

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

NM OIL & GAS DIVISION  
ARTESIA DISTRICT

FORM APPROVED  
OMB NO. 1004-0137  
Expires: January 31, 2018

SEP 11 2017

**SUNDRY NOTICES AND REPORTS ON WELLS**  
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.*

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**SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other		8. Well Name and No. RDX FEDERAL COM 17 37H
2. Name of Operator RKI EXPLORATION & PROD LL Contact: CRYSTAL FULTON E-Mail: crystal.fulton@wpenergy.com		9. API Well No. 30-015-43544
3a. Address 3500 ONE WILLIAMS CENTER MD35 TULSA, OK 74172	3b. Phone No. (include area code) Ph: 539-573-0218	10. Field and Pool or Exploratory Area PURPLE SAGE;WOLFCAMP(GAS)
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 17 T26S R30E 200FNL 760FWL		11. County or Parish, State EDDY COUNTY, NM

**12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleate horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleation in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

RKI EXPLORATION AND PRODUCTION, LLC requests to change the surface hole location and bottom hole location for the following well.

The pad is already constructed. There will be no new surface disturbance.

Please see attached updated plat, drilling plan, directional plan, and GEO Prog.

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

*Eng Okay 5/29/17 CRW*

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #379887 verified by the BLM Well Information System  
For RKI EXPLORATION & PROD LL, sent to the Carlsbad  
Committed to AFMSS for processing by DEBORAH MCKINNEY on 07/20/2017 ()

Name (Printed/Typed) CRYSTAL FULTON	Title PERMITTING TECH II
Signature (Electronic Submission)	Date 06/27/2017

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

Approved By <i>Crystal Fulton</i>	Title <i>FM</i> FIELD MANAGER	Date <i>08/30/17</i>
Conditions of approval, if any, are attached. Approval of this notice 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.		Office CARLSBAD FIELD OFFICE

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.

(Instructions on page 2)

**\*\* OPERATOR-SUBMITTED \*\* OPERATOR-SUBMITTED \*\* OPERATOR-SUBMITTED \*\***

*RF 9-13-17*

**NM OIL CONSERVATION**

State of New Mexico

ARTESIA DISTRICT

Form C-102

Energy, Minerals & Natural Resources Department

SEP 11 2017

Revised August 1, 2011

**OIL CONSERVATION DIVISION**

Submit one copy to appropriate

District Office

1220 South St. Francis Dr.

Santa Fe, NM 87505

RECEIVED

AMENDED REPORT

District I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720

District II  
811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720

District III  
1000 Rio Brazos Blvd. 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

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

<sup>1</sup> API Number 30-015-43544		<sup>2</sup> Pool Code 98220		<sup>3</sup> Pool Name PURPLE SAGE WOLFCAMP GAS POOL	
<sup>4</sup> Property Code		<sup>5</sup> Property Name RDX FEDERAL COM 17			<sup>6</sup> Well Number 37H
<sup>7</sup> OGRID No. 246289		<sup>8</sup> Operator Name RKI EXPLORATION & PRODUCTION, LLC			<sup>9</sup> Elevation 3071'

<sup>10</sup> Surface Location

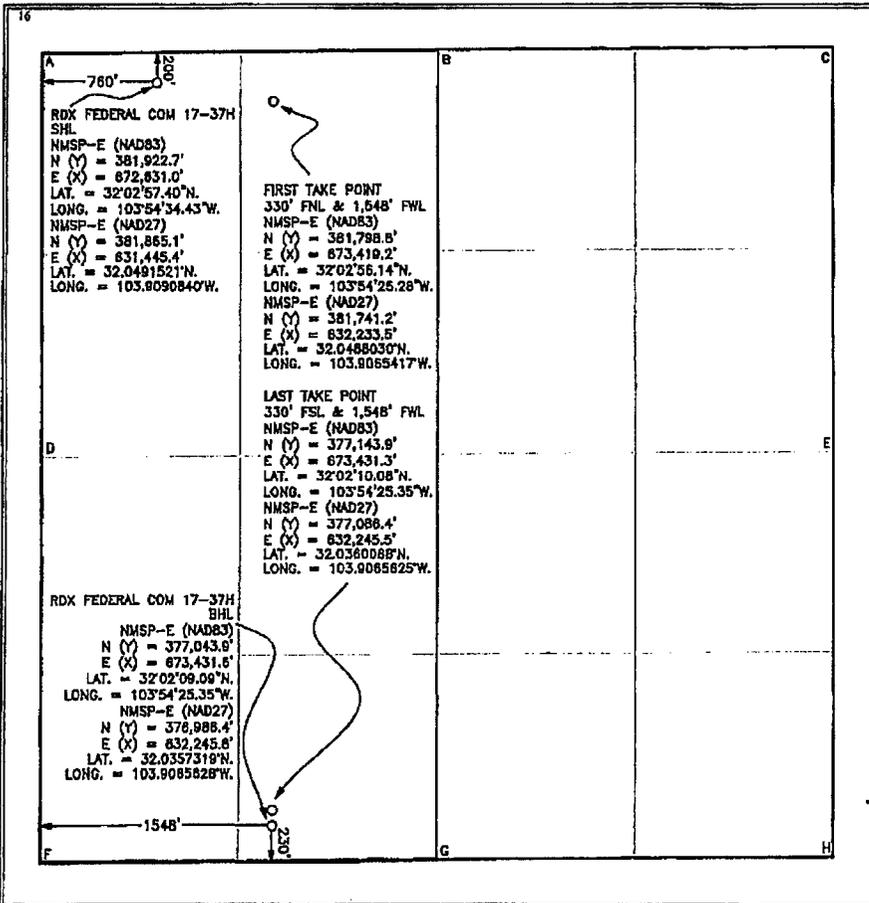
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	17	26 S	30 E		200	NORTH	760	WEST	EDDY

<sup>11</sup> 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
M	17	26 S	30 E		230	SOUTH	1548	WEST	EDDY

<sup>12</sup> Dedicated Acres 320.0	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
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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.



**17 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 a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: *Justin Barrese* Date: 03/24/2017  
 Printed Name: Justin Barrese  
 E-mail Address: justin.barrese@wpxaenergy.com

**18 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.

Date of Survey: 03-24-2017  
 Signature and Seal of Professional Surveyor: *[Signature]*

**MARK DILLON HARP**  
 NEW MEXICO  
 23786  
 PROFESSIONAL SURVEYOR

MARK DILLON HARP 23786  
 Certificate Number AI 2017020221

**RKI Exploration & Production, LLC.**



**Drilling Plan**

Well RDX Federal Com 17-37H  
 Location Surface: 200 FNL 760 FWL T26S R30E S17  
 Bottom Hole: 230 FSL 1548 FWL T26S R30E S17  
 County/State Eddy, NM

The elevation of the unprepared ground is 3,071 feet above sea level.

The geologic name of the surface formation is Quaternary - Alluvium

A rotary rig will be utilized to drill the well to 15631' MD, then will be cased and cemented. This equipment will then be rigged down and the well will be completed with a workover rig.

Proposed depth is 15,631 feet MD.

**1) Estimated Tops:**

Formation Name	MD	TVD	Bearing	BHP (psi)	MASP (psi)
Quaternary - Alluvium	GL	GL	Water		
Rustler Magenta Member (Base)	787	787	Water		
Bell Canyon Sand (Base Salt)	3,414	3,404	Oil/Gas		
Cherry Canyon Sand	4,548	4,528	Oil/Gas		
Brushy Canyon Sand	4,701	4,680	Oil/Gas		
1st Bone Spring Sand	8,206	8,155	Oil/Gas		
2nd Bone Spring Sand	9,021	8,970	Oil/Gas		
3rd Bone Spring Sand	10,119	10,068	Oil/Gas		
KOP	10,327	10,276			
Wolfcamp	10,515	10,459	Oil/Gas		
Landing Point (Wolfcamp)	11,077	10,753	Target Frm		
TD	15,631	10,753	Oil/Gas	6,989	4,624

**2) Notable Formations:**

Any usable fresh water zones encountered will be adequately protected and reported. All usable water zones, potential hydrocarbon zones, and valuable mineral zones will be isolated.

Useable water will be protected by surface casing set and cemented to surface.

**3) Pressure Control Equipment:**

The blowout preventer equipment (BOPE) will consist of 3 rams (10,000 psi WP) with 2 pipe rams (one of which may be variable), 1 blind ram and 1 annular preventer (5,000 psi WP) will be installed. The BOPE will be used below surface casing to TD. See attachments for BOP and choke manifold diagrams. A rotating head will be installed as needed. Units will be hydraulically operated.

An accumulator that meets the requirements of Onshore Order 2 for the pressure rating of the BOP stack will be present.

BOPE will be inspected and operated as recommended in Onshore Order 2. A third party company will test the BOPE. After surface casing is set and the BOPE is nipped up, pressure tests will be conducted to 250 psi low and 5000 psi high (50% of WP) with the annular tested to 250 psi low and 2500 psi high (50% of WP).

A 20" x 13-3/8" x 9-5/8" x 7" 10M multi-bowl wellhead w/ 9-5/8" and 7" mandrel hangers will be install after setting surface casing and utilized until total depth is reached. The 9-5/8" and 7" casings will be set using a mandrel in the casing head and the stack will not be retested at these casing points.

The following BOPE will be installed, tested and operational:

- Drilling spool or blowout preventer with two (2) side outlets;
  - Choke line side shall be 3" minimum diameter;
    - Two (2) adjustable chokes with one (1) remotely controlled from the rig floor and pressure gauge.
  - Kill side shall be at least 2" diameter;
    - Two (2) manual valves and one (1) check valve.

Auxiliary equipment is as follows:

- Upper kelly cock valve with a handle available;
- Lower kelly cock valve with a handle available;
- A float valve will be used in the drill string, either in a float sub or in the mud motor;
- Safety valves and subs with a full opening sized to fit all drill strings and collars will be available on the rig floor in the open position.

RKI Exploration & Production, LLC. requests a variance to drill this well using a co-flex line between the BOP and the choke manifold. Certification for proposed co-flex hose is attached. The hose is required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used.

4) Casing Program:

Section	Hole Size	Top (MD)	Bottom (MD)	Bottom (TVD)	Casing OD	Weight (ppf)	Grade	Threads
Surf	17-1/2"	0	787	787	13-3/8"	54.5	J-55	ST&C
Int_1	12-1/4"	0	3,414	3,404	9-5/8"	40.0	J-55	LT&C
Int_2	8-3/4"	0	11,077	10,753	7"	29.0	HCP-110	BT&C
Prod	6-1/8"	10,327	15,631	10,753	4-1/2"	13.5	HCP-110	CDC-HTC

Safety Factors	
Collapse	1.125
Burst	1.000
Tension	1.600

Design Factors			
Section	Collapse	Burst	Tension
Surf	3.26	15.77	11.98
Int_1	1.72	5.27	3.81
Int_2	1.94	4.74	2.97
Prod	2.26	5.25	2.10

Centralizers will be run as follows:

- One (1) centralizer on each of the bottom three jts of casing beginning with the shoe jt;
- One (1) centralizer every third jt from above bottom three jts to planned top of cement (TOC).

5) Cement Program:

Section	Hole Size	Casing OD	Cap <sub>Ann</sub> (cuft/ft)	Type	Cmt Btm	Cmt Top	Cubic Feet	Yield	Excess	Sacks	Weight	Blend & Additives
Surf	17.50	13.375	0.6946	Lead	530	0	368	1.74	50%	317	13.5	Class C + 4% Gel + 2% CaCl + 0.4 pps Defoamer + 0.125 pps Celloflake
				Tail	787	530	134	1.34	50%	200	14.8	Class C + 2% Calcium

Section	Hole Size	Casing OD	Cap <sub>Ann</sub> (cuft/ft)	Prev Csg ID	Cap <sub>Csg-Csg</sub> (cuft/ft)	Type	Cmt Btm	Cmt Top	Cubic Feet	Yield	Excess	Sacks	Weight	Blend & Additives
Int_1	12.25	9.625	0.3132	12.615	0.3627	Lead	787	0	285	1.92	0%	531	12.9	Class C/Poz 35/65 + 5% Salt + 6% Gel + 0.5% Retarder + 3 pps LCM + 0.4 pps Defoamer + 0.125 pps Celloflake
							2740	787	612		20%			
						Tail	3414	2740	211	1.32	20%	200	14.8	Class C

Section	Hole Size	Casing OD	Cap <sub>Ann</sub> (cuft/ft)	Prev Csg ID	Cap <sub>Csg-Csg</sub> (cuft/ft)			
Int_2	8.75	7.00	0.1503	8.835	0.1585			
Type	Cmt Btm	Cmt Top	Cubic Feet	Yield	Excess	Sacks	Weight	Blend & Additives
Lead	3414	2914	79	2.67	0%	497	11.2	TXI Lightweight + 10% Gel + 8% Plex Crete + 0.9% Retarder + 0.7 pps FL + 3 pps LCM + 0.4 pps Defoamer + 0.125 pps CelloFlake
	10327	3414	1039		20%			
Tail	11077	10327	113	1.18	20%	115	15.6	Class H + 0.3% Retarder

Section	Hole Size	Casing OD	Cap <sub>Ann</sub> (cuft/ft)	Prev Csg ID	Cap <sub>Csg-Csg</sub> (cuft/ft)			
Prod	6.125	4.50	0.0942	6.184	0.0981			
Type	Cmt Btm	Cmt Top	Cubic Feet	Yield	Excess	Sacks	Weight	Blend & Additives
Tail	11077	10327	74	1.89	0%	311	13.0	Acid Soluble TXI + 1.3% Salt + 30% CaCl + 5% Plexaid + 0.7% FL + 0.3% Retarder + 0.1% Antisettling + 0.4 pps Defoamer
	15631	11077	429		20%			

#### 6) Drilling Fluids Program:

An electronic mud monitoring system satisfying the requirements of Onshore Order 1 will be used. All necessary mud products for weight addition and fluid loss control will be on location at all times. Mud program is subject to change due to hole conditions.

Section	Hole Size	TMD	Mud Wt.	Vis	PV	YP	Fluid Loss	Type
Surf	17-1/2"	787	8.5 to 8.9	32 to 36	1 - 6	1 - 6	NC	Fresh Wtr
Int_1	12-1/4"	3,414	9.8 to 10.0	28 to 30	1 - 3	1 - 3	NC	Brine
Int_2	8-3/4"	11,077	8.9 to 9.4	28 to 36	1 - 3	1 - 3	NC	Cut Brine
Prod	6-1/8"	15,631	10.5 to 12.5	50 to 55	20-22	8 - 10	8 - 10	OBM

Mud checks will be performed every 24 hours.

The following mud system monitoring equipment will be in place during drilling:

- Visual pit markers
- Pit volume totalizer (PVT)
- Stroke counter
- Gas detection
- Mud-gas separator (gas buster)
- Flow sensor

A closed-loop system will be in place during all phases of drilling. Cuttings disposal will be at an off-site disposal facility.

#### 7) Formation Evaluation Program:

No core or drill stem test is planned.

A 2-person mud-logging program will be used from Int\_1 9-5/8" casing point to TD.

No electronic logs are planned.

#### 8) Abnormal Conditions:

No abnormal pressure or temperature is expected.

Maximum expected bottom hole pressure is 6989 psi at 10753' TVD. Expected bottom hole temperature is <200°F.

In accordance with Onshore Order 6, RKI Exploration & Production, LLC does not anticipate that there will be enough H2S to meet the BLM's minimum requirements for the submission of an "H2S Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. However, since RKI Exploration & Production, LLC has an H2S safety package on all wells, an "H2S Drilling Operations Plan" is attached.

Adequate flare lines will be installed off the mud/gas separator where gas may be flared safely.

All personnel will be familiar with all aspects of safe operation of equipment being used.

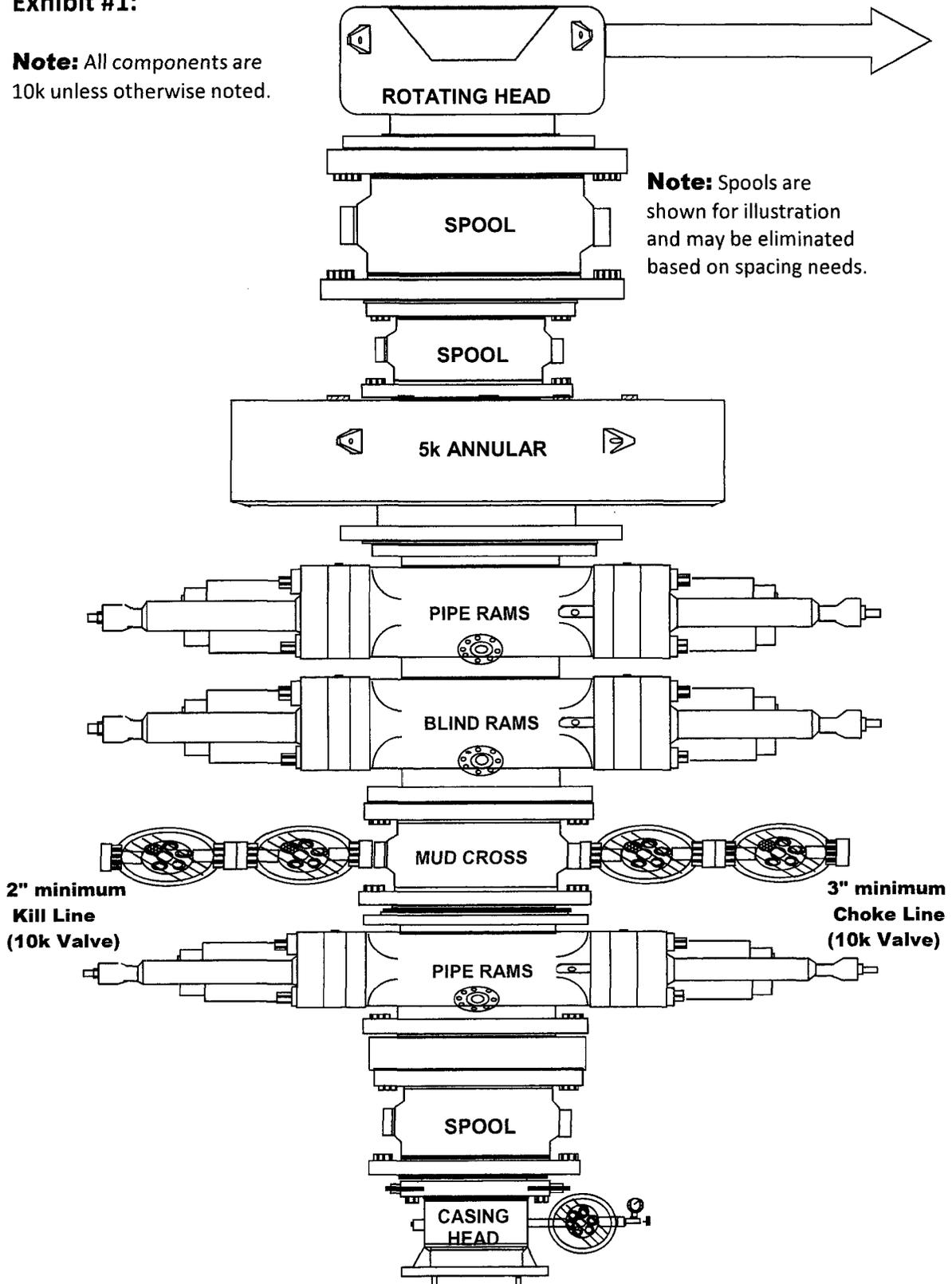
**9) Other Information**

The anticipated spud date is upon approval. Expected duration is 30 days to drill the well.

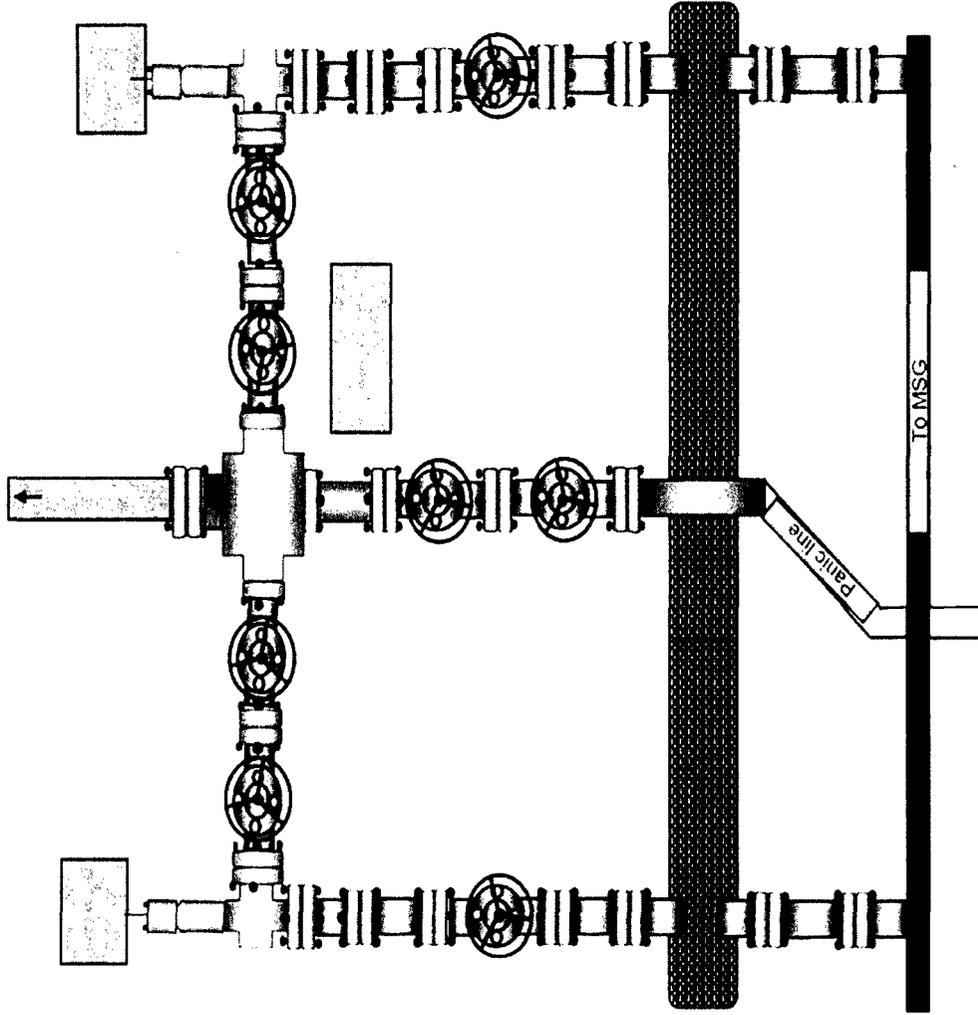
# 13-5/8" 5M BOP Schematic

Exhibit #1:

**Note:** All components are 10k unless otherwise noted.



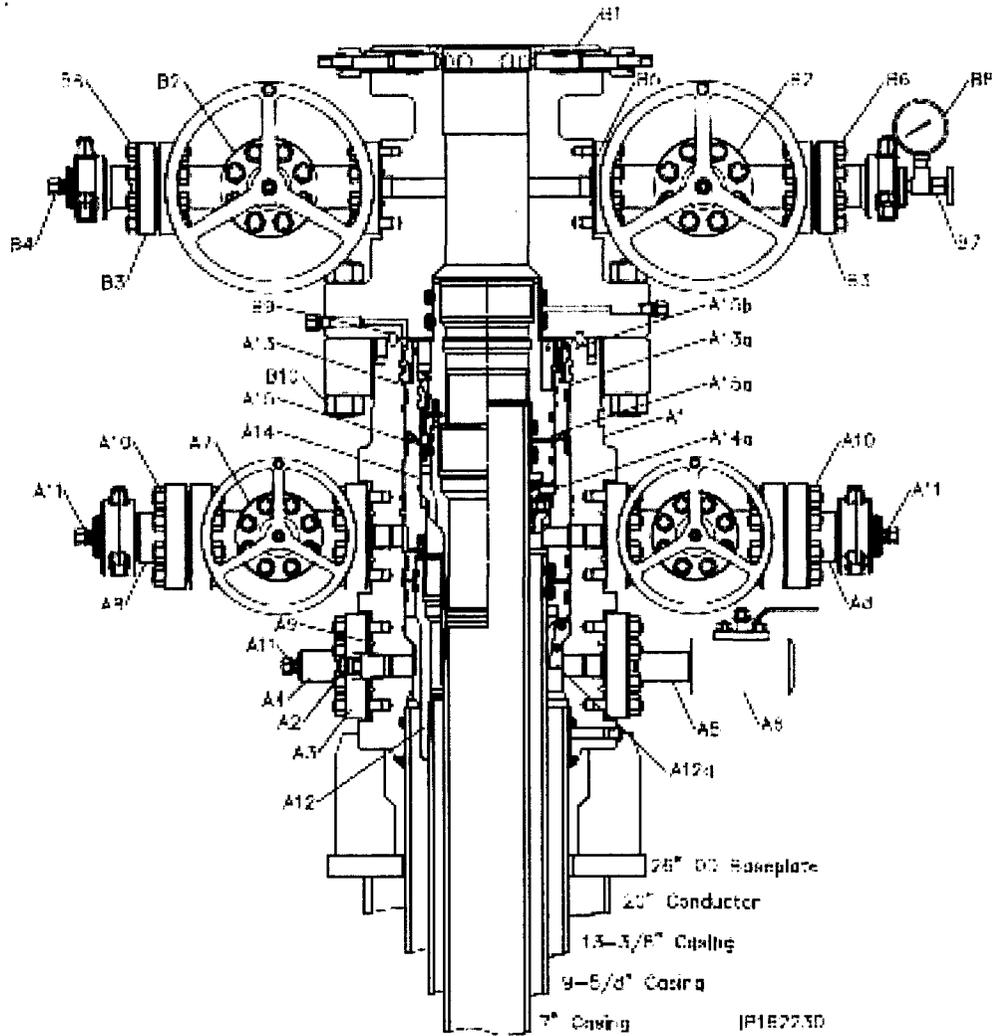
5M Choke Manifold





INFORMATION CONTAINED HEREIN IS THE PROPERTY OF CACTUS WELLHEAD, LLC. REPRODUCTION, DISCLOSURE, OR USE THEREOF IS PERMISSIBLE ONLY AS PROVIDED BY CONTRACT OR AS EXPRESSLY AUTHORIZED BY CACTUS WELLHEAD, LLC.

## Bill of Materials



FOR THE TRADES AND SERVICES OF THE CONTRACTOR, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL APPLICABLE AGENCIES AND REGULATORY BODIES.





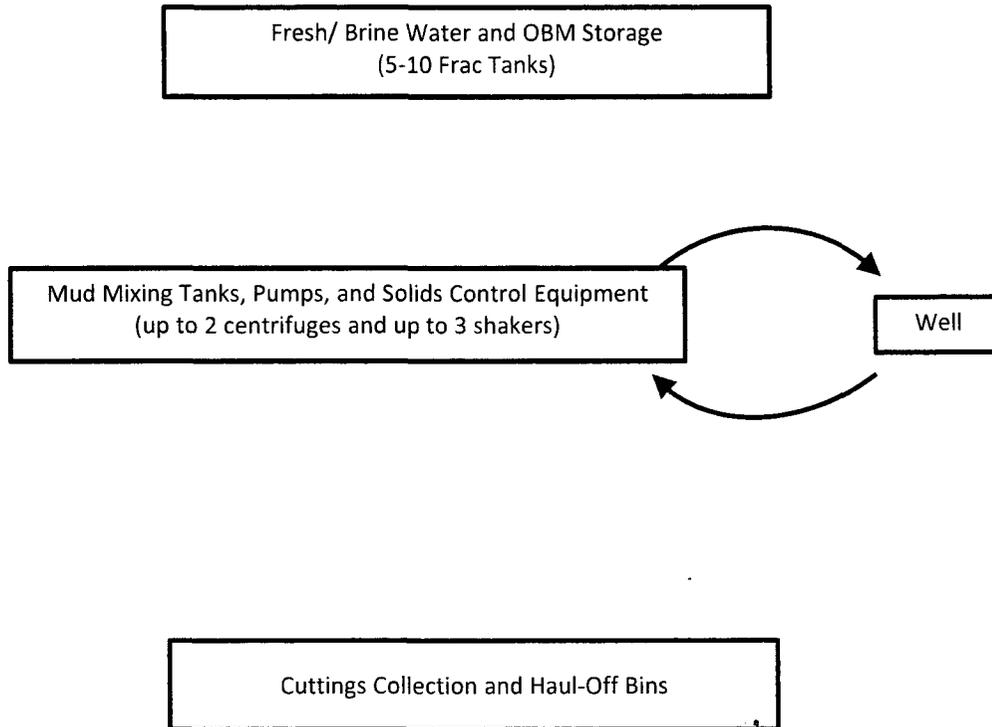


## Closed Loop System

RKI Exploration & Production, LLC.

RDX Federal Com 17-37H

Eddy, NM



### **Operating and Maintenance Plan:**

During drilling operations, third party services companies will utilize solids control equipment to remove cuttings from drilling fluids and collect it in haul-off bins. Equipment will be closely monitored at all times while drilling by the derrick man and the service company employees.

### **Closure Plan:**

During the drilling operations, third party service companies will haul off drill solids and fluids to an approved disposal facility. At the end of the well, all closed loop equipment will be removed from the location.



GATES E & S NORTH AMERICA, INC  
 DU-TEX  
 134 44TH STREET  
 CORPUS CHRISTI, TEXAS 78405

PHONE: 361-887-9807  
 FAX: 361-887-0812  
 EMAIL:  
 WEB: www.gates.com

**10K CHOKE & KILL ASSEMBLY PRESSURE TEST CERTIFICATE**

Customer :	ORION DRILLING COMPANY	Test Date:	9/2/2014
Customer Ref.:	PENDING	Hose Serial No.:	D-090214-4
Invoice No.:	203508	Created By:	JUSTIN CROPPER
Product Description:	10K3.025.0CK4.1/1610KFLGE/E		
End Fitting 1 :	4 1/16 10K FLG	End Fitting 2 :	4 1/16 10K FLG
Gates Part No. :	4773-4291	Assembly Code:	L33078040913D-090214-4
Working Pressure :	10,000 PSI	Test Pressure:	15,000 PSI

Gates E & S North America, Inc. certifies that the following hose assembly has been tested to the Gates Oilfield Roughneck Agreement/Specification requirements and passed the 15 minute hydrostatic test per API Spec 7K/Q1, Fifth Edition, June 2010, Test pressure 9.6.7 and per Table 9 to 15,000 psi in accordance with this product number. Hose burst pressure 9.6.7.2 exceeds the minimum of 2.5 times the working pressure per Table 9.

Quality Manager	QUALITY	Technical Supervisor	PRODUCTION
Date :	9/2/2014	Date :	9/2/2014
Signature :	<i>[Signature]</i>	Signature :	<i>[Signature]</i>



Gates E&S North America  
134 - 44th St.  
CORPUS CHRISTI, TEXAS 78405  
PHONE : (361) 887-9807  
FAX: (361) 887-0812

### CERTIFICATE OF CONFORMANCE

This is to verify that all Parts and/or Materials included in this shipment have been manufactured and/or processed in Conformance with applicable drawings and specifications, and that Records of Required Tests are on file and subject to examination. The following items were assembled at Gates E & S, Inc. (formerly Dutex, Inc.), facilities in Corpus Christi, TX, USA. This hose assembly was designed and manufactured to meet all the requirements of API Spec 7K.

CUSTOMER: ORION DRILLING COMPANY  
CUSTOMERS P.O.#: PENDING  
PART DESCRIPTION: 10K3.025.0CK4.1/3G10KFLGE/E  
SALES ORDER #: 203508  
QUANTITY: 1  
SERIAL #: D-090214-4

SIGNATURE: \_\_\_\_\_  
TITLE: \_\_\_\_\_ QUALITY \_\_\_\_\_  
DATE: \_\_\_\_\_ 9/2/2014 \_\_\_\_\_

ROSE I.D. 8 1/4" LENGTH 20 FT END 1 1/2" END 2 1/2" P.S.I.  
GRADE 10 K WORKING PRESSURE 10,000 P.S.I. ASSEMBLY DATE 9-2-14  
TEST DATE 9-2-14 SERIAL # 430780409110-010-14-4  
NAME [Signature] CR # 0554



U. S. Steel Tubular Products

4 1/2" 13.50 lb (0.29) P110 HC

USS-CDC HTQ™

	PIPE	CONNECTION	
<b>MECHANICAL PROPERTIES</b>			
Minimum Yield Strength	110,000		psi
Maximum Yield Strength	140,000		psi
Minimum Tensile Strength	125,000		psi
<b>DIMENSIONS</b>			
Outside Diameter	4.500	5.250	in
Wall Thickness	0.290		in
Inside Diameter	3.920	3.920	in
OD to API	3.795	3.795	in
Nominal Linear Weight, TAC	13.50		lb/ft
Actual Linear Weight	13.05		lb/ft
<b>SECTION AREA</b>			
Cross Sectional Area - Critical Area	3.836	3.836	sq in
Round Efficiency		100.0	%
<b>PERFORMANCE</b>			
Minimum Collapse Pressure	11,810	11,810	psi
External Pressure Load Resistance		9,450	psi
Minimum Internal Yield Pressure	12,420	12,420	psi
Minimum Pipe Body Yield Strength	125,000		psi
Joint Strength		110,000	psi
Compression Rating		256,000	lbs
Reference Length		21.877	ft
Maximum Allowable Burial Rating		75.6	lb/ft of ft
<b>MAKE-UP DATA</b>			
Make-Up Loss		4.40	in
Minimum Make-Up Torque		7,000	ft-lbs
Maximum Make-Up Torque		10,000	ft-lbs
Minimum Yield Torque		1,400	ft-lbs

Notes:  
 1) All values are based on the pipe and connection performance properties as specified in the table.  
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 4) All values are based on the pipe and connection performance properties as specified in the table.  
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 10) All values are based on the pipe and connection performance properties as specified in the table.

District I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720

District II  
811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720

District III  
1000 Rio Brazos Road, 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, NM 87505

SEP 11 2017

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

RECEIVED

AMENDED REPORT

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

<sup>1</sup> API Number 30-015-43544	<sup>2</sup> Pool Code 98220	<sup>3</sup> Pool Name PURPLE SAGE WOLFCAMP GAS POOL
<sup>4</sup> Property Code	<sup>5</sup> Property Name RDX FEDERAL COM 17	
<sup>7</sup> OGRID No. 246289	<sup>8</sup> Operator Name RKI EXPLORATION & PRODUCTION, LLC	<sup>6</sup> Well Number 37H
		<sup>9</sup> Elevation 3071'

<sup>10</sup> Surface Location

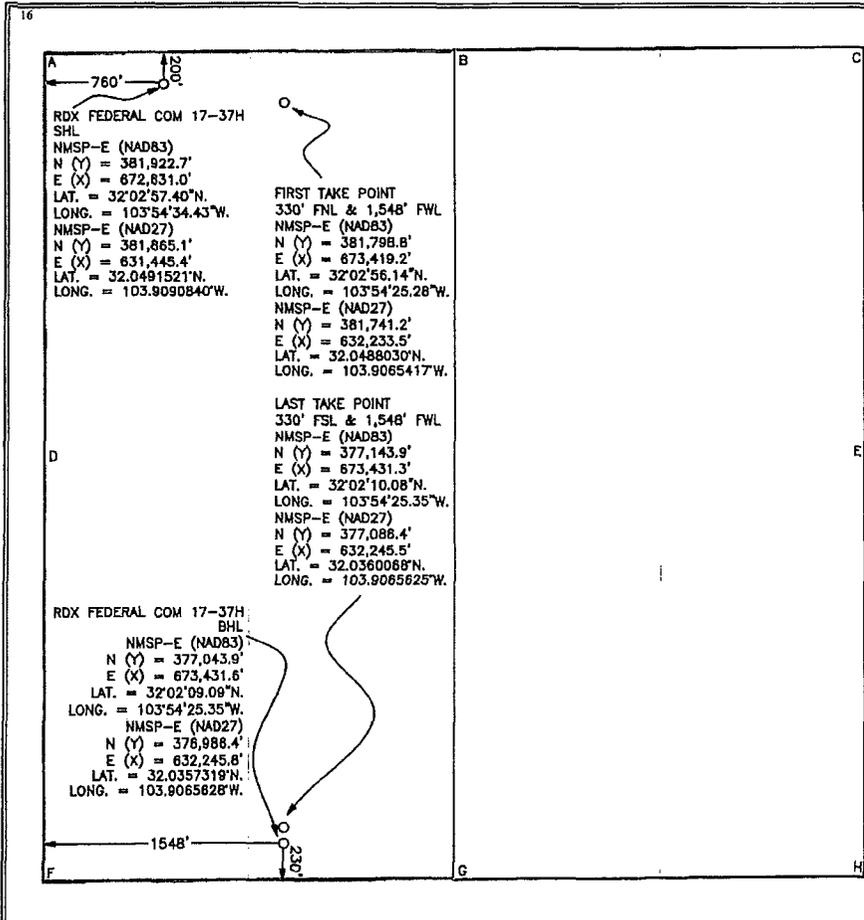
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	17	26 S	30 E		200	NORTH	760	WEST	EDDY

<sup>11</sup> 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
M	17	26 S	30 E		230	SOUTH	1548	WEST	EDDY

<sup>13</sup> Dedicated Acres 320.0	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
--	-------------------------------	----------------------------------	-------------------------

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.



**17 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 a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Justin Bernore 03/24/2017  
Signature Date

Justin Bernore  
Printed Name

justin.bernore@wpxenergy.com  
E-mail Address

**18 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.

03-24-2017  
Date of Survey

Signature and Seal of Professional Surveyor:

MARK DILLON HARP  
Certificate Number 23786

MARK DILLON HARP  
Professional Surveyor  
23786

AI 2017020221

**NM OIL CONSERVATION**  
ARTESIA DISTRICT

SEP 11 2017

RECEIVED

## **WPX Energy**

**Eddy County, New Mexico NAD 83**

**RDX Federal Com 17 Pad**

**RDX Federal Com 17-37H**

**API: 30-015-43544**

**Wellbore #1**

**Plan: Plan #1**

## **Standard Planning Report**

**05 June, 2017**



**Scientific Drilling**

[www.scientificdrilling.com](http://www.scientificdrilling.com)

**Scientific Drilling Int.**  
Planning Report

<b>Database:</b>	Midland District	<b>Local Co-ordinate Reference:</b>	Well RDX Federal Com 17-37H
<b>Company:</b>	WPX Energy	<b>TVD Reference:</b>	KB @ 3094.00usft (Orion Aires)
<b>Project:</b>	Eddy County, New Mexico NAD 83	<b>MD Reference:</b>	KB @ 3094.00usft (Orion Aires)
<b>Site:</b>	RDX Federal Com 17 Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	RDX Federal Com 17-37H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1		

<b>Project</b>	Eddy County, New Mexico NAD 83		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	New Mexico Eastern Zone		

<b>Site</b>	RDX Federal Com 17 Pad				
<b>Site Position:</b>		<b>Northing:</b>	381,922.50 usft	<b>Latitude:</b>	32° 2' 57.397 N
<b>From:</b>	Map	<b>Easting:</b>	672,606.20 usft	<b>Longitude:</b>	103° 54' 34.720 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.22 °

<b>Well</b>	RDX Federal Com 17-37H					
<b>Well Position</b>	<b>+N-S</b>	0.20 usft	<b>Northing:</b>	381,922.70 usft	<b>Latitude:</b>	32° 2' 57.398 N
	<b>+E-W</b>	24.80 usft	<b>Easting:</b>	672,631.00 usft	<b>Longitude:</b>	103° 54' 34.432 W
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft	<b>Ground Level:</b>	3,071.00 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	6/2/2017	6.93	59.78	48,021

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N-S (usft)</b>	<b>+E-W (usft)</b>	<b>Direction (bearing)</b>
	0.00	0.00	0.00	179.87

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,373.90	7.48	79.06	2,372.84	4.62	23.92	2.00	2.00	0.00	79.06	
8,177.58	7.48	79.06	8,127.16	147.93	765.53	0.00	0.00	0.00	0.00	
8,551.48	0.00	0.00	8,500.00	152.55	789.45	2.00	-2.00	0.00	180.00	
10,327.02	0.00	0.00	10,275.54	152.55	789.45	0.00	0.00	0.00	0.00	
11,077.02	90.00	179.87	10,753.01	-324.91	790.51	12.00	12.00	23.98	179.87	
15,630.92	90.00	179.87	10,753.00	-4,878.80	800.60	0.00	0.00	0.00	0.00	RDX37H BHL

# Scientific Drilling Int.

## Planning Report

<b>Database:</b>	Midland District	<b>Local Co-ordinate Reference:</b>	Well RDX Federal Com 17-37H
<b>Company:</b>	WPX Energy	<b>TVD Reference:</b>	KB @ 3094.00usft (Orion Aires)
<b>Project:</b>	Eddy County, New Mexico NAD 83	<b>MD Reference:</b>	KB @ 3094.00usft (Orion Aires)
<b>Site:</b>	RDX Federal Com 17 Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	RDX Federal Com 17-37H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1		

### Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,700.00	7.48	79.06	4,679.16	62.06	321.16	-61.33	0.00	0.00	0.00
4,700.85	7.48	79.06	4,680.00	62.08	321.26	-61.35	0.00	0.00	0.00
<b>Brushy Canyon</b>									
4,800.00	7.48	79.06	4,778.31	64.53	333.93	-63.77	0.00	0.00	0.00
4,900.00	7.48	79.06	4,877.45	67.00	346.71	-66.21	0.00	0.00	0.00
5,000.00	7.48	79.06	4,976.60	69.47	359.49	-68.65	0.00	0.00	0.00
5,100.00	7.48	79.06	5,075.75	71.94	372.27	-71.09	0.00	0.00	0.00
5,200.00	7.48	79.06	5,174.90	74.40	385.05	-73.53	0.00	0.00	0.00
5,300.00	7.48	79.06	5,274.05	76.87	397.82	-75.97	0.00	0.00	0.00
5,400.00	7.48	79.06	5,373.20	79.34	410.60	-78.41	0.00	0.00	0.00
5,500.00	7.48	79.06	5,472.35	81.81	423.38	-80.85	0.00	0.00	0.00
5,600.00	7.48	79.06	5,571.50	84.28	436.16	-83.29	0.00	0.00	0.00
5,700.00	7.48	79.06	5,670.65	86.75	448.94	-85.73	0.00	0.00	0.00
5,800.00	7.48	79.06	5,769.80	89.22	461.72	-88.17	0.00	0.00	0.00
5,900.00	7.48	79.06	5,868.95	91.69	474.49	-90.61	0.00	0.00	0.00
6,000.00	7.48	79.06	5,968.10	94.16	487.27	-93.05	0.00	0.00	0.00
6,100.00	7.48	79.06	6,067.25	96.63	500.05	-95.49	0.00	0.00	0.00
6,200.00	7.48	79.06	6,166.40	99.10	512.83	-97.93	0.00	0.00	0.00
6,300.00	7.48	79.06	6,265.55	101.57	525.61	-100.37	0.00	0.00	0.00
6,400.00	7.48	79.06	6,364.70	104.04	538.38	-102.81	0.00	0.00	0.00
6,500.00	7.48	79.06	6,463.85	106.50	551.16	-105.25	0.00	0.00	0.00
6,600.00	7.48	79.06	6,563.00	108.97	563.94	-107.69	0.00	0.00	0.00
6,700.00	7.48	79.06	6,662.15	111.44	576.72	-110.13	0.00	0.00	0.00
6,800.00	7.48	79.06	6,761.30	113.91	589.50	-112.57	0.00	0.00	0.00
6,900.00	7.48	79.06	6,860.44	116.38	602.28	-115.01	0.00	0.00	0.00
7,000.00	7.48	79.06	6,959.59	118.85	615.05	-117.45	0.00	0.00	0.00
7,100.00	7.48	79.06	7,058.74	121.32	627.83	-119.89	0.00	0.00	0.00
7,200.00	7.48	79.06	7,157.89	123.79	640.61	-122.33	0.00	0.00	0.00
7,291.89	7.48	79.06	7,249.00	126.06	652.35	-124.58	0.00	0.00	0.00
<b>Bone Spring</b>									
7,300.00	7.48	79.06	7,257.04	126.26	653.39	-124.78	0.00	0.00	0.00
7,400.00	7.48	79.06	7,356.19	128.73	666.17	-127.22	0.00	0.00	0.00
7,429.06	7.48	79.06	7,385.00	129.44	669.88	-127.92	0.00	0.00	0.00
<b>Avalon</b>									
7,500.00	7.48	79.06	7,455.34	131.20	678.94	-129.66	0.00	0.00	0.00
7,600.00	7.48	79.06	7,554.49	133.67	691.72	-132.10	0.00	0.00	0.00
7,700.00	7.48	79.06	7,653.64	136.13	704.50	-134.54	0.00	0.00	0.00
7,800.00	7.48	79.06	7,752.79	138.60	717.28	-136.98	0.00	0.00	0.00
7,900.00	7.48	79.06	7,851.94	141.07	730.06	-139.42	0.00	0.00	0.00
8,000.00	7.48	79.06	7,951.09	143.54	742.84	-141.86	0.00	0.00	0.00
8,100.00	7.48	79.06	8,050.24	146.01	755.61	-144.30	0.00	0.00	0.00
8,177.58	7.48	79.06	8,127.16	147.93	765.53	-146.19	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
8,200.00	7.03	79.06	8,149.40	148.46	768.31	-146.72	2.00	-2.00	0.00
8,205.64	6.92	79.06	8,155.00	148.59	768.98	-146.85	2.00	-2.00	0.00
<b>1st Bone Spring Sand</b>									
8,300.00	5.03	79.06	8,248.84	150.46	778.62	-148.69	2.00	-2.00	0.00
8,400.00	3.03	79.06	8,348.59	151.79	785.52	-150.01	2.00	-2.00	0.00
8,500.00	1.03	79.06	8,448.52	152.46	789.00	-150.67	2.00	-2.00	0.00
8,551.48	0.00	0.00	8,500.00	152.55	789.45	-150.76	2.00	-2.00	0.00
<b>Start 1775.54 hold at 8551.48 MD</b>									
8,600.00	0.00	0.00	8,548.52	152.55	789.45	-150.76	0.00	0.00	0.00
8,605.48	0.00	0.00	8,554.00	152.55	789.45	-150.76	0.00	0.00	0.00

# Scientific Drilling Int.

## Planning Report

<b>Database:</b>	Midland District	<b>Local Co-ordinate Reference:</b>	Well RDX Federal Com 17-37H
<b>Company:</b>	WPX Energy	<b>TVD Reference:</b>	KB @ 3094.00usft (Orion Aires)
<b>Project:</b>	Eddy County, New Mexico NAD 83	<b>MD Reference:</b>	KB @ 3094.00usft (Orion Aires)
<b>Site:</b>	RDX Federal Com 17 Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	RDX Federal Com 17-37H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
10,825.00	59.76	179.87	10,688.02	-84.43	789.98	86.22	12.00	12.00	0.00	
10,850.00	62.76	179.87	10,700.04	-106.35	790.02	108.14	12.00	12.00	0.00	
10,875.00	65.76	179.87	10,710.90	-128.87	790.07	130.66	12.00	12.00	0.00	
10,900.00	68.76	179.87	10,720.56	-151.92	790.12	153.71	12.00	12.00	0.00	
10,904.01	69.24	179.87	10,722.00	-155.66	790.13	157.45	12.00	12.00	0.00	
<b>Wolfcamp A2</b>										
10,925.00	71.76	179.87	10,729.01	-175.45	790.18	177.24	12.00	12.00	0.00	
10,950.00	74.76	179.87	10,736.21	-199.38	790.23	201.18	12.00	12.00	0.00	
10,974.31	77.67	179.87	10,742.00	-222.99	790.28	224.79	12.00	12.00	0.00	
<b>Top Target</b>										
10,975.00	77.76	179.87	10,742.15	-223.67	790.28	225.46	12.00	12.00	0.00	
11,000.00	80.76	179.87	10,746.81	-248.23	790.34	250.02	12.00	12.00	0.00	
11,025.00	83.76	179.87	10,750.17	-272.99	790.39	274.79	12.00	12.00	0.00	
11,050.00	86.76	179.87	10,752.24	-297.91	790.45	299.70	12.00	12.00	0.00	
11,074.88	89.74	179.87	10,753.00	-322.77	790.50	324.56	12.00	12.00	0.00	
<b>Landing Point</b>										
11,077.02	90.00	179.87	10,753.01	-324.91	790.51	326.71	12.00	12.00	0.00	
<b>Start 4553.90 hold at 11077.02 MD</b>										
11,100.00	90.00	179.87	10,753.01	-347.89	790.56	349.68	0.00	0.00	0.00	
11,200.00	90.00	179.87	10,753.00	-447.89	790.78	449.68	0.00	0.00	0.00	
11,300.00	90.00	179.87	10,753.00	-547.89	791.00	549.68	0.00	0.00	0.00	
11,400.00	90.00	179.87	10,753.00	-647.89	791.22	649.68	0.00	0.00	0.00	
11,500.00	90.00	179.87	10,753.00	-747.89	791.45	749.68	0.00	0.00	0.00	
11,600.00	90.00	179.87	10,753.00	-847.89	791.67	849.68	0.00	0.00	0.00	
11,700.00	90.00	179.87	10,753.00	-947.89	791.89	949.68	0.00	0.00	0.00	
11,800.00	90.00	179.87	10,753.00	-1,047.89	792.11	1,049.68	0.00	0.00	0.00	
11,900.00	90.00	179.87	10,753.00	-1,147.89	792.33	1,149.68	0.00	0.00	0.00	
12,000.00	90.00	179.87	10,753.00	-1,247.89	792.55	1,249.68	0.00	0.00	0.00	
12,100.00	90.00	179.87	10,753.00	-1,347.89	792.78	1,349.68	0.00	0.00	0.00	
12,200.00	90.00	179.87	10,753.00	-1,447.89	793.00	1,449.68	0.00	0.00	0.00	
12,300.00	90.00	179.87	10,753.00	-1,547.89	793.22	1,549.68	0.00	0.00	0.00	
12,400.00	90.00	179.87	10,753.00	-1,647.89	793.44	1,649.68	0.00	0.00	0.00	
12,500.00	90.00	179.87	10,753.00	-1,747.89	793.66	1,749.68	0.00	0.00	0.00	
12,600.00	90.00	179.87	10,753.00	-1,847.89	793.88	1,849.68	0.00	0.00	0.00	
12,700.00	90.00	179.87	10,753.00	-1,947.89	794.10	1,949.68	0.00	0.00	0.00	
12,800.00	90.00	179.87	10,753.00	-2,047.89	794.33	2,049.68	0.00	0.00	0.00	
12,900.00	90.00	179.87	10,753.00	-2,147.89	794.55	2,149.68	0.00	0.00	0.00	
13,000.00	90.00	179.87	10,753.00	-2,247.89	794.77	2,249.68	0.00	0.00	0.00	
13,100.00	90.00	179.87	10,753.00	-2,347.89	794.99	2,349.68	0.00	0.00	0.00	
13,200.00	90.00	179.87	10,753.00	-2,447.89	795.21	2,449.68	0.00	0.00	0.00	
13,300.00	90.00	179.87	10,753.00	-2,547.89	795.43	2,549.68	0.00	0.00	0.00	
13,400.00	90.00	179.87	10,753.00	-2,647.89	795.66	2,649.68	0.00	0.00	0.00	
13,500.00	90.00	179.87	10,753.00	-2,747.89	795.88	2,749.68	0.00	0.00	0.00	
13,600.00	90.00	179.87	10,753.00	-2,847.89	796.10	2,849.68	0.00	0.00	0.00	
13,700.00	90.00	179.87	10,753.00	-2,947.89	796.32	2,949.68	0.00	0.00	0.00	
13,800.00	90.00	179.87	10,753.00	-3,047.88	796.54	3,049.68	0.00	0.00	0.00	
13,900.00	90.00	179.87	10,753.00	-3,147.88	796.76	3,149.68	0.00	0.00	0.00	
14,000.00	90.00	179.87	10,753.00	-3,247.88	796.99	3,249.68	0.00	0.00	0.00	
14,100.00	90.00	179.87	10,753.00	-3,347.88	797.21	3,349.68	0.00	0.00	0.00	
14,200.00	90.00	179.87	10,753.00	-3,447.88	797.43	3,449.68	0.00	0.00	0.00	
14,300.00	90.00	179.87	10,753.00	-3,547.88	797.65	3,549.68	0.00	0.00	0.00	
14,400.00	90.00	179.87	10,753.00	-3,647.88	797.87	3,649.68	0.00	0.00	0.00	
14,500.00	90.00	179.87	10,753.00	-3,747.88	798.09	3,749.68	0.00	0.00	0.00	

# Scientific Drilling Int.

## Planning Report

<b>Database:</b>	Midland District	<b>Local Co-ordinate Reference:</b>	Well RDX Federal Com 17-37H
<b>Company:</b>	WPX Energy	<b>TVD Reference:</b>	KB @ 3094.00usft (Orion Aires)
<b>Project:</b>	Eddy County, New Mexico NAD 83	<b>MD Reference:</b>	KB @ 3094.00usft (Orion Aires)
<b>Site:</b>	RDX Federal Com 17 Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	RDX Federal Com 17-37H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1		

### Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (bearing)
3,413.91	3,404.00	Bell Canyon (Base of Salt)			
4,547.55	4,528.00	Cherry Canyon			
4,700.85	4,680.00	Brushy Canyon			
7,291.89	7,249.00	Bone Spring			
7,429.06	7,385.00	Avalon			
8,205.64	8,155.00	1st Bone Spring Sand			
8,605.48	8,554.00	2nd Bone Spring Lime			
9,021.48	8,970.00	2nd Bone Spring Sand			
9,475.48	9,424.00	3rd Bone Spring Lime			
10,119.48	10,068.00	3rd Bone Spring Sand			
10,515.33	10,459.00	Wolfcamp Top			
10,548.32	10,489.00	WC_X			
10,653.29	10,577.00	WC_Y			
10,685.12	10,601.00	Wolfcamp A			
10,904.01	10,722.00	Wolfcamp A2			
10,974.31	10,742.00	Top Target			
11,074.88	10,753.00	Landing Point			

### Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,000.00	2,000.00	0.00	0.00	Start Build 2.00
2,373.90	2,372.84	4.62	23.92	Start 5803.68 hold at 2373.90 MD
8,177.58	8,127.16	147.93	765.53	Start Drop -2.00
8,551.48	8,500.00	152.55	789.45	Start 1775.54 hold at 8551.48 MD
10,327.02	10,275.54	152.55	789.45	Start DLS 12.00 TFO 179.87
11,077.02	10,753.01	-324.91	790.51	Start 4553.90 hold at 11077.02 MD
15,630.92	10,753.00	-4,878.80	800.60	TD at 15630.92

SEP 11 2017

**PECOS DISTRICT  
CONDITIONS OF APPROVAL**

RECEIVED

OPERATOR'S NAME:	RKI Exploration & Production, LLC.
LEASE NO.:	NMNM020965
WELL NAME & NO.:	37H- RDX Federal Com 17
SURFACE HOLE FOOTAGE:	200'/N & 760'/W
BOTTOM HOLE FOOTAGE:	230'/S & 1548'/W
LOCATION:	Section 17, T. 26 S., R. 30 E., NMPM
COUNTY:	Eddy County, New Mexico

**I. DRILLING**

**A. DRILLING OPERATIONS REQUIREMENTS**

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

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

**Eddy County**

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

1. **Hydrogen Sulfide (H<sub>2</sub>S) monitors shall be installed prior to drilling out the surface shoe. If H<sub>2</sub>S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.
4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If**

available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

## **B. CASING**

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

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

### **Wait on cement (WOC) for Water Basin:**

After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

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

Abnormal pressures may be encountered upon penetrating the 3<sup>rd</sup> Bone Spring Sandstone and all subsequent formations.

Medium Cave/Karst

Possibility of water flows in the Salado and Castile.

Possibility of lost circulation in the Rustler, Red Beds and Delaware.

1. The 13-3/8 inch surface casing shall be set at approximately 787 feet (in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet above the salt) and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of

six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

- b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
- d. If cement falls back, remedial cementing will be done prior to drilling out that string.

**Formation below the 13-3/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.**

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

**Operator has proposed DV tool at depth of 5500'. Operator is to submit sundry if DV tool depth varies by more than 100' from approved depth.**

- a. First stage to DV tool:
  - Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve approved top of cement on the next stage.
- b. Second stage above DV tool:
  - Cement to surface. If cement does not circulate see B.1.a, c-d above.

**Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.**

**Medium Cave/Karst: If cement does not circulate to surface on the intermediate casing, the cement on the production casing must come to surface.**

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

3. The minimum required fill of cement behind the 7 production casing is:
  - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.
4. The minimum required fill of cement behind the 4-1/2 inch production liner is:
  - Cement should tie-back to the top of the liner. Operator shall provide method of verification.
4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

### C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. **Operator has proposed a multi-bowl wellhead assembly that has a weld on head with no o-ring seals. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi.**
  - a. **Wellhead manufacturer is supplying the test plug/retrieval tool for the operator's third party tester to use during the BOP/BOPE test. Operator shall use the supplied test plug/retrieval tool.**
  - b. **Operator shall install the wear bushing required by the wellhead manufacturer. This wear bushing shall be installed by using the test plug/retrieval tool.**
  - c. **Wellhead manufacturer representative shall be on location when the intermediate casing mandrel is landed. Operator shall submit copy of manufacturer's wellsite report with subsequent report.**
  - d. **If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.**

**5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
  - a. The tests shall be done by an independent service company utilizing a test plug.
  - b. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
  - c. The results of the test shall be reported to the appropriate BLM office.
  - d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
  - e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
  - f. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp** formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

#### **D. DRILLING MUD**

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

**E. DRILL STEM TEST**

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

**F. WASTE MATERIAL AND FLUIDS**

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

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

**CRW 082817**