

Amended Page 1

ATS-13-64

Form 3160-3
(March 2012)

BLM Carlsbad Field Office

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NM-20965
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name TCS 2/6/2013
2. Name of Operator RKI EXPLORATION & PRODUCTION, LLC. <246289>		7. If Unit or CA Agreement, Name and No. <39027>
3a. Address 210 PARK AVENUE, SUITE 900 OKLAHOMA CITY, OK. 73102	3b. Phone No. (include area code) 405-996-5748 (BRENT UMBERHAM)	8. Lease Name and Well No. RDX FEDERAL 17-18 <39027>
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 2310 FSL & 990 FWL At proposed prod. zone 2227 FSL & 413 FWL		9. API Well No. 30-015-40996
14. Distance in miles and direction from nearest town or post office* 14 MILES SOUTHEAST OF MALAGA, NM		10. Field and Pool, or Exploratory BRUSHY DRAW DELAWARE EAST <8090>
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) BHL: 413'	16. No. of acres in lease 520	11. Sec., T. R. M. or Blk. and Survey or Area SECTION 17, T. 26 S., R. 30 E.
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 660' - #13	19. Proposed Depth MD: 7401 TVD: 7360	12. County or Parish EDDY
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3089' GL	22. Approximate date work will start*	13. State NM
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:

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 <i>Barry W. Hunt</i>	Name (Printed/Typed) BARRY W. HUNT	Date 10/15/12
Title PERMIT AGENT FOR RKI EXPLORATION & PRODUCTION, LLC.		
Approved by (Signature) <i>James A. Amos</i>	Name (Printed/Typed) James A. Amos	Date 1-10-13
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)

*(Instructions on page 2)

Carlsbad Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVALApproval Subject to General Requirements
& Special Stipulations Attached

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102
Revised October 12, 2005

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number 30-015-40996	Pool Code 8090	Pool Name Brushy Draw Delaware East
Property Code 39027	Property Name RDX FEDERAL "17"	Well Number 18
GRID No. 246289	Operator Name RKI EXPLORATION & PRODUCTION	Elevation 3089'

Surface Location

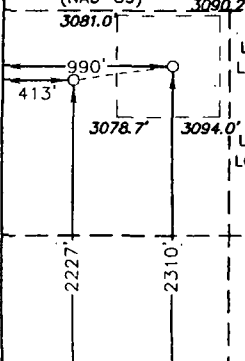
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	17	26 S	30 E		2310	SOUTH	990	WEST	EDDY

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
L	17	26 S	30 E		2227	SOUTH	413	WEST	EDDY

Dedicated Acres 40	Joint or Infill	Consolidation Code	Order No. 7200
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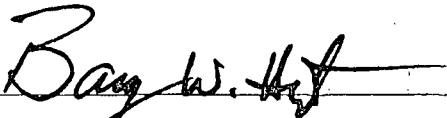
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

BOTTOM HOLE LOCATION LAT N.: 32°02'29.20" LONG W.: 103°54'30.08" SPC N.: 378975.442 E.: 631105.251 (NAD-27) LAT N.: 32°02'28.36" LONG W.: 103°54'36.79" SPC N.: 379032.958 E.: 672291.167 (NAD-83) SURFACE LOCATION LAT N.: 32°02'29.20" LONG W.: 103°54'30.08" SPC N.: 379062.097 E.: 631681.700 (NAD-27) LAT N.: 32°02'29.65" LONG W.: 103°54'31.81" SPC N.: 379119.613 E.: 672867.623 (NAD-83) 	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 pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Barry W. Hunt</i> 10/12/12 Signature Date Barry W. Hunt Printed Name SURVEYOR 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. FEBRUARY 3, 2012 Date Surveyed <i>Gary L. Jones</i> Signature & Seal Professional Surveyor W. Gary L. Jones 7970 Certificate No. Gary L. Jones 7977 BASIN SURVEYS
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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 12th day of October 2012.

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

RKI Exploration & Production LLC

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

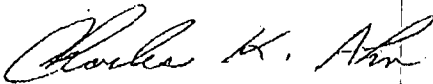
June 25th, 2012

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

DRILLING PLAN

Well RDX Fed 17-18

SL: 2,310 FSL 990 FWL

BHL: 2,227 FSL 413 FWL

Section 17-26S-30E

County Eddy

State New Mexico

- 1) The elevation of the unprepared ground is 3,089 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 7,360 feet and run casing. This equipment will then be rigged down and the well will be completed with a workover rig.

4) Proposed depth is: 7,360 feet TVD 7,401 feet MD

5) Estimated tops:	TVD	MD	
Alluvium	*		
Rustler	927		
Salado	1,276	1,285	
Castile	1,756	1,766	
Lamar Lime	3,297	3,319	
Base of Lime	3,494	3,519	
Delaware Top	3,530	3,555	
Bell Canyon Sand	3,530	3,555 Oil	1,528 psi
Cherry Canyon Sand	4,596	4,566 Oil	1,990 psi
Brushy Canyon Sand	5,654	5,695 Oil	2,448 psi
Bone Spring	7,313	7,353	
TD	7,360	7,401	144 degree F

The Bone Spring will be penetrated as rathole to enable the entire Brushy Canyon to be logged.

* Fresh water is anticipated at approximately 180 feet.

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 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 setting the 13 3/8" string. 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 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.

SC
COA

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	950	13 3/8"	54.5#/J-55	ST&C	2.75	5.58	9.93
12 1/2"	0	3,400	9 5/8"	40#/J-55	LT&C	1.37	5.45	3.82
7 7/8"	0	7,401	5 1/2"	17#/N-80	LT&C	1.96	1.55	2.77

8) Cement program:

Surface 17 1/2" hole
 Pipe OD 13 3/8"
 Setting Depth 950 ft
 Annular Volume 0.69462 cf/ft
 Excess 1 100 %

Lead 601 sx 1.75 cf/sk 13.5 ppg
 Tail 200 sx 1.34 cf/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 1/2" hole
 Pipe OD 9 5/8"
 Setting Depth 3,400 ft
 Annular Volume 0.31318 cf/ft 0.3627 cf/ft
 Excess 1 100 %
 Total Annular Volume 1112 cf
 With Excess 2224 cf

Lead 779 sx 2.07 cf/sk 12.6 ppg
 Tail 200 sx 1.33 cf/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 7 7/8" hole
 Pipe OD 5 1/2"
 Setting Depth 7,401 ft
 Annular Volume 0.1733 cf/ft 0.26074 cf/ft 300 ft
 Excess 0.35 35 %
 Total Annular Volume 772 cf
 With Excess 1,042 cf
 DV Tool Depth 5,500 ft

Stage 1

Lead: 303 sx 1.47 cf/sk 13.0 ppg

Lead: PVL + 2% PF174 + .3% PF167 + .1% PF65 + .2% PF13 + .25 pps PF46

Top of cement: DV tool

Stage 2

Lead: 166 sx 2.04 cf/sk 12.6 ppg

Tail: 175 sx 1.47 cf/sk 13.0 ppg

Lead: 35/65 Poz "C" + 5% PF44 + 6% PF20 + 3 pps PF42 + .2% PF13 + .125 pps PF130 + .25 pps PF46

Tail: PVL + 2% PF174 + .3% PF167 + .1% PF65 + .2% PF13 + .25 pps PF46

Top of cement: 3,100 ft

9) Mud program:

Top	Bottom	Mud Wt.	Vis	PV	YP	Fluid Loss	Type System
0	950	8.5 to 8.9	32 to 36	6 - 12	2 - 8	NC	Fresh Water
950	3,400	9.8 to 10.0	28 to 30	1 - 6	1 - 6	NC	Brine
3,400	7,401	8.9 to 9.1	28 to 36	1 - 6	1 - 6	NC	Fresh Water

10) Logging, coring, and testing program:

See COA

No drillstem 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.

Lost circulation is not anticipated, but lost circulation equipment will be on location and readily available if needed.

12) Anticipated Start Date

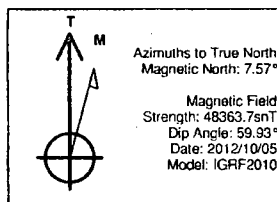
Nov '12

Duration

15 days

RKI Exploration & Production

Project: Eddy County (NM83E)
Site: Sec 17-T26S-R30E
Well: RDX 17-18
Wellbore: Wellbore #1
Design: Prelim Plan



Wolverine Directional

WELL DETAILS: RDX 17-18

Ground Level: 0.0
+N/-S +E/-W Northing Easting Latitude Longitude
0.0 0.0 379119.61 672867.62 32° 2' 29.649 N 103° 54' 31.811 W

SHL: 2310' FSL / 990' FWL
BHL 2227' FSL / 413' FWL

SECTION DETAILS

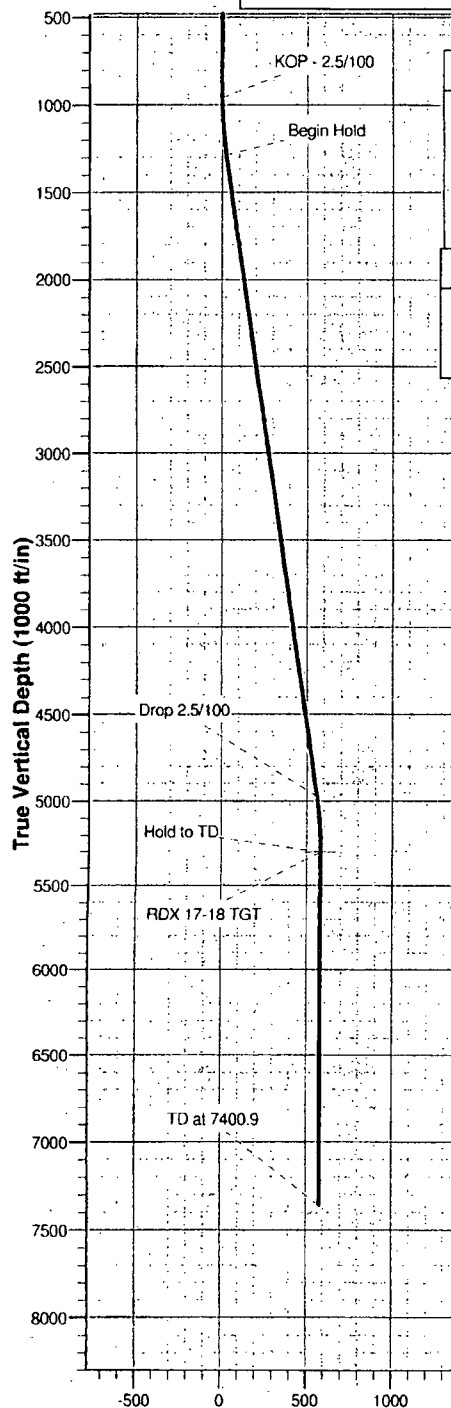
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	955.0	0.00	0.00	955.0	0.0	0.0	0.00	0.00	0.0	
3	1285.3	8.26	261.68	1284.1	-3.4	-23.5	2.50	261.68	23.8	
4	5013.7	8.26	261.68	4973.9	-80.9	-553.3	0.00	0.00	559.2	
5	5343.9	0.00	0.00	5303.0	-84.4	-576.8	2.50	180.00	582.9	RDX 17-18 TGT
6	7400.9	0.00	0.00	7360.0	-84.4	-576.8	0.00	0.00	582.9	

Wellbore Targets

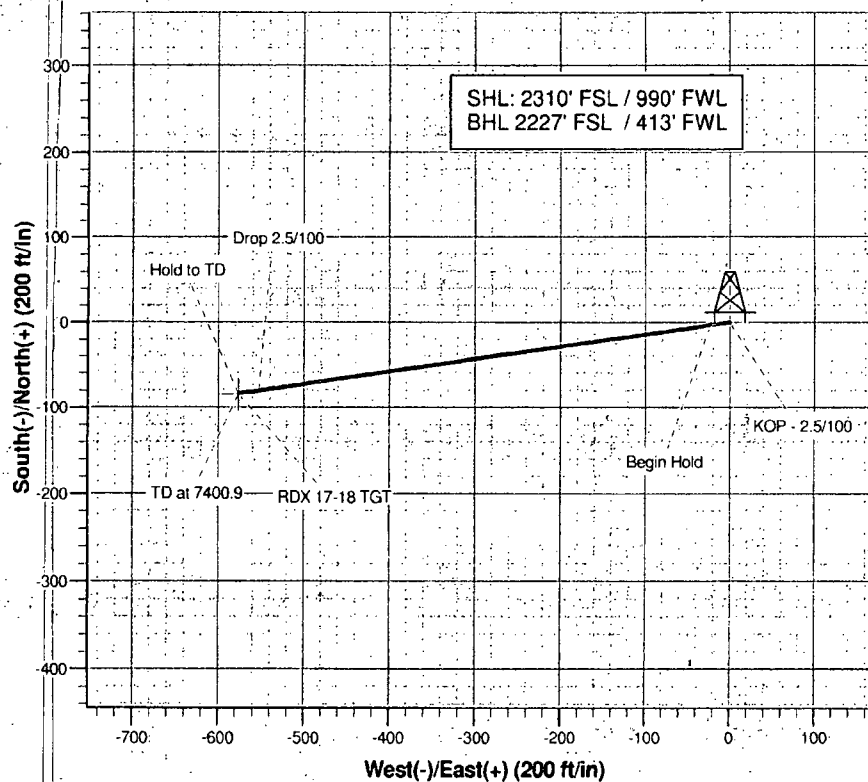
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
RDX 17-18 TGT	5303.0	-84.4	-576.8	379032.96	672291.17	Point

ANNOTATIONS

TVD	MD	Annotation
955.0	955.0	KOP - 2.5/100
1284.1	1285.3	Begin Hold
4973.9	5013.7	Drop 2.5/100
5303.0	5343.9	Hold to TD
7360.0	7400.9	TD at 7400.9



Vertical Section at 261.68° (1000 ft/in)



RKI Exploration & Production

Eddy County (NM83E)

Sec 17-T26S-R30E

RDX 17-18

Wellbore #1

Plan: Prelim Plan

Standard Planning Report

05 October, 2012

Wolverine Directional, LLC

Planning Report

Database:	EDM.2003.21 Single User Db	Local Co-ordinate Reference:	Well RDX 17-18
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 17-T26S-R30E	North Reference:	True
Well:	RDX 17-18	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 17-T26S-R30E		
Site Position:		Northing:	377,154.62ft
From:	Map	Easting:	674,928.68ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	32° 2' 10.122 N
		Longitude:	103° 54' 7.956 W
		Grid Convergence:	0.23 °

Well:	RDX 17-18		
Well Position	+N/-S	1,973.1 ft	Northing:
	+E/-W	-2,053.3 ft	Easting:
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	32° 2' 29.649 N
		Longitude:	103° 54' 31.811 W
		Ground Level:	0.0ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2012/10/05	7.57	59.93	48,364

Design:		Prelim Plan		
Audit Notes:				
Version:		Phase:	PROTOTYPE	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	261.68

Plan Sections:										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(ft)	(ft)	Rate	Rate	Rate	(°)	
(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	
955.0	0.00	0.00	955.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,285.3	8.26	261.68	1,284.1	-3.4	-23.5	2.50	2.50	0.00	261.68	
5,013.7	8.26	261.68	4,973.9	-80.9	-553.3	0.00	0.00	0.00	0.00	
5,343.9	0.00	0.00	5,303.0	-84.4	-576.8	2.50	-2.50	0.00	180.00	RDX 17-18 TGT
7,400.9	0.00	0.00	7,360.0	-84.4	-576.8	0.00	0.00	0.00	0.00	

Wolverine Directional, LLC

Planning Report

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well RDX 17-18
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 17-T26S-R30E	North Reference:	True
Well:	RDX 17-18	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
955.0	0.00	0.00	955.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP 2.5/100									
1,000.0	1.12	261.68	1,000.0	-0.1	-0.4	0.4	2.50	2.50	0.00
1,100.0	3.62	261.68	1,099.9	-0.7	-4.5	4.6	2.50	2.50	0.00
1,200.0	6.12	261.68	1,199.5	-1.9	-12.9	13.1	2.50	2.50	0.00
1,285.3	8.26	261.68	1,284.1	-3.4	-23.5	23.8	2.50	2.50	0.00
Begin Hold									
1,300.0	8.26	261.68	1,298.7	-3.7	-25.6	25.9	0.00	0.00	0.00
1,400.0	8.26	261.68	1,397.7	-5.8	-39.8	40.2	0.00	0.00	0.00
1,500.0	8.26	261.68	1,496.6	-7.9	-54.0	54.6	0.00	0.00	0.00
1,600.0	8.26	261.68	1,595.6	-10.0	-68.2	69.0	0.00	0.00	0.00
1,700.0	8.26	261.68	1,694.6	-12.1	-82.4	83.3	0.00	0.00	0.00
1,800.0	8.26	261.68	1,793.5	-14.1	-96.6	97.7	0.00	0.00	0.00
1,900.0	8.26	261.68	1,892.5	-16.2	-110.9	112.0	0.00	0.00	0.00
2,000.0	8.26	261.68	1,991.4	-18.3	-125.1	126.4	0.00	0.00	0.00
2,100.0	8.26	261.68	2,090.4	-20.4	-139.3	140.8	0.00	0.00	0.00
2,200.0	8.26	261.68	2,189.4	-22.5	-153.5	155.1	0.00	0.00	0.00
2,300.0	8.26	261.68	2,288.3	-24.5	-167.7	169.5	0.00	0.00	0.00
2,400.0	8.26	261.68	2,387.3	-26.6	-181.9	183.8	0.00	0.00	0.00
2,500.0	8.26	261.68	2,486.3	-28.7	-196.1	198.2	0.00	0.00	0.00
2,600.0	8.26	261.68	2,585.2	-30.8	-210.3	212.6	0.00	0.00	0.00
2,700.0	8.26	261.68	2,684.2	-32.9	-224.5	226.9	0.00	0.00	0.00
2,800.0	8.26	261.68	2,783.2	-34.9	-238.7	241.3	0.00	0.00	0.00
2,900.0	8.26	261.68	2,882.1	-37.0	-252.9	255.6	0.00	0.00	0.00
3,000.0	8.26	261.68	2,981.1	-39.1	-267.2	270.0	0.00	0.00	0.00
3,100.0	8.26	261.68	3,080.0	-41.2	-281.4	284.4	0.00	0.00	0.00
3,200.0	8.26	261.68	3,179.0	-43.2	-295.6	298.7	0.00	0.00	0.00
3,300.0	8.26	261.68	3,278.0	-45.3	-309.8	313.1	0.00	0.00	0.00
3,400.0	8.26	261.68	3,376.9	-47.4	-324.0	327.4	0.00	0.00	0.00
3,500.0	8.26	261.68	3,475.9	-49.5	-338.2	341.8	0.00	0.00	0.00
3,600.0	8.26	261.68	3,574.9	-51.6	-352.4	356.2	0.00	0.00	0.00
3,700.0	8.26	261.68	3,673.8	-53.6	-366.6	370.5	0.00	0.00	0.00
3,800.0	8.26	261.68	3,772.8	-55.7	-380.8	384.9	0.00	0.00	0.00
3,900.0	8.26	261.68	3,871.8	-57.8	-395.0	399.2	0.00	0.00	0.00
4,000.0	8.26	261.68	3,970.7	-59.9	-409.3	413.6	0.00	0.00	0.00
4,100.0	8.26	261.68	4,069.7	-62.0	-423.5	428.0	0.00	0.00	0.00
4,200.0	8.26	261.68	4,168.6	-64.0	-437.7	442.3	0.00	0.00	0.00
4,300.0	8.26	261.68	4,267.6	-66.1	-451.9	456.7	0.00	0.00	0.00
4,400.0	8.26	261.68	4,366.6	-68.2	-466.1	471.1	0.00	0.00	0.00
4,500.0	8.26	261.68	4,465.5	-70.3	-480.3	485.4	0.00	0.00	0.00
4,600.0	8.26	261.68	4,564.5	-72.3	-494.5	499.8	0.00	0.00	0.00
4,700.0	8.26	261.68	4,663.5	-74.4	-508.7	514.1	0.00	0.00	0.00
4,800.0	8.26	261.68	4,762.4	-76.5	-522.9	528.5	0.00	0.00	0.00
4,900.0	8.26	261.68	4,861.4	-78.6	-537.1	542.9	0.00	0.00	0.00

Wolverine Directional, LLC

Planning Report

Database	EDM 2003.21 Single User Db	Local Co-ordinate Reference	Well RDX-17-18
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 17-T26S-R30E	North Reference	True
Well	RDX-17-18	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)
5,000.0	-8.26	261.68	4,960.4	-80.7	-551.3	557.2	0.00	0.00	0.00
5,013.7	8.26	261.68	4,973.9	-80.9	-553.3	559.2	0.00	0.00	0.00
Drop 2.5/100									
5,100.0	6.10	261.68	5,059.5	-82.5	-564.0	570.0	2.50	-2.50	0.00
5,200.0	3.60	261.68	5,159.2	-83.7	-572.3	578.4	2.50	-2.50	0.00
5,300.0	1.10	261.68	5,259.1	-84.3	-576.4	582.5	2.50	-2.50	0.00
5,343.9	0.00	0.00	5,303.0	-84.4	-576.8	582.9	2.50	-2.50	223.82
Hold to TD - RDX-17-18 TGT									
5,400.0	0.00	0.00	5,359.1	-84.4	-576.8	582.9	0.00	0.00	0.00
5,500.0	0.00	0.00	5,459.1	-84.4	-576.8	582.9	0.00	0.00	0.00
5,600.0	0.00	0.00	5,559.1	-84.4	-576.8	582.9	0.00	0.00	0.00
5,700.0	0.00	0.00	5,659.1	-84.4	-576.8	582.9	0.00	0.00	0.00
5,800.0	0.00	0.00	5,759.1	-84.4	-576.8	582.9	0.00	0.00	0.00
5,900.0	0.00	0.00	5,859.1	-84.4	-576.8	582.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,959.1	-84.4	-576.8	582.9	0.00	0.00	0.00
6,100.0	0.00	0.00	6,059.1	-84.4	-576.8	582.9	0.00	0.00	0.00
6,200.0	0.00	0.00	6,159.1	-84.4	-576.8	582.9	0.00	0.00	0.00
6,300.0	0.00	0.00	6,259.1	-84.4	-576.8	582.9	0.00	0.00	0.00
6,400.0	0.00	0.00	6,359.1	-84.4	-576.8	582.9	0.00	0.00	0.00
6,500.0	0.00	0.00	6,459.1	-84.4	-576.8	582.9	0.00	0.00	0.00
6,600.0	0.00	0.00	6,559.1	-84.4	-576.8	582.9	0.00	0.00	0.00
6,700.0	0.00	0.00	6,659.1	-84.4	-576.8	582.9	0.00	0.00	0.00
6,800.0	0.00	0.00	6,759.1	-84.4	-576.8	582.9	0.00	0.00	0.00
6,900.0	0.00	0.00	6,859.1	-84.4	-576.8	582.9	0.00	0.00	0.00
7,000.0	0.00	0.00	6,959.1	-84.4	-576.8	582.9	0.00	0.00	0.00
7,100.0	0.00	0.00	7,059.1	-84.4	-576.8	582.9	0.00	0.00	0.00
7,200.0	0.00	0.00	7,159.1	-84.4	-576.8	582.9	0.00	0.00	0.00
7,300.0	0.00	0.00	7,259.1	-84.4	-576.8	582.9	0.00	0.00	0.00
7,400.9	0.00	0.00	7,360.0	-84.4	-576.8	582.9	0.00	0.00	0.00
TD at 7400.9									

Targets									
Target Name	hit/miss target	Dip Angle (°)	Dip Dir (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude Longitude
RDX-17-18 TGT	- plan hits target	0.00	0.00	5,303.0	-84.4	-576.8	379,032.96	672,291.17	32° 2' 28.814 N 103° 54' 38.512 W
- Point									

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment	
955.0	955.0	0.0	0.0	KOP - 2.5/100	
1,285.3	1,284.1	-3.4	-23.5	Begin Hold	
5,013.7	4,973.9	-80.9	-553.3	Drop 2.5/100	
5,343.9	5,303.0	-84.4	-576.8	Hold to TD	
7,400.9	7,360.0	-84.4	-576.8	TD at 7400.9	

3,000 psi Manifold

100' MSA - H₂S
150' H₂S

To flare

3" min



Mud/Gas Separator

To Shaker/Pits

3" min



to mud tanks

3" min



Adjustable Choke

2" min



to mud gas separator
3" min



3" min

Steel Flex Line or Steel Line

3" min



3" min

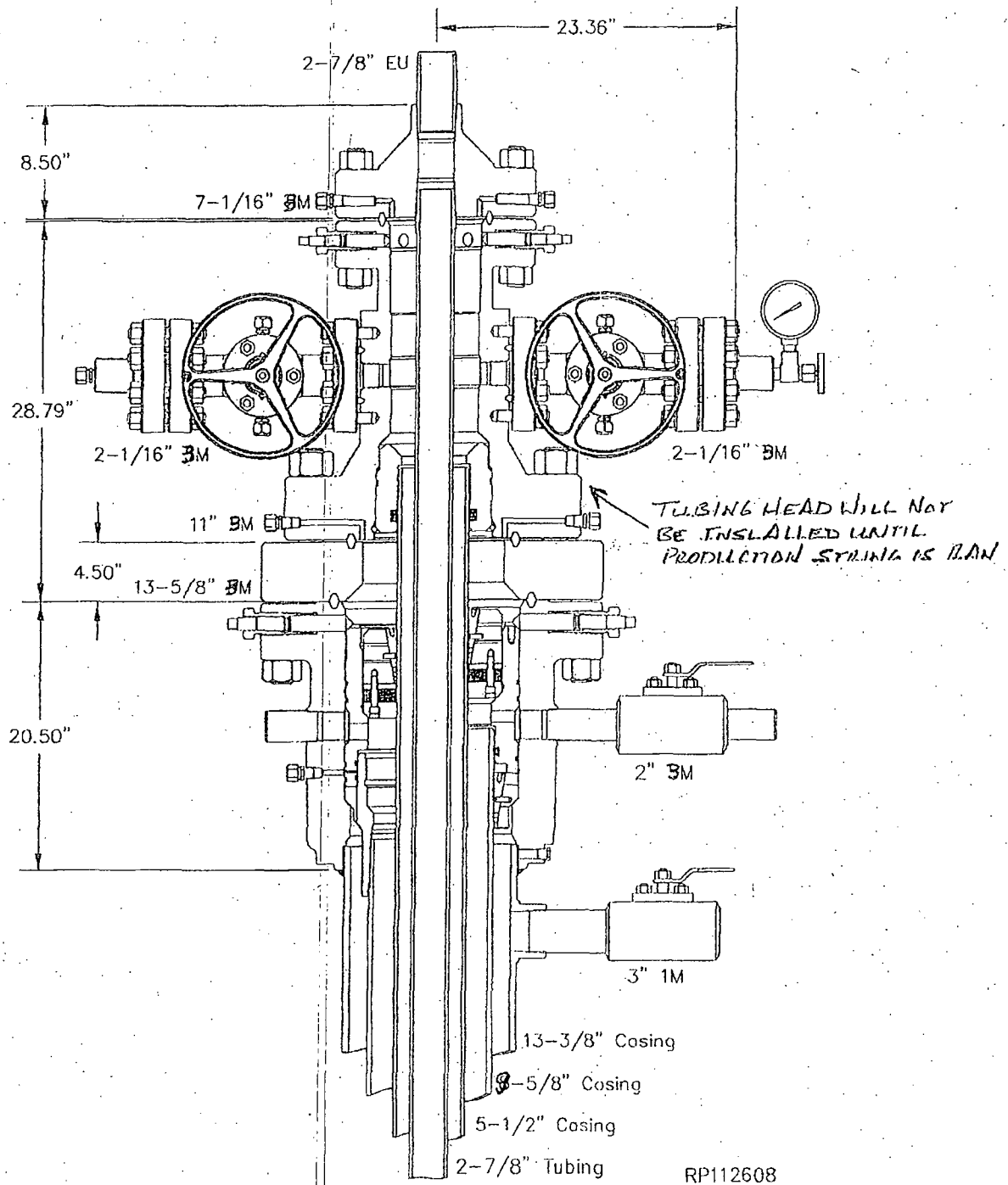
flow from panic line
does not go into buffer tank

4" min



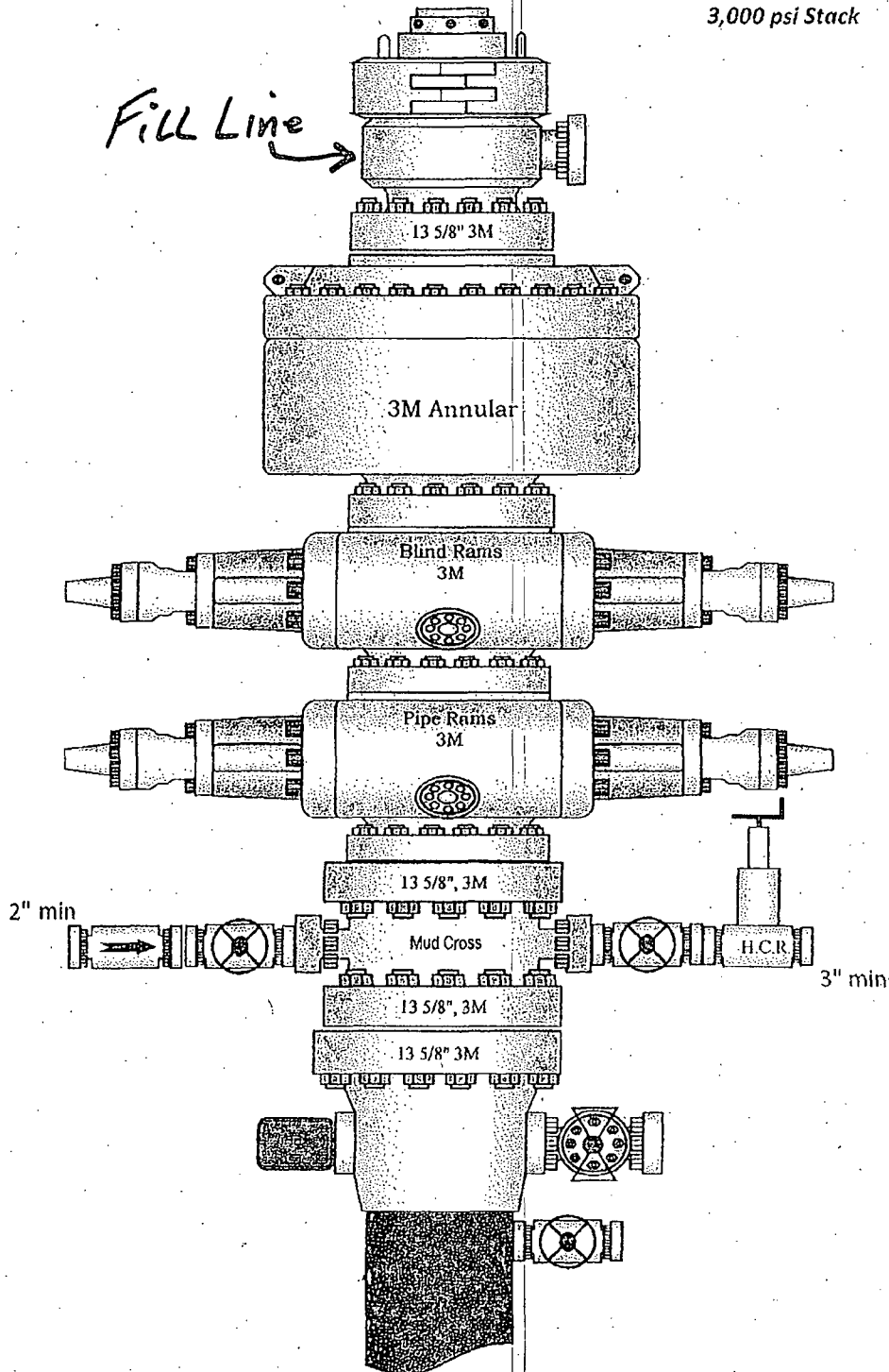
Adjustable Choke

System Drawing

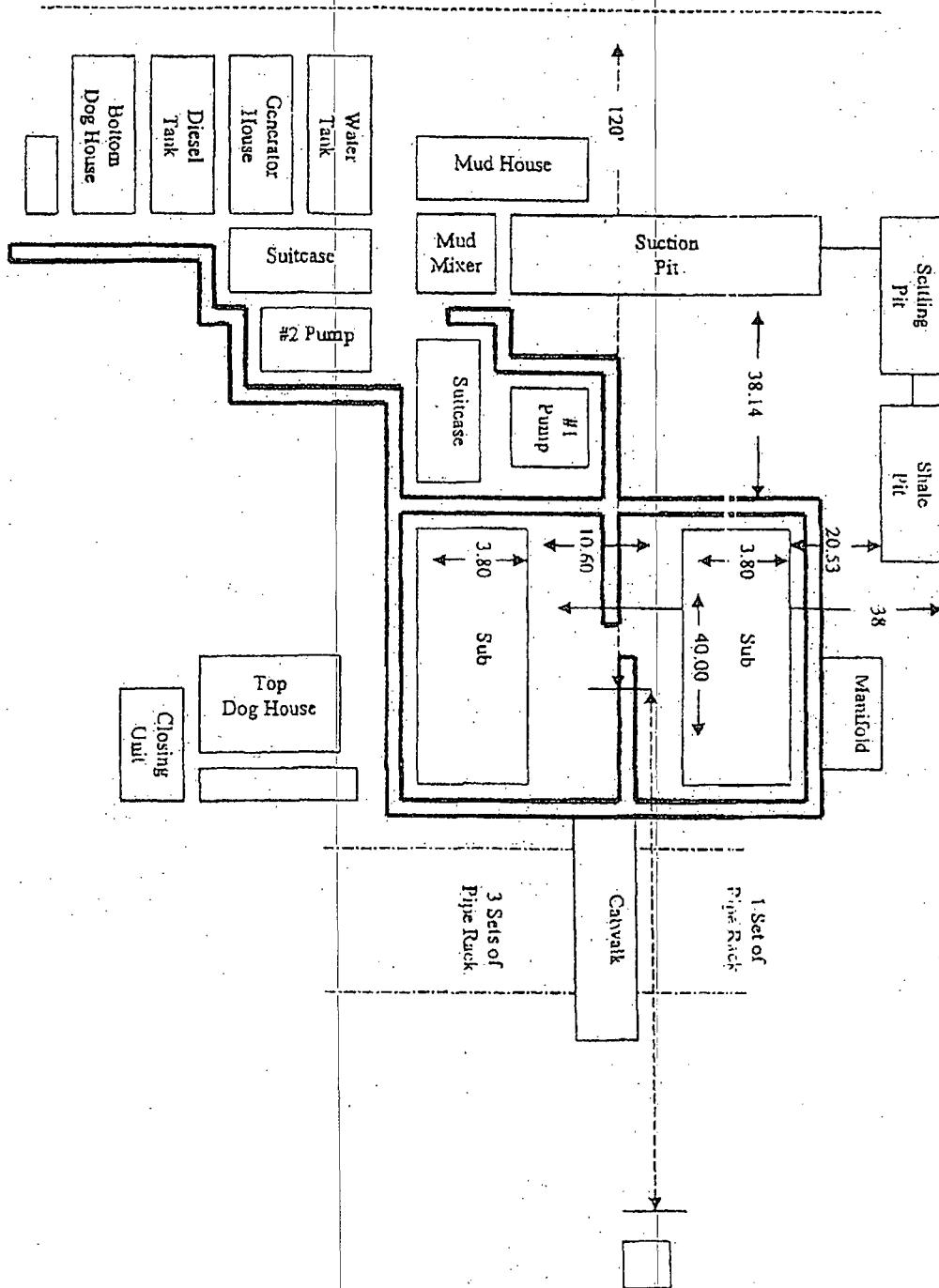


3,000 psi Stack

Fill Line



Plat for Closed Loop System



PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	RKI Exploration & Production
LEASE NO.:	NM20965
WELL NAME & NO.:	18 RDX Federal 17
SURFACE HOLE FOOTAGE:	2310' / FSL & 990' / FWL
BOTTOM HOLE FOOTAGE:	2227' / FSL & 413' / FWL
LOCATION:	Section 17, T.26 S., R.30 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.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**

Phantom Bank Heronries

- ☐ **Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads

- ☐ **Road Section Diagram**

- ☐ **Drilling**
 - Waste Material and Fluids

- ☐ **Production (Post Drilling)**
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- ☐ **Interim Reclamation**

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