

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.**

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		5. Lease Serial No. NMNM20965
2. Name of Operator RKI EXPLORATION & PROD LLC		6. If Indian, Allottee or Tribe Name
Contact: CHARLES K AHN E-Mail: cahn@rkxp.com		7. If Unit or CA/Agreement, Name and/or No.
3a. Address 210 PARK AVE SUITE 900 OKLAHOMA CITY, OK 73102	3b. Phone No. (include area code) Ph: 405-996-5771 Fx: 405-996-5772	8. Well Name and No. RDX FEDERAL COM 17 20H
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 17 T26S R30E NENE 0330FNL 0790FEL 32.048834 N Lat, 103.896956 W Lon		9. API Well No. 30-015-41381-00-X1
BHL 330 FNL 430 FEL		10. Field and Pool, or Exploratory UNDESIGNATED
		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 Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Drilling Operations
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	Side Track

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 recomple 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.)

As detailed on the attached drilling plan, our revised casing plan (following the side track operation) is to set a 7-inch 26# P-110 at 7,839 feet with DV tool at 5,000 feet. We will drill 6-1/8 inch curve and lateral and run a 4-1/2 inch liner with an OH packer isolation system.

Accepted for record

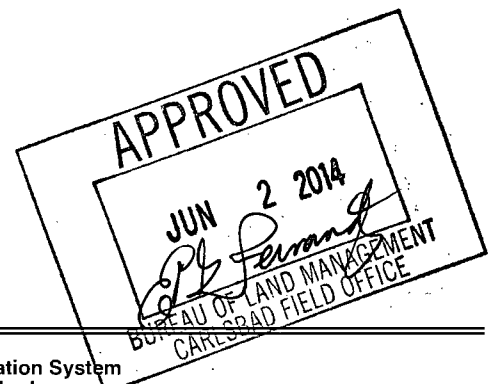
NMOC

NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 06 2014

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

RECEIVED



14. I hereby certify that the foregoing is true and correct.	
Electronic Submission #247777 verified by the BLM Well Information System For RKI EXPLORATION & PROD LLC, sent to the Carlsbad Committed to AFMSS for processing by ED FERNANDEZ on 06/02/2014 (14EF0060SE)	
Name (Printed/Typed) CHARLES K AHN	Title HS&E/REGULATORY MANAGER
Signature (Electronic Submission)	Date 06/02/2014

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By EDWARD FERNANDEZ	Title PETROLEUM ENGINEER	Date 06/02/2014
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

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 **

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Well: RDX Fed 17-20H
 Location Surface: 330 FNL 790 FEL 17-26S-30E
 Bottom Hole: 330 FSL 990 FEL 17-26S-30E
 County Eddy
 State New Mexico

430 FEL

- 1) The elevation to the unprepared ground is 3,081 feet above sea level.
- 2) The geologic name of the surface formation is Quaternary - Alluvium.
- 3) A rotary rig will be utilized to drill the well to 13,235 feet and run casing.
 This equipment will then be rigged down and the well will be completed with a workover rig.
- 4) Proposed depth is 13,235 feet

5) Estimated tops:

	MD	TVD	
Rüster	800		
Salado	1,100		
Castile	1,650		
Lamar Lime	3,498		
Base of Lime	3,523		
Delaware Top	3,564		
Bell Canyon Sand	3,564		Oil 1,568 psi
Cherry Canyon Sand	4,621		Oil 2,033 psi
Brushy Canyon Sand	5,670		Oil 2,495 psi
Bone Spring	7,324		3,223 psi
KOP	7,939	7,884	
Landing Point (Bone Spring)	8,954	8,530	Oil 3,753 psi
TD	13,235	8,450	3,718 psi
			158 deg F

6) Casing program:

Hole Size	Top	Bottom	OD Csg	Wt/Grade	Connection	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 1/2"	0	950	13 3/8"	54.5#/I-55	ST&C	2.70	13.06	9.93
12 1/4"	0	3,443	9 5/8"	40#/I-55	LT&C	1.33	5.21	3.78
8 3/4"	0	7,839	7"	26#/P-110	LT&C	1.80	1.99	4.14
6-1/8"	7,639	13,235	4-1/2"	11.6#/P-110	LT&C	1.30	2.14	5.93
Collapse	1.125							
Burst	1.0							
Tension	2.0							

7) Cement program:

Surface	17 1/2" hole	
Pipe OD	13 3/8"	
Setting Depth	950 ft	
Annular Volume	0.69462 cf/ft	
Excess	1	100 %
Lead	601 sx	1.75 cf/sk 13.5 ppg
Tail	200 sx	1.34 cf/sk 14.8 ppg
Lead: "C" + 4% PF20 + 2% PF1 + .125 pps PF29 + .2% PF46		
Tail: "C" + 1% PF1		
Top of cement:		Surface
Intermediate	12 1/4" hole	
Pipe OD	9 5/8"	
Setting Depth	3,443 ft	
Annular Volume	0.31318 cf/ft	0.3627 cf/ft
Excess	0.5	50 %
Lead	623 sx	2.07 cf/sk 12.6 ppg
Tail	200 sx	1.33 cf/sk 14.8 ppg

Lead: 35/65 Poz "C" + 5% PF44 + 6% PF20 + 3 pps PF42 + .125 pps PF29 + .2% PF46 +1% PF1
 Tail: "C" + .2% PF13

	Top of cement:	Surface
Intermediate	8 3/4" hole	
Pipe OD	7"	
Setting Depth	7,839 ft	
Annular Volume	0.1503 cf/ft	0.26074 cf/ft
Excess	0.35	35 %
Total Annular Volume	739 cf	
With Excess	998 cf	
DV Tool Depth	5,000 ft	

Stage 1
 Lead: 308 sx 1.87 cf/sk 13.0 ppg
 Lead: PVL + 30% PF151 + 5% PF174 + .7% PF606 + .5% PF13 + .2% PF153
 Top of cement: DV tool

Stage 2
 Lead: 141 sx 2.04 cf/sk 12.6 ppg
 Tail: 100 sx 1.33 cf/sk 14.8 ppg
 Lead: 35/65 Poz "C" + 5% PF44 + 6% PF20 + .2% PF13 + .125 pps PF29 + .25 pps PF46
 Tail: "C" + .3% PF13

Top of cement: 3,143 ft
Production 6 1/8" hole
 Pipe OD 4 1/2" with packer isolation system
 Setting Depth 13,235 ft
 Packer isolation system

8) Pressure control equipment:

The blowout preventer equipment (BOP) shown in Exhibit #1 will consist of a double ram type (3,000 psi WP) preventer, a bag-type annular preventer (3,000 psi WP), and rotating head. Both units will be hydraulically operated and the ram type preventer will be equipped with blind rams on top and pipe rams (sized to accommodate the drill pipe size being utilized) on bottom. A 13 3/8" SOW x 13 5/8" 3M casing head will be installed on the 13 3/8" casing and utilized until total depth is reached. All BOP and associated equipment will be tested to 3,000 psi and the annular will be tested to 1,500 psi after setting the 13 3/8" string. The 13 3/8" and 9 5/8" casing will be tested to .22 psi per ft of casing string length or 1,500 psi whichever is greater, but not to exceed 70% of the minimum yield.
 The 9 5/8" casing will be hung in the casing head and the stack will not be nipped down at this point.
 The stack will not be isolated and tested after running the 9 5/8" casing, but will be tested along with the 9 5/8" casing. Pipe rams will be operated and checked each 24 hour period and each time the drill string is out of the hole. These function test will be documented on the daily driller's log.
 A drilling spool or blowout preventer with 2 side outlets (choke side shall be 3" minimum diameter, kill side shall be at least 2" diameter).
 2 kill line valves, one of which will be a check valve.
 2 chokes on the manifold along with a pressure gauge.
 Upper kelly cock valve with handle available.
 Safety valve and subs to fit all drill string connections in use.
 All BOP equipment connections subjected to pressure will be flanged, welded, or clamped.
 Fill up line above the upper most preventer.

9) Mud program:

Top	Bottom	Mud Wt.	Vis	PV	YP	Fluid Loss	Type System
0	950	8.5 to 8.9	32 to 36	1 - 6	1 - 6	NC	Fresh Water
950	3,443	9.8 to 10.1	28 to 30	1 - 3	1 - 3	NC	Brine
3,443	13,235	8.9 to 9.1	28 to 36	1 - 3	1 - 3	NC	Fresh Water

10) Logging, coring, and testing program:

No drillstem test are planned
 KOP to intermediate: CNL, Caliper, GR, DLL,
 Intermediate to surface: CNL, GR
 No coring is planned

11) Potential hazards:

No adnormal pressures or temperatures are expected. There is no known presence of H2S in this area, although some form of H2S detection equipment will be utilized. If H2S is encountered the operator will comply with the provisions of Onshore Order No. 6. Electronic pit monitoring equipment will be utilized with a Pason system. Electronic mud monitoring and mud logging will be utilized below the 9 5/8" casing. Lost circulation material and weighting materials will be readily available.

12) Anticipated start date
Duration

ASAP
25 days



Project: Eddy County, New Mexico (NAD 83)
Site: RDX Federal Com 17
Well: 20H
Wellbore: WB #2 Job #1410739
Design: Plan #5 06-01-14
Rig: Silver Oak 10



PHOENIX
TECHNOLOGY SERVICES



Azimuths to Grid North
True North: -0.23°
Magnetic North: 7.13°
Magnetic Field
Strength: 48182.5nT
Dip Angle: 59.90°
Date: 06/30/2014
Model: IGRF2010_14

SITE DETAILS: RDX Federal Com 17

Site Centre Northing: 381822.10
Easting: 676389.30

Positional Uncertainty: 0.00
Convergence: 0.23
Local North: Grid

PROJECT DETAILS: Eddy County, New Mexico (NAD 83)

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

WELL DETAILS

	+N/-S	+E/-W	Northing	Ground Level	Latitude	Longitude
	0.00	0.00	381822.10	3081.00	32° 2' 56.25408 N	103° 53' 50.76837 W
				676389.30		

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	TFace	VSeal	Target	Annotation
1	3600.00	3.17	349.24	3578.98	277.64	-107.14	0.00	0.00	-285.24		Tie On Survey, Start 2.50°/100' Build
2	4043.34	10.00	91.00	4019.99	289.04	-70.82	2.50	117.83	-293.73		Hold 10.00° Inc at 91.00° Azm
3	5893.34	10.00	91.00	5841.89	283.43	250.38	0.00	0.00	-262.77		Start Drop 1.50°/100'
4	6560.01	0.00	0.00	6505.18	282.42	308.49	1.50	180.00	-257.18		Begin Vertical Hold
5	7939.62	0.00	0.00	7884.79	282.42	308.49	0.00	0.00	-257.18		KOP, Start 10.00°/100' Build
6	8389.62	45.00	173.00	8289.93	115.86	328.85	10.00	173.00	-89.52		Hold 45.00° Inc for 100'
7	8488.62	45.00	173.00	8380.64	45.57	337.47	0.00	0.00	-16.87		Start 10.00°/100' Build & Turn
8	8954.35	91.07	179.87	8530.00	-372.54	359.22	10.00	9.50	400.15		LP, Hold 91.07° Inc at 179.87° Azm
9	13235.72	91.07	179.87	8450.00	-4653.55	368.75	0.00	0.00	4688.13		BHL v3 RDX Fed Com 17-20H v5 - TD at 13235.72

Map System: US State Plane 1983

Datum: North American Datum 1983

Ellipsoid: GRS 1980

Zone Name: New Mexico Eastern Zone

Local Origin: Well 20H, Grid North

Latitude: 32° 2' 56.25408 N

Longitude: 103° 53' 50.76837 W

Grid East: 676389.30

Grid North: 381822.10

Scale Factor: 1.000

Geomagnetic Model: IGRF2010_14

Sample Date: 30-May-14

Magnetic Declination: 7.36°

Dip Angle from Horizontal: 59.90°

Magnetic Field Strength: 48183

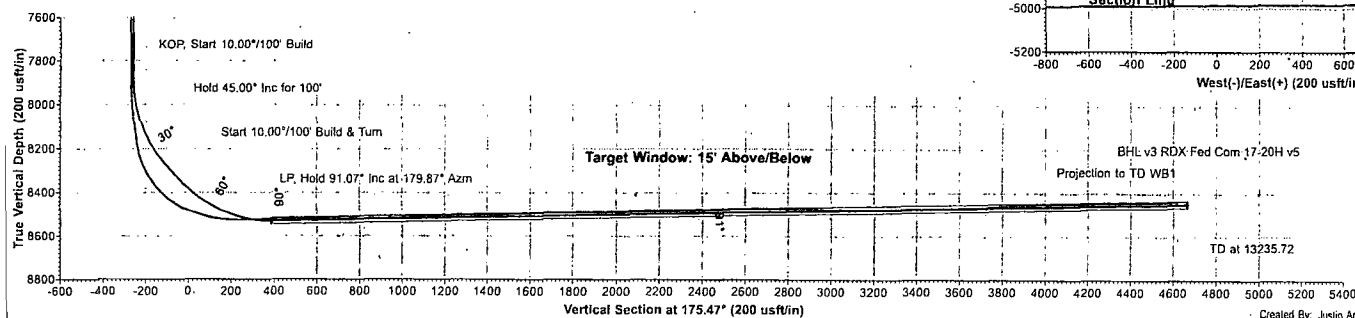
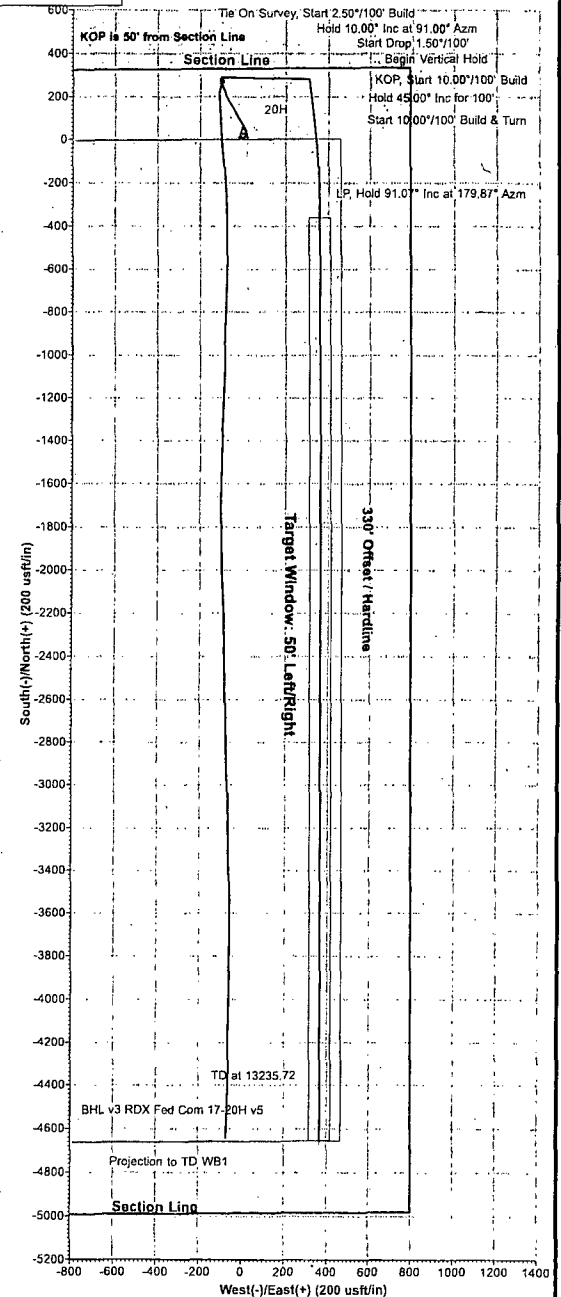
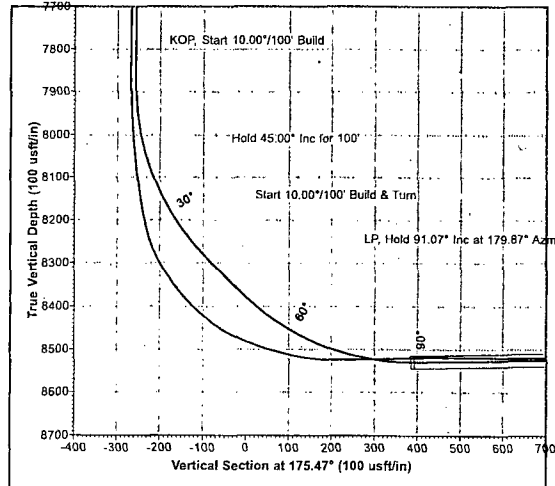
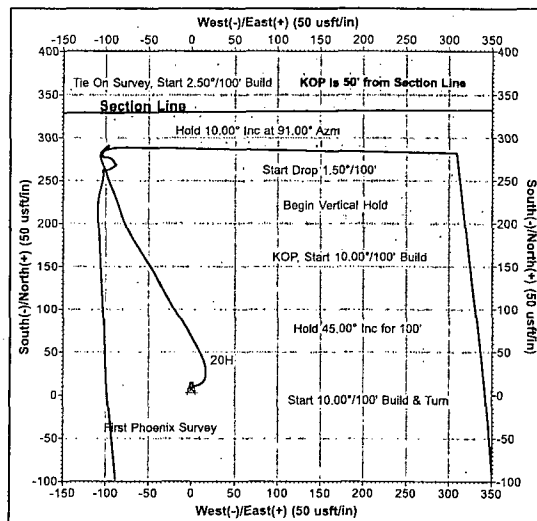
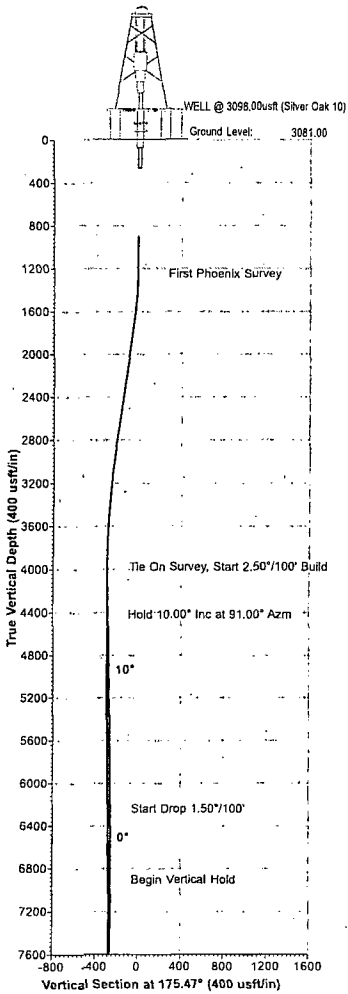
To convert a Magnetic Direction to a Grid Direction, Add 7.13°
To convert a Magnetic Direction to a True Direction, Add 7.36° East
To convert a True Direction to a Grid Direction, Subtract 0.23°

CASING DETAILS

TVD	MD	Name	Size
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DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL v3 RDX Fed Com 17-20H v5	8450.00	-4653.55	368.75	377168.55	676758.05	32° 2' 10.18754 N	103° 53' 46.70252 W



RKI Exploration

Eddy County, New Mexico (NAD 83)

RDX Federal Com 17

20H

WB #2 Job #1410739

Plan: Plan #5 06-01-14

Standard Planning Report

31 May, 2014

Planning Report

Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well: 20H
Company:	RKI Exploration	TVD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Project:	Eddy County, New Mexico (NAD 83)	MD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Site:	RDX Federal Com-17	North Reference:	Grid
Well:	20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB #2 Job #1410739		
Design:	Plan #5 06-01-14		

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

Site:	RDX Federal Com-17		
Site Position:	Map	Northings:	381,822.10 usft
From:		Easting:	676,389.30 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 2' 56.25408 N
		Longitude:	103° 53' 50.76837 W
		Grid Convergence:	0.23 °

Well:	20H		
Well Position	+N/-S	0.00 usft	Northings:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level:
			3,081.00 usft

Wellbore:	WB #2 Job #1410739		
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Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010_14	05/30/14	(°)	(°)	(nT)
			7.36	59.90	48,183

Design:	Plan #5 06-01-14		
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Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth:
			3,600.00

Vertical Section	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	175.47

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/100usft)		
3,600.00	3.17	349.24	3,578.98	277.64	-107.14	0.00	0.00	0.00	0.00	
4,043.34	10.00	91.00	4,019.99	289.04	-70.82	2.50	1.54	22.95	117.83	
5,893.34	10.00	91.00	5,841.89	283.43	250.38	0.00	0.00	0.00	0.00	
6,560.01	0.00	0.00	6,505.18	282.42	308.40	1.50	-1.50	0.00	180.00	
7,939.62	0.00	0.00	7,884.79	282.42	308.40	0.00	0.00	0.00	0.00	
8,389.62	45.00	173.00	8,289.93	115.86	328.85	10.00	10.00	0.00	173.00	
8,489.62	45.00	173.00	8,360.64	45.67	337.47	0.00	0.00	0.00	0.00	
8,954.35	91.07	179.87	8,530.00	-372.94	359.22	10.00	9.91	1.48	9.50	
13,235.72	91.07	179.87	8,450.00	-4,653.55	368.75	0.00	0.00	0.00	0.00	BHL v3 RDX Fed Con

Planning Report

Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well 20H
Company:	RKI Exploration	TVD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Project:	Eddy County, New Mexico (NAD 83)	MD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Site:	RDX Federal Com 17	North Reference:	Grid
Well:	20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB #2 Job #1410739		
Design:	Plan #5 06-01-14		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,600.00	3.17	349.24	3,578.98	277.64	-107.14	-285.24	0.00	0.00	0.00
File On Survey: Start 2:50°/100° Build									
3,700.00	2.98	37.13	3,678.86	282.43	-106.08	-289.93	2.50	-0.19	47.89
3,800.00	4.50	68.65	3,778.65	285.93	-100.86	-293.01	2.50	1.52	31.52
3,900.00	6.64	82.25	3,878.18	288.14	-91.48	-294.47	2.50	2.14	13.60
4,000.00	8.97	89.04	3,977.25	289.05	-77.96	-294.30	2.50	2.33	6.80
4,043.34	10.00	91.00	4,019.99	289.04	-70.82	-293.73	2.50	2.39	4.51
Hold 10:00° Inc at 91:00° Azm									
4,100.00	10.00	91.00	4,075.79	288.87	-60.98	-292.78	0.00	0.00	0.00
4,200.00	10.00	91.00	4,174.27	288.57	-43.62	-291.11	0.00	0.00	0.00
4,300.00	10.00	91.00	4,272.75	288.26	-26.26	-289.44	0.00	0.00	0.00
4,400.00	10.00	91.00	4,371.24	287.96	-8.90	-287.76	0.00	0.00	0.00
4,500.00	10.00	91.00	4,469.72	287.66	8.46	-286.09	0.00	0.00	0.00
4,600.00	10.00	91.00	4,568.20	287.35	25.83	-284.42	0.00	0.00	0.00
4,700.00	10.00	91.00	4,666.68	287.05	43.19	-282.74	0.00	0.00	0.00
4,800.00	10.00	91.00	4,765.16	286.75	60.55	-281.07	0.00	0.00	0.00
4,900.00	10.00	91.00	4,863.64	286.44	77.91	-279.39	0.00	0.00	0.00
5,000.00	10.00	91.00	4,962.12	286.14	95.27	-277.72	0.00	0.00	0.00
5,100.00	10.00	91.00	5,060.60	285.84	112.64	-276.05	0.00	0.00	0.00
5,200.00	10.00	91.00	5,159.08	285.54	130.00	-274.37	0.00	0.00	0.00
5,300.00	10.00	91.00	5,257.56	285.23	147.36	-272.70	0.00	0.00	0.00
5,400.00	10.00	91.00	5,356.04	284.93	164.72	-271.03	0.00	0.00	0.00
5,500.00	10.00	91.00	5,454.52	284.63	182.09	-269.35	0.00	0.00	0.00
5,600.00	10.00	91.00	5,553.00	284.32	199.45	-267.68	0.00	0.00	0.00
5,700.00	10.00	91.00	5,651.49	284.02	216.81	-266.01	0.00	0.00	0.00
5,800.00	10.00	91.00	5,749.97	283.72	234.17	-264.33	0.00	0.00	0.00
5,893.34	10.00	91.00	5,841.89	283.43	250.38	-262.77	0.00	0.00	0.00
Start Drop 1:50°/100°									
5,900.00	9.90	91.00	5,848.45	283.41	251.53	-262.66	1.50	-1.50	0.00
6,000.00	8.40	91.00	5,947.17	283.14	267.43	-261.13	1.50	-1.50	0.00
6,100.00	6.90	91.00	6,046.28	282.90	280.74	-259.84	1.50	-1.50	0.00
6,200.00	5.40	91.00	6,145.70	282.72	291.45	-258.81	1.50	-1.50	0.00
6,300.00	3.90	91.00	6,245.37	282.58	299.55	-258.03	1.50	-1.50	0.00
6,400.00	2.40	91.00	6,345.22	282.48	305.05	-257.50	1.50	-1.50	0.00
6,500.00	0.90	91.00	6,445.17	282.43	307.93	-257.22	1.50	-1.50	0.00
6,560.01	0.00	0.00	6,505.18	282.42	308.40	-257.18	1.50	-1.50	0.00
Begin Vertical Hold									
6,600.00	0.00	0.00	6,545.17	282.42	308.40	-257.18	0.00	0.00	0.00
6,700.00	0.00	0.00	6,645.17	282.42	308.40	-257.18	0.00	0.00	0.00
6,800.00	0.00	0.00	6,745.17	282.42	308.40	-257.18	0.00	0.00	0.00
6,900.00	0.00	0.00	6,845.17	282.42	308.40	-257.18	0.00	0.00	0.00
7,000.00	0.00	0.00	6,945.17	282.42	308.40	-257.18	0.00	0.00	0.00
7,100.00	0.00	0.00	7,045.17	282.42	308.40	-257.18	0.00	0.00	0.00
7,200.00	0.00	0.00	7,145.17	282.42	308.40	-257.18	0.00	0.00	0.00
7,300.00	0.00	0.00	7,245.17	282.42	308.40	-257.18	0.00	0.00	0.00
7,400.00	0.00	0.00	7,345.17	282.42	308.40	-257.18	0.00	0.00	0.00
7,500.00	0.00	0.00	7,445.17	282.42	308.40	-257.18	0.00	0.00	0.00
7,600.00	0.00	0.00	7,545.17	282.42	308.40	-257.18	0.00	0.00	0.00
7,700.00	0.00	0.00	7,645.17	282.42	308.40	-257.18	0.00	0.00	0.00
7,800.00	0.00	0.00	7,745.17	282.42	308.40	-257.18	0.00	0.00	0.00
7,900.00	0.00	0.00	7,845.17	282.42	308.40	-257.18	0.00	0.00	0.00
7,939.62	0.00	0.00	7,884.79	282.42	308.40	-257.18	0.00	0.00	0.00
KOP Start 10:00°/100° Build									
8,000.00	6.04	173.00	7,945.06	279.27	308.79	-254.00	10.00	10.00	0.00

Planning Report

Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well: 20H
Company:	RKI Exploration	TVD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Project:	Eddy County, New Mexico (NAD 83)	MD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Site:	RDX Federal Com 17	North Reference:	Grid
Well:	20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB #2 Job #1410739		
Design:	Plan #5-06-01-14		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (%/100usft)	Build Rate (%/100usft)	Turn Rate (%/100usft)
8,100.00	16.04	173.00	8,043.08	260.29	311.12	-234.90	10.00	10.00	0.00
8,200.00	26.04	173.00	8,136.30	224.70	315.49	-199.08	10.00	10.00	0.00
8,300.00	36.04	173.00	8,221.87	173.59	321.76	-147.63	10.00	10.00	0.00
8,389.62	45.00	173.00	8,289.93	115.86	328.85	-89.52	10.00	10.00	0.00
Hold 45.00° Inc for 100'									
8,400.00	45.00	173.00	8,297.27	108.57	329.75	-82.19	0.00	0.00	0.00
8,489.62	45.00	173.00	8,360.64	45.67	337.47	-18.87	0.00	0.00	0.00
Start 10.00°/100' Build & Turn									
8,500.00	46.02	173.24	8,367.92	38.32	338.36	-11.48	10.00	9.87	2.29
8,600.00	55.91	175.19	8,430.82	-38.87	346.09	66.08	10.00	9.89	1.95
8,700.00	65.82	176.72	8,479.45	-125.89	352.18	153.31	10.00	9.91	1.54
8,800.00	75.74	178.04	8,512.33	-220.10	356.46	247.57	10.00	9.92	1.31
8,900.00	85.67	179.24	8,528.45	-318.63	358.79	345.98	10.00	9.93	1.20
8,954.35	91.07	179.87	8,530.00	-372.94	359.22	400.15	10.00	9.93	1.17
LP Hold 91.07° Inc at 179.87° Azm									
9,000.00	91.07	179.87	8,529.14	-418.58	359.32	445.66	0.00	0.00	0.00
9,100.00	91.07	179.87	8,527.28	-518.56	359.54	545.34	0.00	0.00	0.00
9,200.00	91.07	179.87	8,525.41	-618.54	359.76	645.03	0.00	0.00	0.00
9,300.00	91.07	179.87	8,523.54	-718.53	359.98	744.72	0.00	0.00	0.00
9,400.00	91.07	179.87	8,521.67	-818.51	360.21	844.40	0.00	0.00	0.00
9,500.00	91.07	179.87	8,519.80	-918.49	360.43	944.09	0.00	0.00	0.00
9,600.00	91.07	179.87	8,517.93	-1,018.47	360.65	1,043.78	0.00	0.00	0.00
9,700.00	91.07	179.87	8,516.06	-1,118.46	360.88	1,143.47	0.00	0.00	0.00
9,800.00	91.07	179.87	8,514.20	-1,218.44	361.10	1,243.15	0.00	0.00	0.00
9,900.00	91.07	179.87	8,512.33	-1,318.42	361.32	1,342.84	0.00	0.00	0.00
10,000.00	91.07	179.87	8,510.46	-1,418.40	361.54	1,442.53	0.00	0.00	0.00
10,100.00	91.07	179.87	8,508.59	-1,518.38	361.77	1,542.22	0.00	0.00	0.00
10,200.00	91.07	179.87	8,506.72	-1,618.37	361.99	1,641.90	0.00	0.00	0.00
10,300.00	91.07	179.87	8,504.85	-1,718.35	362.21	1,741.59	0.00	0.00	0.00
10,400.00	91.07	179.87	8,502.99	-1,818.33	362.43	1,841.28	0.00	0.00	0.00
10,500.00	91.07	179.87	8,501.12	-1,918.31	362.66	1,940.97	0.00	0.00	0.00
10,600.00	91.07	179.87	8,499.25	-2,018.30	362.88	2,040.65	0.00	0.00	0.00
10,700.00	91.07	179.87	8,497.38	-2,118.28	363.10	2,140.34	0.00	0.00	0.00
10,800.00	91.07	179.87	8,495.51	-2,218.26	363.33	2,240.03	0.00	0.00	0.00
10,900.00	91.07	179.87	8,493.64	-2,318.24	363.55	2,339.72	0.00	0.00	0.00
11,000.00	91.07	179.87	8,491.77	-2,418.23	363.77	2,439.40	0.00	0.00	0.00
11,100.00	91.07	179.87	8,489.91	-2,518.21	363.99	2,539.09	0.00	0.00	0.00
11,200.00	91.07	179.87	8,488.04	-2,618.19	364.22	2,638.78	0.00	0.00	0.00
11,300.00	91.07	179.87	8,486.17	-2,718.17	364.44	2,738.47	0.00	0.00	0.00
11,400.00	91.07	179.87	8,484.30	-2,818.15	364.66	2,838.15	0.00	0.00	0.00
11,500.00	91.07	179.87	8,482.43	-2,918.14	364.88	2,937.84	0.00	0.00	0.00
11,600.00	91.07	179.87	8,480.56	-3,018.12	365.11	3,037.53	0.00	0.00	0.00
11,700.00	91.07	179.87	8,478.69	-3,118.10	365.33	3,137.22	0.00	0.00	0.00
11,800.00	91.07	179.87	8,476.83	-3,218.08	365.55	3,236.90	0.00	0.00	0.00
11,900.00	91.07	179.87	8,474.96	-3,318.07	365.77	3,336.59	0.00	0.00	0.00
12,000.00	91.07	179.87	8,473.09	-3,418.05	366.00	3,436.28	0.00	0.00	0.00
12,100.00	91.07	179.87	8,471.22	-3,518.03	366.22	3,535.97	0.00	0.00	0.00
12,200.00	91.07	179.87	8,469.35	-3,618.01	366.44	3,635.65	0.00	0.00	0.00
12,300.00	91.07	179.87	8,467.48	-3,718.00	366.67	3,735.34	0.00	0.00	0.00
12,400.00	91.07	179.87	8,465.62	-3,817.98	366.89	3,835.03	0.00	0.00	0.00
12,500.00	91.07	179.87	8,463.75	-3,917.96	367.11	3,934.72	0.00	0.00	0.00
12,600.00	91.07	179.87	8,461.88	-4,017.94	367.33	4,034.40	0.00	0.00	0.00
12,700.00	91.07	179.87	8,460.01	-4,117.92	367.56	4,134.09	0.00	0.00	0.00

Planning Report

Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well: 20H
Company:	RKI Exploration	TVD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Project:	Eddy County New Mexico (NAD 83)	MD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Site:	RDX Federal Com 17	North Reference:	Grid
Well:	20H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB #2 Job #1410739		
Design:	Plan #5.06.01-14		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
12,800.00	91.07	179.87	8,458.14	-4,217.91	367.78	4,233.78	0.00	0.00	0.00	
12,900.00	91.07	179.87	8,456.27	-4,317.89	368.00	4,333.47	0.00	0.00	0.00	
13,000.00	91.07	179.87	8,454.40	-4,417.87	368.22	4,433.15	0.00	0.00	0.00	
13,100.00	91.07	179.87	8,452.54	-4,517.85	368.45	4,532.84	0.00	0.00	0.00	
13,200.00	91.07	179.87	8,450.67	-4,617.84	368.67	4,632.53	0.00	0.00	0.00	
13,235.72	91.07	179.87	8,450.00	-4,653.55	368.75	4,668.13	0.00	0.00	0.00	
TD at 13235.72										

Design Targets										
Target Name	hit/miss target	Dip Angle (°)	Dip Dir (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BHL v3 RDX Fed Com 1		-1.07	179.89	8,450.00	-4,653.55	368.75	377,168.55	676,758.04	32° 2' 10.18754 N	103° 53' 46.70263 W
- plan hits target center										
- Rectangle (sides W100.00 H4,293.00 D30.00)										

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
3,600.00	3,578.98	277.64	-107.14	Tie On Survey, Start 2.50°/100' Build	
4,043.34	4,019.99	289.04	-70.82	Hold 10.00° Inc at 91.00° Azm	
5,893.34	5,841.89	283.43	250.38	Start Drop 1.50°/100'	
6,560.01	6,505.18	282.42	308.40	Begin Vertical Hold	
7,939.62	7,884.79	282.42	308.40	KOP, Start 10.00°/100' Build	
8,389.62	8,289.93	115.86	328.85	Hold 45.00° Inc for 100'	
8,489.62	8,360.64	45.67	337.47	Start 10.00°/100' Build & Turn	
8,954.35	8,530.00	-372.94	359.22	LP, Hold 91.07° Inc at 179.87° Azm	
13,235.72	8,450.00	-4,653.55	368.75	TD at 13235.72	

RKI Exploration

Eddy County, New Mexico (NAD 83)

RDX Federal Com 17

20H

WB #2 Job #1410739

Plan #5 06-01-14

Anticollision Report

31 May, 2014

Anticollision Report

Company:	RKI Exploration	Local Co-ordinate Reference:	Well 20H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Reference Site:	RDX Federal Com 17	MD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	WB #2 Job #1410739	Database:	Compass 5000 GCR DB
Reference Design:	Plan #5 06-01-14	Offset TVD Reference:	Offset Datum

Reference:	Plan: #5 06-01-14		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	05/31/14		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
1,003.00	3,600.00	Phoenix MWD Surveys (Wellbore #1 Job #	MWD	MWD - Standard	
3,600.00	13,235.72	Plan #5 06-01-14 (WB #2 Job #1410739)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
RDX Federal Com 17						
20H - Wellbore #1 Job #1410739 - Surveys (Silver Oak 1	3,600.00	3,600.00	0.00	0.00	0.000	Level 1, CC, SF
20H - Wellbore #1 Job #1410739 - Surveys (Silver Oak 1	3,660.43	3,660.43	0.24	-0.01	0.963	Level 1, ES

Offset Design										RDX: Federal Com 17 - 20H - Wellbore #1 Job #1410739 - Surveys (Silver Oak 10)				Offset Site Error: 0.00 usft	
Survey Program: 1003 MWD														Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	Offset Wellbore Centre -E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
3,600.00	3,578.98	3,600.00	3,578.98	0.00	0.00	0.00	277.64	-107.14	0.00	0.00	0.00	0.000	Level 1, CC, SF		
3,660.43	3,639.34	3,660.43	3,639.34	0.12	0.12	-116.23	280.58	-107.21	0.24	-0.01	0.25	0.963	Level 1, ES		
3,700.00	3,678.86	3,699.99	3,678.88	0.21	0.20	-122.28	281.88	-106.95	1.03	0.62	0.40	2.541			
3,800.00	3,778.65	3,799.87	3,778.74	0.40	0.38	-116.65	283.45	-105.81	5.54	4.77	0.77	7.183			
3,900.00	3,878.18	3,899.49	3,878.35	0.59	0.57	-105.26	284.52	-104.73	13.74	12.62	1.11	12.334			
4,000.00	3,977.25	3,998.66	3,977.51	0.79	0.76	-98.35	285.26	-103.76	26.08	24.65	1.43	18.197			
4,100.00	4,075.79	4,097.32	4,076.17	1.04	0.95	-94.17	285.81	-102.89	42.02	40.27	1.75	23.987			
4,200.00	4,174.27	4,195.91	4,174.75	1.33	1.14	-92.08	286.44	-102.09	58.51	56.42	2.09	28.025			
4,300.00	4,272.75	4,294.47	4,273.30	1.68	1.33	-90.85	287.15	-101.35	75.10	72.67	2.43	30.887			
4,400.00	4,371.24	4,393.05	4,371.88	2.12	1.52	-90.05	287.87	-100.65	91.75	88.96	2.79	32.911			
4,500.00	4,469.72	4,491.64	4,470.46	2.92	1.72	-89.55	288.51	-99.96	108.43	105.26	3.17	34.238			
4,600.00	4,568.20	4,590.23	4,569.05	4.07	1.91	-89.21	289.08	-99.28	125.12	121.52	3.59	34.807			
4,700.00	4,666.68	4,688.94	4,667.75	4.55	2.10	-88.94	289.66	-98.56	141.77	137.76	4.02	35.303			
4,800.00	4,765.16	4,787.67	4,766.48	4.94	2.30	-88.70	290.34	-97.75	158.35	153.85	4.50	35.205			
4,900.00	4,863.64	4,886.14	4,864.94	5.29	2.49	-88.48	291.10	-96.89	174.87	169.90	4.98	35.128			
5,000.00	4,962.12	4,983.40	4,962.21	5.61	2.68	-88.45	291.33	-96.50	191.85	186.46	5.38	35.633			
5,100.00	5,060.60	5,080.42	5,059.22	5.91	2.88	-88.65	290.79	-96.81	209.51	203.77	5.75	36.454			
5,200.00	5,159.08	5,177.60	5,156.39	6.20	3.07	-89.00	289.50	-97.80	227.85	221.77	6.08	37.469			
5,300.00	5,257.56	5,275.61	5,254.37	6.49	3.27	-89.35	288.02	-99.03	246.43	240.02	6.41	38.428			
5,400.00	5,356.04	5,373.57	5,352.32	6.77	3.48	-89.65	286.55	-100.37	265.12	258.37	6.75	39.272			
5,500.00	5,454.52	5,471.62	5,450.34	7.05	3.68	-89.91	285.06	-101.80	283.91	276.82	7.09	40.017			
5,600.00	5,553.00	5,569.80	5,548.50	7.33	3.88	-90.19	283.32	-103.25	302.73	295.29	7.44	40.704			
5,700.00	5,651.49	5,667.98	5,646.65	7.60	4.08	-90.49	281.28	-104.70	321.56	313.78	7.78	41.346			
5,800.00	5,749.97	5,769.16	5,747.80	7.88	4.29	-90.78	279.06	-105.94	340.16	332.03	8.13	41.856			

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

Anticollision Report

Company:	RKI Exploration	Local Co-ordinate Reference:	Well: 20H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Reference Site:	RDX Federal Com 17	MD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	WB #2 Job #1410739	Database:	Compass 5000 GCR DB
Reference Design:	Plan #5 06 01-14	Offset TVD Reference:	Offset Datum

Offset Design: RDX Federal Com 17 - 20H - Wellbore #1 Job #1410739 - Surveys (Silver Oak 10)													Offset Site Error:	0.00 usft
Survey Program: 1003-MWD													Offset Well Error:	0.00 usft
Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Vertical Depth (usft)	Reference Vertical Depth (usft)	Offset Vertical Depth (usft)	Semi-Major Axis Reference (usft)	Semi-Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre N-S (usft)	Offset Wellbore Centre E-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,900.00	5,848.45	5,872.98	5,851.61	5,851.61	8.15	4.49	-90.93	277.58	-105.80	357.39	348.88	8.50	42.021	
6,000.00	5,947.17	5,977.56	5,956.17	5,956.17	8.41	4.70	-90.95	277.00	-104.06	371.65	362.79	8.85	41.978	
6,100.00	6,046.28	6,076.32	6,054.89	6,054.89	8.64	4.89	-90.88	277.00	-101.64	382.52	373.32	9.21	41.553	
6,200.00	6,145.70	6,174.31	6,152.87	6,152.87	8.85	5.09	-90.84	277.02	-99.64	391.20	381.65	9.55	40.966	
6,300.00	6,245.37	6,272.44	6,250.98	6,250.98	9.04	5.28	-90.80	277.05	-98.05	397.68	387.80	9.88	40.231	
6,400.00	6,345.22	6,372.51	6,351.04	6,351.04	9.20	5.48	-90.80	276.87	-96.62	401.75	391.54	10.21	39.337	
6,500.00	6,445.17	6,472.72	6,451.24	6,451.24	9.35	5.69	-90.89	276.17	-95.13	403.15	392.63	10.52	38.311	
6,600.00	6,545.17	6,572.79	6,551.29	6,551.29	9.48	5.89	-91.06	274.98	-93.58	402.10	390.26	11.84	33.960	
6,700.00	6,645.17	6,671.93	6,650.40	6,650.40	9.61	6.09	-91.28	273.47	-92.15	400.68	388.52	12.17	32.934	
6,800.00	6,745.17	6,771.06	6,749.51	6,749.51	9.74	6.29	-91.53	271.73	-90.92	399.48	386.99	12.49	31.982	
6,900.00	6,845.17	6,870.12	6,848.55	6,848.55	9.88	6.50	-91.82	269.80	-89.90	398.51	385.69	12.82	31.093	
7,000.00	6,945.17	6,969.00	6,947.41	6,947.41	10.02	6.70	-92.02	268.39	-89.15	397.80	384.65	13.16	30.233	
7,100.00	7,045.17	7,067.90	7,046.31	7,046.31	10.16	6.90	-92.11	267.81	-88.71	397.38	383.86	13.52	29.399	
7,200.00	7,145.17	7,167.14	7,145.56	7,145.56	10.30	7.10	-92.09	267.96	-88.55	397.21	383.32	13.89	28.592	
7,300.00	7,245.17	7,266.91	7,245.32	7,245.32	10.45	7.31	-92.09	267.97	-88.48	397.14	382.87	14.27	27.829	
7,365.58	7,310.75	7,332.34	7,310.75	7,310.75	10.54	7.44	-92.11	267.78	-88.46	397.13	382.61	14.52	27.357	
7,400.00	7,345.17	7,366.67	7,345.09	7,345.09	10.59	7.52	-92.14	267.61	-88.46	397.13	382.49	14.65	27.117	
7,500.00	7,445.17	7,462.41	7,440.81	7,440.81	10.74	7.72	-92.24	266.88	-88.74	397.47	382.46	15.01	26.487	
7,600.00	7,545.17	7,554.87	7,533.24	7,533.24	10.90	7.92	-92.42	265.56	-90.57	399.51	384.15	15.35	26.020	
7,700.00	7,645.17	7,647.20	7,625.49	7,625.49	11.05	8.11	-92.68	263.59	-94.12	403.44	387.74	15.70	25.704	
7,800.00	7,745.17	7,746.48	7,724.60	7,724.60	11.21	8.33	-92.98	261.21	-99.40	408.87	392.82	16.05	25.477	
7,900.00	7,845.17	7,862.11	7,840.14	7,840.14	11.37	8.57	-92.91	261.46	-103.64	412.60	396.12	16.47	25.046	
8,000.00	7,945.06	7,970.33	7,948.33	7,948.33	11.50	8.79	-92.72	259.73	-103.26	412.53	396.33	16.20	25.471	
8,000.13	7,945.19	7,970.46	7,948.46	7,948.46	11.50	8.79	-92.71	259.72	-103.26	412.53	396.33	16.20	25.470	
8,100.00	8,043.08	8,058.97	8,036.67	8,036.67	11.54	8.97	-91.06	252.63	-103.43	414.67	398.09	16.58	25.011	
8,200.00	8,136.30	8,144.74	8,121.85	8,121.85	11.48	9.15	-87.53	242.86	-105.61	421.74	404.79	16.95	24.884	
8,300.00	8,221.87	8,254.62	8,229.45	8,229.45	11.30	9.37	-83.67	221.43	-109.42	433.89	416.57	17.33	25.041	
8,400.00	8,297.27	8,397.27	8,355.22	8,355.22	10.99	9.61	-83.77	156.20	-106.59	442.73	425.23	17.50	25.300	
8,500.00	8,367.92	8,513.00	8,436.44	8,436.44	10.71	9.76	-85.33	74.30	-101.93	447.04	429.46	17.58	25.434	
8,600.00	8,430.82	8,663.89	8,500.11	8,500.11	10.85	10.31	-92.91	-61.17	-92.39	444.48	426.49	17.99	24.705	
8,700.00	8,479.45	8,761.48	8,520.82	8,520.82	10.98	10.61	-93.96	-156.04	-83.84	439.02	420.43	18.60	23.609	
8,800.00	8,512.33	8,844.34	8,524.45	8,524.45	11.14	10.89	-92.43	-238.53	-77.81	434.83	415.42	19.41	22.398	
8,900.00	8,528.45	8,940.89	8,522.52	8,522.52	11.44	11.33	-92.16	-334.99	-74.27	433.41	412.82	20.59	21.046	
9,000.00	8,529.14	9,027.62	8,519.68	8,519.68	12.00	11.83	-90.41	-421.64	-72.19	431.62	409.61	22.01	19.606	
9,018.47	8,528.80	9,043.81	8,519.21	8,519.21	12.14	11.93	-90.10	-437.82	-72.11	431.58	409.27	22.31	19.348	
9,100.00	8,527.28	9,116.48	8,518.88	8,518.88	12.81	12.41	-89.19	-512.49	-72.55	432.22	408.60	23.63	18.293	
9,200.00	8,525.41	9,217.04	8,520.66	8,520.66	13.78	13.20	-89.01	-611.01	-74.26	434.11	408.53	25.58	16.971	
9,300.00	8,523.54	9,314.72	8,520.15	8,520.15	14.88	14.19	-88.70	-708.67	-76.19	436.30	408.49	27.81	15.688	
9,400.00	8,521.67	9,412.00	8,518.93	8,518.93	16.08	15.20	-88.36	-805.91	-78.80	439.20	409.08	30.12	14.582	
9,500.00	8,519.80	9,512.33	8,517.82	8,517.82	17.36	16.33	-88.41	-906.18	-81.85	442.46	409.84	32.62	13.565	
9,600.00	8,517.93	9,620.22	8,514.51	8,514.51	18.70	17.68	-89.42	-1,014.00	-83.43	444.12	408.72	35.40	12.546	
9,700.00	8,516.06	9,712.01	8,511.04	8,511.04	20.10	18.85	-88.36	-1,105.71	-85.18	446.27	408.24	38.03	11.736	
9,800.00	8,514.20	9,805.73	8,509.13	8,509.13	21.55	20.06	-87.57	-1,199.34	-88.61	450.14	409.41	40.73	11.052	
9,900.00	8,512.33	9,906.43	8,507.36	8,507.36	23.04	21.44	-87.67	-1,299.94	-92.91	454.63	410.98	43.65	10.416	
10,000.00	8,510.46	10,013.54	8,504.29	8,504.29	24.56	22.99	-88.57	-1,406.94	-96.51	458.23	411.47	46.77	9.799	
10,100.00	8,508.59	10,119.13	8,497.92	8,497.92	26.12	24.52	-89.25	-1,512.32	-98.18	460.11	410.25	49.87	9.227	
10,200.00	8,506.72	10,220.13	8,493.81	8,493.81	27.70	25.91	-89.36	-1,613.22	-99.27	461.46	408.60	52.87	8.729	
10,300.00	8,504.85	10,322.17	8,492.42	8,492.42	29.30	27.32	-89.62	-1,715.25	-100.19	462.58	406.66	55.92	8.272	
10,400.00	8,502.99	10,427.89	8,491.80	8,491.80	30.93	28.83	-90.33	-1,820.97	-100.30	462.87	403.77	59.10	7.832	
10,500.00	8,501.12	10,530.05	8,491.44	8,491.44	32.57	30.36	-90.60	-1,923.12	-99.43	462.21	399.89	62.32	7.417	
10,600.00	8,499.25	10,641.34	8,490.58	8,490.58	34.23	32.10	-92.00	-2,034.38	-96.98	460.22	394.46	65.76	6.998	
10,700.00	8,497.38	10,746.51	8,488.76	8,488.76	35.90	33.78	-92.66	-2,139.41	-91.84	455.51	386.37	69.15	6.587	

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

Anticollision Report

Company:	RKL Exploration	Local Co-ordinate Reference:	Well 20H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Reference Site:	RDX Federal Com 17	MD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	WB #2 Job #1410739	Database:	Compass 5000 GCR DB
Reference Design:	Plan #5 06-01-14	Offset TVD Reference:	Offset Datum

Offset Design - RDX Federal Com 17 - 20H - Wellbore #1 Job #1410739 - Surveys (Silver Oak 10)													Offset Site Error:	0.00 usft
Survey Program: 1003-MWD													Offset Well Error:	0.00 usft
Reference	Vertical	Offset	Vertical	Semi-Major Axis		Azimuth	Offset Wellbore Centre		Distance		Minimum	Separation	Warning	
Measured Depth (usft)	Depth (usft)	Measured Depth (usft)	Depth (usft)	Reference (usft)	Offset (usft)	from North (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor		
10,800.00	8,495.51	10,834.42	8,487.70	37.58	35.17	-91.14	-2,227.27	-89.25	452.74	380.48	72.26	6.265		
10,900.00	8,493.64	10,935.24	8,486.22	39.27	36.81	-91.25	-2,328.05	-87.07	450.78	375.16	75.62	5.961		
11,000.00	8,491.77	11,034.58	8,483.36	40.97	38.46	-91.16	-2,427.33	-84.95	448.89	369.90	78.99	5.683		
11,100.00	8,489.91	11,136.33	8,479.29	42.69	40.17	-91.38	-2,528.98	-82.73	446.97	364.56	82.41	5.424		
11,200.00	8,488.04	11,237.10	8,474.67	44.41	41.83	-91.47	-2,629.60	-79.93	444.49	358.69	85.80	5.181		
11,300.00	8,486.17	11,332.43	8,473.19	46.13	43.35	-90.87	-2,724.89	-77.81	442.49	353.43	89.06	4.969		
11,400.00	8,484.30	11,436.97	8,474.95	47.87	45.01	-91.46	-2,829.40	-76.23	441.14	348.64	92.50	4.769		
11,500.00	8,482.43	11,540.92	8,477.06	49.61	46.73	-91.98	-2,933.27	-72.84	438.12	342.12	96.00	4.564		
11,600.00	8,480.56	11,647.60	8,478.58	51.35	48.55	-92.87	-3,039.85	-68.53	434.19	334.59	99.60	4.359		
11,700.00	8,478.69	11,728.49	8,478.70	53.10	49.91	-90.34	-3,120.70	-66.17	431.51	328.79	102.72	4.201		
11,800.00	8,476.83	11,831.38	8,478.00	54.85	51.61	-90.73	-3,223.58	-65.75	431.34	325.16	106.18	4.062		
11,900.00	8,474.96	11,936.72	8,476.91	56.61	53.39	-91.44	-3,328.90	-63.74	429.66	319.91	109.74	3.915		
12,000.00	8,473.09	12,041.96	8,475.10	58.37	55.21	-92.15	-3,434.06	-60.29	426.60	313.27	113.33	3.764		
12,100.00	8,471.22	12,137.84	8,473.25	60.14	56.81	-91.60	-3,529.87	-57.00	423.39	306.69	116.70	3.628		
12,200.00	8,469.35	12,227.89	8,471.07	61.90	58.28	-90.25	-3,619.88	-55.62	422.07	302.12	119.95	3.519		
12,213.47	8,469.10	12,240.47	8,470.68	62.14	58.49	-90.13	-3,632.45	-55.58	422.06	301.65	120.40	3.505		
12,300.00	8,467.48	12,322.39	8,467.26	63.67	59.86	-89.50	-3,714.30	-55.94	422.62	299.32	123.30	3.428		
12,400.00	8,465.62	12,421.59	8,461.59	65.45	61.54	-89.37	-3,813.33	-56.83	423.76	297.02	126.74	3.344		
12,500.00	8,463.75	12,520.75	8,457.13	67.22	63.19	-89.25	-3,912.38	-58.15	425.35	295.20	130.15	3.268		
12,600.00	8,461.88	12,621.88	8,453.26	69.00	64.86	-89.39	-4,013.43	-59.00	426.44	292.85	133.60	3.192		
12,700.00	8,460.01	12,721.19	8,451.22	70.78	66.50	-89.30	-4,112.71	-60.40	428.08	291.06	137.02	3.124		
12,800.00	8,458.14	12,825.35	8,450.13	72.57	68.23	-89.86	-4,216.86	-61.04	428.89	288.35	140.54	3.052		
12,900.00	8,456.27	12,922.58	8,448.79	74.35	69.88	-89.49	-4,314.08	-61.33	429.41	285.42	143.99	2.982		
13,000.00	8,454.40	13,019.25	8,446.70	76.14	71.50	-89.05	-4,410.72	-62.65	431.00	283.60	147.39	2.924		
13,100.00	8,452.54	13,115.14	8,444.58	77.92	73.09	-88.51	-4,506.57	-64.55	433.22	282.45	150.77	2.873		
13,200.00	8,450.67	13,217.12	8,441.93	79.71	74.81	-88.77	-4,608.48	-67.11	435.96	281.69	154.27	2.826		
13,235.72	8,450.00	13,251.00	8,441.05	80.35	75.38	-88.53	-4,642.34	-67.82	436.80	281.31	155.49	2.809		

Anticollision Report

Company:	RKI Exploration	Local Co-ordinate Reference:	Well: 20H
Project:	Eddy County New Mexico (NAD 83)	TVD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Reference Site:	RDX Federal Com 17	MD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Site Error:	0'00'usft	North Reference:	Grid
Reference Well:	20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0'00'usft	Output errors are at:	2'00' sigma
Reference Wellbore:	WB #2 Job #1410739	Database:	Compass 5000 GCR DB
Reference Design:	Plan #5 06-01-14	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 3098.00usft (Silver Oak 10)

Offset Depths are relative to Offset Datum

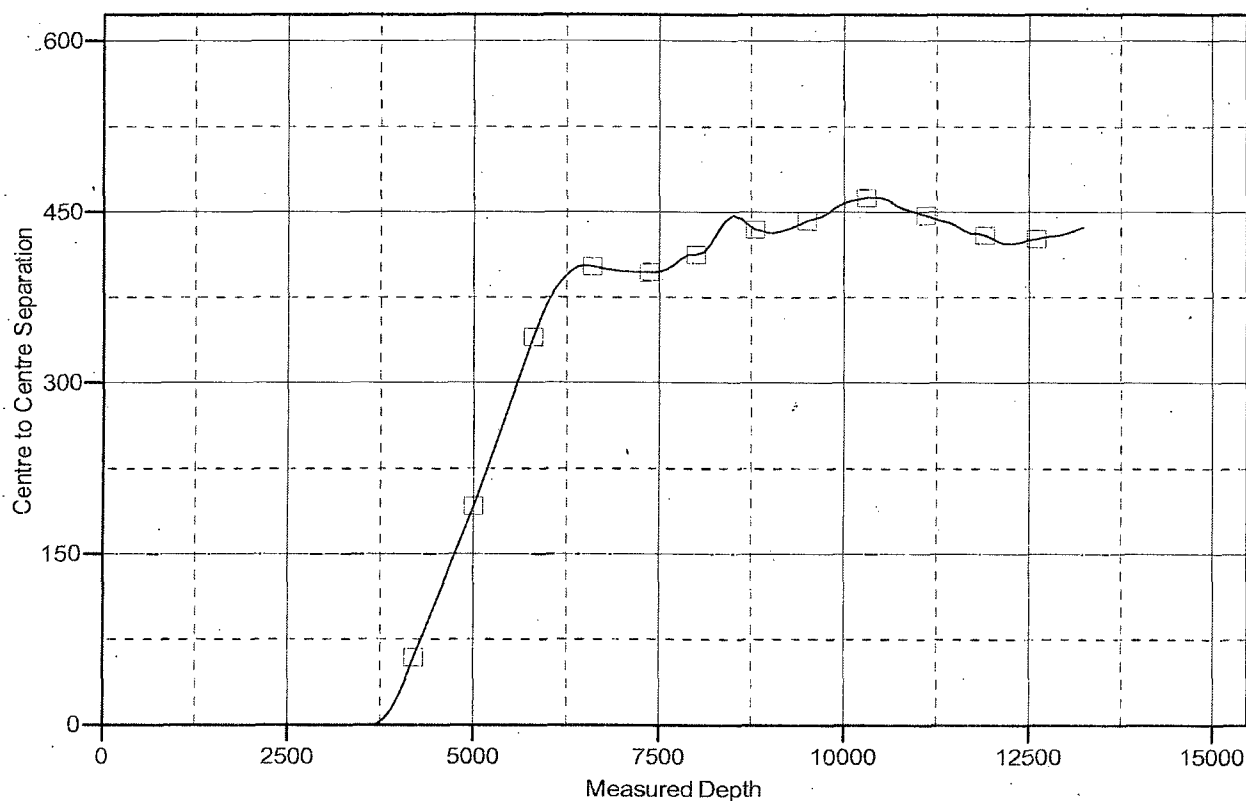
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: 20H

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

Grid Convergence at Surface is: 0.23°

Ladder Plot



LEGEND

Job #1410739, Surveys (Silver Oak 10) V0

Anticollision Report

Company:	RKI Exploration	Local Co-ordinate Reference:	Well 20H
Project:	Eddy County, New Mexico (NAD83)	TVD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Reference Site:	RDX Federal Com 17	MD Reference:	WELL @ 3098.00usft (Silver Oak 10)
Site Error:	0:00 usft	North Reference:	Grid
Reference Well:	20H	Survey Calculation Method:	Minimum Curvature
Well Error:	0:00 usft	Output errors are at:	2:00 sigma
Reference Wellbore:	WB#2 Job #1410739	Database:	Compass 5000 GCR DB
Reference Design:	Plan #5 06-01-14	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 3098.00usft (Silver Oak 10)

Offset Depths are relative to Offset Datum

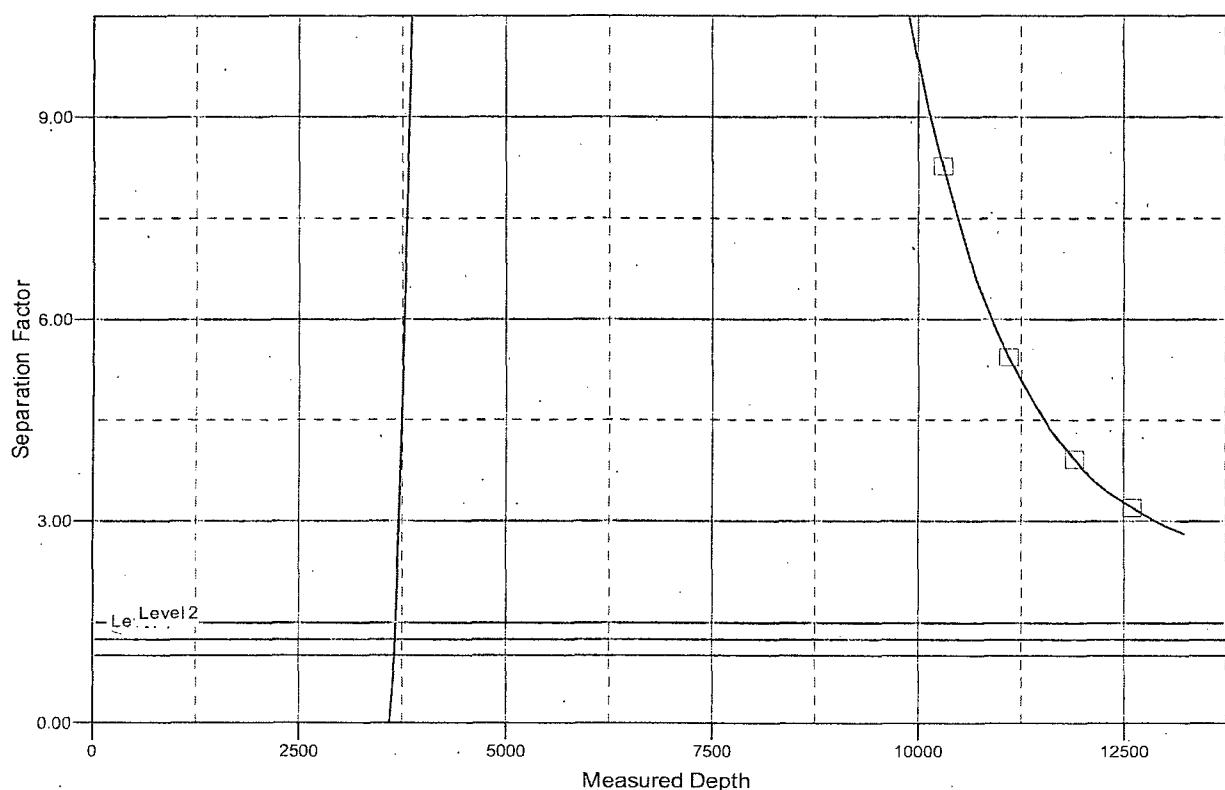
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: 20H

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

Grid Convergence at Surface is: 0.23°

Separation Factor Plot



LEGEND

Job #1410739, Surveys (Silver Oak 10) V0

CONDITIONS OF APPROVAL

Sundry dated 6/2/2014 Sidetrack

OPERATOR'S NAME:	RKI Exploration & Production, LLC
LEASE NO.:	NMNM-20965
WELL NAME & NO.:	RDX Federal Com 17-20H
SURFACE HOLE FOOTAGE:	0330' FNL & 0790' FEL
BOTTOM HOLE FOOTAGE:	0330' FSL & 0430' FEL
LOCATION:	Section 17, T. 26 S., R 30 E., NMPM
COUNTY:	Eddy County, New Mexico

Original COA Still Applies with the following drilling modifications:

A. 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) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. 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

Possibility of water and brine flows in the Salado and Delaware Mountain Groups.
Possibility of lost circulation in the Delaware and Bone Springs formations.

1. The 13-3/8 inch surface casing shall be set at approximately 950 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.
2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
- ☒ 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.**

If 75% or greater lost circulation occurs while drilling the intermediate casing hole, 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** inch production casing is:

Operator has proposed DV tool at depth of 5000'. 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 circulation on the next stage.
 - b. Second stage above DV tool:
 - ☒ Cement should tie-back at **least 300 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 not required – Packer isolation system system to be used.

5. 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.

EGF 060214