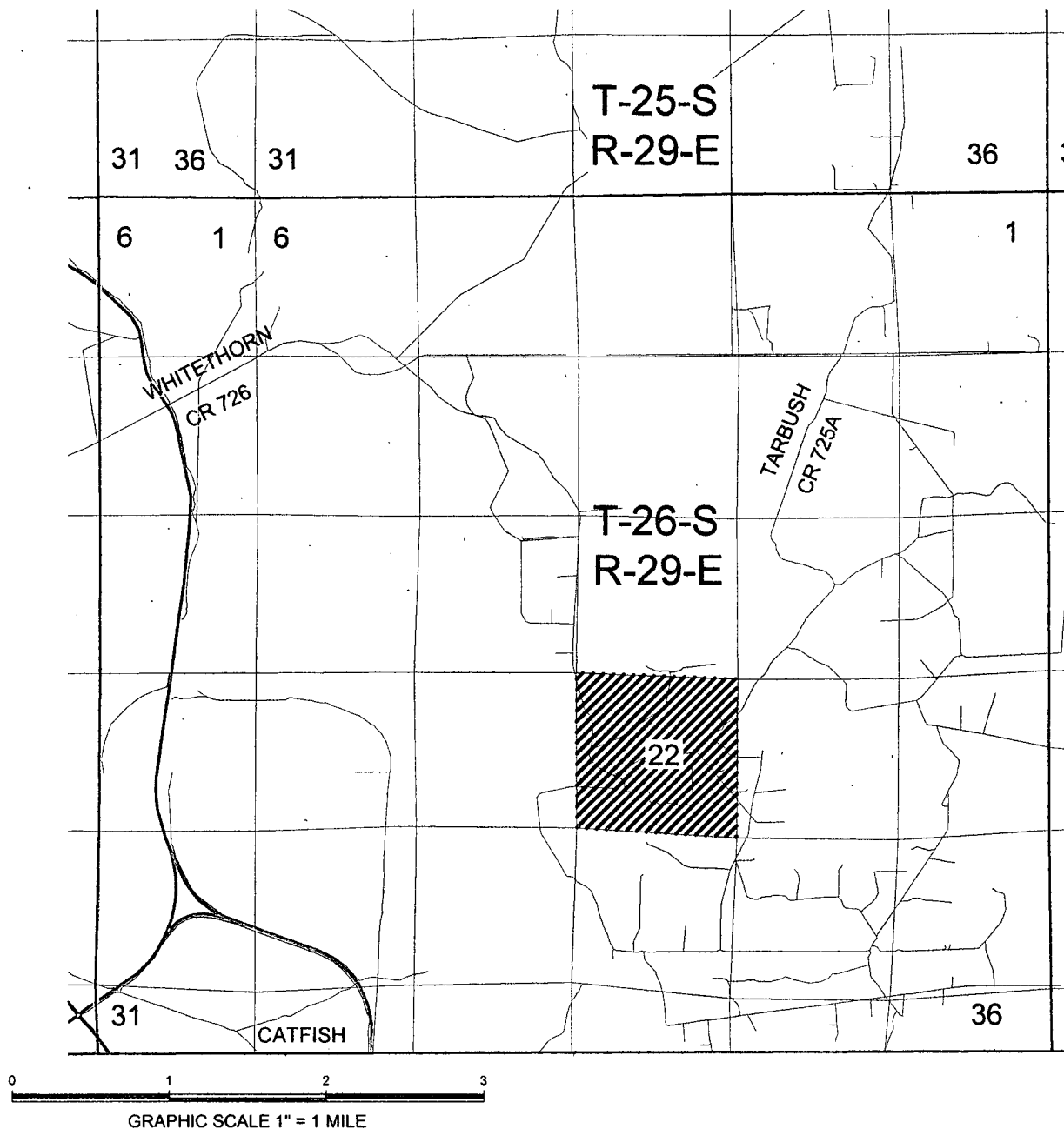


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**RKI EXPLORATION & PRODUCTION**

JOB No.: WTC49484

# VICINITY MAP



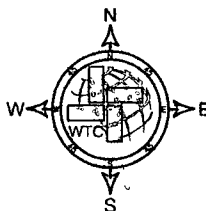
SECTION 22, T 26S, R 29E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 250' FSL & 965' FEL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: EAST PECOS FEDERAL COM  
22-8H



## DRIVING DIRECTIONS:

FROM THE INTERSECTION OF STATE HIGHWAY 285 AND LONGHORN COUNTY ROAD 725. GO EAST/ NORTHEAST ON LONGHORN COUNTY ROAD 725 FOR 7.8 MILES TO A Y. GO RIGHT THROUGH GATE 0.1 MILE, THEN SOUTHEAST 0.6 MILE TO BEGINNING ROAD.



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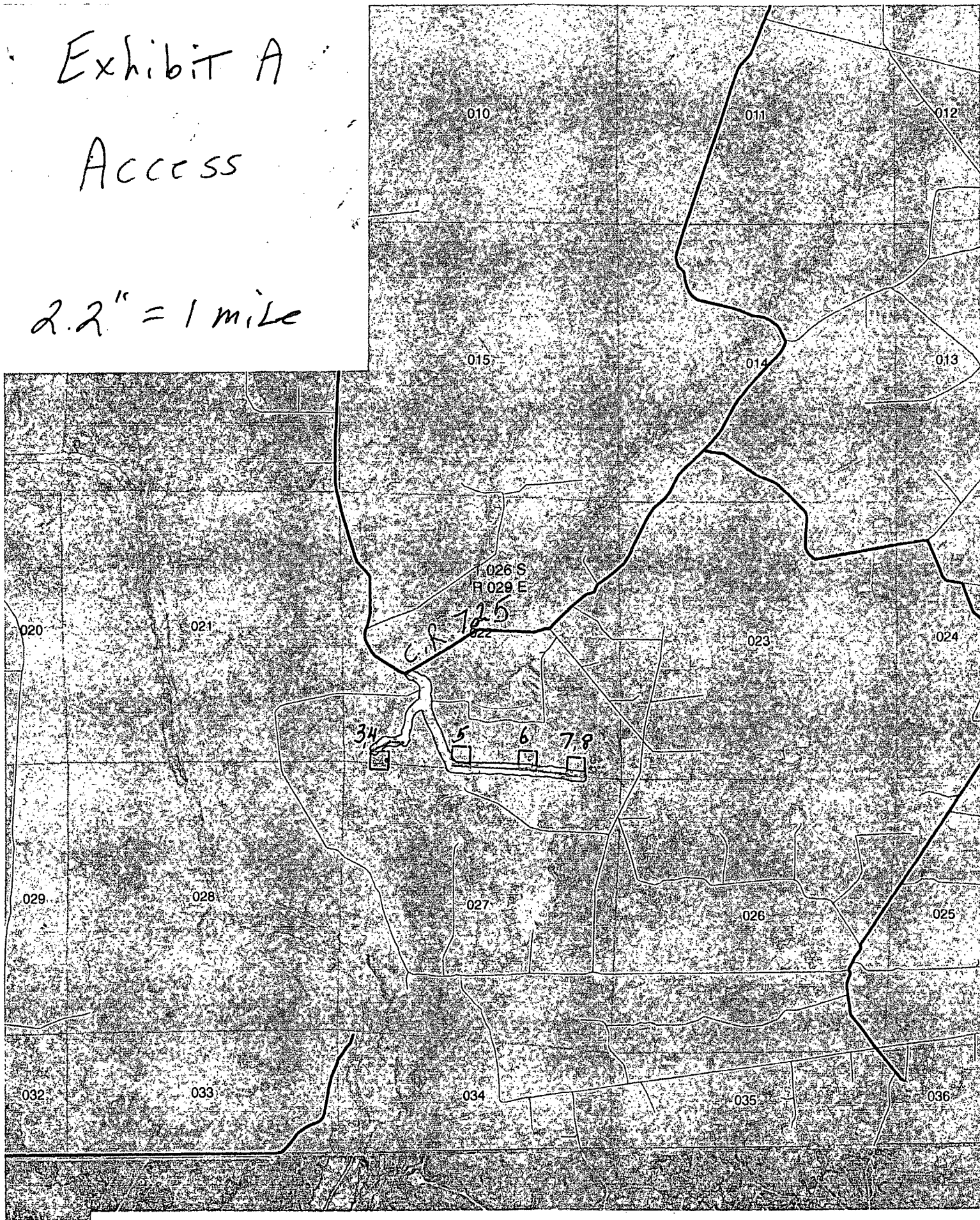
JOB No.: WTC49484



Exhibit A

Access

2.2" = 1 mile



$2.2'' = 1 \text{ mile}$

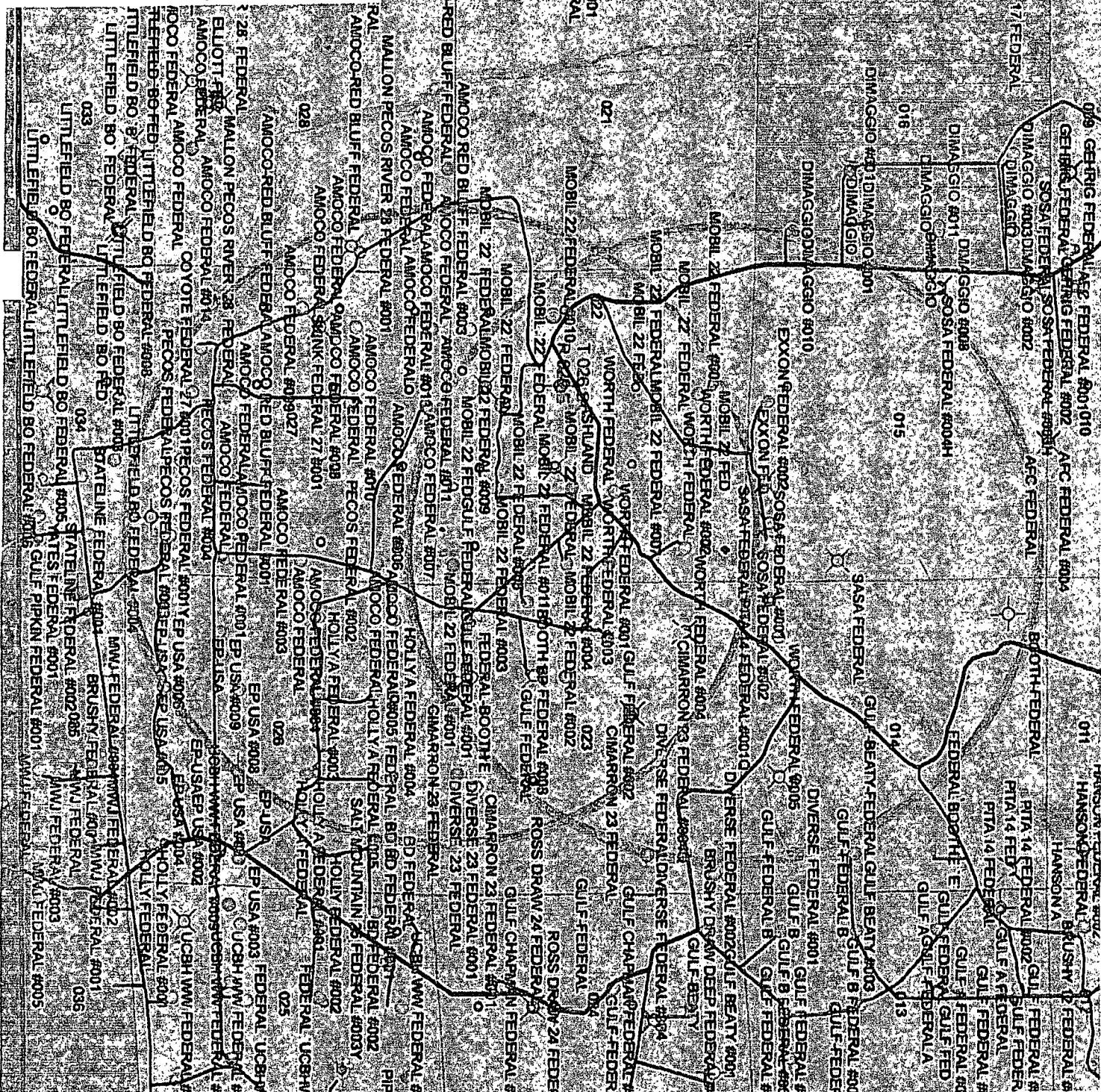
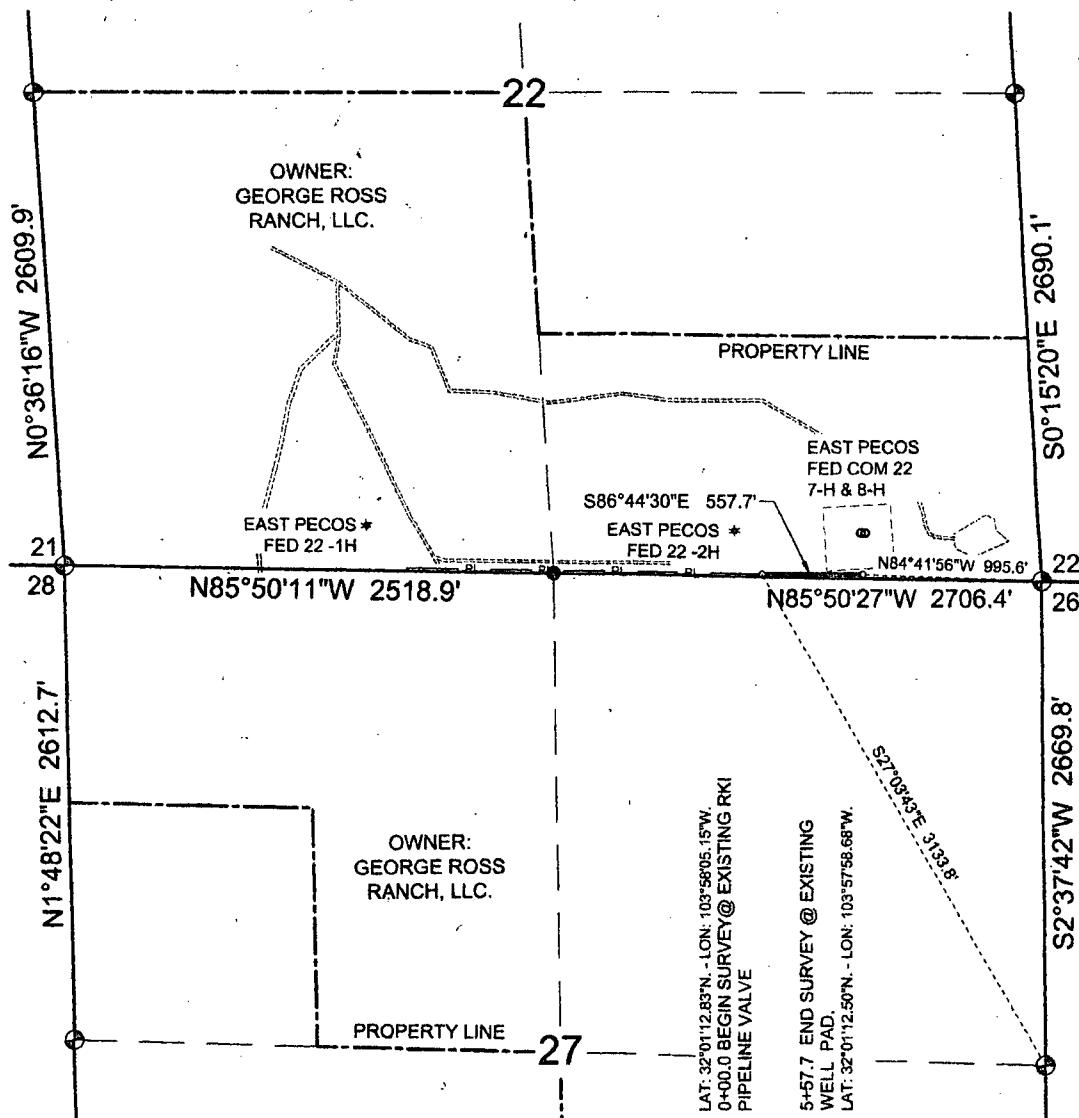


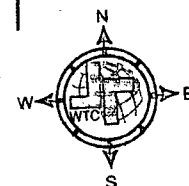
Exhibit E

SECTION 22, & SECTION 27, T26S, R29E, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO



DESCRIPTION

A STRIP OF LAND 30 FEET IN WIDTH AND 557.7 FEET, 0.10 MILES OR 33.80 RODS IN LENGTH, SITUATED IN SECTION 22 AND 27, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO, AND BEING 15 FEET LEFT AND 15 FEET RIGHT OF THE SURVEY OF CENTERLINE AS SHOWN HEREON. SECTION 22, TOWNSHIP 26 SOUTH, RANGE 29 EAST= 557.7 FEET, 0.10 MILES, 33.80 RODS.

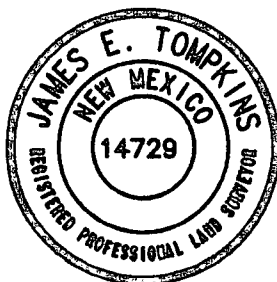


- FND. USGS BRASS CAP
- ⊗ CALCULATED CORNER
- FND. IRON ROD
- BEGIN/END OR ANGLE POINT
- \* WELL

NOTE:

1. BASIS OF BEARING IS A TRANSVERSE MERCATOR PROJECTION OF THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, NAD 83.

1000 0 1000 2000 FEET



I, JAMES E. TOMPKINS, NEW MEXICO PROFESSIONAL SURVEYOR NO. 14729, DO HEREBY CERTIFY THAT THIS PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

*James E. Tompkins*  
JAMES E. TOMPKINS, N.M. P.L.S.

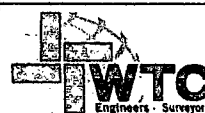
SURVEY DATE: 11/17/2013  
JOB NO.: 49560

12/12/2013

No. 14729

DRAFT: CMR  
SHEET: 1 OF 1

RKI EXPLORATION & PRODUCTION  
A PROPOSED PIPELINE IN  
SECTION 22, T26S, R29E, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO



WTC, INC  
ENGINEERS - SURVEYORS  
405 S.W. 1st Street  
Andrews, TX 79714  
(432) 623-2181



Well East Pecos Federal Com 22-8H  
 Location Surface: 250 FSL 965 FEL Sec. 22-26S-29E  
 Bottom Hole: 230 FNL 660 FEL Sec. 22-26S-29E  
 County Eddy  
 State New Mexico

- 1) The elevation of the unprepared ground is 2,881 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 11,734 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 11,734 feet

5) Estimated tops:

	MD	TVD		
Rustler	300			
Salado	700			
Castile	2,500			
Lamar Lime	2,807			
Delaware Top	3,153			BHP = .44 psi/ft x depth
Bell Canyon Sand	3,153		Oil	1,387 psi
Cherry Canyon Sand	3,948		Oil	1,737 psi
Brushy Canyon Sand	4,946		Oil	2,176 psi
KOP	6,485	6,485	Oil	2,853 psi
Bone Spring	6,664	6,661	Oil	2,932 psi
Landing Point (Avalon Shale)	7,534	7,150	Oil	3,278 psi
TD	11,734	7,150		3,278 psi

Water anticipated at 180 feet.

140 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 nipped 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.

See  
COA

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	325 <sup>375'</sup>	13 3/8"	54.5#/J-55	ST&C	7.90	38.18	29.02
12 1/4"	0	2,850	9 5/8"	40#/J-55	LT&C	1.61	6.30	4.56
8 3/4"	0	11,734	5 1/2"	17#/HCP-110	LT&C	2.59	1.55	6.05
Collapse	1.125							
Burst	1.0							
Tension	2.0							

8) Cement program:

Surface	17 1/2" hole
Pipe OD	13 3/8" <sup>375'</sup>
Setting Depth	325 ft
Annular Volume	0.69462 cf/ft
Excess	1 100 %

Lead	106 sx	1.75 cf/sk	9.13 gal/sk	13.5 ppg
Tail	200 sx	1.33 cf/sk	6.30 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	2,850 ft
Annular Volume	0.31318 cf/ft 0.3627 cf/ft
Excess	0.5 50 %

Lead	502 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	11,734 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:	434 sx 2.08 cf/sk 11.94 gal/sk 11.5 ppg
Tail:	770 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 (antisetling agent) + .25 pps PF46 (antifoam) + .2% PF13 (retarder)  
Top of cement: DV tool

Stage 2	
Lead:	311 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: 2,550 ft

9) Mud program:

See COA

Top	Bottom	Mud Wt.	Vis	Fluid Loss	Type System
0	<del>325</del>	8.5 to 8.9	32 to 36	NC	Fresh Water
<del>325</del>	2,850	9.8 to 10.0	28 to 30	NC	Brine
2,850	11,734	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:

See COA  
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 22-T26S-R29E**

**East Pecos Fed 22-8H**

**Wellbore #1**

**Plan: Prelim Plan**

## **Standard Planning Report**

**10 January, 2014**

# RKI Exploration & Production

Project: Eddy County (NM83E)  
 Site: Sec 22-T26S-R29E  
 Well: East Pecos Fed 22-8H  
 Wellbore: Wellbore #1  
 Design: Prelim Plan



MAzimuths to True North  
 Magnetic North: 7.44°  
 Magnetic Field  
 Strength: 48219.0snT  
 Dip Angle: 59.87°  
 Date: 01/10/2014  
 Model: IGRF2010

**WOLVERINE**  
 DIRECTIONAL

## WELL DETAILS: East Pecos Fed 22-8H

Ground Level: 0.0  
 +N/-S +E/-W Northing Easting Latitude Longitude  
 0.0 0.0 371488.10 655113.80 32° 1' 14.770 N 103° 57' 58.382 W  
 SHL: 250' FSL / 965' FEL  
 BHL: 230' FNL / 660' FEL

## SECTION DETAILS

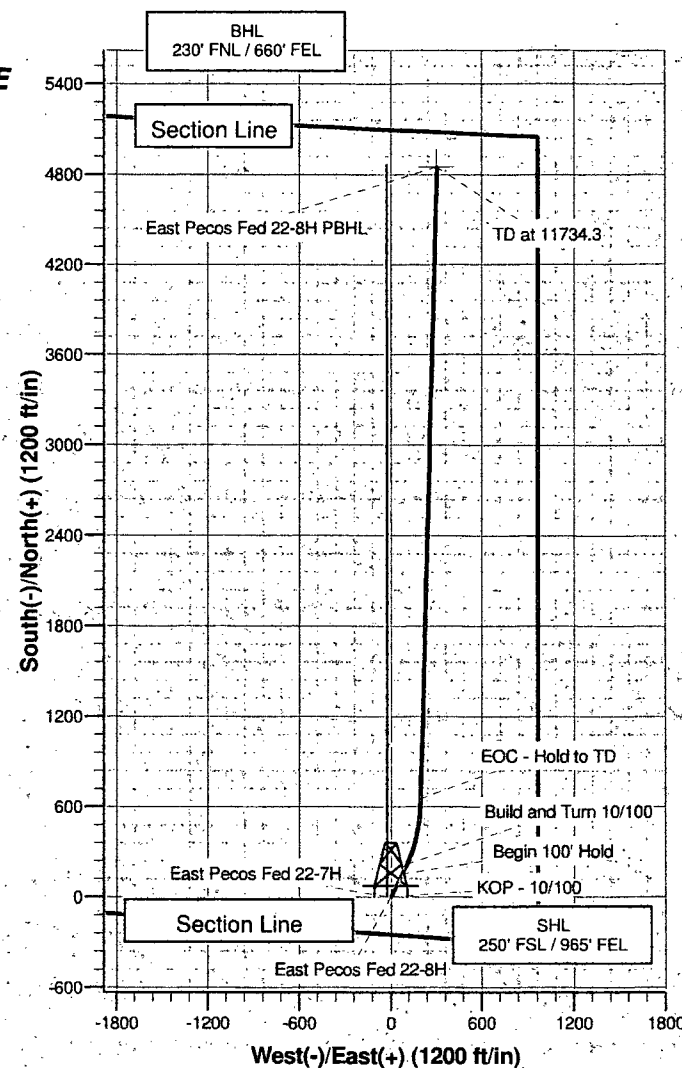
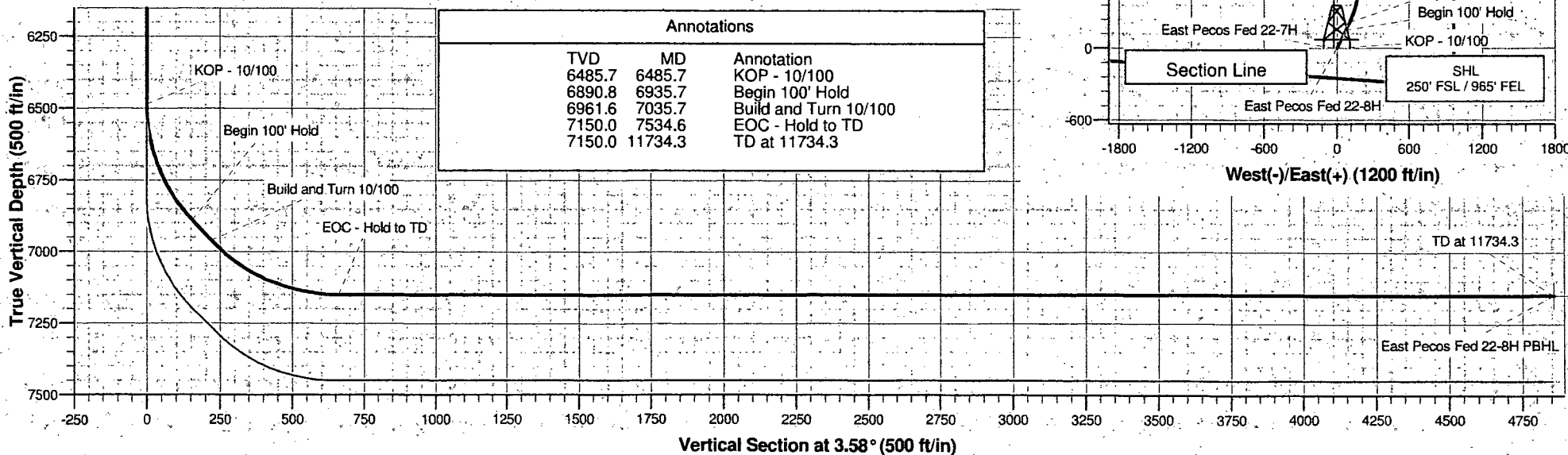
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	6485.7	0.00	0.00	6485.7	0.0	0.0	0.00	0.00	0.0	
3	6935.7	45.00	25.85	6890.8	151.0	73.2	10.00	25.85	155.3	
4	7035.7	45.00	25.85	6961.6	214.7	104.0	0.00	0.00	220.7	
5	7534.6	90.00	1.50	7150.0	650.7	193.2	10.00	-32.62	661.5	
6	11734.3	90.00	1.50	7150.0	4848.9	303.2	0.00	78.46	4858.4	East Pecos Fed 22-8H PBHL

## PROJECT TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
East Pecos Fed 22-8H PBHL	7150.0	4848.9	303.2376338.00	655400.50	Point	

## Annotations

TVD	MD	Annotation
6485.7	6485.7	KOP - 10/100
6890.8	6935.7	Begin 100' Hold
6961.6	7035.7	Build and Turn 10/100
7150.0	7534.6	EOC - Hold to TD
7150.0	11734.3	TD at 11734.3





# Wolverine Directional, LLC

## Planning Report

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well East Pecos Fed 22-8H
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 22-T26S-R29E	North Reference:	True
Well:	East Pecos Fed 22-8H	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 22-T26S-R29E			
Site Position:		Northing:	371,687.09ft	Latitude:	32° 1' 16.831 N
From:	Map	Easting:	652,363.10ft	Longitude:	103° 58' 30.326 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.19 °

Well	East Pecos Fed 22-8H					
Well Position	+N-S	-208.3 ft	Northing:	371,488.10 ft	Latitude:	32° 1' 14.770 N
	+E-W	2,750.0 ft	Easting:	655,113.80 ft	Longitude:	103° 57' 58.382 W
Position Uncertainty	0.0 ft	Wellhead Elevation:	. ft	Ground Level:	0.0 ft	

Wellbore:	Wellbore #1
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Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	01/10/14	(°)	(°)	(nT)
			7.44	59.87	48,219

Design: Prelim Plan				
Audit Notes:				
Version:		Phase: PLAN	Tie On Depth: 0.0	
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	3.58

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	(°)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
6,485.7	0.00	0.00	6,485.7	0.0	0.0	0.00	0.00	0.00	0.00	
6,935.7	45.00	25.85	6,890.8	151.0	73.2	10.00	10.00	0.00	25.85	
7,035.7	45.00	25.85	6,961.6	214.7	104.0	0.00	0.00	0.00	0.00	
7,534.6	90.00	1.50	7,150.0	650.7	193.2	10.00	9.02	-4.88	-32.62	
11,734.3	90.00	1.50	7,150.0	4,848.9	303.2	0.00	0.00	0.00	78.46	East Pecos Fed 22-

# Wolverine Directional, LLC

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Project:	Eddy County (NM83E)	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Sec 22-T26S-R29E	North Reference:	True
Well:	East Pecos Fed 22-8H	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

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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	
6,485.7	0.00	0.00	6,485.7	0.0	0.0	0.0	0.00	0.00	0.00	
<b>KOP - 10/100</b>										
6,500.0	1.43	25.85	6,500.0	0.2	0.1	0.2	10.00	10.00	0.00	
6,550.0	6.43	25.85	6,549.9	3.2	1.6	3.3	10.00	10.00	0.00	
6,600.0	11.43	25.85	6,599.2	10.2	5.0	10.5	10.00	10.00	0.00	
6,650.0	16.43	25.85	6,647.8	21.1	10.2	21.7	10.00	10.00	0.00	
6,700.0	21.43	25.85	6,695.0	35.6	17.3	36.7	10.00	10.00	0.00	
6,750.0	26.43	25.85	6,740.7	53.9	26.1	55.4	10.00	10.00	0.00	
6,800.0	31.43	25.85	6,784.5	75.7	36.7	77.8	10.00	10.00	0.00	
6,850.0	36.43	25.85	6,825.9	100.8	48.8	103.6	10.00	10.00	0.00	
6,900.0	41.43	25.85	6,864.8	129.0	62.5	132.7	10.00	10.00	0.00	
6,935.7	45.00	25.85	6,890.8	151.0	73.2	155.3	10.00	10.00	0.00	
<b>Begin 100' Hold</b>										
7,000.0	45.00	25.85	6,936.3	191.9	93.0	197.4	0.00	0.00	0.00	
7,035.7	45.00	25.85	6,961.6	214.7	104.0	220.7	0.00	0.00	0.00	
<b>Build and Turn 10/100'</b>										
7,050.0	46.21	24.78	6,971.6	223.9	108.4	230.2	10.00	8.46	-7.47	
7,100.0	50.51	21.36	7,004.8	258.3	123.0	265.4	10.00	8.60	-6.84	
7,150.0	54.90	18.35	7,035.1	295.7	136.4	303.6	10.00	8.78	-6.03	
7,200.0	59.35	15.64	7,062.2	335.8	148.7	344.4	10.00	8.91	-5.41	
7,250.0	63.86	13.18	7,086.0	378.4	159.6	387.6	10.00	9.01	-4.93	
7,300.0	68.40	10.89	7,106.2	423.1	169.1	432.8	10.00	9.09	-4.56	
7,350.0	72.97	8.75	7,122.8	469.6	177.2	479.7	10.00	9.15	-4.28	
7,400.0	77.57	6.71	7,135.5	517.5	183.7	528.0	10.00	9.19	-4.08	
7,450.0	82.18	4.75	7,144.2	566.5	188.6	577.1	10.00	9.22	-3.94	
7,500.0	86.80	2.82	7,149.1	616.1	191.8	626.9	10.00	9.24	-3.85	
7,534.6	90.00	1.50	7,150.0	650.7	193.2	661.5	10.00	9.24	-3.82	
<b>EOC - Hold to TD</b>										
7,600.0	90.00	1.50	7,150.0	716.0	194.9	726.8	0.00	0.00	0.00	
7,700.0	90.00	1.50	7,150.0	816.0	197.5	826.7	0.00	0.00	0.00	
7,800.0	90.00	1.50	7,150.0	916.0	200.1	926.7	0.00	0.00	0.00	
7,900.0	90.00	1.50	7,150.0	1,015.9	202.7	1,026.6	0.00	0.00	0.00	
8,000.0	90.00	1.50	7,150.0	1,115.9	205.3	1,126.5	0.00	0.00	0.00	
8,100.0	90.00	1.50	7,150.0	1,215.9	208.0	1,226.5	0.00	0.00	0.00	
8,200.0	90.00	1.50	7,150.0	1,315.8	210.6	1,326.4	0.00	0.00	0.00	
8,300.0	90.00	1.50	7,150.0	1,415.8	213.2	1,426.3	0.00	0.00	0.00	
8,400.0	90.00	1.50	7,150.0	1,515.8	215.8	1,526.3	0.00	0.00	0.00	
8,500.0	90.00	1.50	7,150.0	1,615.7	218.4	1,626.2	0.00	0.00	0.00	
8,600.0	90.00	1.50	7,150.0	1,715.7	221.0	1,726.1	0.00	0.00	0.00	
8,700.0	90.00	1.50	7,150.0	1,815.7	223.7	1,826.1	0.00	0.00	0.00	
8,800.0	90.00	1.50	7,150.0	1,915.6	226.3	1,926.0	0.00	0.00	0.00	
8,900.0	90.00	1.50	7,150.0	2,015.6	228.9	2,026.0	0.00	0.00	0.00	

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### 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)
9,000.0	90.00	1.50	7,150.0	2,115.6	231.5	2,125.9	0.00	0.00	0.00
9,100.0	90.00	1.50	7,150.0	2,215.5	234.1	2,225.8	0.00	0.00	0.00
9,200.0	90.00	1.50	7,150.0	2,315.5	236.8	2,325.8	0.00	0.00	0.00
9,300.0	90.00	1.50	7,150.0	2,415.5	239.4	2,425.7	0.00	0.00	0.00
9,400.0	90.00	1.50	7,150.0	2,515.4	242.0	2,525.6	0.00	0.00	0.00
9,500.0	90.00	1.50	7,150.0	2,615.4	244.6	2,625.6	0.00	0.00	0.00
9,600.0	90.00	1.50	7,150.0	2,715.4	247.2	2,725.5	0.00	0.00	0.00
9,700.0	90.00	1.50	7,150.0	2,815.3	249.9	2,825.4	0.00	0.00	0.00
9,800.0	90.00	1.50	7,150.0	2,915.3	252.5	2,925.4	0.00	0.00	0.00
9,900.0	90.00	1.50	7,150.0	3,015.3	255.1	3,025.3	0.00	0.00	0.00
10,000.0	90.00	1.50	7,150.0	3,115.2	257.7	3,125.2	0.00	0.00	0.00
10,100.0	90.00	1.50	7,150.0	3,215.2	260.3	3,225.2	0.00	0.00	0.00
10,200.0	90.00	1.50	7,150.0	3,315.1	263.0	3,325.1	0.00	0.00	0.00
10,300.0	90.00	1.50	7,150.0	3,415.1	265.6	3,425.0	0.00	0.00	0.00
10,400.0	90.00	1.50	7,150.0	3,515.1	268.2	3,525.0	0.00	0.00	0.00
10,500.0	90.00	1.50	7,150.0	3,615.0	270.8	3,624.9	0.00	0.00	0.00
10,600.0	90.00	1.50	7,150.0	3,715.0	273.4	3,724.8	0.00	0.00	0.00
10,700.0	90.00	1.50	7,150.0	3,815.0	276.1	3,824.8	0.00	0.00	0.00
10,800.0	90.00	1.50	7,150.0	3,914.9	278.7	3,924.7	0.00	0.00	0.00
10,900.0	90.00	1.50	7,150.0	4,014.9	281.3	4,024.6	0.00	0.00	0.00
11,000.0	90.00	1.50	7,150.0	4,114.9	283.9	4,124.6	0.00	0.00	0.00
11,100.0	90.00	1.50	7,150.0	4,214.8	286.5	4,224.5	0.00	0.00	0.00
11,200.0	90.00	1.50	7,150.0	4,314.8	289.2	4,324.4	0.00	0.00	0.00
11,300.0	90.00	1.50	7,150.0	4,414.8	291.8	4,424.4	0.00	0.00	0.00
11,400.0	90.00	1.50	7,150.0	4,514.7	294.4	4,524.3	0.00	0.00	0.00
11,500.0	90.00	1.50	7,150.0	4,614.7	297.0	4,624.2	0.00	0.00	0.00
11,600.0	90.00	1.50	7,150.0	4,714.7	299.7	4,724.2	0.00	0.00	0.00
11,700.0	90.00	1.50	7,150.0	4,814.6	302.3	4,824.1	0.00	0.00	0.00
11,734.3	90.00	1.50	7,150.0	4,848.9	303.2	4,858.4	0.00	0.00	0.00
TD at 11734.3 - East Pecos Fed 22-8H PBHL									

### Targets

Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
East Pecos Fed 22-8H	- plan hits target	0.00	0.00	7,150.0	4,848.9	303.2	376,338.00	655,400.50	32° 2' 2.756 N	103° 57' 54.860 W
	- Point									

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
6,485.7	6,485.7	0.0	0.0	KOP - 10/100
6,935.7	6,890.8	151.0	73.2	Begin 100' Hold
7,035.7	6,961.6	214.7	104.0	Build and Turn 10/100
7,534.6	7,150.0	650.7	193.2	EOC - Hold to TD
11,734.3	7,150.0	4,848.9	303.2	TD at 11734.3

# **RKI Exploration & Production**

**Eddy County (NM83E)**

**Sec 22-T26S-R29E**

**East Pecos Fed 22-8H**

**Wellbore #1**

**Prelim Plan**

## **Anticollision Report**

**10 January, 2014**

# Wolverine Directional, LLC

## Anticollision Report

<b>Company:</b>	RKI Exploration & Production	<b>Local Co-ordinate Reference:</b>	Well East Pecos Fed 22-8H
<b>Project:</b>	Eddy County (NM83E)	<b>TVD Reference:</b>	WELL @ 0.0ft (Original Well Elev)
<b>Reference Site:</b>	Sec 22-T26S-R29E	<b>MD Reference:</b>	WELL @ 0.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	East Pecos Fed 22-8H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	Prelim Plan	<b>Offset TVD Reference:</b>	Offset Datum

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

Survey Tool Program		Date 01/10/14		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,734.3	Prelim Plan (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec 22-T26S-R29E						
East Pecos Fed 22-7H - Wellbore #1 - Prelim Plan	6,485.7	6,485.7	25.1	-3.9	0.866	Level 1, CC, ES, SF

<b>Offset Design</b>	Sec 22-T26S-R29E - East Pecos Fed 22-7H - Wellbore #1 - Prelim Plan										<b>Offset Site Error:</b>	0.0ft
<b>Survey Program:</b>	0-MWD										<b>Offset Well Error:</b>	0.0ft
<b>Reference</b>	<b>Offset</b>	<b>Semi Major Axis</b>		<b>Distance</b>		<b>Minimum Separation</b>		<b>Warning</b>				
<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Reference (ft)</b>	<b>Offset (ft)</b>	<b>Highside Toolface (°)</b>	<b>Offset Wellbore Centre +N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Between Centres (ft)</b>	<b>Between Ellipses (ft)</b>	<b>Separation (ft)</b>	<b>Factor</b>
0.0	0.0	0.0	0.0	0.0	0.0	-85.92	1.8	-25.0	25.1			
100.0	100.0	100.0	100.0	0.1	0.1	-85.92	1.8	-25.0	25.1	24.8	0.22	111.484
200.0	200.0	200.0	200.0	0.3	0.3	-85.92	1.8	-25.0	25.1	24.4	0.67	37.161
300.0	300.0	300.0	300.0	0.6	0.6	-85.92	1.8	-25.0	25.1	23.9	1.12	22.297
400.0	400.0	400.0	400.0	0.8	0.8	-85.92	1.8	-25.0	25.1	23.5	1.57	15.926
500.0	500.0	500.0	500.0	1.0	1.0	-85.92	1.8	-25.0	25.1	23.0	2.02	12.387
600.0	600.0	600.0	600.0	1.2	1.2	-85.92	1.8	-25.0	25.1	22.6	2.47	10.135
700.0	700.0	700.0	700.0	1.5	1.5	-85.92	1.8	-25.0	25.1	22.1	2.92	8.576
800.0	800.0	800.0	800.0	1.7	1.7	-85.92	1.8	-25.0	25.1	21.7	3.37	7.432
900.0	900.0	900.0	900.0	1.9	1.9	-85.92	1.8	-25.0	25.1	21.2	3.82	6.558
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-85.92	1.8	-25.0	25.1	20.8	4.27	5.868
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-85.92	1.8	-25.0	25.1	20.3	4.72	5.309
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-85.92	1.8	-25.0	25.1	19.9	5.17	4.847
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-85.92	1.8	-25.0	25.1	19.4	5.62	4.459
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-85.92	1.8	-25.0	25.1	19.0	6.07	4.129
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-85.92	1.8	-25.0	25.1	18.5	6.52	3.844
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-85.92	1.8	-25.0	25.1	18.1	6.97	3.596
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-85.92	1.8	-25.0	25.1	17.6	7.42	3.378
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-85.92	1.8	-25.0	25.1	17.2	7.87	3.185
1,900.0	1,900.0	1,900.0	1,900.0	4.2	4.2	-85.92	1.8	-25.0	25.1	16.7	8.32	3.013
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	-85.92	1.8	-25.0	25.1	16.3	8.77	2.859
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	-85.92	1.8	-25.0	25.1	15.8	9.22	2.719
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	-85.92	1.8	-25.0	25.1	15.4	9.66	2.593
2,300.0	2,300.0	2,300.0	2,300.0	5.1	5.1	-85.92	1.8	-25.0	25.1	14.9	10.11	2.477
2,400.0	2,400.0	2,400.0	2,400.0	5.3	5.3	-85.92	1.8	-25.0	25.1	14.5	10.56	2.372
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	-85.92	1.8	-25.0	25.1	14.0	11.01	2.275

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

# Wolverine Directional, LLC

## Anticollision Report

<b>Company:</b>	RKI Exploration & Production	<b>Local Co-ordinate Reference:</b>	Well East Pecos Fed 22-8H
<b>Project:</b>	Eddy County (NM83E)	<b>TVD Reference:</b>	WELL @ 0.0ft (Original Well Elev)
<b>Reference Site:</b>	Sec 22-T26S-R29E	<b>MD Reference:</b>	WELL @ 0.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	East Pecos Fed 22-8H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	Prelim Plan	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design: Sec 22-T26S-R29E - East Pecos Fed 22-7H - Wellbore #1 - Prelim Plan													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	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	-85.92		1.8	-25.0	25.1	13.6	11.48	2.186	
2,700.0	2,700.0	2,700.0	2,700.0	6.0	6.0	-85.92		1.8	-25.0	25.1	13.1	11.91	2.103	
2,800.0	2,800.0	2,800.0	2,800.0	6.2	6.2	-85.92		1.8	-25.0	25.1	12.7	12.36	2.027	
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.4	-85.92		1.8	-25.0	25.1	12.2	12.81	1.956	
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.6	-85.92		1.8	-25.0	25.1	11.8	13.26	1.890	
3,100.0	3,100.0	3,100.0	3,100.0	6.9	6.9	-85.92		1.8	-25.0	25.1	11.3	13.71	1.828	
3,200.0	3,200.0	3,200.0	3,200.0	7.1	7.1	-85.92		1.8	-25.0	25.1	10.9	14.16	1.770	
3,300.0	3,300.0	3,300.0	3,300.0	7.3	7.3	-85.92		1.8	-25.0	25.1	10.4	14.61	1.715	
3,400.0	3,400.0	3,400.0	3,400.0	7.5	7.5	-85.92		1.8	-25.0	25.1	10.0	15.06	1.664	
3,500.0	3,500.0	3,500.0	3,500.0	7.8	7.8	-85.92		1.8	-25.0	25.1	9.5	15.51	1.616	
3,600.0	3,600.0	3,600.0	3,600.0	8.0	8.0	-85.92		1.8	-25.0	25.1	9.1	15.96	1.570	
3,700.0	3,700.0	3,700.0	3,700.0	8.2	8.2	-85.92		1.8	-25.0	25.1	8.6	16.41	1.527	
3,800.0	3,800.0	3,800.0	3,800.0	8.4	8.4	-85.92		1.8	-25.0	25.1	8.2	16.86	1.486 Level 3	
3,900.0	3,900.0	3,900.0	3,900.0	8.7	8.7	-85.92		1.8	-25.0	25.1	7.8	17.31	1.448 Level 3	
4,000.0	4,000.0	4,000.0	4,000.0	8.9	8.9	-85.92		1.8	-25.0	25.1	7.3	17.76	1.411 Level 3	
4,100.0	4,100.0	4,100.0	4,100.0	9.1	9.1	-85.92		1.8	-25.0	25.1	6.9	18.21	1.376 Level 3	
4,200.0	4,200.0	4,200.0	4,200.0	9.3	9.3	-85.92		1.8	-25.0	25.1	6.4	18.66	1.343 Level 3	
4,300.0	4,300.0	4,300.0	4,300.0	9.6	9.6	-85.92		1.8	-25.0	25.1	6.0	19.11	1.312 Level 3	
4,400.0	4,400.0	4,400.0	4,400.0	9.8	9.8	-85.92		1.8	-25.0	25.1	5.5	19.55	1.281 Level 3	
4,500.0	4,500.0	4,500.0	4,500.0	10.0	10.0	-85.92		1.8	-25.0	25.1	5.1	20.00	1.253 Level 3	
4,600.0	4,600.0	4,600.0	4,600.0	10.2	10.2	-85.92		1.8	-25.0	25.1	4.6	20.45	1.225 Level 2	
4,700.0	4,700.0	4,700.0	4,700.0	10.5	10.5	-85.92		1.8	-25.0	25.1	4.2	20.90	1.199 Level 2	
4,800.0	4,800.0	4,800.0	4,800.0	10.7	10.7	-85.92		1.8	-25.0	25.1	3.7	21.35	1.174 Level 2	
4,900.0	4,900.0	4,900.0	4,900.0	10.9	10.9	-85.92		1.8	-25.0	25.1	3.3	21.80	1.149 Level 2	
5,000.0	5,000.0	5,000.0	5,000.0	11.1	11.1	-85.92		1.8	-25.0	25.1	2.8	22.25	1.126 Level 2	
5,100.0	5,100.0	5,100.0	5,100.0	11.4	11.4	-85.92		1.8	-25.0	25.1	2.4	22.70	1.104 Level 2	
5,200.0	5,200.0	5,200.0	5,200.0	11.6	11.6	-85.92		1.8	-25.0	25.1	1.9	23.15	1.082 Level 2	
5,300.0	5,300.0	5,300.0	5,300.0	11.8	11.8	-85.92		1.8	-25.0	25.1	1.5	23.60	1.062 Level 2	
5,400.0	5,400.0	5,400.0	5,400.0	12.0	12.0	-85.92		1.8	-25.0	25.1	1.0	24.05	1.042 Level 2	
5,500.0	5,500.0	5,500.0	5,500.0	12.2	12.2	-85.92		1.8	-25.0	25.1	0.6	24.50	1.023 Level 2	
5,600.0	5,600.0	5,600.0	5,600.0	12.5	12.5	-85.92		1.8	-25.0	25.1	0.1	24.95	1.004 Level 2	
5,700.0	5,700.0	5,700.0	5,700.0	12.7	12.7	-85.92		1.8	-25.0	25.1	-0.3	25.40	0.987 Level 1	
5,800.0	5,800.0	5,800.0	5,800.0	12.9	12.9	-85.92		1.8	-25.0	25.1	-0.8	25.85	0.969 Level 1	
5,900.0	5,900.0	5,900.0	5,900.0	13.1	13.1	-85.92		1.8	-25.0	25.1	-1.2	26.30	0.953 Level 1	
6,000.0	6,000.0	6,000.0	6,000.0	13.4	13.4	-85.92		1.8	-25.0	25.1	-1.7	26.75	0.937 Level 1	
6,100.0	6,100.0	6,100.0	6,100.0	13.6	13.6	-85.92		1.8	-25.0	25.1	-2.1	27.20	0.921 Level 1	
6,200.0	6,200.0	6,200.0	6,200.0	13.8	13.8	-85.92		1.8	-25.0	25.1	-2.6	27.65	0.906 Level 1	
6,300.0	6,300.0	6,300.0	6,300.0	14.0	14.0	-85.92		1.8	-25.0	25.1	-3.0	28.10	0.892 Level 1	
6,400.0	6,400.0	6,400.0	6,400.0	14.3	14.3	-85.92		1.8	-25.0	25.1	-3.5	28.55	0.878 Level 1	
6,485.7	6,485.7	6,485.7	6,485.7	14.5	14.5	-85.92		1.8	-25.0	25.1	-3.9	28.93	0.866 Level 1, CC, ES, SF	
6,500.0	6,500.0	6,500.0	6,500.0	14.5	14.5	-112.14		1.8	-25.0	25.1	-3.9	28.99	0.867 Level 1	
6,550.0	6,549.9	6,549.9	6,549.9	14.6	14.6	-118.84		1.8	-25.0	26.6	-2.6	29.18	0.912 Level 1	
6,600.0	6,599.2	6,599.2	6,599.2	14.7	14.7	-131.02		1.8	-25.0	31.1	1.9	29.24	1.064 Level 2	
6,650.0	6,647.8	6,647.8	6,647.8	14.8	14.8	-143.42		1.8	-25.0	40.1	11.1	29.05	1.381 Level 3	
6,700.0	6,695.0	6,695.0	6,695.0	14.9	14.9	-152.92		1.8	-25.0	54.2	25.5	28.61	1.893	
6,750.0	6,740.7	6,740.7	6,740.7	15.1	15.0	-159.41		1.8	-25.0	73.0	45.0	27.99	2.608	
6,800.0	6,784.5	6,784.5	6,784.5	15.2	15.1	-163.71		1.8	-25.0	96.2	69.0	27.20	3.537	
6,850.0	6,825.9	6,830.0	6,830.0	15.3	15.2	-166.74		2.3	-25.0	123.1	96.9	26.29	4.684	
6,900.0	6,864.8	6,881.1	6,880.9	15.5	15.4	-168.22		6.7	-25.0	151.3	126.0	25.30	5.981	
6,935.7	6,890.8	6,919.1	6,918.4	15.6	15.4	-168.46		12.9	-25.0	171.7	147.2	24.56	6.993	
7,000.0	6,936.3	6,993.9	6,990.5	15.9	15.6	-168.29		32.2	-25.0	205.9	181.0	24.83	8.290	
7,035.7	6,961.6	7,039.5	7,033.1	16.0	15.7	-167.44		48.6	-25.0	222.1	197.1	25.04	8.870	

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

# Wolverine Directional, LLC

## Anticollision Report

<b>Company:</b>	RKI Exploration & Production	<b>Local Co-ordinate Reference:</b>	Well East Pecos Fed 22-8H
<b>Project:</b>	Eddy County (NM83E)	<b>TVD Reference:</b>	WELL @ 0.0ft (Original Well Elev)
<b>Reference Site:</b>	Sec 22-T26S-R29E	<b>MD Reference:</b>	WELL @ 0.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	East Pecos Fed 22-8H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore:</b>	Wellbore #1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	Prelim Plan	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design: Sec 22-T26S-R29E - East Pecos Fed 22-7H - Wellbore #1 - Prelim Plan														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
7,050.0	6,971.6	7,058.5	7,050.4	16.1	15.8	-165.78	56.4	-25.0	228.2	203.3	24.92	9.158			
7,100.0	7,004.8	7,127.2	7,110.7	16.4	15.9	-160.55	89.3	-25.0	248.3	223.7	24.58	10.101			
7,150.0	7,035.1	7,199.7	7,169.5	16.7	16.1	-156.05	131.6	-25.0	266.6	242.1	24.44	10.909			
7,200.0	7,062.2	7,268.3	7,219.9	17.0	16.3	-152.23	178.1	-25.1	282.7	258.3	24.47	11.557			
7,250.0	7,086.0	7,315.2	7,253.1	17.3	16.5	-149.47	211.2	-25.1	300.0	275.4	24.52	12.231			
7,300.0	7,106.2	7,364.9	7,288.2	17.7	16.7	-147.46	246.5	-25.1	319.4	294.8	24.65	12.957			
7,350.0	7,122.8	7,450.3	7,342.9	18.1	17.2	-146.44	311.9	-25.1	338.0	313.1	24.86	13.598			
7,400.0	7,135.5	7,542.8	7,390.4	18.6	17.8	-145.60	391.1	-25.1	352.9	327.7	25.26	13.974			
7,450.0	7,144.2	7,641.5	7,426.4	19.1	18.5	-144.91	482.9	-25.2	363.7	337.8	25.90	14.043			
7,500.0	7,149.1	7,744.6	7,446.6	19.5	19.5	-144.31	583.8	-25.2	369.7	342.9	26.81	13.794			
7,534.6	7,150.0	7,811.5	7,450.0	19.9	20.1	-143.95	650.6	-25.2	371.0	343.5	27.54	13.473			
7,600.0	7,150.0	7,876.8	7,450.0	20.6	20.8	-143.74	716.0	-25.2	372.0	343.5	28.52	13.044			
7,700.0	7,150.0	7,976.8	7,450.0	21.7	21.9	-143.41	815.9	-25.3	373.6	343.5	30.10	12.413			
7,800.0	7,150.0	8,076.7	7,450.0	22.8	23.1	-143.08	915.9	-25.3	375.2	343.4	31.79	11.805			
7,900.0	7,150.0	8,176.7	7,450.0	24.0	24.4	-142.76	1,015.9	-25.3	376.8	343.2	33.61	11.210			
8,000.0	7,150.0	8,276.7	7,450.0	25.3	25.7	-142.44	1,115.8	-25.4	378.4	342.9	35.56	10.641			
8,100.0	7,150.0	8,376.6	7,450.0	26.7	27.2	-142.13	1,215.8	-25.4	380.0	342.4	37.61	10.105			
8,200.0	7,150.0	8,476.6	7,450.0	28.1	28.6	-141.81	1,315.8	-25.5	381.7	341.9	39.75	9.603			
8,300.0	7,150.0	8,576.6	7,450.0	29.5	30.1	-141.50	1,415.7	-25.5	383.3	341.4	41.96	9.136			
8,400.0	7,150.0	8,676.5	7,450.0	31.0	31.7	-141.19	1,515.7	-25.5	385.0	340.7	44.25	8.701			
8,500.0	7,150.0	8,776.5	7,450.0	32.6	33.2	-140.88	1,615.6	-25.6	386.7	340.1	46.59	8.298			
8,600.0	7,150.0	8,876.5	7,450.0	34.1	34.8	-140.58	1,715.6	-25.6	388.3	339.3	49.00	7.925			
8,700.0	7,150.0	8,976.4	7,450.0	35.7	36.4	-140.28	1,815.6	-25.6	390.0	338.6	51.46	7.579			
8,800.0	7,150.0	9,076.4	7,450.0	37.3	38.0	-139.98	1,915.5	-25.7	391.7	337.8	53.97	7.259			
8,900.0	7,150.0	9,176.3	7,450.0	38.9	39.7	-139.68	2,015.5	-25.7	393.4	336.9	56.52	6.961			
9,000.0	7,150.0	9,276.3	7,450.0	40.6	41.4	-139.39	2,115.5	-25.7	395.2	336.1	59.11	6.685			
9,100.0	7,150.0	9,376.3	7,450.0	42.2	43.0	-139.10	2,215.4	-25.8	396.9	335.2	61.75	6.428			
9,200.0	7,150.0	9,476.2	7,450.0	43.9	44.7	-138.81	2,315.4	-25.8	398.6	334.2	64.41	6.189			
9,300.0	7,150.0	9,576.2	7,450.0	45.6	46.4	-138.53	2,415.4	-25.9	400.4	333.3	67.11	5.966			
9,400.0	7,150.0	9,676.2	7,450.0	47.2	48.1	-138.24	2,515.3	-25.9	402.2	332.3	69.85	5.758			
9,500.0	7,150.0	9,776.1	7,450.0	48.9	49.8	-137.96	2,615.3	-25.9	403.9	331.3	72.61	5.563			
9,600.0	7,150.0	9,876.1	7,450.0	50.7	51.6	-137.68	2,715.3	-26.0	405.7	330.3	75.40	5.381			
9,700.0	7,150.0	9,976.1	7,450.0	52.4	53.3	-137.41	2,815.2	-26.0	407.5	329.3	78.22	5.210			
9,800.0	7,150.0	10,076.0	7,450.0	54.1	55.0	-137.13	2,915.2	-26.0	409.3	328.3	81.06	5.049			
9,900.0	7,150.0	10,176.0	7,450.0	55.8	56.8	-136.86	3,015.1	-26.1	411.1	327.2	83.93	4.899			
10,000.0	7,150.0	10,276.0	7,450.0	57.6	58.5	-136.59	3,115.1	-26.1	413.0	326.1	86.82	4.756			
10,100.0	7,150.0	10,375.9	7,450.0	59.3	60.3	-136.33	3,215.1	-26.1	414.8	325.1	89.74	4.622			
10,200.0	7,150.0	10,475.9	7,450.0	61.1	62.0	-136.06	3,315.0	-26.2	416.6	324.0	92.68	4.496			
10,300.0	7,150.0	10,575.8	7,450.0	62.8	63.8	-135.80	3,415.0	-26.2	418.5	322.9	95.63	4.376			
10,400.0	7,150.0	10,675.8	7,450.0	64.6	65.6	-135.54	3,515.0	-26.3	420.3	321.7	98.61	4.263			
10,500.0	7,150.0	10,775.8	7,450.0	66.3	67.3	-135.28	3,614.9	-26.3	422.2	320.6	101.61	4.155			
10,600.0	7,150.0	10,875.7	7,450.0	68.1	69.1	-135.03	3,714.9	-26.3	424.1	319.5	104.62	4.054			
10,700.0	7,150.0	10,975.7	7,450.0	69.8	70.9	-134.78	3,814.9	-26.4	426.0	318.3	107.65	3.957			
10,800.0	7,150.0	11,075.7	7,450.0	71.6	72.6	-134.53	3,914.8	-26.4	427.9	317.2	110.70	3.865			
10,900.0	7,150.0	11,175.6	7,450.0	73.4	74.4	-134.28	4,014.8	-26.4	429.8	316.0	113.77	3.777			
11,000.0	7,150.0	11,275.6	7,450.0	75.2	76.2	-134.03	4,114.8	-26.5	431.7	314.8	116.86	3.694			
11,100.0	7,150.0	11,375.6	7,450.0	76.9	78.0	-133.79	4,214.7	-26.5	433.6	313.6	119.96	3.615			
11,200.0	7,150.0	11,475.5	7,450.0	78.7	79.8	-133.55	4,314.7	-26.6	435.5	312.5	123.07	3.539			
11,300.0	7,150.0	11,575.5	7,450.0	80.5	81.6	-133.31	4,414.6	-26.6	437.5	311.3	126.20	3.468			
11,400.0	7,150.0	11,675.5	7,450.0	82.3	83.3	-133.07	4,514.6	-26.6	439.4	310.1	129.35	3.397			
11,500.0	7,150.0	11,775.4	7,450.0	84.0	85.1	-132.83	4,614.6	-26.7	441.3	308.8	132.51	3.331			
11,600.0	7,150.0	11,875.4	7,450.0	85.8	86.9	-132.60	4,714.5	-26.7	443.3	307.6	135.68	3.267			

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



# Wolverine Directional, LLC

## Anticollision Report

<b>Company:</b>	RKI Exploration & Production	<b>Local Co-ordinate Reference:</b>	Well East Pecos Fed 22-8H
<b>Project:</b>	Eddy County (NM83E)	<b>TVD Reference:</b>	WELL @ 0.0ft (Original Well Elev)
<b>Reference Site:</b>	Sec 22-T26S-R29E	<b>MD Reference:</b>	WELL @ 0.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	East Pecos Fed 22-8H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	Prelim Plan	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Sec 22-T26S-R29E - East Pecos Fed 22-7H - Wellbore #1 - Prelim Plan												<b>Offset Site Error:</b>	0.0ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.0ft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
11,700.0	7,150.0	11,975.3	7,450.0	87.6	88.7	-132.37	4,814.5	-26.8	445.3	306.4	138.86	3.206	
11,734.3	7,150.0	12,009.6	7,450.0	88.2	89.3	-132.29	4,848.8	-26.8	445.9	306.0	139.95	3.187	

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

# Wolverine Directional, LLC

## Anticollision Report

<b>Company:</b>	RKI Exploration & Production	<b>Local Co-ordinate Reference:</b>	Well East Pecos Fed 22-8H
<b>Project:</b>	Eddy County (NM83E)	<b>TVD Reference:</b>	WELL @ 0.0ft (Original Well Elev)
<b>Reference Site:</b>	Sec 22-T26S-R29E	<b>MD Reference:</b>	WELL @ 0.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	East Pecos Fed 22-8H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at:</b>	2.00 sigma
<b>Reference Wellbore:</b>	Wellbore #1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	Prelim Plan	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 0.0ft (Original Well Elev)

Offset Depths are relative to Offset Datum

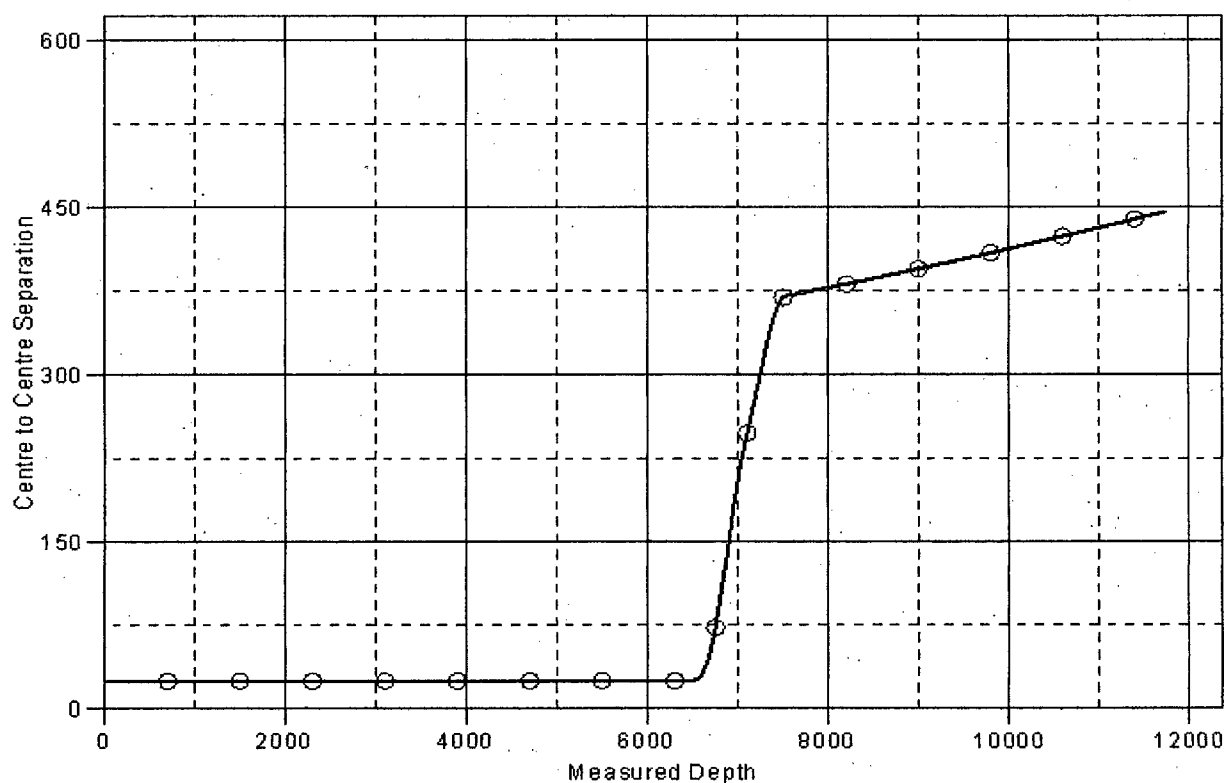
Central Meridian is 104° 20' 0.000 W °

Coordinates are relative to: East Pecos Fed 22-8H

Coordinate System is US State Plane 1983, New Mexico Eastern Zone

Grid Convergence at Surface is: 0.19°

### Ladder Plot



### LEGEND

—○— East Pecos Fed 22-7 H, Wellbore #1, Prelim Plan V0

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

# Wolverine Directional, LLC

## Anticollision Report

<b>Company:</b>	RKI Exploration & Production	<b>Local Co-ordinate Reference:</b>	Well: East Pecos Fed 22-8H
<b>Project:</b>	Eddy County (NM83E)	<b>TVD Reference:</b>	WELL @ 0.0ft (Original Well Elev)
<b>Reference Site:</b>	Sec 22-T26S-R29E	<b>MD Reference:</b>	WELL @ 0.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	East Pecos Fed 22-8H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore:</b>	Wellbore #1	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	Prelim Plan	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 0.0ft (Original Well Elev)

Offset Depths are relative to Offset Datum

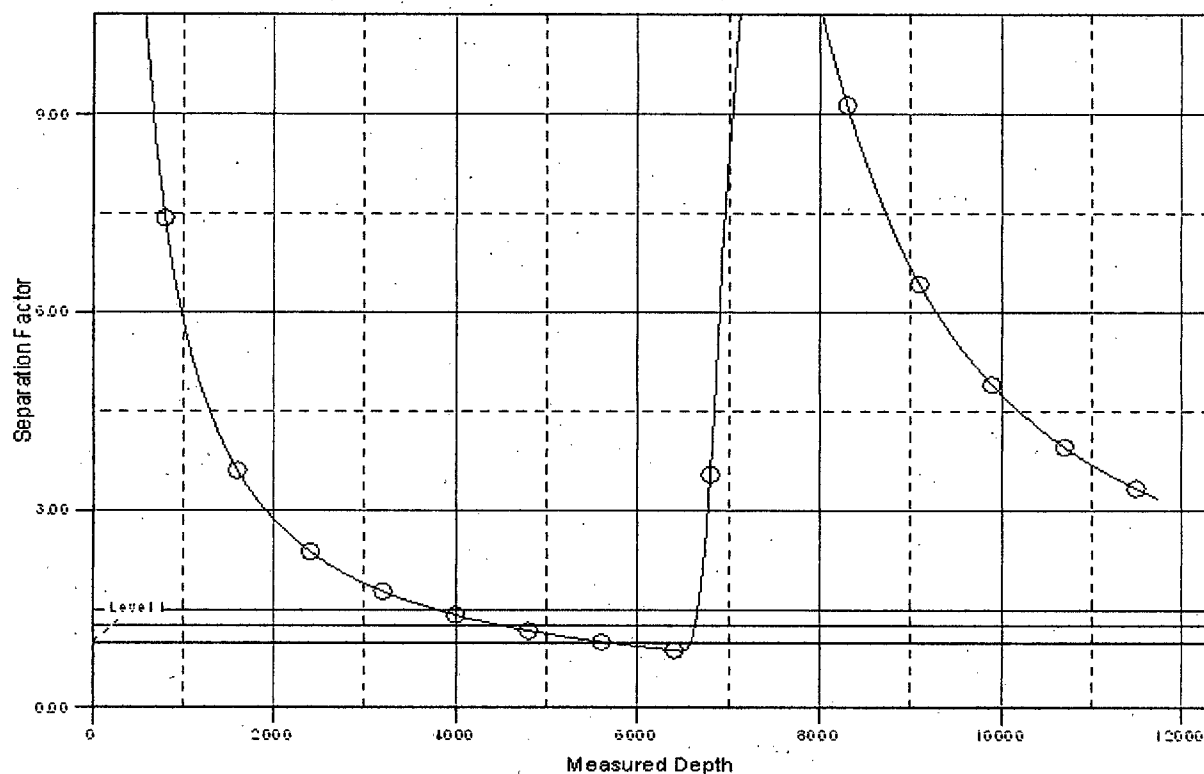
Central Meridian is 104° 20' 0.000 W °

Coordinates are relative to: East Pecos Fed 22-8H

Coordinate System is US State Plane 1983, New Mexico Eastern Zone

Grid Convergence at Surface is: 0.19°

### Separation Factor Plot

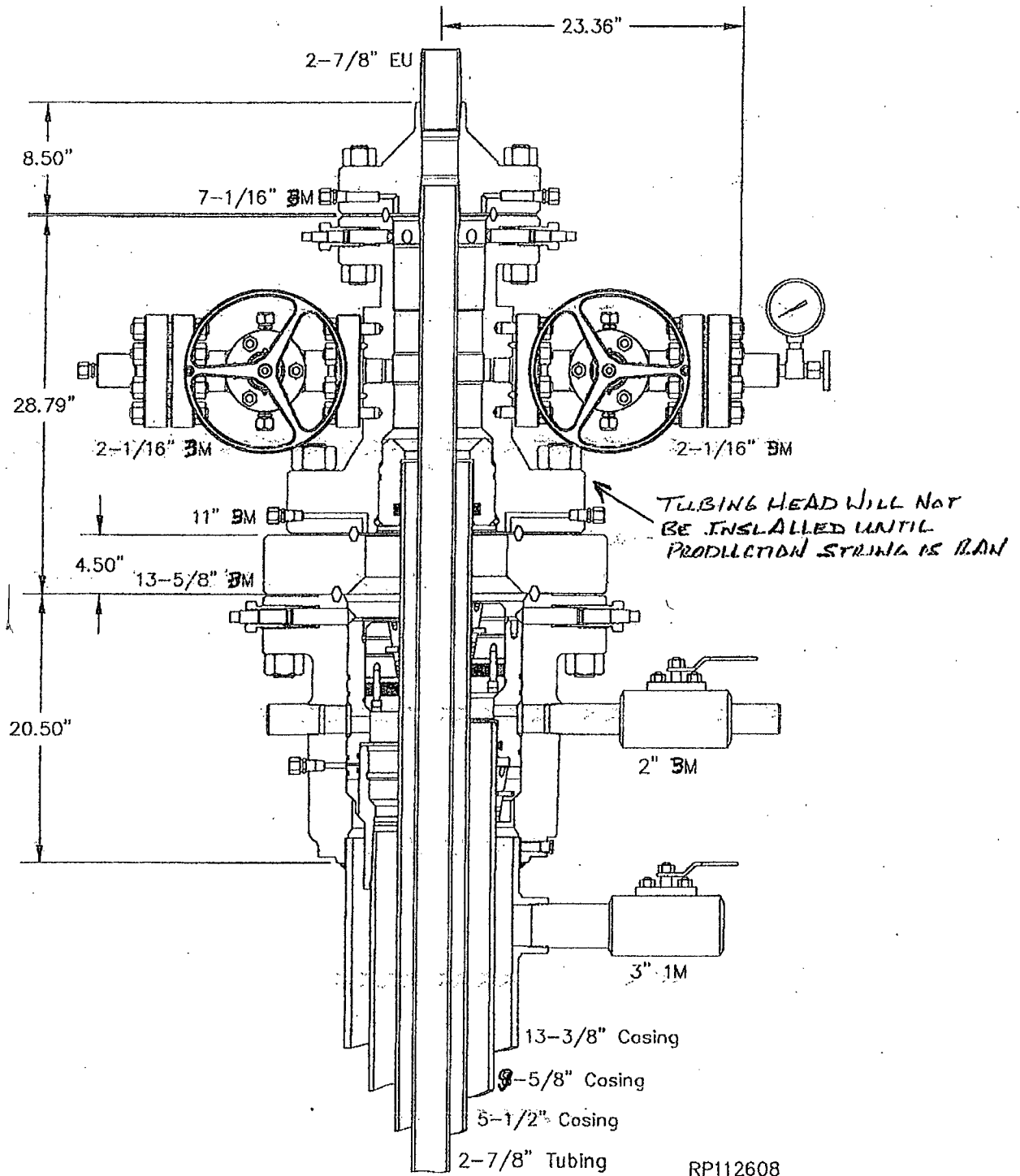


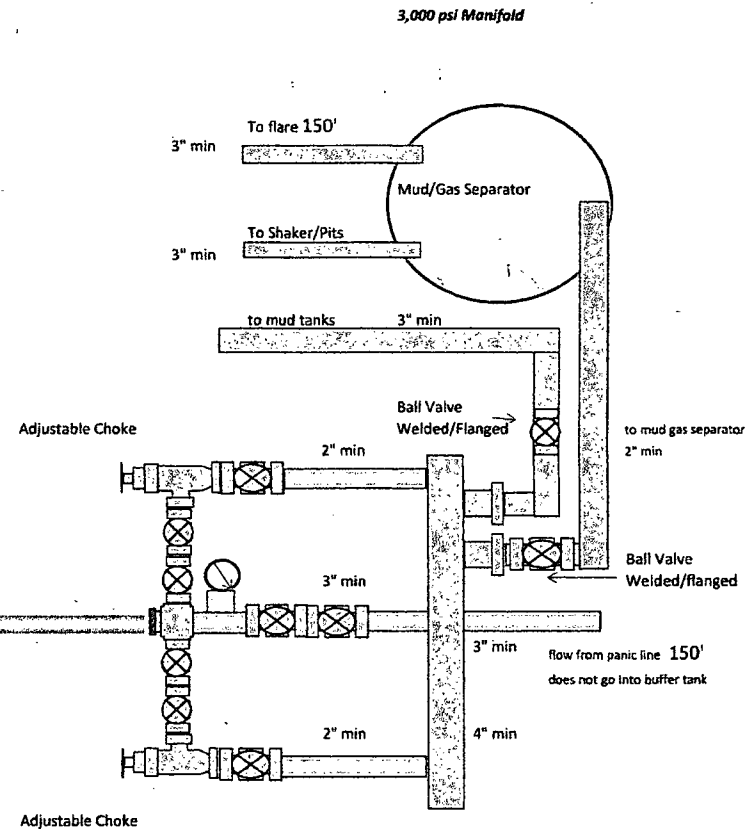
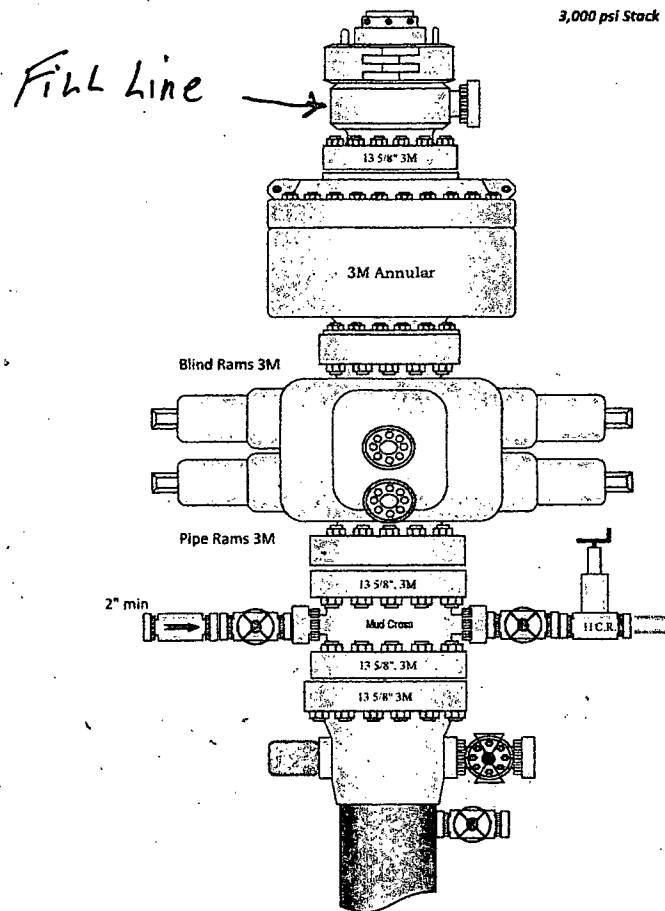
#### LEGEND

○ East Pecos Fed 22-7 H, Wellbore #1, Prelim Plan V0

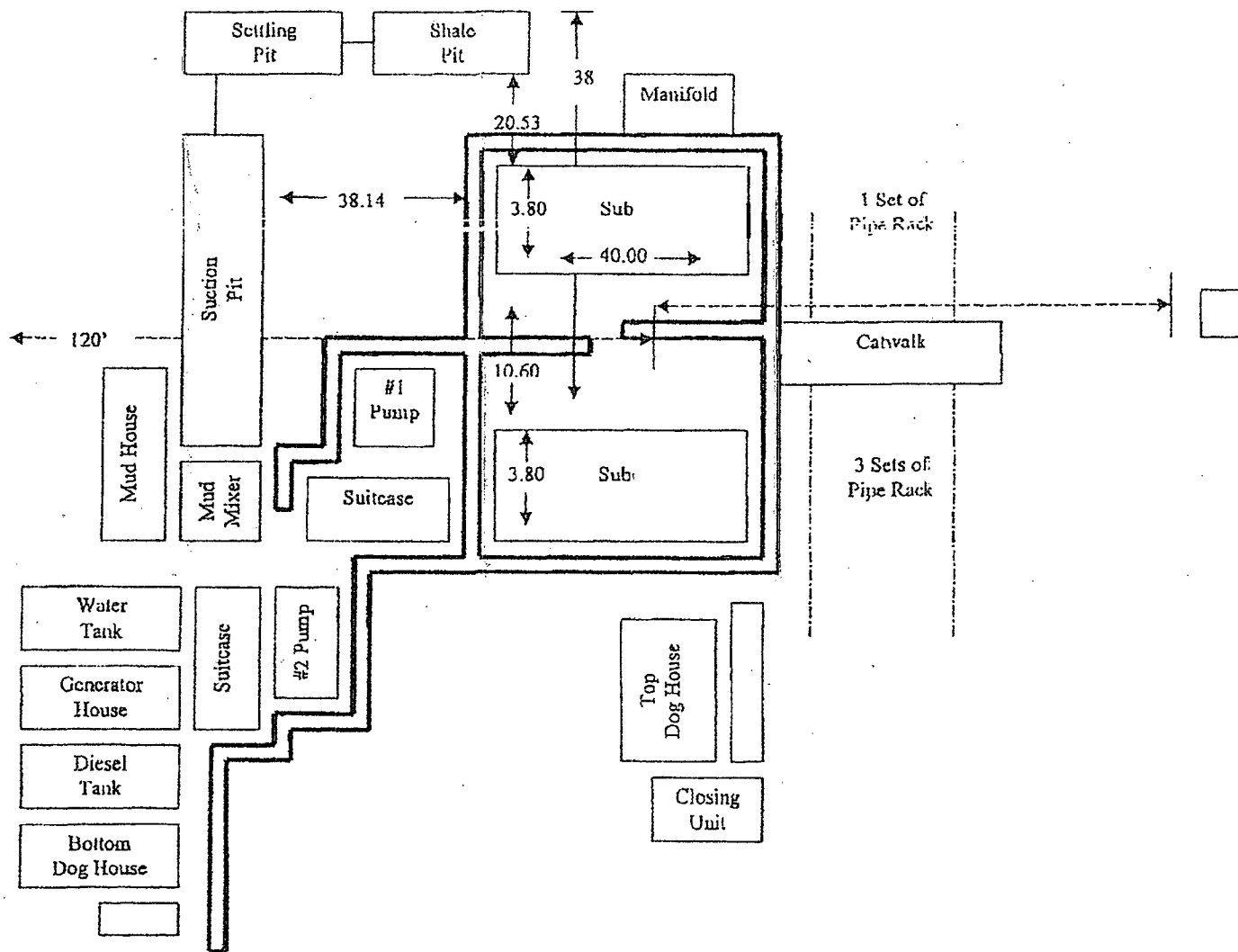
# GE Oil & Gas multi-bowl wellhead

## System Drawing



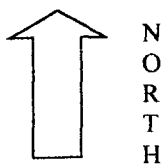
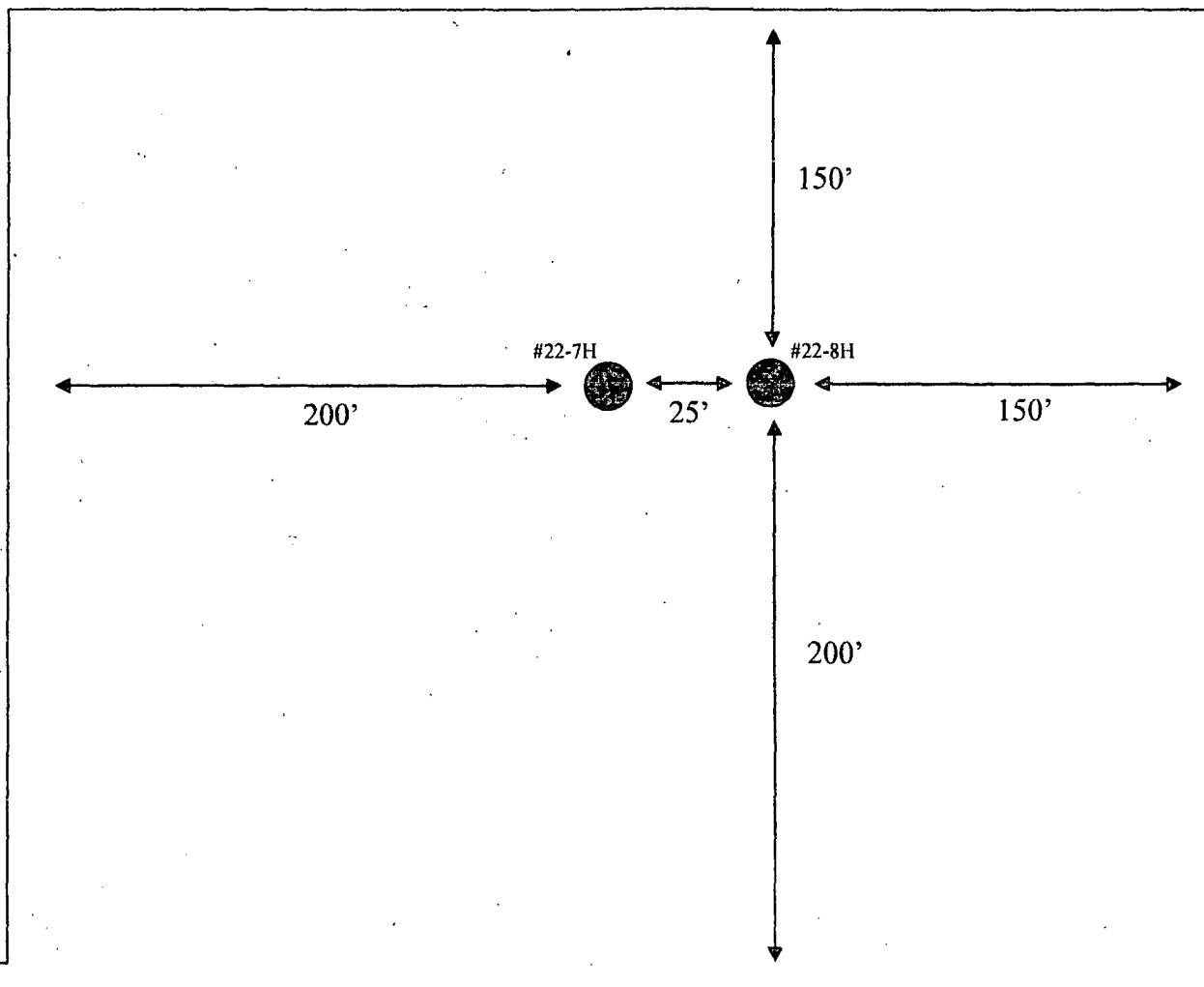


# Plat for Closed Loop System



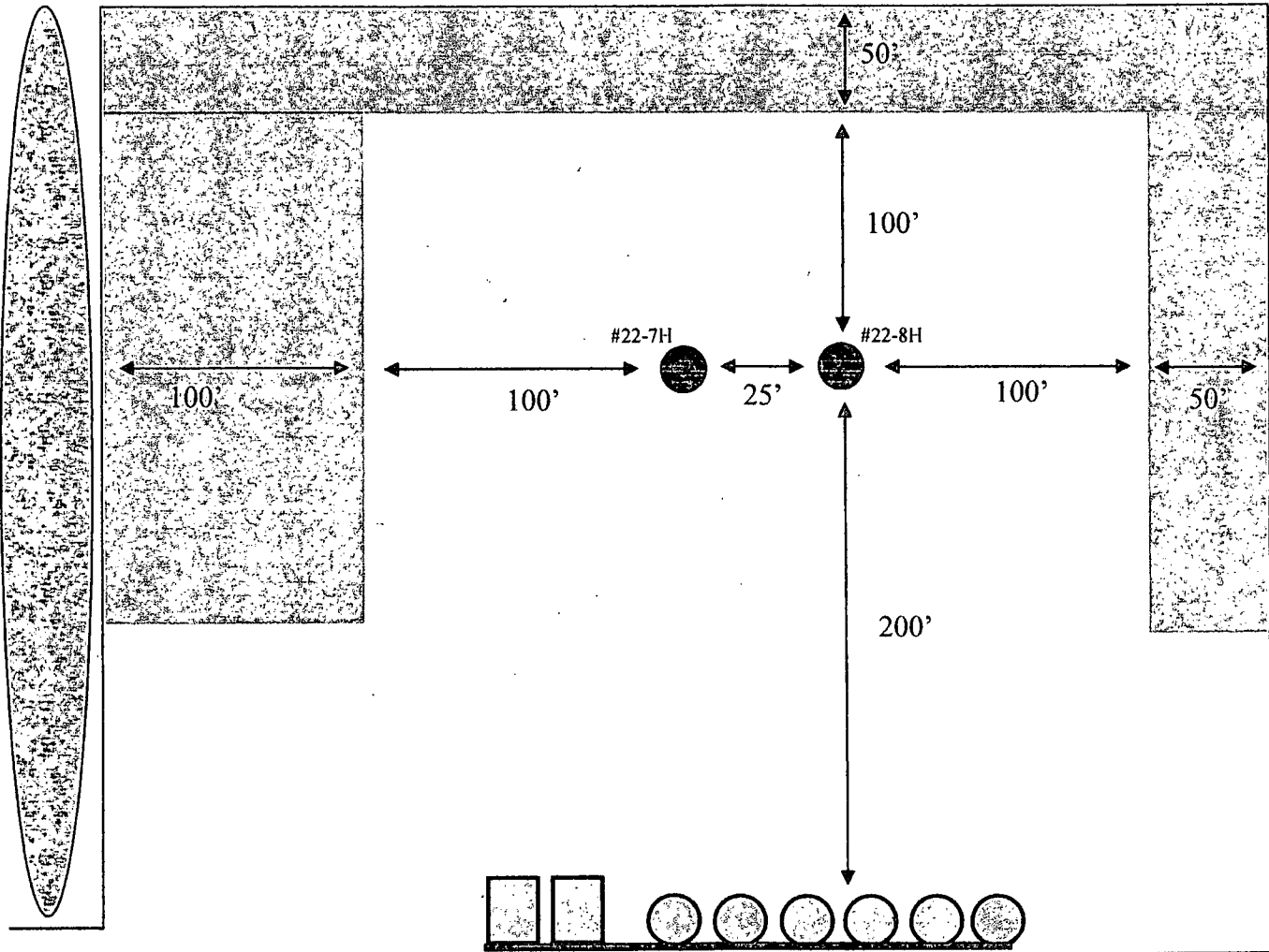
**EXHIBIT D**

**Rig Plat Only**  
**EAST PECOS FEDERAL COM 22-7H & 8H**  
**V-DOOR EAST**



**EXHIBIT C**

**Interim Reclamation & Production Facilities  
EAST PECOS FEDERAL COM 22-7H & 8H  
V-DOOR EAST**



**LEGEND**



Well Bore



Topsoil



Interim Reclamation



Berm



Production Facilities



NORTH



# **RKI** Exploration & Production LLC

3817 NW Expressway, Suite 950, Oklahoma City, OK 73112  
405-949-2221 Fax 405-949-2223

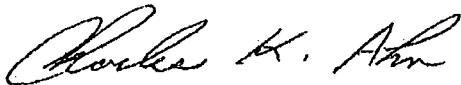
June 25<sup>th</sup>, 2012

To Whom It May Concern:

Please be advised that Mr. Barry Hunt has been retained by RKI Exploration & Production to sign as our agent on Application for Permit to Drill (APD) as well as Right of Way applications within the States of New Mexico and Texas.

If you have any questions or require additional information, please feel free to contact me at (405) 996-5771.

Sincerely,



Charles K. Ahn  
EH&S/Regulatory Manager

## SURFACE USE PLAN

**RKI Exploration & Production, LLC**  
**East Pecos Federal Com 22-8H**  
**Surface Hole: 250 FSL & 965 FEL**  
**Bottom Hole: 230 FNL & 660 FEL**  
**Section 22, T. 26 S., R. 29 E**  
**Eddy County, New Mexico**

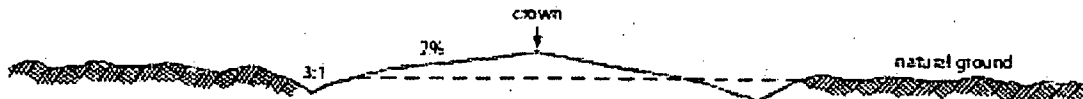
This plan is submitted with form 3160-3, Application for Permit to Drill, covering the above described well. The purpose of this plan is to describe the location of the proposed well, the proposed construction activities and operations plan, the magnitude of the surface disturbance involved and the procedures 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 7.8 miles. Turn south on lease road for 0.1 mile. Turn east on lease road for 0.6 mile. The proposed access road of 518 ft. will begin at this point. 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 is all on lease and on private surface and does not require 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 access road will begin at the southwest corner of the proposed well location and run west, for 518 ft. to the existing lease road to the East Pecos Federal 22-2H.
- 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 facility will be constructed on the south side of this pad. (**SEE EXHIBIT C**). There will also be a buried, 6" steel, gas pipeline (250 psi), that will follow the proposed access road (south side) to the existing gas pipeline at the East Pecos Fed 22-2H. There will also be a surface installed, 4" poly, flowline (oil/gas/water) that will follow the gas line to the existing line at the East Pecos Fed 22-2H. The gas and water line will be 557.7 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 berms 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 22-8H 25 ft. east of the 22-7H), 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 East.
- 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 George Ross Ranch, LLC. 3710 Rawlins Street, Suite 850, Dallas, Texas 75219. The ranch manager is Worth Ross. 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 gravelly loam, within a rolling hills type area. The vegetation consists of Mesquite, Creosote, White-Thorn Acacia 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 representatives 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 12/3/13 RESULTED IN PROPOSED LOCATION BEING MOVED 305 FT. WEST, DUE TO A SMALL PLAYA AREA AND CONCRETE IRRIGATION DITCH, WHERE ORIGINALLY STAKED. IT WAS AGREED TO TURN THE LOCATION TO A V-DOOR EAST AND ACCESS ROAD TO WEST. BATTERY WILL BE PLACED ON THE SOUTH SIDE OF PAD AND TOP SOIL TO THE WEST. INTERIM RECLAMATION WOULD BE THE NORTH, EAST, AND WEST PORTION OF PAD.**

**PRESENT AT ON-SITE:**

**BARRY HUNT – PERMIT AGENT FOR RKI EXPLORATION & PRODUCTION  
INDRA DAHAL – BLM  
WTC SURVEYORS**