

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) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural
Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-101
August 1, 2011
Permit 195057

NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 05 2014

RECEIVED

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address COG OPERATING LLC One Concho Center Midland, TX 79701		2. OGRID Number 229137
4. Property Code 39004		3. API Number 30-015-42784
5. Property Name BRADLEY 8 FEE		6. Well No. 006H

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	EW Line	County
N	8	19S	26E		150	S	2310	W	EDDY

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	EW Line	County
C	8	19S	26E	C	330	N	2301	W	Eddy

9. Pool Information

WILDCAT G-01 S192617K;GLOR-YESO	97788
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Additional Well Information

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type Private	15. Ground Level Elevation 3374
16. Multiple N	17. Proposed Depth 7720	18. Formation Yeso Formation	19. Contractor	20. Spud Date 1/30/2015
Depth to Ground water 110		Distance from nearest fresh water well > 1000		Distance to nearest surface water > 1000

☒ We will be using a closed-loop system in lieu of lined pits

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	11	8.625	32	1200	700	0
Prod	7.875	5.5	17	7720	800	

Casing/Cement Program: Additional Comments

COG proposes to drill an 11" hole to 1200' w/fresh water, run 8 5/8 32# J-55 and cement to surface. Drill a 7-7/8" hole to 2580' MD and kick off and drill curve to 3100' TVD 3402' MD. Drill a 7 7/8" lateral to new BHL @ 3063' TVD 7712' MD. Run a 5 1/2" 17# L-80 casing to TD cement to surface with 800 sacks.

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Ram	2000	2000	

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.
I further certify I have complied with 19.15.14.9 (A) NMAC ☐ and/or 19.15.14.9 (B) NMAC ☐, if applicable.

Signature: *[Signature]*

Printed Name: Kelly Holly

Title: Permitting

Email Address: cholly@concho.com

Date: 11-4-14

Phone: 432

OIL CONSERVATION DIVISION

Approved By: *[Signature]*

Title: Geologist

Approved Date: 11-5-2014

Conditions of Approval Attached

Expiration Date: 11-5-2016

085-4384

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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 30-015- 42784	Pool Code 97788	Pool Name Wildcat;G-01 S192617K; GL-Yeso
Property Code 39004	Property Name BRADLEY 8 FEE	Well Number 6H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3374'

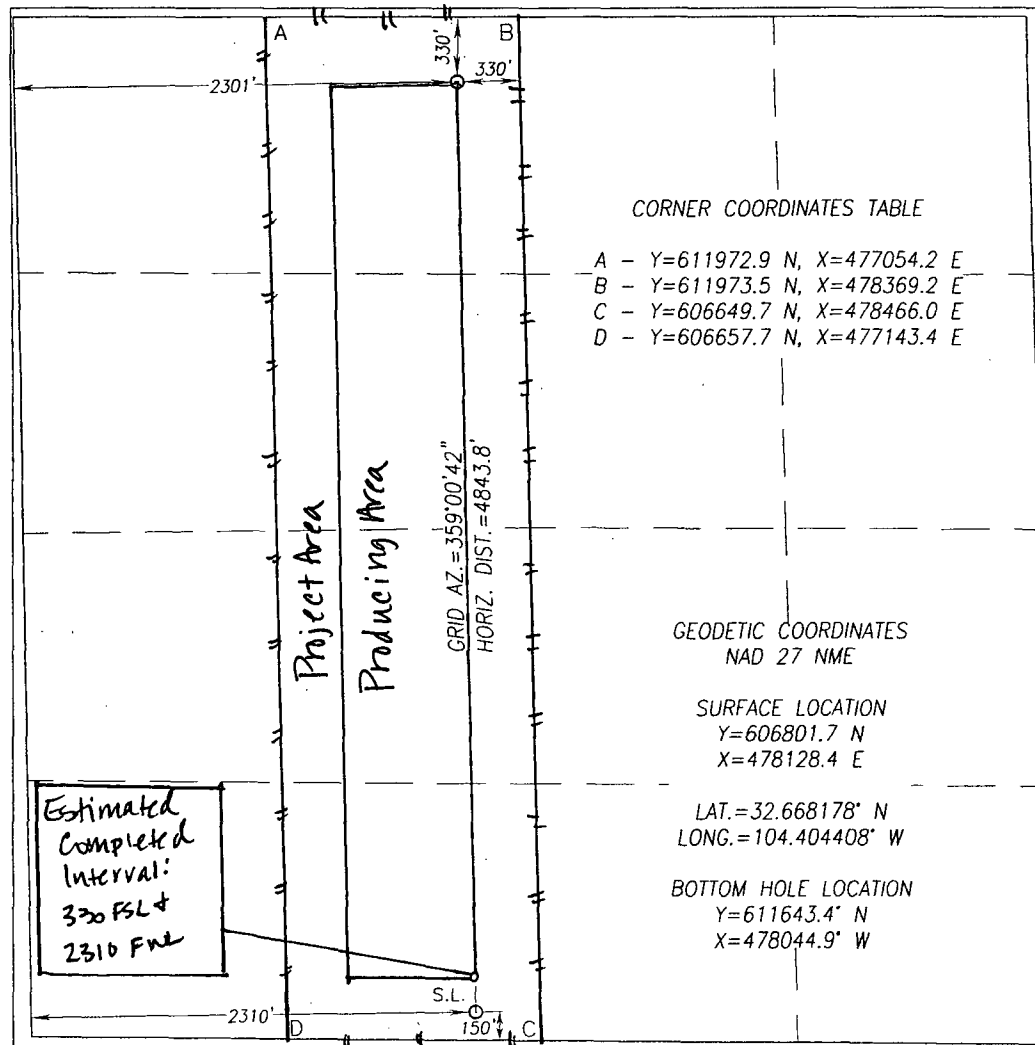
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	8	19-S	26-E		150	SOUTH	2310	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	8	19-S	26-E		330	NORTH	2301	WEST	EDDY
Dedicated Acres 160	Joint or Infill	Consolidation Code	Order No.						

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

[Signature] 9-17-13
Signature Date

Kelly J. Holly
Printed Name

kholly@concho.com
E-mail Address

SURVEYOR CERTIFICATION

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

AUGUST 30, 2013

Date of Survey
Signature & Seal of Professional Surveyor:

[Signature]
RONALD J. EIDSON
NEW MEXICO
3239
Certificate Number Gary G. Eidson 12641
Ronald J. Eidson 3239
BKL WSC W.O.: 13.11.0984



COG Operating LLC

Eddy County, NM (NAD27 NME)

Bradley 8 Fee

#6H

WB1

Plan: Plan #1 10-20-14

Surface: 150' FSL, 2310' FWL, Sec 8, T19S, R26E, Unit N

PP: 330' FSL, 2310' FWL, Sec 8, T19S, R26E, Unit N

BHL: 330' FNL, 2301' FWL, Sec 8, T19S, R26E, Unit C

Standard Planning Report

20 October, 2014





Phoenix Technology Services
Planning Report



Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well #6H
Company:	COG Operating LLC	TVD Reference:	KB @ 3392.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27:NME)	MD Reference:	KB @ 3392.00usft (Silver Oak 3)
Site:	Bradley 8 Fee	North Reference:	Grid
Well:	#6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1 10-20-14		

Project:	Eddy County, NM (NAD27:NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	Bradley 8 Fee		
Site Position:		Northing:	606,797.50 usft
From:	Map	Easting:	478,847.80 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 40' 5.40482 N
		Longitude:	104° 24' 7.45386 W
		Grid Convergence:	-0.04 °

Well:		#6H				
Well Position	+N/-S	4.20 usft	Northing:	606,801.70 usft	Latitude:	32° 40' 5.44169 N
	+E/-W	-719.40 usft	Easting:	478,128.40 usft	Longitude:	104° 24' 15.86995 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,374.00 usft

Wellbore	WB1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010_14	10/20/2014	7.59	60.37	48,457

Design					Plan #1 10-20-14				
Audit Notes:									
Version:		Phase:		PLAN		Tie On Depth:		0.00	
Vertical Section:		Depth From (TVD)		+N/-S		+E/-W		Direction	
		(usft)		(usft)		(usft)		(°)	
		0.00		0.00		0.00		359.01	

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,579.62	0.00	0.00	2,579.62	0.00	0.00	0.00	0.00	0.00	0.00	
3,402.35	90.50	359.01	3,100.47	525.34	-9.06	11.00	11.00	0.00	359.01	
7,719.52	90.50	359.01	3,062.80	4,841.70	-83.50	0.00	0.00	0.00	0.00	PBHL-Bradley 8 #6H



Phoenix Technology Services
Planning Report



Database:	Compass 5000 GCR/DB	Local Co-ordinate Reference:	Well #6H
Company:	COG Operating LLC	TVD Reference:	KB @ 3392.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27/NME)	MD Reference:	KB @ 3392.00usft (Silver Oak 3)
Site:	Bradley 8 Fee	North Reference:	Grid
Well:	#6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #110-20-14		

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,579.62	0.00	0.00	2,579.62	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Start 11°/100' Build									
2,600.00	2.24	359.01	2,599.99	0.40	-0.01	0.40	11.00	11.00	0.00
2,700.00	13.24	359.01	2,698.93	13.85	-0.24	13.85	11.00	11.00	0.00
2,800.00	24.24	359.01	2,793.48	45.92	-0.79	45.93	11.00	11.00	0.00
2,900.00	35.24	359.01	2,880.18	95.45	-1.65	95.46	11.00	11.00	0.00
3,000.00	46.24	359.01	2,955.83	160.60	-2.77	160.63	11.00	11.00	0.00
3,026.21	49.12	359.01	2,973.47	179.98	-3.10	180.01	11.00	11.00	0.00
PP-Bradley 8 #6H									
3,100.00	57.24	359.01	3,017.65	238.99	-4.12	239.03	11.00	11.00	0.00
3,200.00	68.24	359.01	3,063.38	327.74	-5.65	327.79	11.00	11.00	0.00
3,300.00	79.24	359.01	3,091.34	423.58	-7.31	423.64	11.00	11.00	0.00
3,394.55	89.64	359.01	3,100.48	517.53	-8.93	517.61	11.00	11.00	0.00
TL, 3105' TVD @ 0° VZ, 90.5° Inc									
3,400.00	90.24	359.01	3,100.49	522.99	-9.02	523.07	11.00	11.00	0.00
3,402.35	90.50	359.01	3,100.47	525.34	-9.06	525.42	11.00	11.00	0.00
LP, Hold 90.5° Inc, 359.01° Azm									
3,500.00	90.50	359.01	3,099.62	622.97	-10.74	623.06	0.00	0.00	0.00
3,600.00	90.50	359.01	3,098.75	722.95	-12.47	723.06	0.00	0.00	0.00
3,700.00	90.50	359.01	3,097.88	822.93	-14.19	823.05	0.00	0.00	0.00
3,800.00	90.50	359.01	3,097.00	922.91	-15.92	923.05	0.00	0.00	0.00
3,900.00	90.50	359.01	3,096.13	1,022.89	-17.64	1,023.05	0.00	0.00	0.00
4,000.00	90.50	359.01	3,095.26	1,122.88	-19.37	1,123.04	0.00	0.00	0.00
4,100.00	90.50	359.01	3,094.39	1,222.86	-21.09	1,223.04	0.00	0.00	0.00
4,200.00	90.50	359.01	3,093.51	1,322.84	-22.81	1,323.04	0.00	0.00	0.00
4,300.00	90.50	359.01	3,092.64	1,422.82	-24.54	1,423.03	0.00	0.00	0.00
4,400.00	90.50	359.01	3,091.77	1,522.80	-26.26	1,523.03	0.00	0.00	0.00
4,500.00	90.50	359.01	3,090.90	1,622.78	-27.99	1,623.02	0.00	0.00	0.00
4,600.00	90.50	359.01	3,090.02	1,722.76	-29.71	1,723.02	0.00	0.00	0.00
4,700.00	90.50	359.01	3,089.15	1,822.75	-31.44	1,823.02	0.00	0.00	0.00
4,800.00	90.50	359.01	3,088.28	1,922.73	-33.16	1,923.01	0.00	0.00	0.00
4,900.00	90.50	359.01	3,087.40	2,022.71	-34.88	2,023.01	0.00	0.00	0.00
5,000.00	90.50	359.01	3,086.53	2,122.69	-36.61	2,123.01	0.00	0.00	0.00
5,100.00	90.50	359.01	3,085.66	2,222.67	-38.33	2,223.00	0.00	0.00	0.00
5,200.00	90.50	359.01	3,084.79	2,322.65	-40.06	2,323.00	0.00	0.00	0.00
5,300.00	90.50	359.01	3,083.91	2,422.63	-41.78	2,422.99	0.00	0.00	0.00
5,400.00	90.50	359.01	3,083.04	2,522.61	-43.51	2,522.99	0.00	0.00	0.00
5,500.00	90.50	359.01	3,082.17	2,622.60	-45.23	2,622.99	0.00	0.00	0.00
5,600.00	90.50	359.01	3,081.30	2,722.58	-46.95	2,722.98	0.00	0.00	0.00
5,700.00	90.50	359.01	3,080.42	2,822.56	-48.68	2,822.98	0.00	0.00	0.00
5,800.00	90.50	359.01	3,079.55	2,922.54	-50.40	2,922.97	0.00	0.00	0.00
5,900.00	90.50	359.01	3,078.68	3,022.52	-52.13	3,022.97	0.00	0.00	0.00
6,000.00	90.50	359.01	3,077.81	3,122.50	-53.85	3,122.97	0.00	0.00	0.00
6,100.00	90.50	359.01	3,076.93	3,222.48	-55.57	3,222.96	0.00	0.00	0.00
6,200.00	90.50	359.01	3,076.06	3,322.47	-57.30	3,322.96	0.00	0.00	0.00
6,300.00	90.50	359.01	3,075.19	3,422.45	-59.02	3,422.96	0.00	0.00	0.00
6,400.00	90.50	359.01	3,074.31	3,522.43	-60.75	3,522.95	0.00	0.00	0.00
6,500.00	90.50	359.01	3,073.44	3,622.41	-62.47	3,622.95	0.00	0.00	0.00
6,600.00	90.50	359.01	3,072.57	3,722.39	-64.20	3,722.94	0.00	0.00	0.00
6,700.00	90.50	359.01	3,071.70	3,822.37	-65.92	3,822.94	0.00	0.00	0.00
6,800.00	90.50	359.01	3,070.82	3,922.35	-67.64	3,922.94	0.00	0.00	0.00
6,900.00	90.50	359.01	3,069.95	4,022.33	-69.37	4,022.93	0.00	0.00	0.00
7,000.00	90.50	359.01	3,069.08	4,122.32	-71.09	4,122.93	0.00	0.00	0.00



Phoenix Technology Services
Planning Report



Database:	Compass 5000_GCR_DB	Local Co-ordinate Reference:	Well #6H
Company:	COG Operating LLC	TVD Reference:	KB @ 3392.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3392.00usft (Silver Oak 3)
Site:	Bradley 8 Fee	North Reference:	Grid
Well:	#6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1 10-20-14		

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)	
7,100.00	90.50	359.01	3,068.21	4,222.30	-72.82	4,222.93	0.00	0.00	0.00	
7,200.00	90.50	359.01	3,067.33	4,322.28	-74.54	4,322.92	0.00	0.00	0.00	
7,300.00	90.50	359.01	3,066.46	4,422.26	-76.27	4,422.92	0.00	0.00	0.00	
7,400.00	90.50	359.01	3,065.59	4,522.24	-77.99	4,522.91	0.00	0.00	0.00	
7,500.00	90.50	359.01	3,064.72	4,622.22	-79.71	4,622.91	0.00	0.00	0.00	
7,600.00	90.50	359.01	3,063.84	4,722.20	-81.44	4,722.91	0.00	0.00	0.00	
7,700.00	90.50	359.01	3,062.97	4,822.19	-83.16	4,822.90	0.00	0.00	0.00	
7,719.52	90.50	359.01	3,062.80	4,841.70	-83.50	4,842.42	0.00	0.00	0.00	
TD at 7719.52' MD - PBHL-Bradley 8 #6H										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
hit/miss target										
Shape										
PP-Bradley 8 #6H	0.00	0.00	2,973.49	180.00	-3.10	606,981.70	478,125.30	32° 40' 7.22289 N	104° 24' 15.90768 W	
- plan hits target center										
- Point										
PBHL-Bradley 8 #6H	0.00	360.00	3,062.80	4,841.70	-83.50	611,643.40	478,044.90	32° 40' 53.35295 N	104° 24' 16.88488 W	
- plan hits target center										
- Point										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,394.55	3,100.48	TL, 3105' TVD @ 0 VZ, 90.5° Inc		-0.50	358.01	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
2,579.62	2,579.62	0.00	0.00	KOP, Start 11°/100' Build	
3,402.35	3,100.47	525.34	-9.06	LP, Hold 90.5° Inc, 359.01° Azm	
7,719.52	3,062.80	4,841.70	-83.50	TD at 7719.52' MD	



Project: Eddy County, NM (NAD27 NME)
Site: Bradley & Fee
Well: #6H
Wellbore: WB1
Design: Plan #1 10-20-14
Rig: Silver Oak 3



PHOENIX
TECHNOLOGY SERVICES



Azimuths to Grid North
True North: 0.04°
Magnetic North: 7.63°
Magnetic Field
Strength: 48457.4nT
Dip Angle: 60.37°
Date: 10/20/2014
Model: IGRF2010_14

WELL DETAILS

+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude
0.00	0.00	606801.70	478128.40	32° 40' 5.44169 N	104° 24' 15.86995 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2	2579.52	0.00	0.00	2579.52	0.00	0.00	0.00	0.00	0.00		KOP Start 11°/100' Build
3	3402.35	90.50	359.01	3100.47	525.34	-9.06	11.00	359.01	525.42		LP Hold 90.5° Inc. 359.01° Azm
4	7719.52	90.50	359.01	3062.80	4841.70	-83.50	0.00	0.00	4842.42	PBHL-Bradley 8 #6H	TD at 7719.52 MD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PP-Bradley 8 #6H	2973.49	180.00	-3.10	606981.70	478125.30	32° 40' 7.22288 N	104° 24' 15.90768 W	Point
PBHL-Bradley 8 #6H	3062.80	4841.70	-83.50	611643.40	478044.90	32° 40' 53.35294 N	104° 24' 16.88488 W	Point

- plan hits target center
- plan hits target center

PROJECT DETAILS: Eddy County, NM (NAD27 NME)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001

System Datum: Mean Sea Level

SITE DETAILS: Bradley & Fee

Site Centre Northing: 606797.50
Easting: 478847.80

Positional Uncertainty: 0.00
Convergence: -0.04
Local North: Grid

LEGEND

- Crusader Rabbit #1, WB1, Surveys V0
- #2H, WB1/Job #1310409, Surveys (JV #4) V0
- #26H, WB1, Plan #1 10-20-14 V0
- Plan #1 10-20-14

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001

Local Origin: Well #6H, Grid North

Latitude: 32° 40' 5.44169 N
Longitude: 104° 24' 15.86995 W

Grid East: 478128.40
Grid North: 606801.70
Scale Factor: 1.000

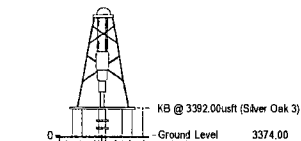
Geomagnetic Model: IGRF2010_14
Sample Date: 20-Oct-14

Magnetic Declination: 7.59°
Dip Angle from Horizontal: 60.37°
Magnetic Field Strength: 48457

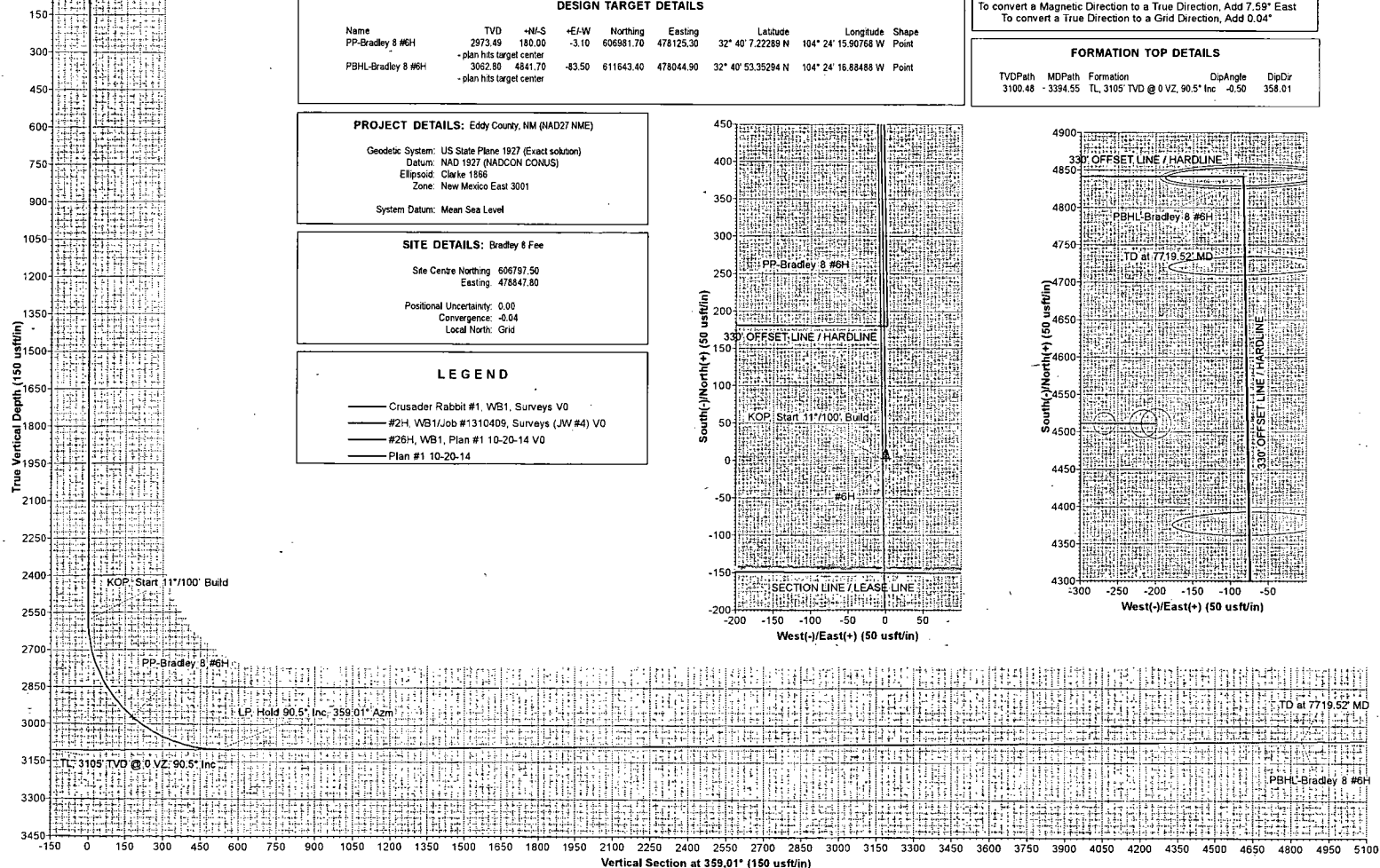
To convert a Magnetic Direction to a Grid Direction, Add 7.63°
To convert a Magnetic Direction to a True Direction, Add 7.59° East
To convert a True Direction to a Grid Direction, Add 0.04°

FORMATION TOP DETAILS

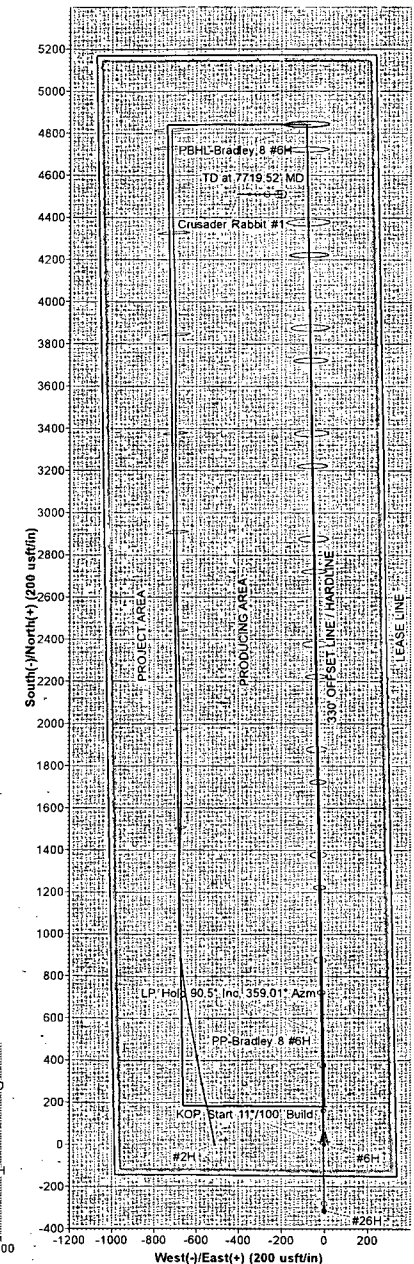
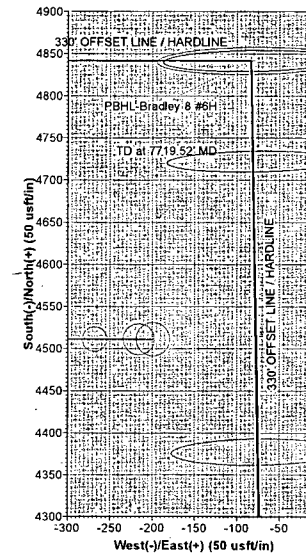
TVDPath	MDPath	Formation	DipAngle	DipDr
3100.48	-3394.55	TL 3105' TVD @ 0 VZ, 90.5° Inc	-0.50	358.01



KB @ 3392.00usft (Silver Oak 3)
Ground Level: 3374.00



Vertical Section at 359.01° (150 usft/in)





COG Operating LLC

Eddy County, NM (NAD27 NME)

Bradley 8 Fee

#6H

WB1

Plan #1 10-20-14

Anticollision Report

20 October, 2014



PHOENIX
TECHNOLOGY SERVICES



Phoenix Technology Services
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #6H
Project:	Eddy County NM (NAD27-NME)	TVD/Reference:	KB @ 3392.00usft (Silver Oak 3)
Reference Site:	Bradley 8 Fee	MD/Reference:	KB @ 3392.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2'00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR DB
Reference Design:	Plan #1 10-20-14	Offset TVD/Reference:	Offset Datum

Reference	Plan #1 10-20-14		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	Error Surface:	Circular Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 10/20/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	7,719.52	Plan #1 10-20-14 (WB1)	PHX+MWD+IGRF	PHX+MWD+IGRF v3: standard declination

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Bradley 8 Fee						
#26H - WB1 - Plan #1 10-20-14	2,579.62	2,579.62	315.00	296.92	17.426	CC, ES
#26H - WB1 - Plan #1 10-20-14	7,719.52	9,064.44	1,027.20	812.06	4.775	SF
#2H - WB1/Job #1310409 - Surveys (JW #4)	1,356.06	1,351.07	507.95	500.90	72.025	CC
#2H - WB1/Job #1310409 - Surveys (JW #4)	7,719.52	7,673.00	635.74	447.21	3.372	ES, SF
Crusader Rabbit						
Crusader Rabbit #1 - WB1 - Surveys	7,393.84	3,067.66	280.68	177.23	2.713	CC
Crusader Rabbit #1 - WB1 - Surveys	7,400.00	3,067.60	280.75	177.17	2.710	ES, SF

Offset Design: Bradley 8 Fee - #26H- WB1- Plan #1:10-20-14										Offset Site Error: 0.00 usft	
Survey Program: 0-PHX+MWD+IGRF										Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance		Minimum Separation		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre N-S (usft)	Offset Wellbore Centre E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor
0.00	0.00	0.00	0.00	0.00	0.00	179.91	-315.00	0.50	315.00		
100.00	100.00	100.00	100.00	0.15	0.15	179.91	-315.00	0.50	315.00	314.70	0.30 1,052.372
200.00	200.00	200.00	200.00	0.51	0.51	179.91	-315.00	0.50	315.00	313.98	1.02 309.958
300.00	300.00	300.00	300.00	0.86	0.87	179.91	-315.00	0.50	315.00	313.27	1.73 181.744
400.00	400.00	400.00	400.00	1.22	1.23	179.91	-315.00	0.50	315.00	312.55	2.45 128.564
500.00	500.00	500.00	500.00	1.58	1.59	179.91	-315.00	0.50	315.00	311.83	3.17 99.460
600.00	600.00	600.00	600.00	1.94	1.94	179.91	-315.00	0.50	315.00	311.12	3.88 81.101
700.00	700.00	700.00	700.00	2.30	2.30	179.91	-315.00	0.50	315.00	310.40	4.60 68.464
800.00	800.00	800.00	800.00	2.66	2.66	179.91	-315.00	0.50	315.00	309.68	5.32 59.234
900.00	900.00	900.00	900.00	3.01	3.02	179.91	-315.00	0.50	315.00	308.97	6.03 52.197
1,000.00	1,000.00	1,000.00	1,000.00	3.37	3.38	179.91	-315.00	0.50	315.00	308.25	6.75 46.654
1,100.00	1,100.00	1,100.00	1,100.00	3.73	3.74	179.91	-315.00	0.50	315.00	307.53	7.47 42.176
1,200.00	1,200.00	1,200.00	1,200.00	4.09	4.10	179.91	-315.00	0.50	315.00	306.81	8.19 38.482
1,300.00	1,300.00	1,300.00	1,300.00	4.45	4.45	179.91	-315.00	0.50	315.00	306.10	8.90 35.383
1,400.00	1,400.00	1,400.00	1,400.00	4.81	4.81	179.91	-315.00	0.50	315.00	305.38	9.62 32.746
1,500.00	1,500.00	1,500.00	1,500.00	5.17	5.17	179.91	-315.00	0.50	315.00	304.66	10.34 30.474
1,600.00	1,600.00	1,600.00	1,600.00	5.52	5.53	179.91	-315.00	0.50	315.00	303.95	11.05 28.498
1,700.00	1,700.00	1,700.00	1,700.00	5.88	5.89	179.91	-315.00	0.50	315.00	303.23	11.77 26.762
1,800.00	1,800.00	1,800.00	1,800.00	6.24	6.25	179.91	-315.00	0.50	315.00	302.51	12.49 25.226
1,900.00	1,900.00	1,900.00	1,900.00	6.60	6.60	179.91	-315.00	0.50	315.00	301.80	13.20 23.856

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



Phoenix Technology Services
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #6H
Project:	Eddy County NM (NAD27 NME)	TVD Reference:	KB @ 3392.00usft (Silver Oak 3)
Reference Site:	Bradley 8 Fee	MD Reference:	KB @ 3392.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR-DB
Reference Design:	Plan #1 10-20-14	Offset TVD Reference:	Offset Datum

Offset Design: Bradley 8 Fee - #26H - WB1 - Plan #1 10-20-14												Offset Site Error:	0.00 usft
Survey Program: 0-PHX-MWD-IGRF												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Minimum		Separation		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
2,000.00	2,000.00	2,000.00	2,000.00	6.96	6.96	179.91	-315.00	0.50	315.00	301.08	13.92	22.627	
2,100.00	2,100.00	2,100.00	2,100.00	7.32	7.32	179.91	-315.00	0.50	315.00	300.36	14.64	21.519	
2,200.00	2,200.00	2,200.00	2,200.00	7.67	7.68	179.91	-315.00	0.50	315.00	299.65	15.36	20.514	
2,300.00	2,300.00	2,300.00	2,300.00	8.03	8.04	179.91	-315.00	0.50	315.00	298.93	16.07	19.599	
2,400.00	2,400.00	2,400.00	2,400.00	8.39	8.40	179.91	-315.00	0.50	315.00	298.21	16.79	18.762	
2,500.00	2,500.00	2,500.00	2,500.00	8.75	8.76	179.91	-315.00	0.50	315.00	297.49	17.51	17.994	
2,579.62	2,579.62	2,579.62	2,579.62	9.04	9.04	179.91	-315.00	0.50	315.00	296.92	18.08	17.426 CC, ES	
2,600.00	2,599.99	2,599.99	2,599.99	9.11	9.11	-179.10	-315.00	0.50	315.40	297.18	18.22	17.308	
2,650.00	2,649.79	2,649.79	2,649.79	9.29	9.29	-179.11	-315.00	0.50	319.75	301.16	18.58	17.207	
2,700.00	2,698.93	2,698.93	2,698.93	9.47	9.47	-179.12	-315.00	0.50	328.85	309.91	18.94	17.361	
2,750.00	2,746.98	2,746.98	2,746.98	9.65	9.64	-179.13	-315.00	0.50	342.61	323.32	19.29	17.757	
2,800.00	2,793.48	2,793.48	2,793.48	9.83	9.81	-179.14	-315.00	0.50	360.92	341.28	19.64	18.376	
2,850.00	2,838.02	2,838.02	2,838.02	10.04	9.97	-179.15	-315.00	0.50	383.61	363.60	20.01	19.173	
2,900.00	2,880.18	2,880.18	2,880.18	10.27	10.12	-179.16	-315.00	0.50	410.45	390.06	20.39	20.127	
2,950.00	2,919.57	2,919.57	2,919.57	10.54	10.26	-179.15	-315.00	0.50	441.22	420.41	20.80	21.209	
3,000.00	2,955.83	2,955.83	2,955.83	10.86	10.39	-179.14	-315.00	0.50	475.61	454.37	21.25	22.384	
3,050.00	2,988.62	2,988.62	2,988.62	11.23	10.51	-179.11	-315.00	0.50	513.33	491.59	21.73	23.620	
3,100.00	3,017.65	3,017.65	3,017.65	11.65	10.61	-179.06	-315.00	0.50	554.01	531.75	22.26	24.887	
3,150.00	3,042.65	3,042.65	3,042.65	12.13	10.70	-178.97	-315.00	0.50	597.29	574.46	22.84	26.156	
3,200.00	3,063.38	3,063.38	3,063.38	12.68	10.78	-178.81	-315.00	0.50	642.77	619.31	23.46	27.403	
3,250.00	3,079.66	3,079.66	3,079.66	13.28	10.83	-178.54	-315.00	0.50	690.02	665.90	24.12	28.610	
3,300.00	3,091.34	3,091.34	3,091.34	13.94	10.88	-177.95	-315.00	0.50	738.62	713.80	24.82	29.762	
3,350.00	3,098.30	3,098.30	3,098.30	14.64	10.90	-176.09	-315.00	0.50	788.11	762.57	25.54	30.853	
3,402.35	3,100.47	3,100.47	3,100.47	15.42	10.91	-33.92	-315.00	0.50	840.39	814.07	26.33	31.922	
3,500.00	3,099.62	3,099.62	3,099.62	16.96	10.91	-31.07	-315.00	0.50	938.04	910.17	27.87	33.662	
3,600.00	3,098.75	4,953.89	4,125.87	18.65	26.42	-179.78	731.85	-16.55	1,027.17	982.09	45.08	22.787	
3,700.00	3,097.88	5,053.89	4,125.00	20.43	28.23	-179.79	831.83	-18.18	1,027.17	978.50	48.66	21.107	
3,800.00	3,097.00	5,153.89	4,124.13	22.27	30.09	-179.79	931.81	-19.81	1,027.17	974.81	52.36	19.618	
3,900.00	3,096.13	5,253.89	4,123.25	24.16	31.98	-179.80	1,031.80	-21.44	1,027.17	971.03	56.14	18.296	
4,000.00	3,095.26	5,353.89	4,122.38	26.09	33.90	-179.80	1,131.78	-23.07	1,027.17	967.17	59.99	17.122	
4,100.00	3,094.39	5,453.89	4,121.51	28.06	35.84	-179.81	1,231.76	-24.70	1,027.17	963.27	63.90	16.075	
4,200.00	3,093.51	5,553.89	4,120.64	30.04	37.81	-179.81	1,331.75	-26.32	1,027.17	959.31	67.85	15.138	
4,300.00	3,092.64	5,653.89	4,119.76	32.05	39.80	-179.82	1,431.73	-27.95	1,027.17	955.32	71.85	14.297	
4,400.00	3,091.77	5,753.89	4,118.89	34.07	41.80	-179.82	1,531.71	-29.58	1,027.17	951.29	75.87	13.538	
4,500.00	3,090.90	5,853.89	4,118.02	36.11	43.81	-179.83	1,631.69	-31.21	1,027.17	947.24	79.93	12.852	
4,600.00	3,090.02	5,953.89	4,117.14	38.16	45.84	-179.83	1,731.68	-32.84	1,027.17	943.16	84.00	12.228	
4,700.00	3,089.15	6,053.89	4,116.27	40.22	47.88	-179.84	1,831.66	-34.47	1,027.16	939.07	88.10	11.659	
4,800.00	3,088.28	6,153.89	4,115.40	42.29	49.92	-179.84	1,931.64	-36.10	1,027.16	934.95	92.21	11.139	
4,900.00	3,087.40	6,253.89	4,114.53	44.36	51.98	-179.85	2,031.63	-37.73	1,027.16	930.82	96.34	10.662	
5,000.00	3,086.53	6,353.89	4,113.65	46.45	54.04	-179.86	2,131.61	-39.35	1,027.16	926.68	100.48	10.222	
5,100.00	3,085.66	6,453.89	4,112.78	48.53	56.10	-179.86	2,231.59	-40.98	1,027.16	922.53	104.64	9.817	
5,200.00	3,084.79	6,553.89	4,111.91	50.62	58.18	-179.87	2,331.58	-42.61	1,027.16	918.36	108.80	9.441	
5,300.00	3,083.91	6,653.89	4,111.04	52.72	60.25	-179.87	2,431.56	-44.24	1,027.16	914.19	112.97	9.092	
5,400.00	3,083.04	6,753.89	4,110.16	54.82	62.34	-179.88	2,531.54	-45.87	1,027.16	910.01	117.16	8.768	
5,500.00	3,082.17	6,853.89	4,109.29	56.92	64.42	-179.88	2,631.52	-47.50	1,027.16	905.82	121.34	8.465	
5,600.00	3,081.30	6,953.89	4,108.42	59.03	66.51	-179.89	2,731.51	-49.13	1,027.16	901.62	125.54	8.182	
5,700.00	3,080.42	7,053.89	4,107.55	61.14	68.60	-179.89	2,831.49	-50.75	1,027.16	897.42	129.74	7.917	
5,800.00	3,079.55	7,153.89	4,106.67	63.25	70.70	-179.90	2,931.47	-52.38	1,027.16	893.21	133.95	7.668	
5,900.00	3,078.68	7,253.89	4,105.80	65.36	72.80	-179.90	3,031.46	-54.01	1,027.16	889.00	138.16	7.435	
6,000.00	3,077.81	7,353.89	4,104.93	67.48	74.90	-179.91	3,131.44	-55.64	1,027.16	884.78	142.38	7.214	
6,100.00	3,076.93	7,453.89	4,104.05	69.59	77.00	-179.91	3,231.42	-57.27	1,027.16	880.56	146.60	7.007	
6,200.00	3,076.06	7,553.89	4,103.18	71.71	79.11	-179.92	3,331.40	-58.90	1,027.16	876.34	150.82	6.810	

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



Phoenix Technology Services
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well #6H
Project:	Eddy County - NM (NAD27/NME)	TVD Reference:	KB @ 3392.00usft (Silver Oak 3)
Reference Site:	Bradley 8 Fee	MD Reference:	KB @ 3392.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	WB1	Database:	Compass 5000 GCR DB
Reference Design:	Plan #1 10-20-14	Offset TVD Reference:	Offset Datum

Offset Design: Bradley 8 Fee - #26H - WB1 - Plan #1 10-20-14												Offset Site Error:	0.00 usft
Survey Program: 0-PRX-MWD-IGRF												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Minimum		Separation		Warnings			
Measured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre	Between	Between	Minimum	Separation		
Depth	Depth	Depth	Depth	Reference	Offset	Toolface	+N-S	Centres	Ellipses	Separation	Factor		
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)			
6,300.00	3,075.19	7,653.89	4,102.31	73.83	81.22	-179.92	3,431.39	-60.53	1,027.16	872.11	155.05	6.625	
6,400.00	3,074.31	7,753.89	4,101.44	75.96	83.33	-179.93	3,531.37	-62.16	1,027.16	867.88	159.28	6.449	
6,500.00	3,073.44	7,853.89	4,100.56	78.08	85.44	-179.94	3,631.35	-63.78	1,027.16	863.64	163.52	6.282	
6,600.00	3,072.57	7,953.89	4,099.69	80.20	87.55	-179.94	3,731.34	-65.41	1,027.16	859.41	167.75	6.123	
6,700.00	3,071.70	8,053.89	4,098.82	82.33	89.67	-179.95	3,831.32	-67.04	1,027.16	855.17	171.99	5.972	
6,800.00	3,070.82	8,153.89	4,097.95	84.45	91.78	-179.95	3,931.30	-68.67	1,027.16	850.93	176.24	5.828	
6,900.00	3,069.95	8,253.89	4,097.07	86.58	93.90	-179.96	4,031.28	-70.30	1,027.16	846.68	180.48	5.691	
7,000.00	3,069.08	8,353.89	4,096.20	88.71	96.02	-179.96	4,131.27	-71.93	1,027.16	842.44	184.73	5.560	
7,100.00	3,068.21	8,453.89	4,095.33	90.84	98.14	-179.97	4,231.25	-73.56	1,027.16	838.19	188.97	5.435	
7,200.00	3,067.33	8,553.89	4,094.46	92.97	100.26	-179.97	4,331.23	-75.18	1,027.16	833.94	193.22	5.316	
7,300.00	3,066.46	8,653.89	4,093.58	95.10	102.38	-179.98	4,431.22	-76.81	1,027.16	829.69	197.47	5.201	
7,400.00	3,065.59	8,753.89	4,092.71	97.23	104.50	-179.98	4,531.20	-78.44	1,027.16	825.43	201.73	5.092	
7,500.00	3,064.72	8,853.89	4,091.84	99.36	106.62	-179.99	4,631.18	-80.07	1,027.16	821.18	205.98	4.987	
7,600.00	3,063.84	8,953.89	4,090.96	101.49	108.75	-179.99	4,731.16	-81.70	1,027.16	816.92	210.24	4.886	
7,700.00	3,062.97	9,053.89	4,090.09	103.62	110.87	-180.00	4,831.15	-83.33	1,027.16	812.67	214.49	4.789	
7,710.53	3,062.88	9,064.42	4,090.00	103.85	111.10	-180.00	4,841.67	-83.50	1,027.16	812.22	214.94	4.779	
7,719.52	3,062.80	9,064.44	4,090.00	104.04	111.10	180.00	4,841.70	-83.50	1,027.20	812.06	215.14	4.775 SF	



Phoenix Technology Services
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well #6H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3392.00usft (Silver Oak 3)
Reference Site:	Bradley 8 Fee	MD Reference:	KB @ 3392.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR DB
Reference Design:	Plan #1 10-20-14	Offset TVD Reference:	Offset Datum

Offset Design: Bradley 8 Fee - #2H - WB1/Job #1310409 - Surveys (JW, #4)												Offset Site Error:	0.00 usft
Survey Program: 1100-VES-ISCWSA-GYRO-3-2489-MWD												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre N-S (usft)	Offset Wellbore Centre E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-89.65	3.10	-510.40	510.43				
100.00	100.00	95.44	95.44	0.15	0.08	-89.66	3.00	-510.36	510.37	510.14	0.22	2,274.472	
200.00	200.00	196.61	196.61	0.51	0.26	-89.69	2.78	-510.16	510.17	509.40	0.77	665.380	
300.00	300.00	297.20	297.19	0.86	0.45	-89.71	2.56	-509.78	509.79	508.48	1.31	388.153	
400.00	400.00	396.41	396.41	1.22	0.63	-89.73	2.40	-509.43	509.44	507.58	1.86	274.386	
500.00	500.00	495.96	495.96	1.58	0.82	-89.74	2.32	-509.20	509.21	506.81	2.40	212.061	
600.00	600.00	595.33	595.32	1.94	1.01	-89.75	2.25	-509.08	509.08	506.13	2.95	172.782	
700.00	700.00	695.94	695.93	2.30	1.20	-89.78	2.10	-508.96	508.96	505.47	3.49	145.703	
800.00	800.00	795.79	795.78	2.66	1.38	-89.80	1.75	-508.79	508.79	504.75	4.04	126.042	
900.00	900.00	896.12	896.12	3.01	1.57	-89.86	1.27	-508.60	508.61	504.03	4.58	111.028	
1,000.00	1,000.00	995.75	995.74	3.37	1.75	-89.92	0.75	-508.42	508.42	503.30	5.12	99.224	
1,100.00	1,100.00	1,095.85	1,095.84	3.73	1.94	-89.98	0.19	-508.27	508.27	502.60	5.67	89.675	
1,200.00	1,200.00	1,195.74	1,195.73	4.09	2.12	-90.03	-0.30	-508.11	508.11	501.90	6.21	81.792	
1,300.00	1,300.00	1,295.57	1,295.56	4.45	2.31	-90.07	-0.61	-507.98	507.98	501.23	6.76	75.175	
1,356.06	1,356.06	1,351.07	1,351.06	4.65	2.40	-90.08	-0.70	-507.95	507.95	500.90	7.05	72.025 CC	
1,400.00	1,400.00	1,394.54	1,394.53	4.81	2.48	-90.08	-0.73	-507.97	507.97	500.69	7.28	69.746	
1,500.00	1,500.00	1,493.95	1,493.94	5.17	2.63	-90.09	-0.75	-508.12	508.12	500.33	7.80	65.165	
1,600.00	1,600.00	1,593.26	1,593.25	5.52	2.80	-90.11	-1.01	-508.39	508.40	500.08	8.32	61.079	
1,700.00	1,700.00	1,695.18	1,695.17	5.88	2.98	-90.19	-1.69	-508.57	508.57	499.70	8.87	57.359	
1,757.75	1,757.75	1,752.76	1,752.74	6.09	3.09	-90.24	-2.11	-508.55	508.56	499.38	9.18	55.399	
1,800.00	1,800.00	1,794.79	1,794.77	6.24	3.17	-90.26	-2.30	-508.56	508.57	499.16	9.41	54.050	
1,900.00	1,900.00	1,894.48	1,894.46	6.60	3.35	-90.30	-2.69	-508.63	508.64	498.69	9.95	51.112	
2,000.00	2,000.00	1,993.55	1,993.53	6.96	3.53	-90.36	-3.22	-508.82	508.83	498.34	10.49	48.501	
2,100.00	2,100.00	2,093.46	2,093.44	7.32	3.71	-90.40	-3.60	-509.12	509.14	498.11	11.03	46.174	
2,200.00	2,200.00	2,193.70	2,193.68	7.67	3.88	-90.41	-3.63	-509.41	509.42	497.87	11.55	44.105	
2,300.00	2,300.00	2,292.73	2,292.70	8.03	4.03	-90.38	-3.40	-509.75	509.77	497.71	12.06	42.255	
2,400.00	2,400.00	2,393.31	2,393.29	8.39	4.19	-90.34	-3.05	-510.16	510.17	497.59	12.58	40.552	
2,500.00	2,500.00	2,493.16	2,493.13	8.75	4.29	-90.30	-2.72	-510.45	510.46	497.42	13.04	39.141	
2,579.62	2,579.62	2,568.06	2,567.98	9.04	4.30	-90.02	-0.21	-510.88	510.92	497.59	13.34	38.308	
2,600.00	2,599.99	2,583.00	2,582.83	9.11	4.31	-88.85	1.39	-511.13	511.26	497.85	13.42	38.110	
2,650.00	2,649.79	2,626.48	2,625.51	9.29	4.34	-88.21	9.47	-512.28	512.59	498.96	13.63	37.603	
2,700.00	2,698.93	2,665.56	2,662.97	9.47	4.38	-87.53	20.43	-513.96	514.70	500.84	13.85	37.152	
2,750.00	2,746.98	2,701.23	2,698.47	9.65	4.42	-86.93	32.46	-516.28	517.83	503.76	14.07	36.804	
2,800.00	2,793.48	2,741.51	2,733.37	9.83	4.46	-86.38	48.20	-519.82	521.95	507.85	14.29	36.513	
2,850.00	2,838.02	2,787.73	2,774.38	10.04	4.52	-85.92	69.05	-524.23	526.33	511.76	14.56	36.139	
2,900.00	2,880.18	2,833.00	2,812.84	10.27	4.62	-85.56	92.47	-528.66	530.69	515.80	14.90	35.627	
2,950.00	2,919.57	2,873.33	2,845.58	10.54	4.81	-85.27	115.63	-532.89	535.29	519.93	15.36	34.857	
3,000.00	2,955.83	2,908.08	2,872.74	10.86	5.02	-85.05	136.84	-537.33	540.75	524.87	15.88	34.058	
3,050.00	2,988.62	2,946.01	2,901.16	11.23	5.29	-84.96	161.30	-543.05	547.15	530.63	16.51	33.135	
3,100.00	3,017.65	2,989.00	2,931.49	11.65	5.65	-85.05	190.96	-549.97	553.94	536.64	17.30	32.026	
3,150.00	3,042.65	3,033.36	2,960.62	12.13	6.09	-85.25	223.59	-557.28	560.83	542.61	18.22	30.779	
3,200.00	3,063.38	3,075.45	2,986.10	12.68	6.56	-85.49	256.27	-564.60	568.11	548.87	19.24	29.533	
3,250.00	3,079.66	3,133.21	3,017.76	13.28	7.28	-86.24	303.56	-574.37	575.20	554.64	20.56	27.976	
3,300.00	3,091.34	3,183.01	3,041.68	13.94	7.96	-86.88	346.56	-581.97	581.52	559.62	21.90	26.554	
3,350.00	3,098.30	3,224.25	3,058.82	14.64	8.57	-87.34	383.50	-588.44	588.17	564.96	23.21	25.340	
3,402.35	3,100.47	3,266.25	3,073.58	15.42	9.22	-87.79	422.16	-595.58	595.93	571.29	24.64	24.185	
3,500.00	3,099.62	3,352.65	3,094.09	16.96	10.67	-89.86	504.46	-611.56	612.39	584.76	27.63	22.162	
3,600.00	3,098.75	3,462.97	3,101.44	18.65	12.61	-90.63	612.50	-631.98	629.33	598.07	31.26	20.133	
3,700.00	3,097.88	3,580.48	3,102.84	20.43	14.65	-90.83	728.42	-651.10	643.96	608.88	35.08	18.356	
3,800.00	3,097.00	3,697.47	3,101.35	22.27	16.72	-90.77	844.36	-666.59	655.46	616.47	38.99	16.809	
3,900.00	3,096.13	3,846.15	3,098.56	24.16	19.27	-90.63	992.51	-678.36	661.46	618.02	43.43	15.229	
4,000.00	3,095.26	3,982.52	3,095.43	26.09	21.57	-90.46	1,128.79	-681.30	661.98	614.32	47.66	13.889	

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



Phoenix Technology Services
Anticollision Report



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Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3392.00usft (Silver Oak 3)
Reference Site:	Bradley 8 Fee	MD Reference:	KB @ 3392.00usft (Silver Oak 3)
Site Error:	0.00' usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00' usft	Output errors are at	2.00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR DB
Reference Design:	Plan #1 10-20-14	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Bradley 8 Fee - #2H - WB1/Job #1310409 - Surveys (JW #4)												Offset Well Error:	0.00 usft
Survey Program: 100-VES-ISCWSA-GYRO-3 2489-MWD													
Reference		Offset		Semi Major Axis		Distance		Minimum Separation		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
4,100.00	3,094.39	4,075.86	3,094.29	28.06	23.05	-90.43	1,222.12	-680.85	659.78	608.67	51.11	12.909	
4,200.00	3,093.51	4,197.24	3,093.31	30.04	25.00	-90.44	1,343.47	-678.72	656.25	601.20	55.05	11.922	
4,300.00	3,092.64	4,297.10	3,092.95	32.05	26.59	-90.49	1,443.28	-675.58	651.39	592.75	58.64	11.109	
4,400.00	3,091.77	4,391.44	3,093.17	34.07	28.08	-90.59	1,537.58	-672.75	646.69	584.53	62.15	10.405	
4,500.00	3,090.90	4,481.74	3,092.49	36.11	29.55	-90.60	1,627.87	-671.69	643.76	578.09	65.67	9.804	
4,600.00	3,090.02	4,579.87	3,092.13	38.16	31.18	-90.65	1,725.99	-670.67	641.00	571.66	69.34	9.244	
4,700.00	3,089.15	4,670.25	3,091.35	40.22	32.70	-90.65	1,816.37	-671.21	639.85	566.93	72.92	8.775	
4,800.00	3,088.28	4,769.57	3,091.22	42.29	34.37	-90.72	1,915.68	-671.99	638.92	562.26	76.66	8.334	
4,840.62	3,087.92	4,806.28	3,090.95	43.13	35.00	-90.72	1,952.39	-672.51	638.79	560.66	78.13	8.176	
4,900.00	3,087.40	4,863.34	3,090.14	44.36	35.97	-90.69	2,009.43	-673.66	638.96	558.63	80.34	7.954	
5,000.00	3,086.53	4,963.76	3,089.22	46.45	37.67	-90.69	2,109.83	-675.75	639.32	555.20	84.12	7.600	
5,100.00	3,085.66	5,062.21	3,088.93	48.53	39.35	-90.74	2,208.25	-677.75	639.63	551.75	87.88	7.278	
5,200.00	3,084.79	5,154.68	3,087.64	50.62	40.96	-90.69	2,300.68	-680.27	640.64	549.05	91.58	6.995	
5,300.00	3,083.91	5,252.47	3,084.91	52.72	42.67	-90.52	2,398.35	-684.18	642.88	547.49	95.39	6.739	
5,400.00	3,083.04	5,361.88	3,081.61	54.82	44.59	-90.31	2,507.66	-687.59	644.26	544.86	99.41	6.481	
5,500.00	3,082.17	5,474.80	3,078.43	56.92	46.56	-90.12	2,620.52	-689.14	643.91	540.43	103.48	6.222	
5,600.00	3,081.30	5,568.61	3,075.76	59.03	48.16	-89.95	2,714.29	-689.78	642.88	535.69	107.19	5.998	
5,700.00	3,080.42	5,672.48	3,073.47	61.14	49.93	-89.83	2,818.13	-690.89	642.23	531.16	111.07	5.782	
5,800.00	3,079.55	5,776.93	3,072.48	63.25	51.74	-89.82	2,922.57	-691.11	640.71	525.73	114.99	5.572	
5,900.00	3,078.68	5,869.54	3,070.41	65.36	53.34	-89.71	3,015.16	-691.66	639.58	520.88	118.70	5.388	
5,979.91	3,077.98	5,945.78	3,067.89	67.05	54.64	-89.54	3,091.35	-692.74	639.35	517.66	121.69	5.254	
6,000.00	3,077.81	5,964.65	3,067.29	67.48	54.96	-89.50	3,110.20	-693.08	639.37	516.93	122.44	5.222	
6,100.00	3,076.93	6,060.16	3,064.20	69.59	56.59	-89.30	3,205.63	-695.37	640.06	513.88	126.19	5.072	
6,200.00	3,076.06	6,170.96	3,061.28	71.71	58.52	-89.13	3,316.38	-697.41	640.21	509.98	130.23	4.916	
6,300.00	3,075.19	6,278.95	3,057.99	73.83	60.39	-88.92	3,424.31	-697.42	638.51	504.29	134.22	4.757	
6,400.00	3,074.31	6,379.66	3,055.41	75.96	62.11	-88.76	3,524.99	-697.04	636.45	498.38	138.07	4.610	
6,500.00	3,073.44	6,481.45	3,053.20	78.08	63.86	-88.63	3,626.75	-696.45	634.18	492.24	141.94	4.468	
6,600.00	3,072.57	6,577.57	3,050.17	80.20	65.50	-88.43	3,722.83	-695.86	631.91	486.20	145.70	4.337	
6,700.00	3,071.70	6,673.18	3,047.67	82.33	67.14	-88.28	3,818.40	-696.11	630.49	481.03	149.46	4.218	
6,800.00	3,070.82	6,767.57	3,045.10	84.45	68.75	-88.11	3,912.76	-697.00	629.77	476.56	153.21	4.111	
6,822.23	3,070.63	6,788.37	3,044.63	84.93	69.11	-88.09	3,933.54	-697.32	629.74	475.70	154.04	4.088	
6,900.00	3,069.95	6,860.01	3,042.72	86.58	70.35	-87.97	4,005.14	-698.86	630.11	473.19	156.93	4.015	
7,000.00	3,069.08	6,951.64	3,039.20	88.71	71.95	-87.73	4,096.65	-701.83	631.75	471.09	160.65	3.932	
7,100.00	3,068.21	7,055.59	3,035.12	90.84	73.76	-87.45	4,200.44	-706.03	634.21	469.61	164.60	3.853	
7,200.00	3,067.33	7,156.09	3,032.15	92.97	75.51	-87.27	4,300.85	-708.98	635.52	467.04	168.48	3.772	
7,300.00	3,066.46	7,262.73	3,028.86	95.10	77.36	-87.06	4,407.39	-712.13	636.87	464.41	172.46	3.693	
7,400.00	3,065.59	7,374.00	3,024.59	97.23	79.29	-86.76	4,518.57	-713.47	636.51	459.99	176.52	3.606	
7,500.00	3,064.72	7,471.17	3,020.55	99.36	80.98	-86.47	4,615.65	-714.00	635.53	455.19	180.34	3.524	
7,596.81	3,063.87	7,563.32	3,016.64	101.42	82.57	-86.19	4,707.72	-715.02	635.14	451.15	183.99	3.452	
7,600.00	3,063.84	7,566.17	3,016.52	101.49	82.62	-86.18	4,710.56	-715.06	635.14	451.03	184.11	3.450	
7,700.00	3,062.97	7,663.50	3,011.83	103.62	84.32	-85.83	4,807.76	-716.89	635.57	447.62	187.94	3.382	
7,719.52	3,062.80	7,673.00	3,011.37	104.04	84.49	-85.80	4,817.25	-717.07	635.74	447.21	188.53	3.372 ES, SF	



Phoenix Technology Services
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well #6H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3392.00usft (Silver Oak 3)
Reference Site:	Bradley 8 Fee	MD Reference:	KB @ 3392.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR DB
Reference Design:	Plan #1 10-20-14	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Crusader Rabbit - Crusader Rabbit #1 - WB1 - Surveys												Offset Well Error:	0.00 usft
Survey Program: 370 MWD													
Reference		Offset		Semi Major Axis		Distance		Minimum Separation		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre N-S (usft)	Offset Wellbore Centre E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-5.12	4,511.30	-404.40	4,529.39				
100.00	100.00	96.38	96.38	0.15	0.11	-5.12	4,511.30	-404.24	4,529.37	4,529.12	0.26	N/A	
200.00	200.00	197.83	197.83	0.51	0.22	-5.11	4,511.30	-403.71	4,529.33	4,528.60	0.73	6,213.787	
300.00	300.00	299.27	299.27	0.86	0.34	-5.10	4,511.30	-402.82	4,529.25	4,528.05	1.20	3,768.476	
400.00	400.00	400.27	400.26	1.22	0.49	-5.09	4,511.30	-401.58	4,529.14	4,527.43	1.71	2,650.918	
500.00	500.00	500.26	500.24	1.58	0.71	-5.07	4,511.30	-400.27	4,529.03	4,526.73	2.29	1,975.373	
600.00	600.00	600.25	600.22	1.94	0.94	-5.05	4,511.30	-398.96	4,528.91	4,526.03	2.88	1,573.705	
700.00	700.00	700.24	700.21	2.30	1.16	-5.04	4,511.30	-397.66	4,528.80	4,525.33	3.46	1,308.021	
800.00	800.00	800.24	800.19	2.66	1.39	-5.02	4,511.30	-396.35	4,528.68	4,524.63	4.05	1,119.079	
900.00	900.00	900.57	900.52	3.01	1.62	-5.00	4,511.30	-394.99	4,528.56	4,523.93	4.63	977.576	
1,000.00	1,000.00	1,000.91	1,000.84	3.37	1.84	-4.99	4,511.30	-393.54	4,528.44	4,523.22	5.22	867.836	
1,100.00	1,100.00	1,101.24	1,101.16	3.73	2.07	-4.97	4,511.30	-392.01	4,528.30	4,522.50	5.80	780.242	
1,200.00	1,200.00	1,201.57	1,201.48	4.09	2.30	-4.95	4,511.30	-390.39	4,528.16	4,521.78	6.39	708.705	
1,300.00	1,300.00	1,301.88	1,301.77	4.45	2.53	-4.92	4,511.30	-388.88	4,528.02	4,521.04	6.97	649.232	
1,400.00	1,400.00	1,401.30	1,401.18	4.81	2.72	-4.90	4,511.30	-387.02	4,527.88	4,520.34	7.53	601.225	
1,500.00	1,500.00	1,500.73	1,500.60	5.17	2.92	-4.88	4,511.30	-385.51	4,527.75	4,519.66	8.09	559.824	
1,600.00	1,600.00	1,600.17	1,600.03	5.52	3.12	-4.87	4,511.30	-384.14	4,527.63	4,518.98	8.64	523.748	
1,700.00	1,700.00	1,700.16	1,700.01	5.88	3.32	-4.85	4,511.30	-382.83	4,527.52	4,518.31	9.21	491.801	
1,800.00	1,800.00	1,800.15	1,799.99	6.24	3.53	-4.83	4,511.30	-381.52	4,527.41	4,517.64	9.77	463.525	
1,900.00	1,900.00	1,900.14	1,899.98	6.60	3.73	-4.82	4,511.30	-380.21	4,527.30	4,516.97	10.33	438.322	
2,000.00	2,000.00	2,000.43	2,000.25	6.96	3.95	-4.80	4,511.30	-378.86	4,527.18	4,516.27	10.91	414.949	
2,100.00	2,100.00	2,100.75	2,100.56	7.32	4.18	-4.78	4,511.30	-377.43	4,527.06	4,515.57	11.49	393.847	
2,200.00	2,200.00	2,201.06	2,200.86	7.67	4.40	-4.76	4,511.30	-375.91	4,526.94	4,514.86	12.08	374.787	
2,300.00	2,300.00	2,301.38	2,301.16	8.03	4.63	-4.74	4,511.30	-374.30	4,526.81	4,514.14	12.66	357.485	
2,400.00	2,400.00	2,401.69	2,401.46	8.39	4.86	-4.72	4,511.30	-372.60	4,526.67	4,513.42	13.25	341.708	
2,500.00	2,500.00	2,502.06	2,501.82	8.75	5.08	-4.70	4,511.30	-370.81	4,526.52	4,512.69	13.83	327.232	
2,579.62	2,579.62	2,581.98	2,581.73	9.04	5.26	-4.68	4,511.30	-369.31	4,526.40	4,512.10	14.30	316.550	
2,600.00	2,599.99	2,602.43	2,602.17	9.11	5.31	-3.69	4,511.30	-368.91	4,525.97	4,511.55	14.42	313.896	
2,650.00	2,649.79	2,652.41	2,652.14	9.29	5.42	-3.71	4,511.30	-367.93	4,521.55	4,506.83	14.71	307.322	
2,700.00	2,698.93	2,701.73	2,701.45	9.47	5.53	-3.77	4,511.30	-366.93	4,512.38	4,497.38	15.01	300.676	
2,750.00	2,748.98	2,749.95	2,749.66	9.65	5.64	-3.88	4,511.30	-365.93	4,498.56	4,483.26	15.30	294.070	
2,800.00	2,793.48	2,796.62	2,796.32	9.83	5.75	-4.03	4,511.30	-364.94	4,480.21	4,464.63	15.58	287.505	
2,850.00	2,838.02	2,841.39	2,841.08	10.04	5.85	-4.24	4,511.30	-363.96	4,457.49	4,441.60	15.89	280.493	
2,900.00	2,880.18	2,883.88	2,883.56	10.27	5.95	-4.52	4,511.30	-362.99	4,430.62	4,414.40	16.22	273.121	
2,950.00	2,918.57	2,923.58	2,923.25	10.54	6.04	-4.89	4,511.30	-362.06	4,399.84	4,383.26	16.58	265.335	
3,000.00	2,955.83	2,960.12	2,959.77	10.86	6.12	-5.38	4,511.30	-361.16	4,365.44	4,348.46	16.98	257.096	
3,050.00	2,988.62	2,993.16	2,992.81	11.23	6.20	-6.05	4,511.30	-360.32	4,327.74	4,310.32	17.42	248.411	
3,100.00	3,017.65	3,022.17	3,021.81	11.65	6.26	-6.96	4,511.30	-359.57	4,287.08	4,269.17	17.91	239.368	
3,150.00	3,042.65	3,046.74	3,046.37	12.13	6.31	-8.28	4,511.30	-358.95	4,243.84	4,225.39	18.45	230.078	
3,200.00	3,063.38	3,067.12	3,066.74	12.68	6.35	-10.29	4,511.30	-358.46	4,198.42	4,179.39	19.03	220.590	
3,250.00	3,079.66	3,083.11	3,082.73	13.28	6.38	-13.67	4,511.30	-358.09	4,151.24	4,131.57	19.67	211.051	
3,300.00	3,091.34	3,094.58	3,094.19	13.94	6.41	-20.31	4,511.30	-357.83	4,102.73	4,082.38	20.35	201.613	
3,350.00	3,098.30	3,101.41	3,101.02	14.64	6.42	-37.63	4,511.30	-357.67	4,053.34	4,032.28	21.07	192.415	
3,402.35	3,100.47	3,103.53	3,103.14	15.42	6.43	-98.64	4,511.30	-357.63	4,001.18	3,979.34	21.84	183.166	
3,500.00	3,099.62	3,102.65	3,102.27	16.96	6.42	-98.46	4,511.30	-357.65	3,903.78	3,880.40	23.39	166.931	
3,600.00	3,098.75	3,101.76	3,101.37	18.65	6.42	-98.28	4,511.30	-357.67	3,804.05	3,778.98	25.08	151.705	
3,700.00	3,097.88	3,100.86	3,100.47	20.43	6.42	-98.10	4,511.30	-357.69	3,704.34	3,677.49	26.85	137.962	
3,800.00	3,097.00	3,099.96	3,099.58	22.27	6.42	-97.92	4,511.30	-357.71	3,604.64	3,575.94	28.69	125.640	
3,900.00	3,096.13	3,099.07	3,098.68	24.16	6.42	-97.74	4,511.30	-357.72	3,504.95	3,474.37	30.58	114.615	
4,000.00	3,095.26	3,098.17	3,097.79	26.09	6.42	-97.56	4,511.30	-357.74	3,405.29	3,372.78	32.51	104.748	
4,100.00	3,094.39	3,097.27	3,096.89	28.06	6.41	-97.38	4,511.30	-357.76	3,305.64	3,271.17	34.47	95.901	
4,200.00	3,093.51	3,096.38	3,095.99	30.04	6.41	-97.20	4,511.30	-357.78	3,206.02	3,169.56	36.45	87.946	

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



Phoenix Technology Services
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #6H
Project:	Eddy County - NM (NAD27-NME)	TVD Reference:	KB @ 3392.00usft (Silver Oak 3)
Reference Site:	Bradley 8 Fee	MD Reference:	KB @ 3392.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR DB
Reference Design:	Plan # 110-20-14	Offset TVD Reference:	Offset Datum

Offset Design Crusader Rabbit - Crusader Rabbit #1 - WB1 - Surveys												Offset Site Error:	0.00 usft
Survey Program: 370-MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre N-S (usft)	Offset Wellbore Centre E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,300.00	3,092.84	3,095.48	3,095.10	32.05	6.41	-97.02	4,511.30	-357.80	3,106.42	3,067.96	38.46	80.771	
4,400.00	3,091.77	3,094.58	3,094.20	34.07	6.41	-96.83	4,511.30	-357.83	3,006.84	2,966.36	40.48	74.276	
4,500.00	3,090.90	3,093.69	3,093.30	36.11	6.41	-96.65	4,511.30	-357.85	2,907.30	2,864.78	42.52	68.378	
4,600.00	3,090.02	3,092.79	3,092.40	38.16	6.40	-96.47	4,511.30	-357.87	2,807.79	2,763.22	44.57	63.004	
4,700.00	3,089.15	3,091.89	3,091.51	40.22	6.40	-96.29	4,511.30	-357.89	2,708.31	2,661.69	46.62	58.089	
4,800.00	3,088.28	3,090.99	3,090.61	42.29	6.40	-96.11	4,511.30	-357.91	2,608.87	2,560.19	48.69	53.582	
4,900.00	3,087.40	3,090.09	3,089.71	44.36	6.40	-95.93	4,511.30	-357.93	2,509.48	2,458.72	50.76	49.436	
5,000.00	3,086.53	3,089.20	3,088.81	46.45	6.40	-95.74	4,511.30	-357.95	2,410.14	2,357.30	52.84	45.610	
5,100.00	3,085.66	3,088.30	3,087.92	48.53	6.40	-95.56	4,511.30	-357.97	2,310.85	2,255.93	54.93	42.071	
5,200.00	3,084.79	3,087.40	3,087.02	50.62	6.39	-95.38	4,511.30	-357.99	2,211.63	2,154.61	57.02	38.789	
5,300.00	3,083.91	3,086.50	3,086.12	52.72	6.39	-95.20	4,511.30	-358.01	2,112.48	2,053.37	59.11	35.737	
5,400.00	3,083.04	3,085.60	3,085.22	54.82	6.39	-95.01	4,511.30	-358.03	2,013.42	1,952.21	61.21	32.894	
5,500.00	3,082.17	3,084.70	3,084.32	56.92	6.39	-94.83	4,511.30	-358.05	1,914.45	1,851.14	63.31	30.239	
5,600.00	3,081.30	3,083.81	3,083.42	59.03	6.39	-94.65	4,511.30	-358.07	1,815.59	1,750.18	65.42	27.755	
5,700.00	3,080.42	3,082.91	3,082.52	61.14	6.38	-94.46	4,511.30	-358.09	1,716.87	1,649.35	67.52	25.427	
5,800.00	3,079.55	3,082.01	3,081.63	63.25	6.38	-94.28	4,511.30	-358.11	1,618.30	1,548.67	69.63	23.241	
5,900.00	3,078.68	3,081.11	3,080.73	65.36	6.38	-94.10	4,511.30	-358.13	1,519.92	1,448.18	71.74	21.186	
6,000.00	3,077.81	3,080.21	3,079.83	67.48	6.38	-93.92	4,511.30	-358.15	1,421.76	1,347.91	73.86	19.250	
6,100.00	3,076.93	3,079.31	3,078.93	69.59	6.38	-93.73	4,511.30	-358.17	1,323.88	1,247.91	75.97	17.426	
6,200.00	3,076.06	3,078.41	3,078.03	71.71	6.37	-93.55	4,511.30	-358.19	1,226.34	1,148.25	78.09	15.705	
6,300.00	3,075.19	3,077.51	3,077.13	73.83	6.37	-93.37	4,511.30	-358.21	1,129.23	1,049.03	80.21	14.079	
6,400.00	3,074.31	3,076.61	3,076.23	75.96	6.37	-93.18	4,511.30	-358.24	1,032.67	950.35	82.33	12.544	
6,500.00	3,073.44	3,075.71	3,075.33	78.08	6.37	-93.00	4,511.30	-358.26	936.84	852.39	84.45	11.094	
6,600.00	3,072.57	3,074.81	3,074.43	80.20	6.37	-92.81	4,511.30	-358.28	841.97	755.40	86.57	9.726	
6,700.00	3,071.70	3,073.91	3,073.53	82.33	6.37	-92.63	4,511.30	-358.30	748.43	659.74	88.69	8.438	
6,800.00	3,070.82	3,073.01	3,072.63	84.45	6.36	-92.45	4,511.30	-358.32	656.81	565.99	90.82	7.232	
6,900.00	3,069.95	3,072.11	3,071.73	86.58	6.36	-92.26	4,511.30	-358.34	568.01	475.07	92.94	6.111	
7,000.00	3,069.08	3,071.21	3,070.83	88.71	6.36	-92.08	4,511.30	-358.36	483.61	388.54	95.07	5.087	
7,100.00	3,068.21	3,070.31	3,069.93	90.84	6.36	-91.90	4,511.30	-358.38	406.34	309.15	97.20	4.181	
7,200.00	3,067.33	3,069.40	3,069.03	92.97	6.36	-91.71	4,511.30	-358.40	341.10	241.78	99.32	3.434	
7,300.00	3,066.46	3,068.50	3,068.12	95.10	6.35	-91.53	4,511.30	-358.43	295.95	194.50	101.45	2.917	
7,393.84	3,065.64	3,067.66	3,067.28	97.10	6.35	-91.36	4,511.30	-358.45	280.68	177.23	103.45	2.713 CC	
7,400.00	3,065.59	3,067.60	3,067.22	97.23	6.35	-91.34	4,511.30	-358.45	280.75	177.17	103.58	2.710 ES, SF	
7,500.00	3,064.72	3,066.70	3,066.32	99.36	6.35	-91.16	4,511.30	-358.47	300.08	194.38	105.71	2.839	
7,600.00	3,063.84	3,065.80	3,065.42	101.49	6.35	-90.98	4,511.30	-358.49	348.25	240.41	107.84	3.229	
7,700.00	3,062.97	3,064.90	3,064.52	103.62	6.35	-90.79	4,511.30	-358.51	415.34	305.37	109.97	3.777	
7,719.52	3,062.80	3,064.72	3,064.34	104.04	6.35	-90.76	4,511.30	-358.51	429.93	319.55	110.39	3.895	



Phoenix Technology Services
Anticollision Report

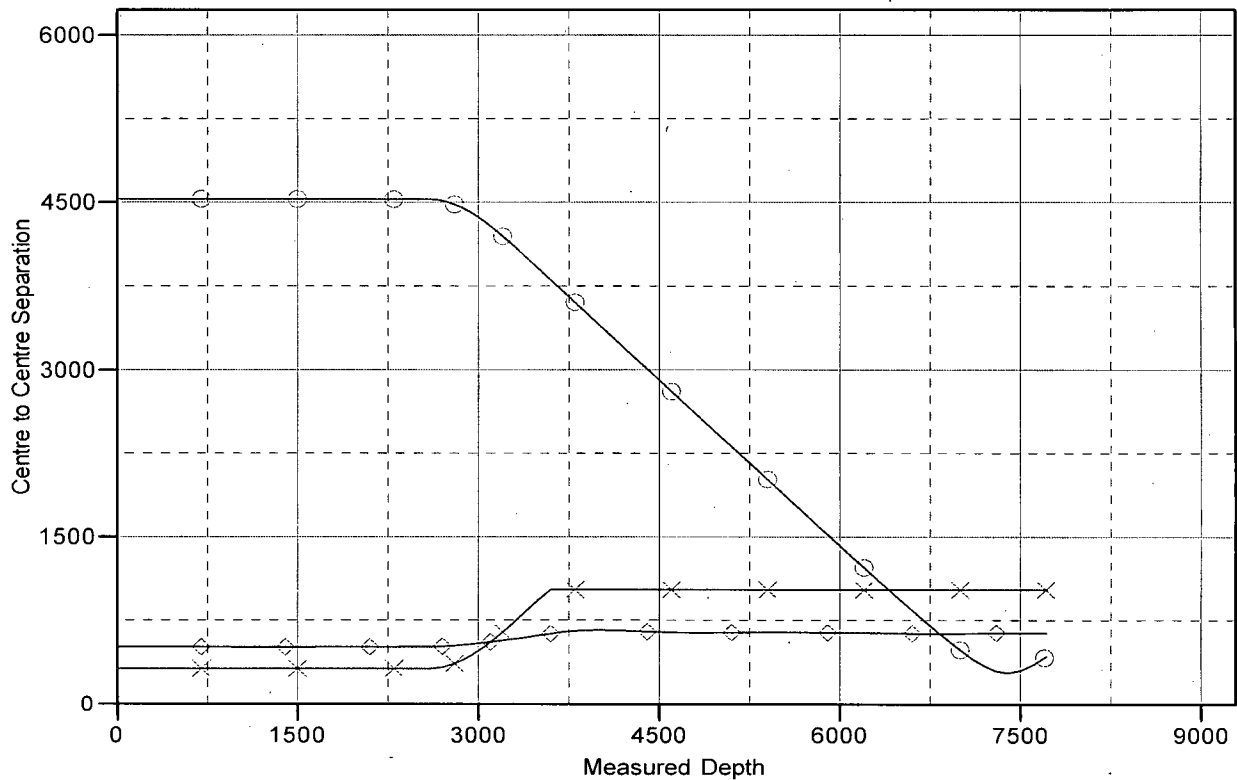


Company:	COG Operating LLC	Local/Co-ordinate Reference:	Well #6H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3392.00usft (Silver Oak 3)
Reference Site:	Bradley 8 Fee	MD Reference:	KB @ 3392.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR DB
Reference Design:	Plan #1 10-20-14	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 3392.00usft (Silver Oak 3)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #6H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: -0.04°

Ladder Plot



LEGEND

○ Crusader Rabbit #1, WB1, Surveys V0 ◇ #2H, WB1/Job #1310409, Surveys (JW#4) V0 ✕ #26H, WB1, Plan #1 10-20-14 V0



Phoenix Technology Services
Anticollision Report

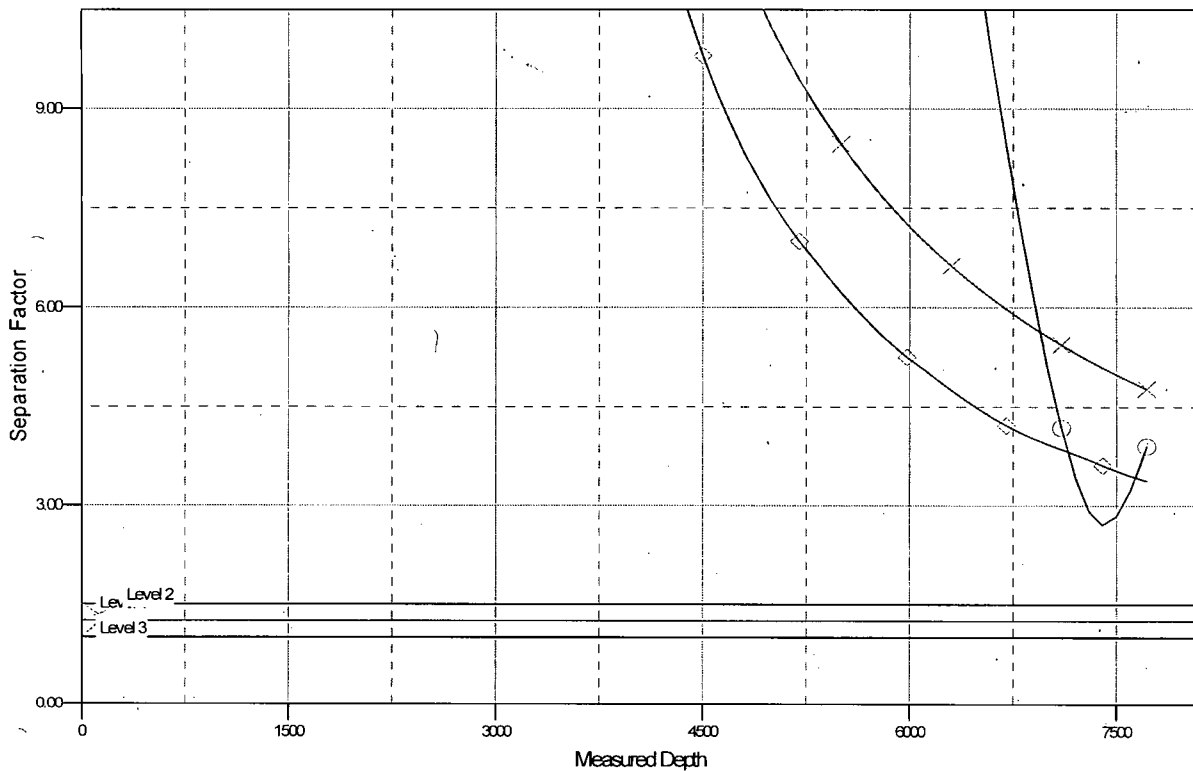


Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #6H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3392.00usft (Silver Oak 3)
Reference Site:	Bradley 8 Fee	MD Reference:	KB @ 3392.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR DB
Reference Design:	Plan #1 10-20-14	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 3392.00usft (Silver Oak 3)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #6H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: -0.04°

Separation Factor Plot



LEGEND

○ CrusaderRabbit#1, WB1, Surveys V0 ◆ #2H, WB1/Job #1310409, Surveys (JW#4) V0 ✕ #26H, WB1, Plan #1 10-20-14 V0