Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Artesia

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

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.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

5. Lease Serial No.
NMNM20965

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.
NMNM129167

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
RDX FEDERAL COM 17 26H

2. Name of Operator
RKI EXPLORATION & PROD LLC
Contact: HEATHER BREHM
E-Mail: hbrehm@rkixp.com

9. API Well No.
30-015-42752-00-X1

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

3b. Phone No. (include area code)
Ph: 405-996-5769
Fx: 405-949-2223

10. Field and Pool, or Exploratory
~~UNDESIGNATED~~
Brushy Draw; Wlcmp (O)
97136

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 17 T26S R30E SWSE 0200FSL 1425FEL
32.020887 N Lat, 103.535827 W Lon

11. County or Parish, and State
EDDY COUNTY, NM

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Change to Original APD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ 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 recomplete 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 shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

BHL LEASE SERIAL NUMBER: NM-101110

RKI RESPECTFULLY REQUESTS THE APPROVAL TO ADD THE WOLFCAMP EXPLORATORY FIELD TO THE CURRENT APD. THE REVISED PLAT AND DRILLING DOCUMENTS ARE ATTACHED TO THIS REQUEST FOR REFERENCE.

THE WELL IS SET TO SPUD 08/2015.

Accepted for record
NMOCD 8/19/15

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

SUBJECT TO LIKE
APPROVAL BY STATE

NM OIL CONSERVATION
ARTESIA DISTRICT
AUG 18 2015
RECEIVED

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

Electronic Submission #305931 verified by the BLM Well Information System
For RKI EXPLORATION & PROD LLC, sent to the Carlsbad
Committed to AFMSS for processing by CATHY QUEEN on 07/15/2015 (15CQ0484SE)

Name *(Printed/Typed)* HEATHER BREHM — Title REGULATORY ANALYST

Signature (Electronic Submission) — Date 06/22/2015

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

APPROVED

Approved By _____ Title _____ Date

AUG 11 2015
/s/ Chris Walls
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

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

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.

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

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

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

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-42752	97136	Brushy Draw; ~~UNDESIGNATED~~ WOLFCAMP (O)

Property Code	Property Name	Well Number
313813	RDX FEDERAL COM 17	26H

OGRID No.	Operator Name	Elevation
246289	RKI EXPLORATION & PRODUCTION	3125'

Surface Location

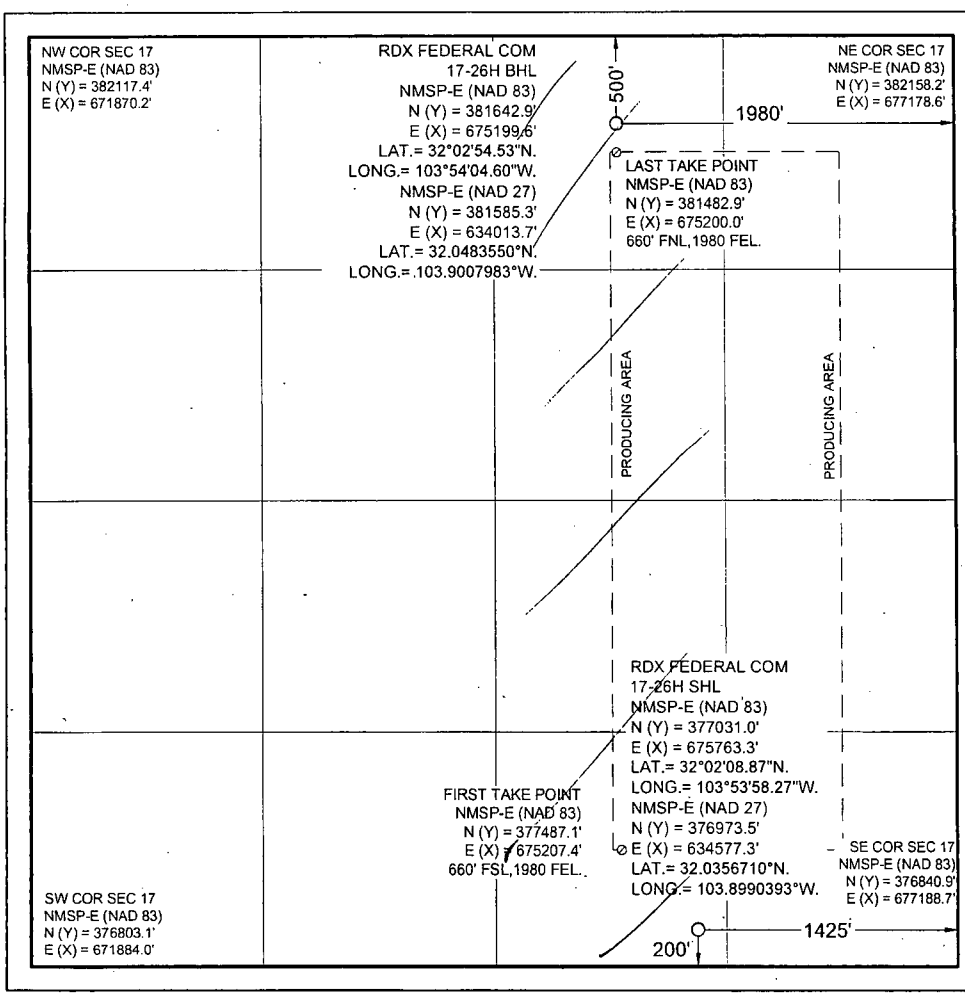
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	17	26 S	30 E		200	SOUTH	1425	EAST	EDDY

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
B	17	26 S	30 E		500	NORTH	1980	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidated Code	Order No.
320 160			

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.

Heather Bohm

Signature Date

Print Name

E-mail Address

SURVEYORS CERTIFICATION

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

SEPTEMBER 2, 2014

Date of Survey

Signature and Seal of Professional Surveyor:

JAMES E. TOMPKINS
NEW MEXICO
14729
REGISTERED PROFESSIONAL LAND SURVEYOR

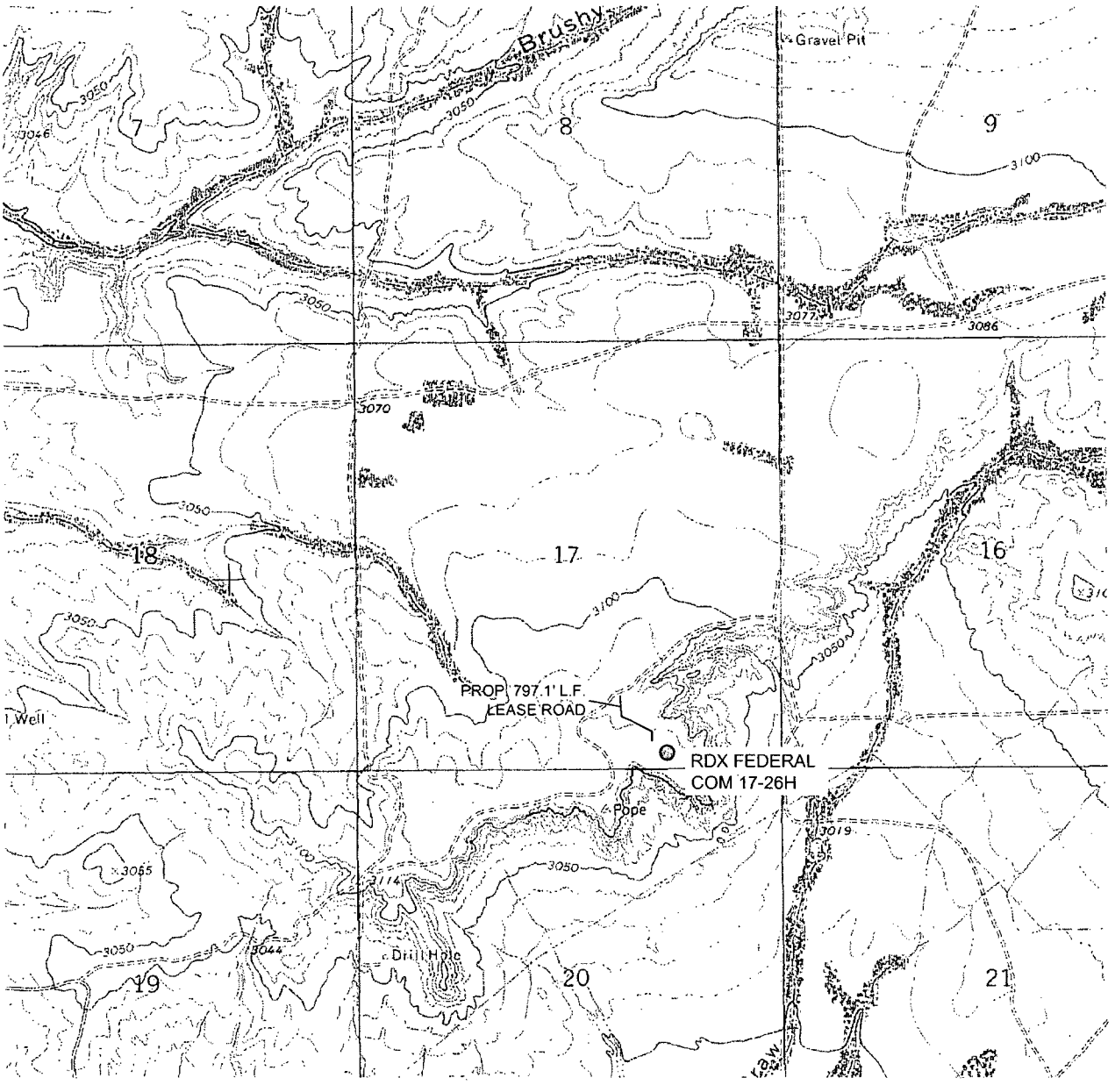
James E. Tompkins

Job No.: WTC50190

JAMES E. TOMPKINS 14729

Certificate Number

LOCATION VERIFICATION MAP



GRAPHIC SCALE 1" = 2000'

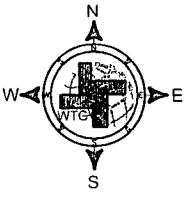
SECTION 17, T 26 S, R 30 E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 200' FSL & 1425' FEL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: RDX FEDERAL COM 17-26H



DRIVING DIRECTIONS:

Beginning at US 285 at the Texas-New Mexico State line go Northerly 3.7 miles to CR 725 (Longhorn Road). On CR 725 go East, South & Southeast for approx. 7.3 miles to a "Y". Take the left fork going Northeasterly for approx. 1.4 miles to a "Y". Take right fork going Easterly for approx. 2.2 miles to a "Y". Take left fork going East for approx. 1.8 miles to beginning of a proposed lease road right from which the location flag is 797 feet southeast.

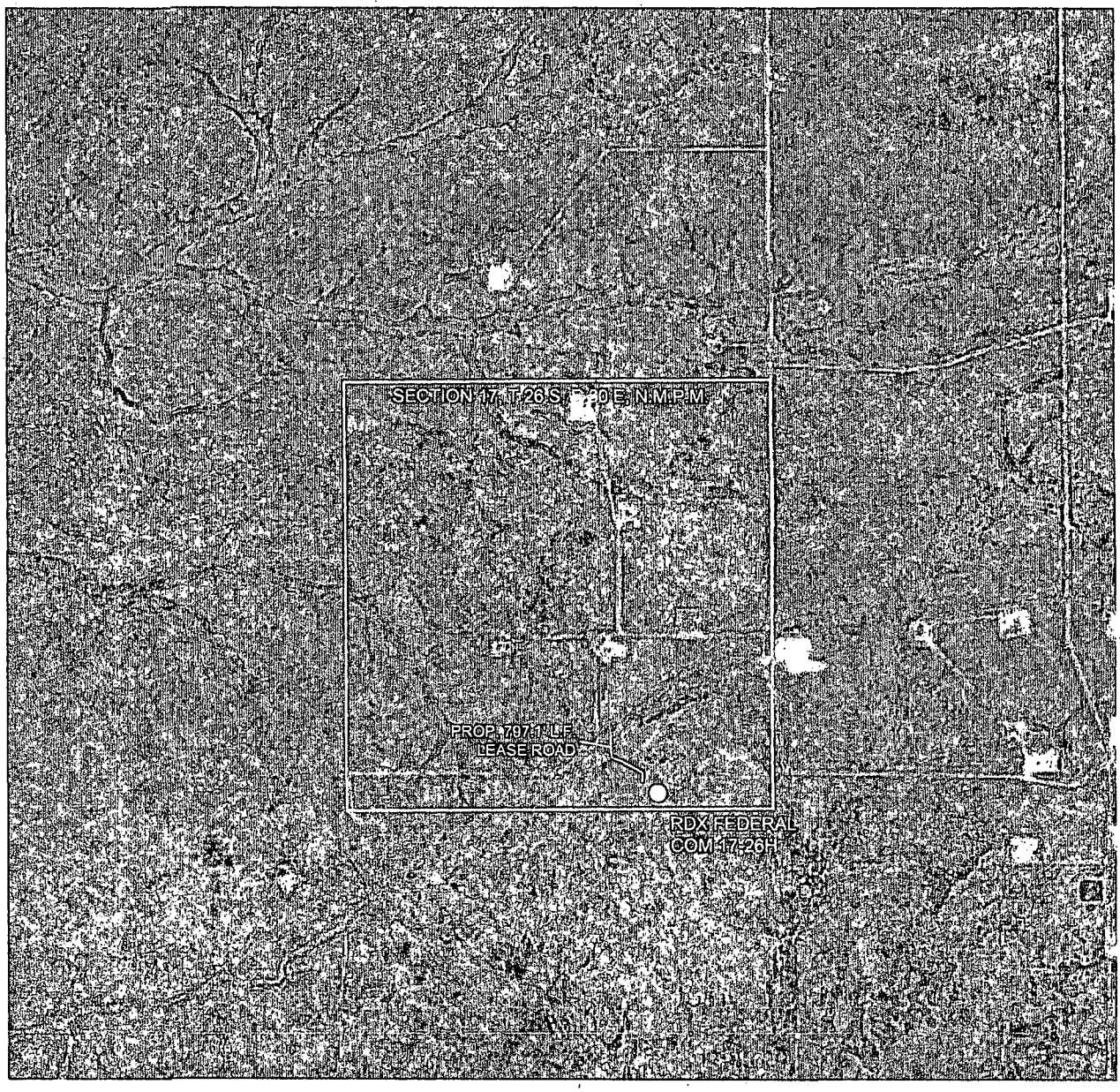
WEST TEXAS CONSULTANTS, INC.
ENGINEERS PLANNERS SURVEYORS
405 S.W. 1st. STREET
ANDREWS, TEXAS 79714
(432) 523-2181

RKI EXPLORATION & PRODUCTION

JOB No.: WTC49050

Z:\Projects\Oil & Gas Surveys\RKI Exploration & Production\49050-RKI Exploration, Stake & Plat 3 RDX 17 Well, Eddy Co\Drawings\49050 - RDX FEDERAL COM 17-26H.dwg

AERIAL MAP



0 1000 2000 4000

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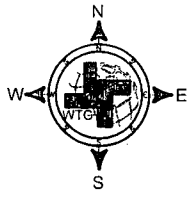

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RKI EXPLORATION & PRODUCTION

JOB No.: WTC49050

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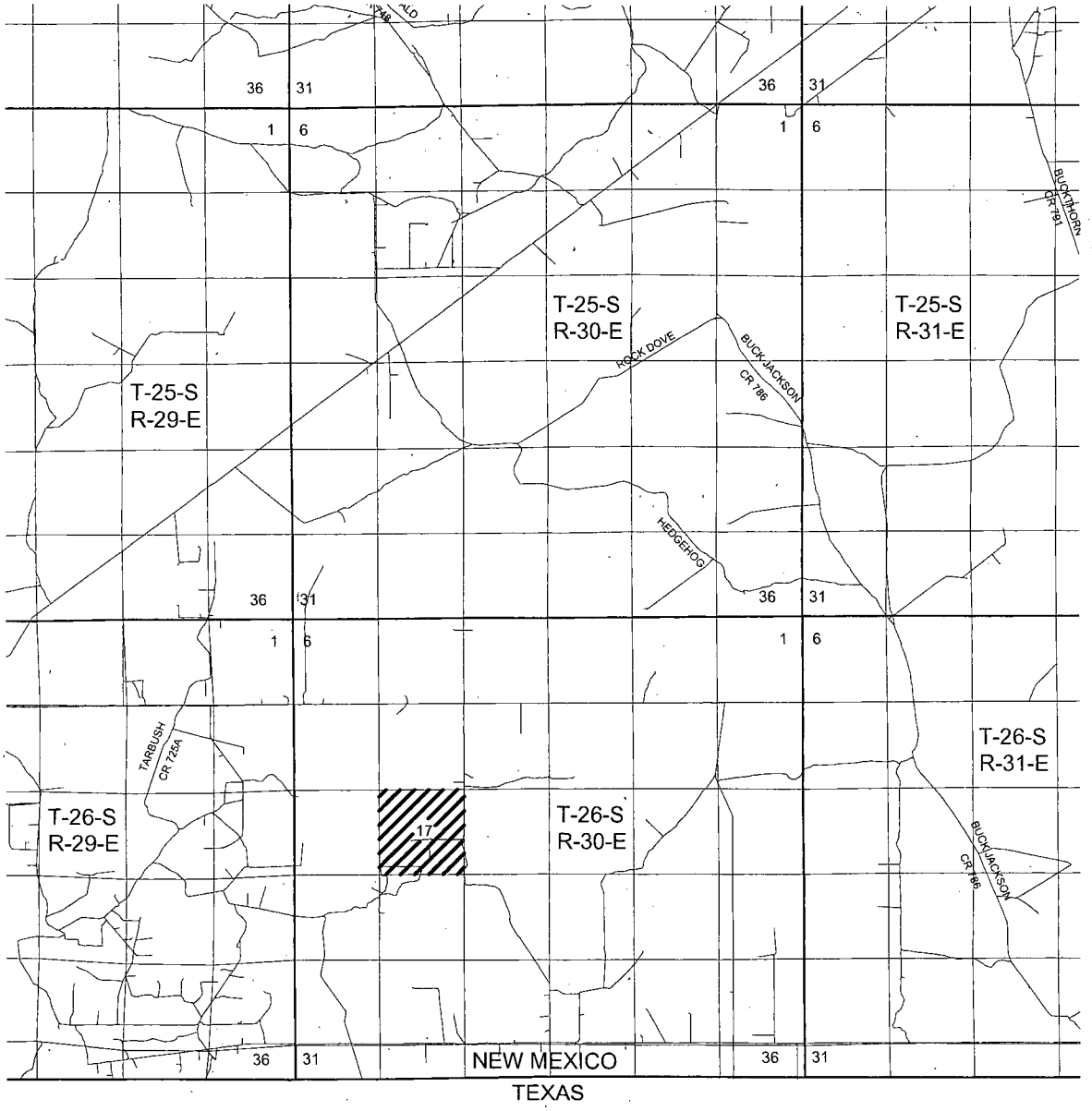
VICINITY MAP



0 2 4 6

GRAPHIC SCALE 1" = 2 MILES

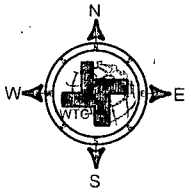
SECTION 17, T 26 S, R 30 E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 200' FSL & 1425' FEL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: RDX FEDERAL COM 17-26H



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RKI EXPLORATION & PRODUCTION

JOB No.: WTC49050

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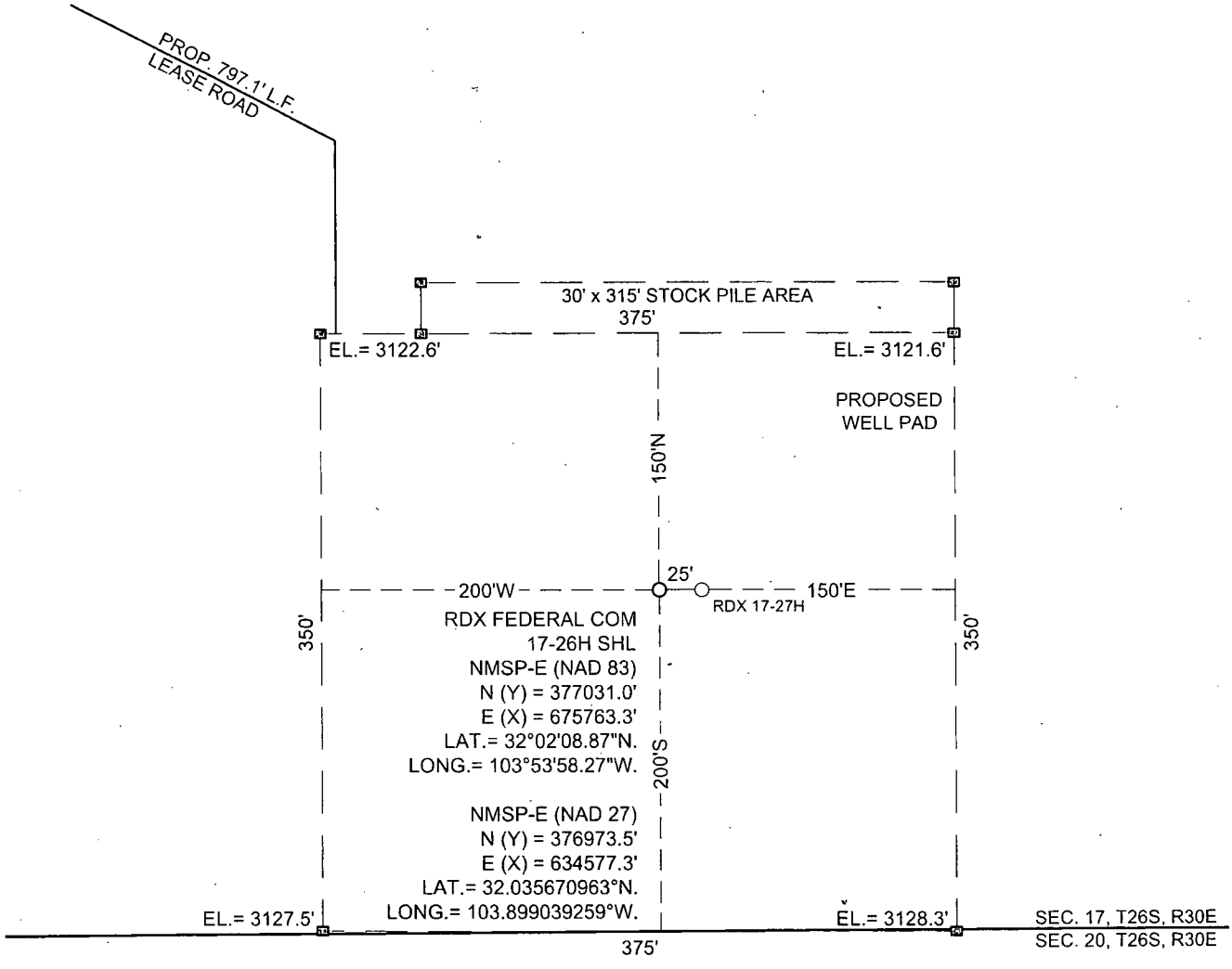
SITE LOCATION



0 50 100 200

GRAPHIC SCALE 1" = 100'

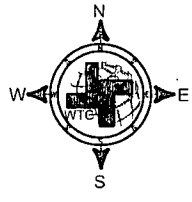
SECTION 17, T 26 S, R 30 E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 200' FSL & 1425' FEL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: RDX FEDERAL COM 17-26H



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RKI Exploration & Production, LLC
Drilling Program

Well	RDX 17-26H			
Location	Surface:	200 FSL	1,425 FEL	Sec. 17-26S-30E
	Bottom Hole:	500 FNL	1,980 FEL	Sec. 17-26S-30E

County Eddy
State New Mexico

1) The elevation of the unprepared ground is 3,125 feet above sea level.
18 KB 3,143

2) A rotary rig will be utilized to drill the well to 14,950 feet and run casing.
This equipment will then be rigged down and the well will be completed with a workover rig.

3) Proposed depth is 14,950 feet measured depth

4) Estimated tops:

	MD	TVD	Thickness	Fluid	
Rustler	800	800		Freshwater	
Salado	1,100	1,100			
Base Lamar Lime	3,412	3,390			
Delaware Top	3,446	3,424		Oil	BHP
Cherry Canyon Sand	4,553	4,517		Oil	1,987 psi
Topper Green		-		Oil	
Kingrea	6,249	6,206		Oil	
Bone Spring Lime	7,285	7,242		Oil	3,186 psi
Bone Spring 1st SS	8,185	8,142		Oil	
Bone Spring 2nd SS	8,998	8,955		Oil	3,940 psi
Bone Spring 3rd SS	10,100	10,057		Oil	4,425 psi
KOP	10,143	10,100		Oil	4,444 psi
Wolfcamp	10,513	10,445		Oil	4,596 psi
Wolfcamp Target Top	11,143	10,744		Oil	4,727 psi
Landing Point	11,143	10,744			4,727 psi
					- psi
Total Depth	14,950	10,744			230 Degrees F
Lateral Length	3,807 MD				

*Note: All mineral resources encountered will be protected by running casing and raising cement across all encountered resources.

5) Casing program:

Hole Size	Top	Bottom	OD Csg	Weight	Grade	Connection	Burst	Pressure Max	Burst SF
17 1/2"	0	~~1,000~~ 1035	13 3/8"	54.5	J-55	STC	2730	468	5.83
12 1/4"	0	7,285	9 5/8"	40	HCL-80	LTC	5750	3788	1.52
8 3/4"	0	14,950	5 1/2"	20	P-110	BTC	12630	10000	1.26

*Burst SF = Burst / Pmax

Hole Size	Top	Bottom	OD Csg	Weight	Grade	Connection	Collapse	Mud Weight	Collapse SF
17 1/2"	0	~~1,000~~	13 3/8"	54.5	J-55	STC	1580	9.0	3.38
12 1/4"	0	7,285	9 5/8"	40	HCL-80	LTC	4230	10.0	1.12
8 3/4"	0	14,950	5 1/2"	20	P-110	BTC	12100	11.5	1.35

*Collapse SF = [Collapse/(mw x 0.052 x Depth)]

Hole Size	Top	Bottom	OD Csg	Weight	Grade	Connection	Tension	Tension Load	Tension SF
17 1/2"	0	~~1,000~~	13 3/8"	54.5	J-55	STC	420000	54500	7.71
12 1/4"	0	~~7,285~~	9 5/8"	40	HCL-80	LTC	936000	291400	3.21
8 3/4"	0	14,950	5 1/2"	20	P-110	BTC	641000	299000	2.14

*All casing load assumptions are based on Air Wt. Burst design assumes Max Frac Pressure (10K), & Collapse design assumes evacuated & max Mud Weight during interval.

Minimum Design Standards	
Collapse	1.1
Burst	1
Tension	1.9

All casing will be new
Casing design subject to revision based on geologic conditions encountered

Cement program:

6) **Surface** 17 1/2" hole

Pipe OD		13 3/8"				
Setting Depth		1,000 ft				
Annular Volume		0.6947 cf/ft				
Tail		200				
Shoe Joint		36.5				
Excess		1			100 %	
					383 ft	
Lead	642 sx		1.75 cf/sk	13.5 ppg		9.13 gal/sk
Tail	200 sx		1.33 cf/sk	14.8 ppg		6.32 gal/sk

Lead: "C" + 4% PF20 (gel) + 2% PF1 (CC) + .125 pps PF29 (CelloFlake) + .4 pps PF46 (antifoam)

Tail: "C" + 1% PF1 (CC)

Top of cement: Surface

3 centralizers on bottom 3 jts 1 per jt, then 1 every other jt

Intermediate 12 1/4" hole

Pipe OD		9 5/8"				
Setting Depth		7,285 ft				
Annular Volume		0.3132 cf/ft		0.323 cf/ft		
DV Tool		5,500 ft				
Excess	1st Stage	0.6			60 %	
	2nd Stage	1.6			160 %	
Stage 1:						
Lead	604 sx		1.48 cf/sk	13 ppg		7.609 gal/sk

Lead: PVL + 1.3% PF44 + 5% PF174 + .5% PF606 + .4% PF13 + .1% PF153 + .4 pps PF45

Top of cement: 5,500 ft DV tool: 5,500 ft

1 per joint bottom 3 joints, then 1 every 3th jt

Stage 2:					
Lead	1308 sx	2.87 cf/sk	11.6 ppg		16.793 gal/sk
Tail	175 sx	1.33 cf/sk	14.8 ppg		6.331 gal/sk

Lead: 35/65 Poz "C" + 5% PF44 + 6% PF20 + .2% PF13 + .125 ps PF29 + .4 pps PF46

Tail: "C" + .2% PF13

Top of cement: SURFACE - ft

1 per joint bottom 3 joints, then 1 every 3th jt

Production 8 3/4" hole

Pipe OD (in OH)		5 1/2"			
Setting Depth		14,950 ft			
Annular Volume		0.2526 cf/ft	0.2526 cf/ft		
Excess		0.35		35 %	
Lead	683 sx	1.47 cf/sk	13 ppg		gal/sk
Tail	867 sx	1.89 cf/sk	13 ppg		9.632 gal/sk

Lead: PVL +1.3% PF44 + 5% PF174 + .5% PF606 + .3% PF 813 + .1% PF153 +.4pps PF45

Tail: AcidSolid PVL + 5% PF174 + .7% PF606 + .2% PF153 + .5% PF13 + 30% PF151 + .4 pps PF47

Top of cement: 6,985 ft

1 per joint bottom 3 joints, then every 3rd joint to top of cement

*NOTE: A cement bond log will be ran across 9 5/8" Intermediate casing

7) Pressure control equipment:

The blowout preventer equipment will be 5,000 psi rated as shown in the attached BOP diagram and consist of the following:
Annular preventer
Pipe rams
Blind rams
Pipe rams
Drilling spool or blowout preventer with 2 side outlets (choke side shall be a 3" minimum diameter, kill side shall be at least 2" diameter
Choke line shall be 3" minimum diameter
2 choke line valves, 3" minimum diameter
2 chokes with 1 remotely controlled from the rig floor
Kill line, 2" minimum diameter
2 kill line valves and a check valve, 2" minimum diameter
Upper and lower kelly cock valves with handles readily available
Safety valves and subs to fit all drill string connections in use shall be readily available
Inside BOP or float available
Pressure gauge on choke manifold
All BOPE subjected to pressure shall be flanged, welded, or clamped
Fill-up line above uppermost preventer

A 13 3/8" SOW x 13 5/8" 5M multi-bowl casing head will be installed and utilized until Total Depth is reached.
The 9 5/8" casing will be landed in the head on a casing mandrel, and the stack will not be broken
until total depth has been reached. Before drilling out the 9 5/8" casing will be tested to .22 psi/ft of casing setting
depth or 1,500 psi whichever is greater, but not exceeding 70% of the burst rating of the pipe.
After drilling approximately 10 feet of new formation an EMW test of 11.0 ppg will be performed.
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.

8) Mud program:

Top	Bottom	Mud Wt.	Vis	PV	YP	Fluid Loss	Type System
0	1,000	8.3 to 8.5	28 to 30	1 - 6	1 - 6	NC	Fresh Water ND
1,000	7,285	9.8 to 10	28 to 30	1 - 10	1 - 12	NC	Brine
7,285	10,143	8.8 to 9.3	35 to 40	8 - 10	10 - 12	NC	Cut Brine
10,143	14,950	9.3 to 10.5	45 to 55	8 - 12	6 - 10	10 to 15	Cut Brine

*Enough Barite will be stored on location to weight up mud system to an 11.5 ppg mud weight if needed (2751 sx from 9.3 ppg to 11.5 ppg - 2000 bbl system). Formula: Barite Required (lbs) = [(35.05 x (Wf-Wi))/(35.05-Wf)] x Mud Volume (gals).
*Pason PVT equipment will monitor all pit levels at all times, in the event an influx occurred.

9) Logging, coring, and testing program:

No drill stem test or cores are planned
Neutron/Density, Resistivity, Gamma Ray, Caliper will be run at Pilot Hole Total Depth.
Neutron, Gamma Ray, Caliper will be run from TD to surface

10) Potential hazards:

No H2S is known to exist in the area.
Lost circulation can occur, lost circulation material will be readily available if needed.

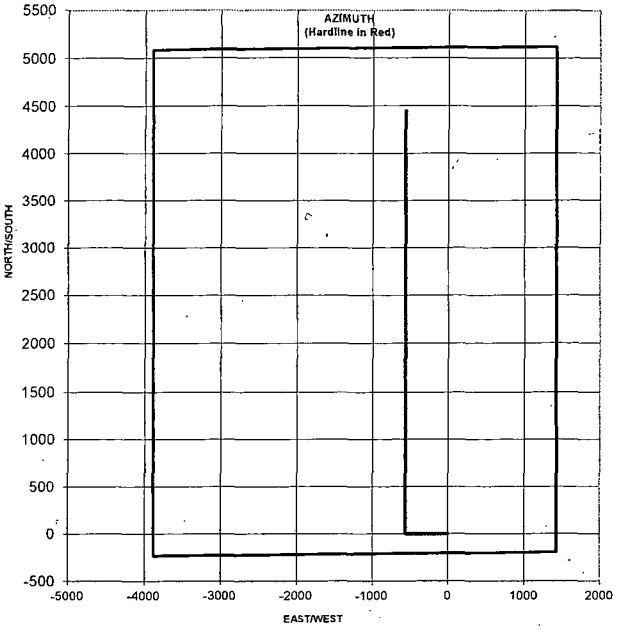
11) Anticipated start date ASAP
Duration 35 days

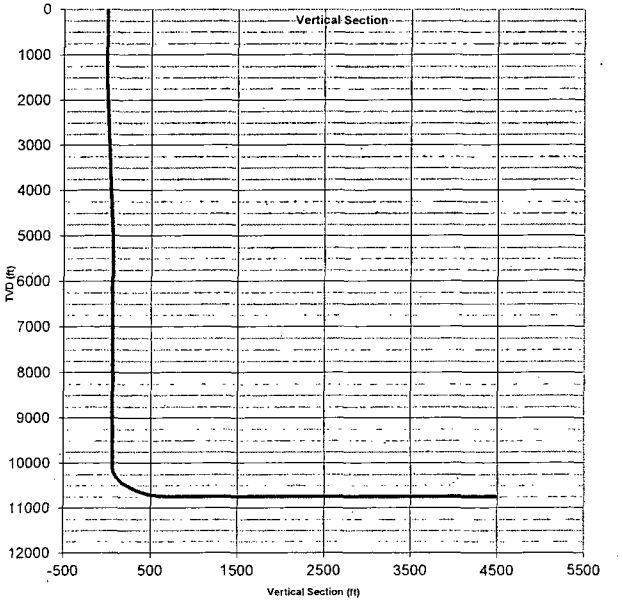
RKI EXPLORATION

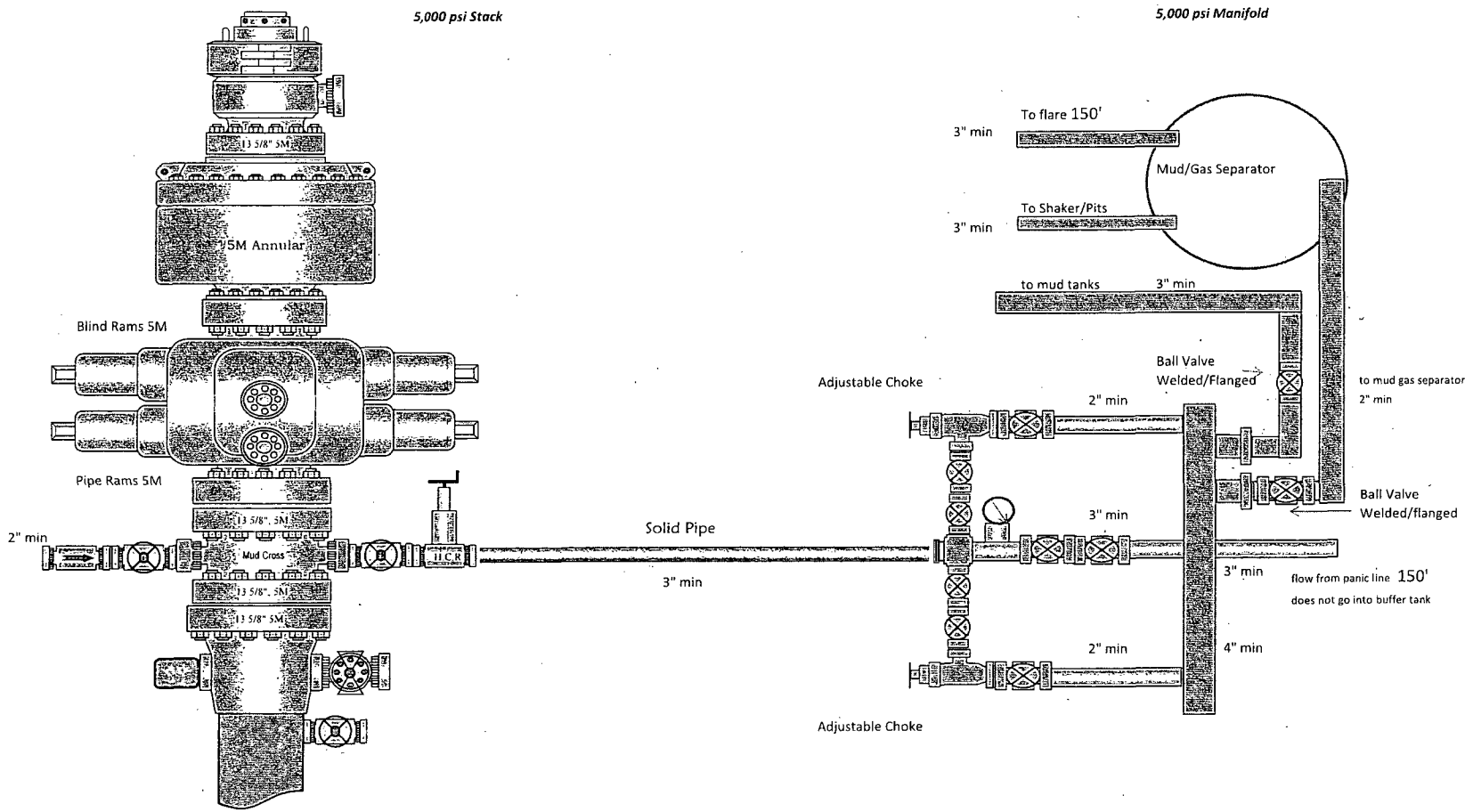
RIG:

WELL:	**RDX 17-26H**	Target Direction:	353.27 deg
LOCATION:	**200' FSL & 1425' FEL 17-26S-30E**	North/South Hard Line:	
BHL:	**500' FNL & 1980' FEL 17-26S-30E**	East/West Hard Line:	

STATION NUMBER	SURVEY DEPTH	INC	AZMTH	TVD	N-S	E-W	VERT. SECTION	DLS/100
Tie-In								
	1500.0		270.00	1500				
	1600.0	3.00	270.00	1600	0	-2.6	0	3.0
	1700.0	6.00	270.00	1700	0	-10.5	1	3.0
	1800.0	9.00	270.00	1799	0	-23.5	3	3.0
	1900.0	9.14	270.00	1898	0	-39.3	5	0.1
	2000.0	9.14	270.00	1996	0	-55.2	6	
	2100.0	9.14	270.00	2095	0	-71.0	8	
Base Lamar	3411.7	9.14	270.00	3390	0	-279.4	33	
Delaware	3446.1	9.14	270.00	3424	0	-284.9	33	
Cherry Cnyn	4553.2	9.14	270.00	4517	0	-460.7	54	
	4700.0	9.14	270.00	4662	0	-484.1	57	
	4800.0	9.14	270.00	4761	0	-499.9	59	
	4900.0	9.14	270.00	4859	0	-515.8	60.4	
	5000.0	9.00	270.00	4958	0	-531.6	62.3	0.1
	5100.0	6.00	270.00	5057	0	-544.6	63.8	3.0
	5200.0	3.00	270.00	5157	0	-552.5	64.7	3.0
	5300.0			5257	0	-555.1	65.1	3.0
Kingrea	6249.1			6206	0	-555.1	65.1	
BS Lime	7285.1			7242	0	-555.1	65.1	
BS 1 SS	8185.1			8142	0	-555.1	65.1	
BS 2 SS	8998.1			8955	0	-555.1	65.1	
BS 3 SS	10100.1			10057	0	-555.1	65.1	
KOP	10143.1		359.89	10100	0	-555.1	65.1	
	10243.1	10.00	359.89	10200	9	-555.1	73.7	10.0
	10343.1	20.00	359.89	10296	35	-555.2	99.4	10.0
	10443.1	30.00	359.89	10387	77	-555.2	141.3	10.0
Wolfcamp	10513.0	37.00	359.89	10445	115	-555.3	179.6	10.0
	10543.1	40.00	359.89	10468	134	-555.4	198.2	10.0
	10593.1	45.00	359.89	10505	168	-555.4	231.8	10.0
	10693.1	45.00	359.89	10576	239	-555.6	302.0	
	10743.1	50.00	359.89	10610	275	-555.6	338.6	10.0
	10843.1	60.00	359.89	10667	357	-555.8	419.9	10.0
	10943.1	70.00	359.89	10709	448	-555.9	509.8	10.0
	11043.1	80.00	359.89	10735	544	-556.1	605.6	10.0
Wolfcamp TT	11143.1	90.00	359.89	10744	644	-556.3	704.4	10.0
	11243.1	90.00	359.89	10744	744	-556.5	803.8	
	11343.1	90.00	359.89	10744	844	-556.7	903.1	
	11443.1	90.00	359.89	10744	944	-556.9	1002.4	
	11543.1	90.00	359.89	10744	1044	-557.1	1101.8	
	11643.1	90.00	359.89	10744	1144	-557.3	1201.1	
	11743.1	90.00	359.89	10744	1244	-557.5	1300.4	
	11843.1	90.00	359.89	10744	1344	-557.7	1399.8	
	11943.1	90.00	359.89	10744	1444	-557.8	1499.1	
	12043.1	90.00	359.89	10744	1544	-558.0	1598.4	
	12143.1	90.00	359.89	10744	1644	-558.2	1697.8	
	12243.1	90.00	359.89	10744	1744	-558.4	1797.1	
	12343.1	90.00	359.89	10744	1844	-558.6	1896.4	
	12443.1	90.00	359.89	10744	1944	-558.8	1995.8	
	12543.1	90.00	359.89	10744	2044	-559.0	2095.1	
	12643.1	90.00	359.89	10744	2144	-559.2	2194.4	
	12743.1	90.00	359.89	10744	2244	-559.4	2293.8	
TD	14950.4	90.00	359.89	10744	4451	-563.6	4486.4	






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

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	RKI EXPLORATION
LEASE NO.:	NM20965
WELL NAME & NO.:	26H-RDX FEDERAL COM 17
SURFACE HOLE FOOTAGE:	200' FSL & 1425' FEL
BOTTOM HOLE FOOTAGE	330' FNL & 1980' FEL
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 (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S 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. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#).
Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

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

Wait on cement (WOC) 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.

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

Medium cave/karst potential
Possibility of water flows in the Salado and Delaware.
Possibility of lost circulation in the Rustler and Delaware.
Possibility of high pressure in the Wolfcamp.

1. The **13-3/8** inch surface casing shall be set at approximately **1035** 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 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. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

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.

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 **5-1/2** inch production casing is:

   ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

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

C. PRESSURE CONTROL

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

2. **Operator has proposed a multi-bowl wellhead assembly that has a weld on head with no o-ring seals. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 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.**
   d. **Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.**
   e. **If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.**

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).

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

c. 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.

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

e. 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.**

f. 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.

g. 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 081115