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.
NMNM54290

6. If Indian, Allottee or Tribe Name

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

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

8. Well Name and No.
NORTH BRUSHY DRAW FEDERAL 35 6H

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

9. API Well No.
30-015-42293-00-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
CORRAL CANYON

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 35 T25S R29E NWNE 175FNL 2290FEL
32.053509 N Lat, 103.571390 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.)

Please refer to the revised WBD, drilling program, directional plan, and plat. Revisions were made to the original APD as there was a change in BHL and POP.
Wellbore will still penetrate the same 40 acre tracts.
Dedicated acreage in the spacing unit will modify from 320 acres to 160 acres.

Accepted for record
NMOCD

1/15/16

NM OIL CONSERVATION
ARTESIA DISTRICT
JAN 08 2016
RECEIVED

14. I hereby certify that the foregoing is true and correct.
Electronic Submission #310624 verified by the BLM Well Information System
For RKI EXPLORATION & PROD LLC, sent to the Carlsbad
Committed to AFMSS for processing by JENNIFER SANCHEZ on 11/13/2015 (16JAS1108SE)

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

Signature (Electronic Submission) — Date 07/29/2015

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

APPROVED
JAN 5 2016
BUREAU OF LAND MANAGEMENT

Approved By _____ Title _____ Date

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

NM OIL CONSERVATION
ARTESIA DISTRICT
JAN 08 2016
RECEIVED

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
30-015-42293	98145	WC-015-G-06 52529513 UPPER WOLFCAMP

Property Code	Property Name	Well Number
38962	NORTH BRUSHY DRAW FEDERAL 35	6H

OGRID No.	Operator Name	Elevation
246289	RKI EXPLORATION AND PRODUCTION	3014'

Surface Location

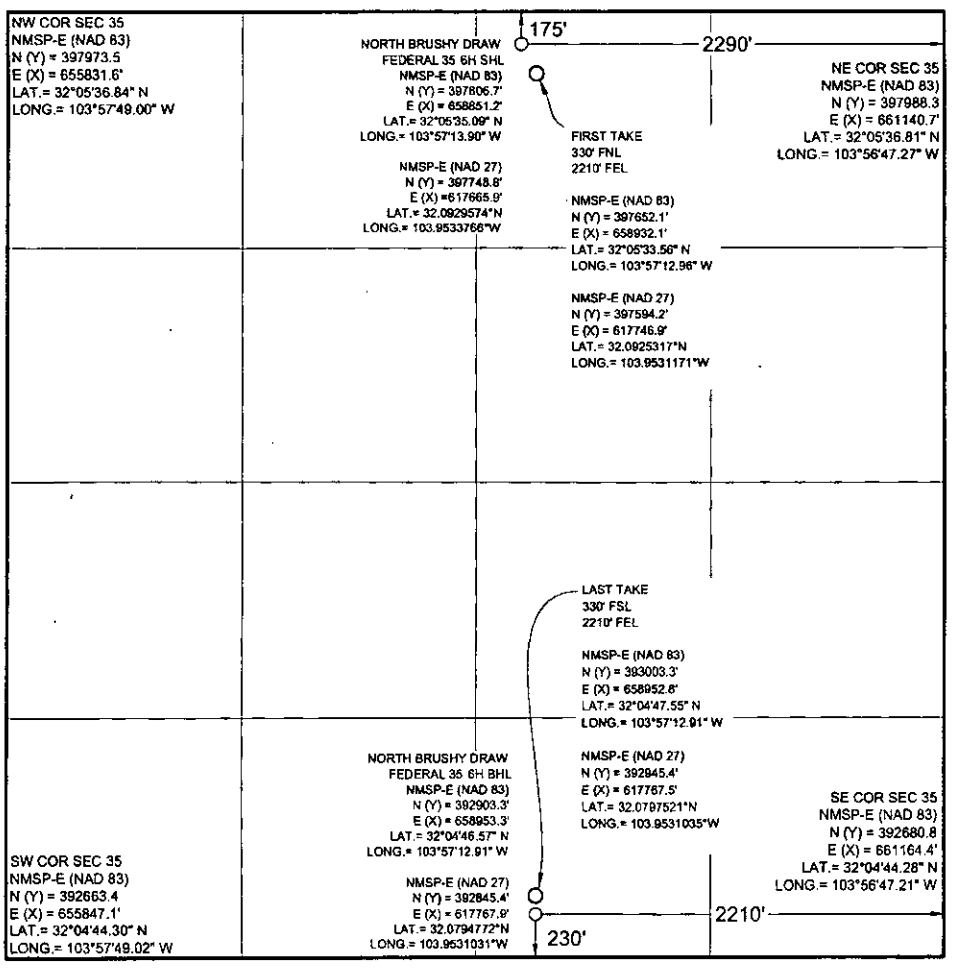
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	35	25 S	29 E		175'	NORTH	2290	EAST	EDDY

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
O	35	25 S	29 E		230	SOUTH	2210	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidated Code	Order No.
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.

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.

July 21, 2015
Date of Survey

Signature and Seal of Professional Surveyor:

JAMES E. TOMPKINS NEW MEXICO 14729 REGISTERED PROFESSIONAL LAND SURVEYOR

Job No.: WTC50793

JAMES E. TOMPKINS 14729
Certificate Number

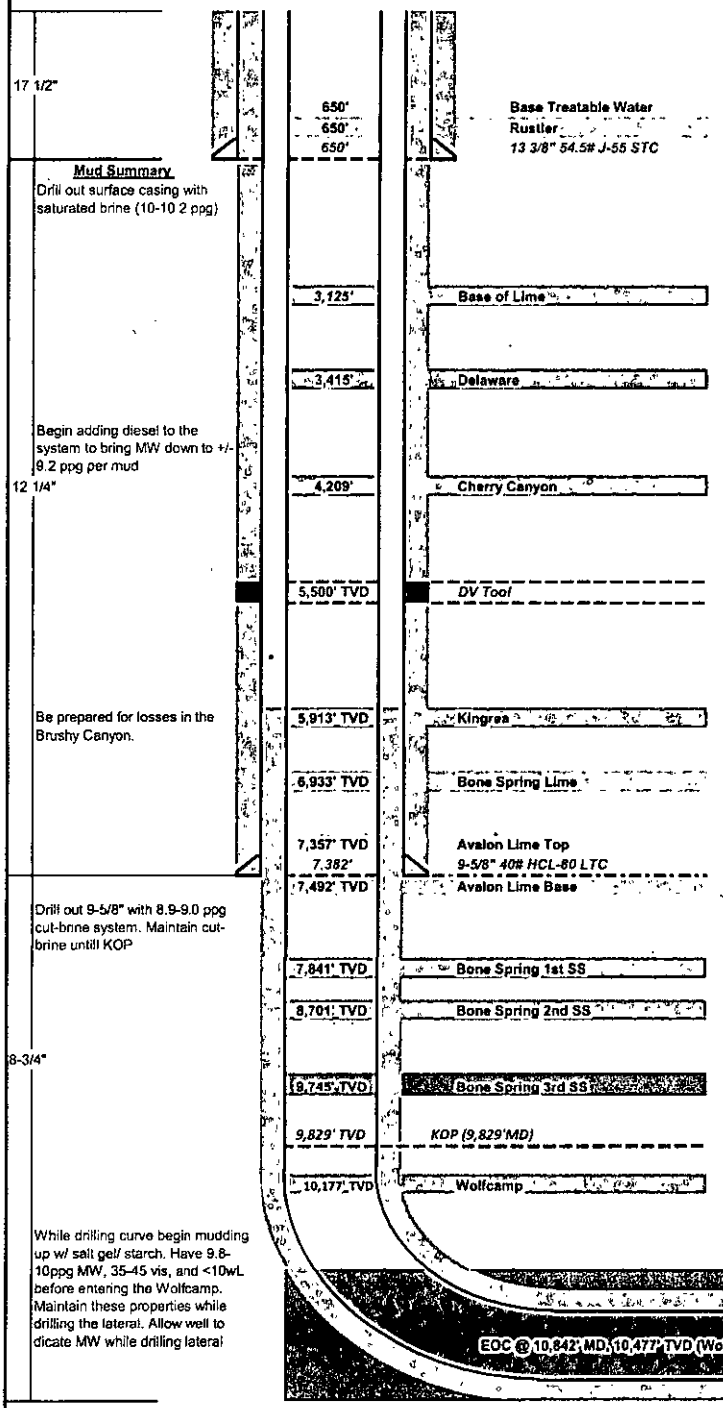
SILVER OAK 14

RIG PHONE: (432) 400-2544

Well:	North Brushy Draw Fed 35-6H	Drilling Engineer:	Preston Wray
Prospect:	Wolfcamp	Drilling Manager:	Joel Acosta
County:	Eddy/ New Mexico	Completions:	Jay Brenner
Surface:	175' FNL & 2290' FEL Sec. 35-25S-29E	Geology:	Jeanne Allen
PBHL:	230' FSL & 2210' FEL Sec. 35-25S-29E	Production:	Paul Munding
GL:	3,014' KB: 3,038'	API:	30-015-42293

RKI Exploration & Production

Well Profile: Deep 9-5/8" Intermediate



Total Measured Depth: 15,096' MD
True Vertical Depth: 10,457' TVD

Wellhead Equipment	
Tubing Head	11" 10M x 7-1/6" 10M
Casing Spool	13 5/8" 5M X 11" 10M
Wellhead	13 3/8" 5M x 13 5/8" 5M

Tubular Detail						
String	Size	Wt	Grade	Conn	From	To
Surface	13 3/8"	54.5#	J-55	ST&C	0'	650'
Intermediate 1	9-5/8"	40#	HCL-80	LT&C	0'	7,382'
Intermediate 2	N/A	N/A	N/A	N/A	N/A	N/A
Production	5-1/2"	20#	P-110	BTC	0'	15,096'

Logging Program			
	Detail	From	To
Run #1			
Run #2			

Directional Program	
Nudge:	-
KOP:	9,829'MD/ 9,829' TVD
Build:	Build 10°/100' DLS @ 140°Az to 168.7°
	Hold 100' tangent @ 45°
	Build 10°/100' DLS to 90.27°
Azimuth:	179.70°
EOC:	10,842' MD, 10,477' TVD
Hold:	90.27° @ 179.7° Az
TD:	15,096' MD / 10,457' TVD
TD (X&Y):	N-S: -4,903', E-W: 102'
TD (VS):	4,903'
Inc:	90°

Clean-up Cycles
*Perform clean-up cycles every 1,000' in lateral @ 80 rpm/ 475 gpm once wellbore cleans up. Minimum of 2 bottoms up. *At TD, circulated 1.5 hrs/ 1,000' of lateral drilled @ 80 rpm/ 475 gpm before TOH

Engineer	Date	Cementing	Logging Company	Mud Loggers	Mud Company	Directional
Preston Wray	7/24/2015	Par-Five	NA	Toledo	Nafta	Ranger
		(575) 748-8610	-	(866) 463-5600	(405) 834-9675	(405) 517-5585
(405) 435-0089		Superintendents	Closed Loop System	Wellhead Company	Casing	Regulatory
		Chuck McDougal	Basic	Cactus	(send email request)	BLM
		Frank Collins	-	(405) 445-2222		(575) 361-2822

North Brushy Draw Fed 35-6H

17-1/2" Surface Hole

****Send SURFACE CASING REQUEST email 3 days prior to running casing****

1 Perform pre spud inspection with drilling contractor. Ensure everything is RU completely and functioning properly before spudding in.

2 Contact the BLM 24 hrs prior to spud and notify of spud. Note the time, date, and operator you spoke with in the DDR. Also, note time/date when rig was accepted as well as spud date/time on DDR.

3 PU the following BHA to drill surface

BHA #1

Bit #1	17.5" PDC Logic KS619
Bit Sub	
Mud Motor	8" Baker XLLS 7/8, 4.0 stg, ABH @ 1.5° 0.16 rpg
Shock sub	Blair Tools Shocksub
Roller Reamer	Blair Tools Roller Reamer
Drill Collars	(3) 8"Silver DC
XO	XO (6-5/8" Reg x 4-1/2" XH)
Drill Collars	(9) 6" Silver Oak DC
HWDP	5" XH Casey Equip HWDP

4 **Pump Setup**

Pump #1			Pump #2		
Liner Size	6	in	Liner Size	6	in
Stroke Length	12	in	Stroke Length	12	in
Eff	0.95	%	Eff	0.95	%
Output	0.0997272	bbl/stk	Output	0.099727	bbl/stk
Pump Rate	356	gpm @85 stk/min	Pump Rate	356	gpm @85 stk/min
Pump Rate	461	gpm @110 stk/min	Pump Rate	461	gpm @110 stk/min
Pressure Rating	3736	psi (80% of max)	Pressure Rating	3736	psi (80% of max)

5 Drill 17-1/2" surface to +/- 650'

- Take surveys every 90' to TD, contact OKC if deviation exceeds 3 degrees
- Pump +/-800 gpm and vary WOB (25-30K) and RPM (100-120) to maximize p-rate
- Sweep hole clean prior to TOH.
- Pump fuild caliper prior to TOH f/ casing
- Run GYRO prior to TOH f/ casing, if needed

6 **Mud Properties (see attached mud program for details)**

From Spud to Surface TD	MW	8.3-9.0	ppg
	Vis	32-40	sec/qt
	PV	3-12	cp
	YP	4-14	lb/100ft sq
	API FL	NC	mL/30min
	Solids	3-5	%

7 RU casing crew and run 650' of 13-3/8" 54.50# J-55 STC

- Run guide shoe, 1 joint of casing, & float (tack weld float euipment)
- Centralize first 3 joints and every other joint to surface
- Run cement basket @ base of conductor, if losses occur while drilling discuss not running cement basket with engineer

13-3/8" 54.50# J-55 STC					
Collapse (100%)	1,130	psi	Displacement	0.6946	cuft/ft
Burst (100%)	2,730	psi	Displacement	0.12372	bbl/ft
Yield (100%)	514,000	lb	Capacity	0.1546	bbl/ft

8 RD casing crew and rig up cementers (Par Five). Have 1" tubing available for top out. **Pump the following volumes**

Top of cement calculated to surface. Confirm cement volumes with fluid caliper prior to pumping.

Pre Flush:	**20**	bbl	Gel Spacer
Lead:	**368**	sks	Class C w/ 4%PF20, 1%PF1,.125pps PF29, .4pps PF45
Density	13.5	ppg	
Yield	1.73	cuft/sk	
Mix H2O	9.123	gal/sk	
Excess	200%		2
Tail	***200***	*sks*	*Class C w/ 1%PF1*
Density	14.8	ppg	
Yield	1.33	cuft/sk	
Mix H2O	6.309	gal/sk	
Excess		%	
Displacement	**93.7**	bbls	Brine water

•Recalculate displacement volumes to float collar once casing is landed. Do not over displace.

• Release pressure and verify that float is holding. If float does not hold, pressure up and check again. If float still does not hold, trap final displacement pressure + 500 psi for 4 hours.

• *Note: if cement is not circulated to surface, notify engineer and superintendent. Contact TRRC and call out wireline truck for temp survey.*

9

Install 13-3/8" SOW x 13-5/8" 5M starting head with 2" 5M ball valve on one outlet and bull plug on the other, test head to 1000 psi. NU BOPE and test with 3rd party company to 250 psi low/5000 psi high (annular to 250 psi low/ 2000 psi high). Keep charted tests on file for duration of well.

• Contact Riley Stafford @ Cactus Wellhead, 405-445-2222 for casing head.

• **Install wear bushing prior to drilling out.**

12-1/4" Intermediate Hole

****Send INTERMEDIATE CASING REQUEST email at least 3 days prior to running casing****

1 PU the following BHA;

Bit	12-1/4"PDC Logic PLSs616S6E PDC/(3x14's,3x15's) TFA:0.9687
Vertical Scout	Vertical Scout
Mud Motor	9-5/8" Turbo Scout 7/8 3.4 stg/0.08 rpg/ w/ 12-1/8" stabilizer
NMDC	Scout Pony NMDC
UBHO	Scout UBHO
NMDC	Scout NMDC/ MWD w/gamma
IBS	Rental 12-1/8" IBS (1/8" under gauge)
Drill Collars	(3) 8" DC
Drill Collars	(9) 6" DC
Jars	Blair Tools Hydraulic Jars
HWDP	5" HWDP

2 **Pump Setup**

Pump #1			Pump #2		
Liner Size	6	in	Liner Size	6	in
Stroke Length	12	in	Stroke Length	12	in
Eff	0.95	%	Eff	0.95	%
Output	0.0997272	bbl/stk	Output	0.099727	bbl/stk
Pump Rate	356	gpm @85 stk/min	Pump Rate	356	gpm @85 stk/min
Pump Rate	461	gpm @110 stk/min	Pump Rate	461	gpm @110 stk/min
Pressure Rating	3736	psi (80% of max)	Pressure Rating	3736	psi (80% of max)

3 TIH to float collar, test casing to 1500 psi for 5 min prior to drilling out float euipment.

4 Drill shoe track and drill ahead following sound drilling practices.

- Pump +/-800 gpm and vary WOB and RPM to maximize ROP.
- Drill out with a 10-10.2ppg saturated brine (150-180K chlorides)
- Run centrifuge as needed to control weight, DO NOT dilute with FW to control weight
- Planned nudge: -
- Begin introducing diesel into the sytem at **4,000' TVD**
- Diesel will be used to cut MW to +/-9.2 ppg (roughly 60/40 WOR), see mud program for details and mixing procedures.
- Take surveys every +/- 90' (must take survey every 200' per TRRC)
- Lost circulation is possible through the Delaware formations. Be sure MW is below 9.4 ppg (from the addition of diesel) before drilling into the Brushy Canyon. If seepage/ losses occurs, treat with LCM. If complete losses occur, PU above loss zone, spot an LCM pill and allow hole to heal for an hour before attempting to establish returns.
- Planned TD for this hole section is **7,382'** . Confirm casing point with onsite geologist and engineer prior to TOH. Be sure to drill +/-20' of rathole so casing can be landed in the wellhead.
- Once TD is reached, circulate hole clean and TOH f/ logs
- We will be running OH logs f/ TD to surface with NA

5 Mud Properties (see attached mud program for details)

Interval	Mud Type	Properties		
Surface csg - 4,000' TVD	Brine	MW	10-10.2	ppg
		Vis	29-32	sec/qt
		PV	NC	cp
		YP	NC	lb/100ft sq
		API FL	NC	mL/30min
		Chlorides	150-180K	ppm
4,000' TVD - Intermediate TD	Diesel-Brine	MW	9.2-9.3	ppg
		Vis	32-40	sec/qt
		PV	10-12	cp
		YP	10-12	lb/100ft sq
		API FL	NC	mL/30min
		Chlorides	150-180K	ppm
		Diesel	30-35	%

6 R/U casing crew and run 9-5/8" 40# HCL-80 LTC casing as follows;

- **Pull wear bushing before running casing!**
- Float Shoe
- 1 joint
- Float Collar
- DV Tool @ **5,500'**

Confirm casing tally with engineers prior to running

9-5/8" 40# HCL-80 LTC						
Collapse	4,230	psi	Annular Vol.	12-1/4" x 9-5/8" csg	0.3132	cuft/ft
Burst	5,750	psi	Annular Vol.	13-3/8"csg x 9-5/8"csg	0.3627	cuft/ft
Yield	837,000	lb	Capacity	-	0.0758	bbl/ft

- It is not required to tag bottom to verfiy hole depth.
- Before making up mandrel and landing joint, verify correct number of joints were left out
- Verify casing landed properly through sight ports in wellhead.

7 RD casing crew and rig up cementers (Par Five). Circulate 1.5 times casing capacity to ensure casing is clear. **Pump the following volumes**

Final cement volumes will be emailed out prior to running casing.

1st Stage:

Pre Flush:	**20**	bbl	Gel Spacer w/ Dye
Lead:	**677**	sks	PVL w/ 1.3%PF44, 5%PF174,.5% PF606, .3% PF813,.1%PF153,
Density	13	ppg	.4ppsPF45
Yield	1.48	cuft/sk	
Mix H2O	7.609	gal/sk	
Excess	1.7		70%
DV Tool	5,500'		
Displacement	**556.2**	bbls	Cut Brine

- Bump plug to 500 psi over final displacement pressure. Release pressure to verify floats are holding.
- Drop DV opening tool, wait +/- 45 minuntes, and pressure up to +/-750 psi to open tool.
- Circulate 4 hrs through DV Tool with prior to pumping 2nd stage

2nd Stage:

Lead:	**1377**	sks	35/65 Poz Class C w/ 5%PF44, 6%PF20,.125pps PF29,
Density	11.6	ppg	.4pps PF45, 3pps PF42, 1%PF79, 4%PF61
Yield	2.87	cuft/sk	
Mix H2O	16.787	gal/sk	
Excess	2.6		160%
Top of Cement	Surface		
Tail	**175**	sks	Class C w/ .2% PF13
Density	14.8	ppg	
Yield	1.33	cuft/sk	
Mix H2O	6.307	gal/sk	
Excess		%	
Displacement	**416.9**	bbls	Cut Brine (+/-9.0-9.2)

8 RD cementers and set pack off with Cactus Wellhead representative

- Test upper and lower seals to 5000 psi.

8-3/4" Veritcal

****Send PRODUCTION CASING REQUEST email at least 3 days prior to running casing****

1 PU the following BHA

Component:	Details:
Bit #1	8-3/4" Insert bit
Bit Sub	

2 TIH to DV Tool,

- Test casing before drilling DV Tool to 1,500 psi for 30 minutes. If surface pressure loss is greater than 10% of initial test pressure, contact engineer.
- Drill DV Tool and repeat casing test to 1,500 psi for 30 minutes. If surface pressure loss is greater than 10% of initial test pressure, contact engineer.
- Continue to TIH to FC, drill shoe track and 10'-15' of formation
- Perform FIT to 11.0 ppg MW equivalent
- TOH f/ directional assembly

3 PU the following BHA

Bit #1	8.75" PDC Logic PLT 616D (3x12, 3x11)
Vertical Scout	Vertical Scout
Mud Motor	6-3/4" Turbo Scout mtr 7/8 5 stg/0.28 rpg/ w/ 8-5/8" stab
NMDC	Scout Pony NMDC
UBHO	Scout UBHO
NMDC	Scout NMDC/ MWD w/gamma
IBS	Rental 8-5/8" IBS (1/8" under gauge)
Drill Collars	(6) 6" Silver Oak DC
XO	
HWDP	5" HWDP (Casey Equip)

4 **Pump Setup**

Pump #1			Pump #2		
Liner Size	6	in	Liner Size	6	in
Stroke Length	12	in	Stroke Length	12	in
Eff	0.95	%	Eff	0.95	%
Output	0.0997272	bbl/stk	Output	0.099727	bbl/stk
Pump Rate	356	gpm @85 stk/min	Pump Rate	356	gpm @85 stk/min
Pump Rate	461	gpm @110 stk/min	Pump Rate	461	gpm @110 stk/min
Pressure Rating	3736	psi (80% of max)	Pressure Rating	3736	psi (80% of max)

5 Drill ahead following sound drilling practices.

- Pump maximize gpm and vary WOB and RPM to maximize ROP.
- Contact OKC in target window is exceeded (target window = 50' radius around well plan)
- Utilize a cut-brine mud sytem (see mud program). Mud additives should be keep to a minimum while drilling the hole section
- Planned KOP is **9,829' TVD** , TOH +/-100' before planned KOP
- Circulate hole clean and TOH for logs. (verfiy OH logs will be run w/ engineer)

6 **Logging Program (verify logging program with engineer)**

	Company	Log Type	Interval	
			To:	From:
Run #1	NA	0	0'	0'
Run #2	NA	0	0'	0'

7 **Mud Properties (see attached mud program for details)**

From 9-5/8" csg to KOP	MW	9.0-9.3	ppg
	Vis	28-32	sec/qt
	PV	-	cp
	YP	-	lb/100ft sq
	API FL	NC	mL/30min
	Solids	< 3	%

8-3/4" Curve

1 PU the following BHA

Bit #1	8.75" Baker HP624 (Kymera)
Mud Motor	6.5" Baker 5/6, 6.0 stg ABH @ 2.25°, 0.33 rpg
UBHO	Drill Tech UBHO
NMDC	6.5" Monel
NMDC	6.5" Flex Monel
DP	20 Stds -5" DP (Casey Equipment)
HWDP	16 Stds- 5" HWDP (Casey Equipment)

2 **Pump Setup**

Pump #1			Pump #2		
Liner Size	6	in	Liner Size	6	in
Stroke Length	12	in	Stroke Length	12	in
Eff	0.95	%	Eff	0.95	%
Output	0.0997272	bbl/stk	Output	0.099727	bbl/stk
Pump Rate	356	gpm @85 stk/min	Pump Rate	356	gpm @85 stk/min
Pump Rate	461	gpm @110 stk/min	Pump Rate	461	gpm @110 stk/min
Pressure Rating	3736	psi (80% of max)	Pressure Rating	3736	psi (80% of max)

3 Drill ahead following sound drilling practices.

- Pump maximum gpm and vary WOB to maximize ROP.
- Kick off 100' above planned KOP
- Build curve per attached directional plan.
- Slide 100% until the first survey is seen. Adjust rotate/ slide ratio based on motor yield.
- If at any point while building the curve the motor is yielding less than DLS required to land on target, call and discuss with Superintendent and Engineer.
- Once curve is landed, circulate hole clean and TOH f/ lateral assembly, refer to Wolfcamp tripping procedures below.

4 **Directional Details:**

KOP:	9,829'MD/ 9,829' TVD
Build:	Build 10°/100' DLS @ 140°Az to 168.7°
	Hold 100' tangent @ 45°
	Build 10°/100' DLS to 90.27°
Azimuth:	179.7
EOC:	10,842' MD, 10,477' TVD
Hold:	90.27° @ 179.7° Az

5 **Mud Properties (see attached mud program for details)**

From KOP to EOC	MW	9.4-10.0	ppg
	Vis	35-45	sec/qt
	PV	10-20	cp
	YP	10-20	lb/100ft sq
	API FL	8-10	mL/30min
	Solids	< 3	%

- Begin a gradual mud up w/ Starch and Salt Gel while drilling the curve
- Mud up should be complete by top of Wolfcamp
- Allow well to dictate MW

8-3/4" Production Lateral

1 PU the following BHA

Bit #1	8.75" PDC (discuss w/ engineer)
Mud Motor	6.5" Baker 5/6, 6.0 stg ABH @ 1.5°, 0.33 rpg
UBHO	Drill Tech UBHO
NMDC	6.5" Monel
NMDC	6.5" Flex Monel
DP	20 Stds -5" DP (Casey Equipment)
XRV	TTS XRV Agitator
DP	5" DP (Casey Equipment)
HWDP	5" HWDP (Casey Equipment)

2 **Pump Setup**

Pump #1			Pump #2		
Liner Size	6	in	Liner Size	6	in
Stroke Length	12	in	Stroke Length	12	in
Eff	0.95	%	Eff	0.95	%
Output	0.0997272	bbl/stk	Output	0.099727	bbl/stk
Pump Rate	356	gpm @85 stk/min	Pump Rate	356	gpm @85 stk/min
Pump Rate	461	gpm @110 stk/min	Pump Rate	461	gpm @110 stk/min
Pressure Rating	3736	psi (80% of max)	Pressure Rating	3736	psi (80% of max)

3 Drill ahead following sound drilling practices.

- Drill lateral per attached directional plan
- Target Window: **20' high/low; 50' left/right**
- Pump maximum gpm and vary WOB and RPM to maximize ROP.
- Monitor PU, SO, and ROT weights and TQ while drilling the lateral for hole cleaning indications.
- Perform clean-up cycles every +/- 1,000' (or as needed) @ 450 gpm / 85 rpm
- **Wolfcamp Tripping Procedure:** Circulate hole clean. Pump first 10 stands off bottom and break circulation every 500'. Ensure hole is taking proper fill. If well is flowing, calculate/ pump ECD pill before continuing to TOH. If excess drag is seen or hole is packing off, **STOP** and circulate hole clean before continuing to TOH! Stop before BHA reaches EOC and circulate hole clean before tripping BHA through the curve.
- USE DP SCREEN ANYTIME PUMP IS ON THE HOLE!!

4 **Directional Details:**

Target TVD	10,477'
Target Window	20' high/low; 50' left/right
TD:	15,096' MD / 10,457' TVD
TD (X&Y):	N-S: -4,903', E-W: 102'
TD (VS):	4903
Inc:	90.27°

5 **Mud Properties (see attached mud program for details)**

From KOP to EOC	MW	9.4-10.0	ppg
	Vis	35-45	sec/qt
	PV	10-20	cp
	YP	10-20	lb/100ft sq
	API FL	8-10	mL/30min
	Solids	< 3	%

- Maintain a 10 WL or lower throughout the lateral
- Allow well to dictate MW
- Discuss the addition of lubricants with Superintendent and Engineer if sliding becomes an issue in the lateral.

6 **Clean-up Cycle/ TOH @ TD Procedure**

- TD well at BHL per directional plan, confirm TD with Superintendent and Engineer

- Circulate 1.5 hrs for every 1,000' of lateral @450 gpm/85 rpm. Recipocate pipe while performing clean-up.
- Record PU/SO/ROT string weights and TQ every hour (in clean-up cycle spreadsheet) and send to Engineer and Superintendent for review prior to TOH.
- Pump first 10 stands off bottom and break circulation every 500'. Ensure hole is taking proper fill. If well is flowing, calculate/ pump ECD pill before continuing to TOH. If excess drag is seen or hole is packing off, **STOP** and circulate hole clean before continuing to TOH!
- Stop before BHA reaches EOC and circulate hole clean before tripping BHA through the curve.
- **USE DP SCREEN ANYTIME PUMP IS ON THE HOLE!!**
- Begin LD drill pipe @ KOP

7 **Production Casing Requirements**

- 3rd Party casing inpection must be monitored by TH Hill
- Torque Turn must be utilized while running casing
- Thread rep must monitor casing run if premium thread is utilized
- TH Hill representative must monitor casing run

8 R/U casing crew and run 5-1/2" 20# P-110 BTC casing as follows;

- **Pull wear before running casing!**
- Float Shoe
- 2 joints
- Float Collar w/ latch down plug
- Marker joints @ middle of lateral and 500' above KOP

Confirm casing tally with engineers prior to running

5-1/2" 20# P-110 BTC						
Collapse	11,080	psi	Annular Vol.	8-3/4" x 5-1/2" csg	0.2526	cuft/ft
Burst	12,360	psi	Annular Vol.	9-5/8"csg x 5-1/2" csg	0.2607	cuft/ft
Yield	641,000	lb	Capacity	-	0.0222	bbl/ft

- Tag bottom to verfiy hole depth.

9 RD casing crew and rig up cementers (Par Five). Circulate 1.5 time casing capacity to ensure casing is clear. **Pump the following volumes**

Final cement volumes will be emailed out prior to running casing.

Pre Flush:	**30**	bbl	Par Five Mud Wash
Lead:	**652**	sks	PVL w/ 1.3%PF44, 5%PF174,.5% PF606, .4% PF813, .1% PF153,
Density	13	ppg	.4 pps PF45,
Yield	1.48	cuft/sk	
Mix H2O	7.573	gal/sk	
Excess	1.35		35%
Top of Cmt	6,882'		
Tail	**950**	sks	AcidSolid PVL w/ 1.3%PF44, 5%PF174,.1% PF153,.7% PF606,
Density	13	ppg	.4% PF813, 30% PF151, .4pps PF45
Yield	1.89	cuft/sk	
Mix H2O	9.632	gal/sk	
Excess	1.35		35%
Displacement	**333.3**	bbls	Freshwater

- Recalculate displacement volumes to float collar once casing is landed.

- If plug does not bump at calculated displacement, call OKC to discuss options before overdisplacing.
- Release pressure and verify that float is holding. If float does not hold, pressure up and check again. If float still does not hold, trap final displacement pressure + 500 psi for 4 hours.

10 ND BOPE and NU 7-1/16" 10M x 11" 10M tubing head and test to 5,000 psi. Note tubing head specs and test details in DDR.

11 Clean pits and prep to release rig. Clear location of trash and verify mouse hole and rat hole are properly covered or abandoned.

Appendix

a.

Hole Section	Wellbore Geometry		Annular Volume	
	Outside	Inside	cuft/ft	bbl/ft
Surface	17-1/2"	13-3/8" 54.5# J-55	0.6946	0.12372
Intermediate	13-3/8" 54.5# J-55	9-5/8" 40# HCL-80 LTC	0.3627	0.0646
	12-1/4"	9-5/8" 40# HCL-80 LTC	0.3132	0.05578
Production	9-5/8" 40# HCL-80 LTC	5-1/2" 20# P-110 BTC	0.2607	0.0464
	8-3/4"	5-1/2" 20# P-110 BTC	0.2526	0.04499

b.

Capacities			
Surface	13-3/8" 54.50# J-55 STC	0.1546	bbl/ft
Intermediate	9-5/8" 40# HCL-80 LTC	0.0758	bbl/ft
Production	5-1/2" 20# P-110 BTC	0.0222	bbl/ft

c.

Liner Pressure Rating		
Liner Size (in)	Max Pressure (psi)	80% Pressure Rating (psi)
5	5000	4000
5.5	5000	4000
6	4670	3736
6.25	4300	3440
6.5	3975	3180
6.75	3690	2952
7	3430	2744

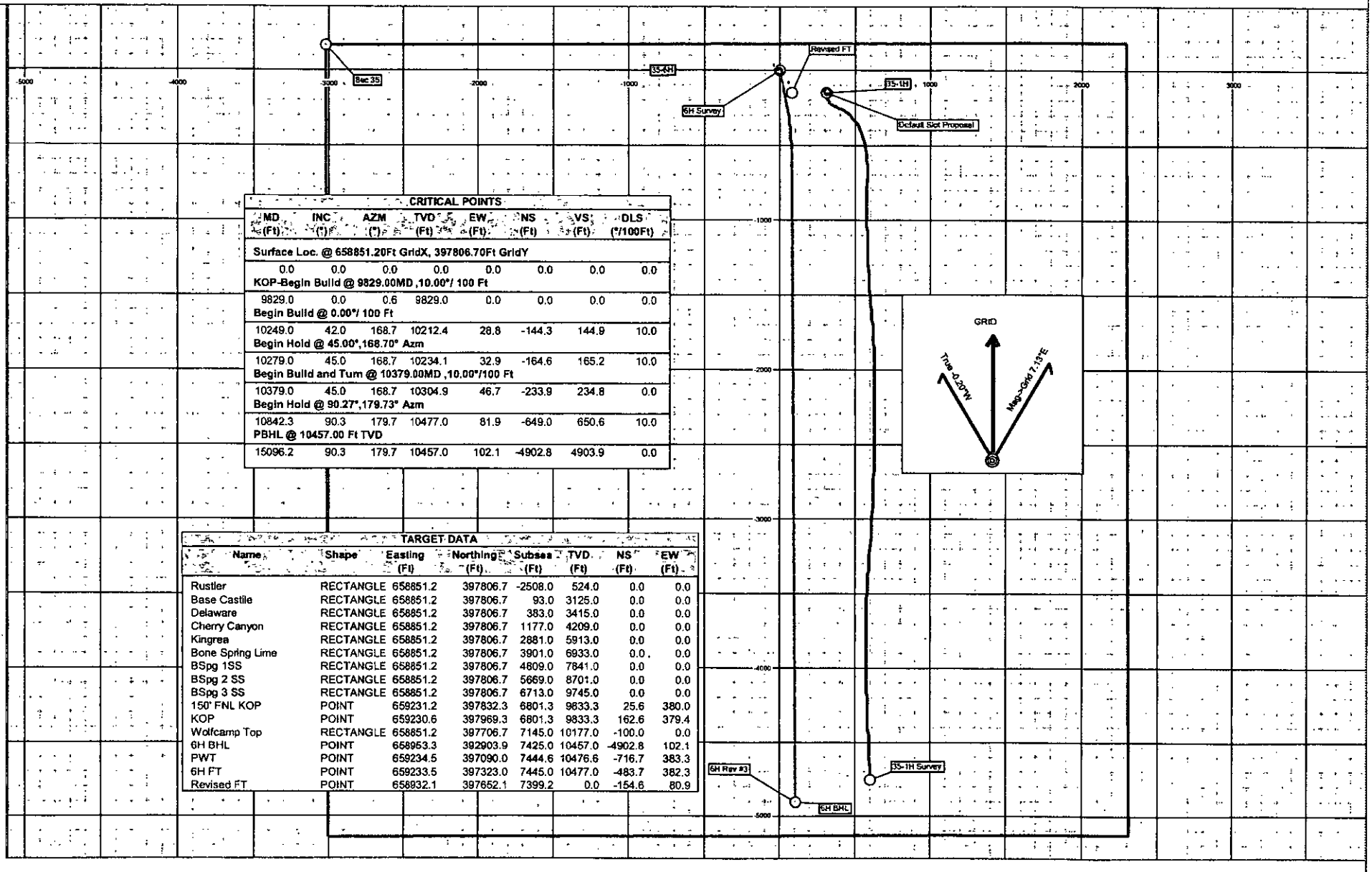
d. **Drill Pipe Specs**

- See attached

Job Number: RDS 15-025
Company: RKI Exploration
Lease/Well: NBD 35-6H
Location: 35-25S-29E
Rig Name: Silver Oak 14

State/County: NM/ Eddy
Country: USA
API Number: 3001542293
Elevation (To MSL): 3014.00 ft
RKB: 18.00 ft
Date: Thursday, July 23, 2015

Projection System: US State Plane 1983
Projection Group: New Mexico Eastern Zone
Projection Datum: GRS80
Magnetic Declination: 7.33
Grid Convergence: 0.20162 E



CRITICAL POINTS

MD (Ft)	INC (°)	AZM (°)	TVD (Ft)	EW (Ft)	NS (Ft)	VS (Ft)	DLS (°/100Ft)
Surface Loc. @ 658851.20Ft GridX, 397806.70Ft GridY							
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KOP-Begin Build @ 9829.00MD ,10.00°/ 100 Ft							
9829.0	0.0	0.6	9829.0	0.0	0.0	0.0	0.0
Begin Build @ 0.00°/ 100 Ft							
10249.0	42.0	168.7	10212.4	28.8	-144.3	144.9	10.0
Begin Hold @ 45.00°,168.70° Azm							
10279.0	45.0	168.7	10234.1	32.9	-164.6	165.2	10.0
Begin Build and Turn @ 10379.00MD ,10.00°/100 Ft							
10379.0	45.0	168.7	10304.9	46.7	-233.9	234.8	0.0
Begin Hold @ 90.27°,179.73° Azm							
10842.3	90.3	179.7	10477.0	81.9	-649.0	650.6	10.0
PBHL @ 10457.00 Ft TVD							
15096.2	90.3	179.7	10457.0	102.1	-4902.8	4903.9	0.0

TARGET DATA

Name	Shape	Easting (Ft)	Northing (Ft)	Subsea (Ft)	TVD (Ft)	NS (Ft)	EW (Ft)
Rustler	RECTANGLE	658851.2	397806.7	-2508.0	524.0	0.0	0.0
Base Castile	RECTANGLE	658851.2	397806.7	93.0	3125.0	0.0	0.0
Delaware	RECTANGLE	658851.2	397806.7	383.0	3415.0	0.0	0.0
Cherry Canyon	RECTANGLE	658851.2	397806.7	1177.0	4209.0	0.0	0.0
Kingrea	RECTANGLE	658851.2	397806.7	2881.0	5913.0	0.0	0.0
Bone Spring Lime	RECTANGLE	658851.2	397806.7	3901.0	6933.0	0.0	0.0
BSpg 1SS	RECTANGLE	658851.2	397806.7	4809.0	7841.0	0.0	0.0
BSpg 2 SS	RECTANGLE	658851.2	397806.7	5669.0	8701.0	0.0	0.0
BSpg 3 SS	RECTANGLE	658851.2	397806.7	6713.0	9745.0	0.0	0.0
150' FNL KOP	POINT	659231.2	397832.3	6801.3	9833.3	25.6	380.0
KOP	POINT	659230.6	397969.3	6801.3	9833.3	162.6	379.4
Wolfcamp Top	RECTANGLE	658851.2	397706.7	7145.0	10177.0	-100.0	0.0
6H BHL	POINT	658953.3	392903.9	7425.0	10457.0	-4902.8	102.1
PWT	POINT	659234.5	397090.0	7444.6	10476.6	-716.7	383.3
6H FT	POINT	659233.5	397323.0	7445.0	10477.0	-483.7	382.3
Revised FT	POINT	658932.1	397652.1	7399.2	0.0	-154.6	80.9