

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**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.

OCD Artesia

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 20105. Lease Serial No.
NMLC058181

6. If Indian, Allottee or Tribe Name

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

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other2. Name of Operator
COG OPERATING LLCContact: KELLY J HOLLY
E-Mail: kholly@concho.com8. Well Name and No.
BEECH 25 FEDERAL 10H9. API Well No.
30-015-40209-00-X13a. Address
ONE CONCHO CENTER 600 W ILLINOIS AVENUE
MIDLAND, TX 797013b. Phone No. (include area code)
Ph: 432-685-438410. Field and Pool, or Exploratory
RED LAKE

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 25 T17S R27E SESW 330FSL 1650FWL

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

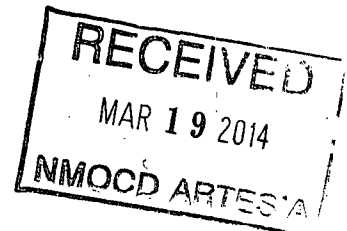
12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

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	Change to Original A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

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

COG Operating LLC respectfully requests permission to change the directional plan and casing isolation plan as follows: Drill 8 3/4" hole to +/- 2955' and kick off building curve at 11 degrees/100' over +/- 783' to horizontal at 3778' MD/3476'TVD. Reduce hole size to 7 7/8", turn lateral at 3 degrees/100' to Az 93.29 degrees, at +/- 4696' MD/ +/-3468' TVD. Continue lateral at 90.50 degrees inclination and AZ 93.29 degrees to TD at +/- 6725' MD/ +/- 3450' TVD. A tapered casing string of 7" X 5 1/2" will be run to TD. At KOP (kick off point) casing will be changed over from 7" to 5 1/2". Production casing will be cemented in one stage with 1075 sks cement. (500 sks ECONCEM 12.5 ppg, 2.05 cf/sk yield, 350 sks Versacem 14.0 ppg, 1.36 cf/sk yield, 225 sks Solucem 15 ppg, 2.61 cf/sk.) Note: Top of Solucem (ASC) will be 50' or more below T/Glorieta or base of San Andres. Cement is calculated to surface.

COG Operating LLC submitted APD for this well at this location:



Accepted for record

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

Electronic Submission #238523 verified by the BLM Well Information System
For COG OPERATING LLC, sent to the Carlsbad
Committed to AFMSS for processing by WESLEY INGRAM on 03/12/2014 (14WW10254SE)

Name(Printed/Typed) KELLY J HOLLY

Title PERMITTING TECH

Signature (Electronic Submission)

Date 03/11/2014

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By **DENIED**CHRISTOPHER WALLS
Title PETROLEUM ENGINEER

Date 03/13/2014

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 **

Additional data for EC transaction #238523 that would not fit on the form

32. Additional remarks, continued

SHL: 330 FSL & 1650 FWL, UL N
BHL: 330 FSL & 1650 FEL, UL O

COG Operating LLC respectfully requests permission to change the SHL and BHL as follows:
SHL: 110 FSL & 240 FWL, UL M
BHL: 400 FSL & 1654 FEL, UL O

Reason for SHL and BHL change is to avoid existing wells.

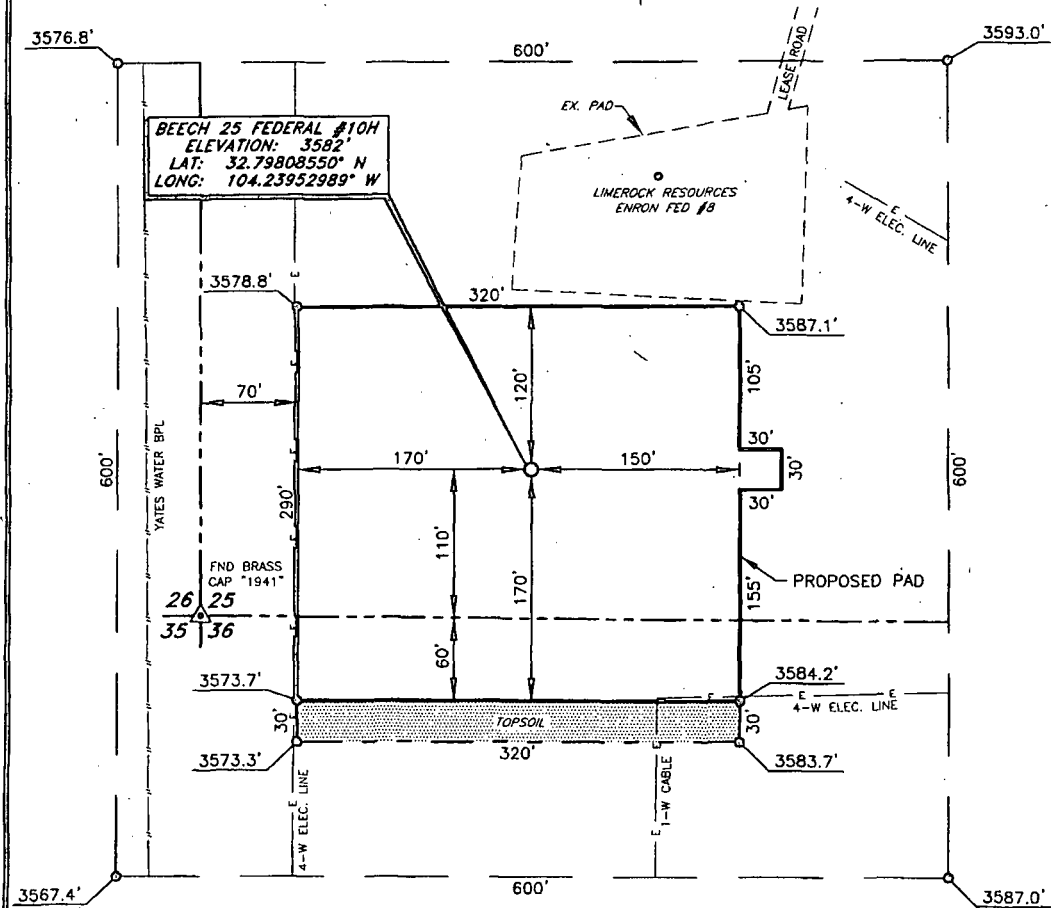
A revised C-102, Directional Plan and Anti-Collision Report are attached.

☐ AMENDED REPORT

Estimated
Completed
Interval:
330 FSL & 720 FWL

COG OPERATING, LLC

Beech 25 Federal #10H
(110' FSL & 240' FWL)
Section 25, T-17-S, R-27-E,
N. M. P. M., Eddy Co., New Mexico



DIRECTIONS TO LOCATION

From the intersection of U.S. Hwy. #82 and CR-204 (Hilltop):

Go Southeast on CR-204 approx. 0.8 mile.

Turn right on a lease road and go South approx. 285 feet.

Turn right and go West approx. 0.2 mile.

Turn right and go North approx. 300 feet.

Turn left and go West approx. 0.1 mile.

Turn left and go South approx. 0.1 mile to the Enron Federal #8.

The location is approx. 235 feet Southwest of the existing Limerock Resources pumping unit.

SCALE: 1" = 100'
0 50 100
BEARINGS ARE
NAD 27 GRID - NM EAST
DISTANCES ARE
GROUND.

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NO.	REVISION	DATE
JOB NO.:	LS140070	
DWG. NO.:	140070PAD	

PROSPERITY CONSULTANTS, LLC

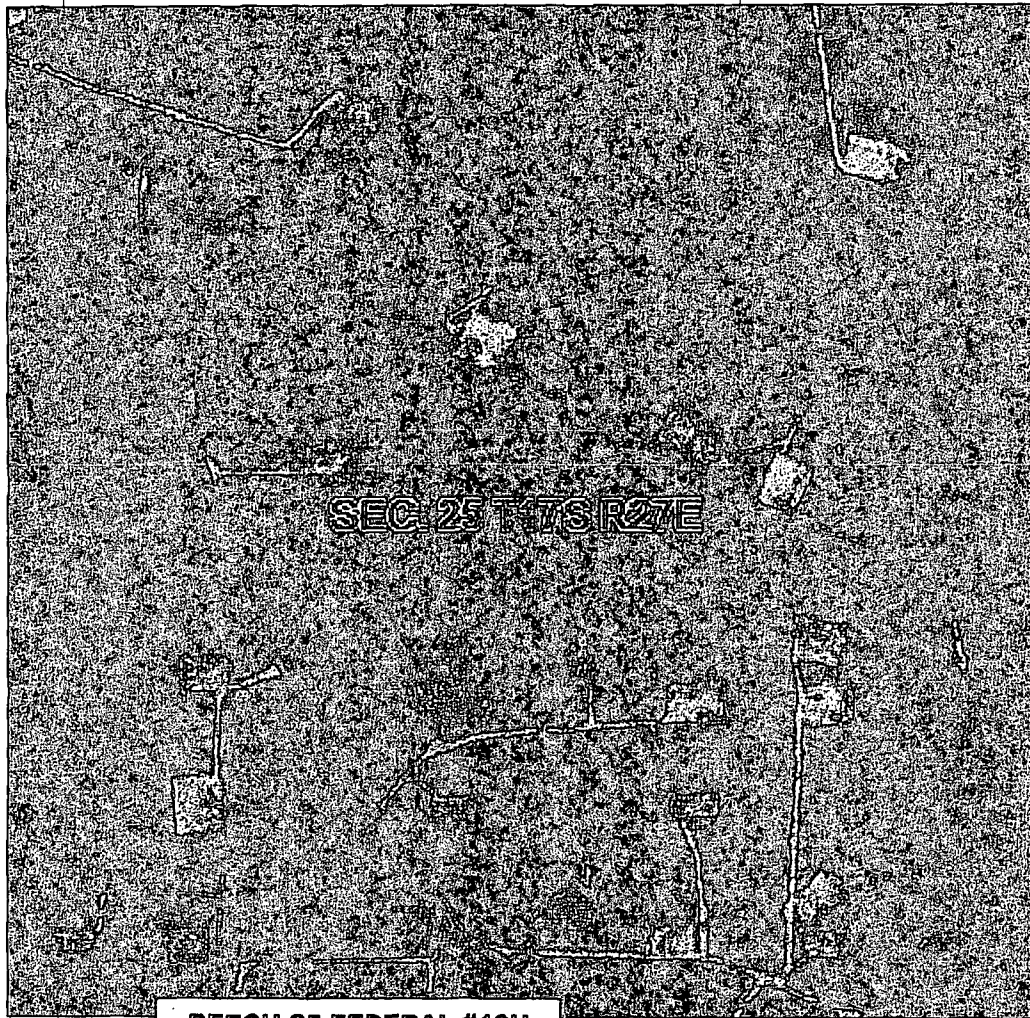


308 W. Broadway St., Hobbs, NM 88240 | Firm No.: TX10193838 NM 4655451 | (575) 964-8200

SCALE: 1"=100'
DATE: 1/23/14
SURVEYED BY: GB/SM
DRAWN BY: AF
APPROVED BY: LWB
SHEET : 1 OF 1

VICINITY MAP

NOT TO SCALE



BEECH 25 FEDERAL #10H

*SECTION 25, TWP. 17 SOUTH, RGE. 27 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO*

OPERATOR: COG Operating, LLC
LEASE: Beech 25 Federal
WELL NO.: 10H

LOCATION: 110' FSL & 240' FWL
ELEVATION: 3582'

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NO.	REVISION	DATE
JOB NO.: LS140070		
DWG. NO.: 140070VM		

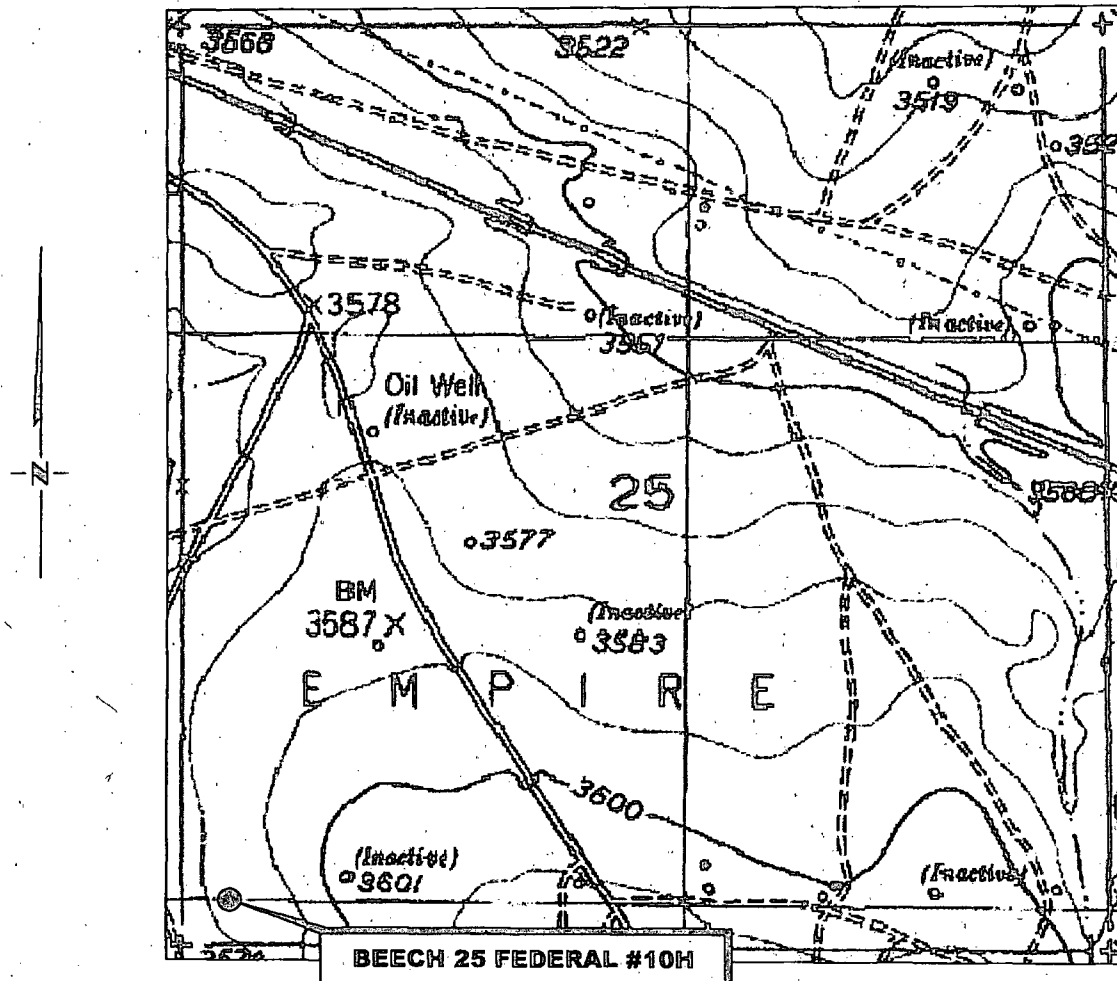
PROSPERITY CONSULTANTS, LLC



308 W. Broadway St., Hobbs, NM 88240 | Firm No. TX 10193838 NM 4655451 | (575) 964-8200

SCALE: N.T.S.
DATE: 1/23/14
SURVEYED BY: GB/SM
DRAWN BY: AF
APPROVED BY: LWB
SHEET : 1 OF 1

LOCATION VERIFICATION MAP



SECTION 25, TWP. 17 SOUTH, RGE. 27 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO

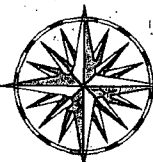
OPERATOR: COG Operating, LLC
LEASE: Beech 25 Federal
WELL NO.: 10H
ELEVATION: 3582'

LOCATION: 110' FSL & 240' FWL
CONTOUR INTERVAL: 10'
USGS TOPO. SOURCE MAP:
Red Lake, NM (1955)

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NO.	REVISION	DATE
JOB NO.: LS140070		
DWG. NO.: 140070LVM		

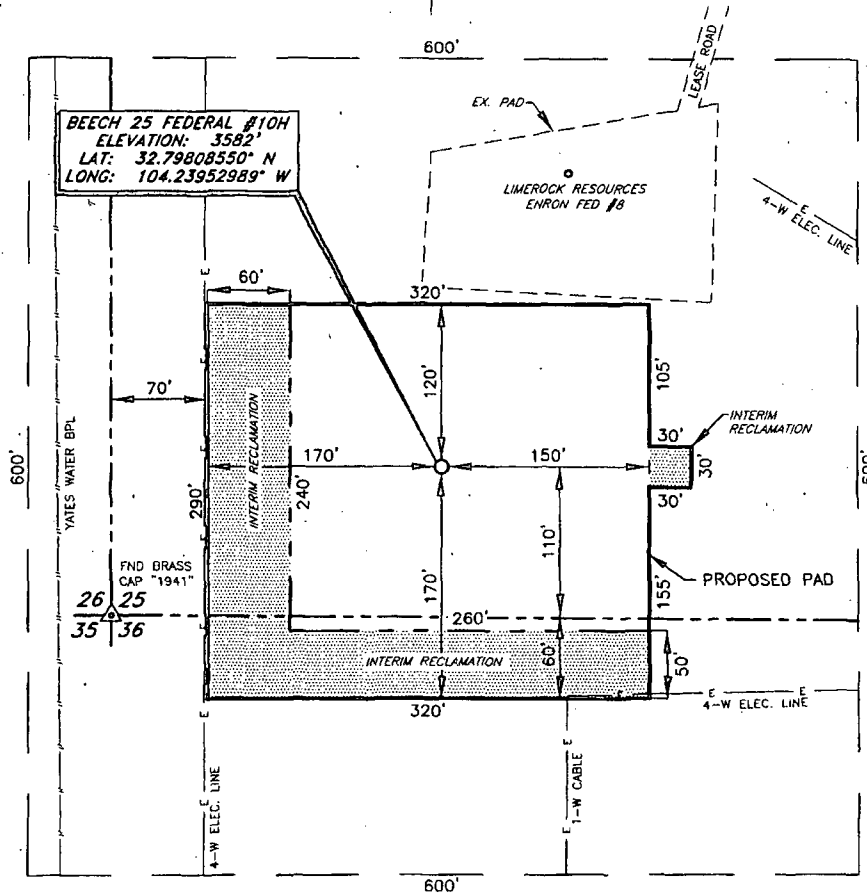
PROSPERITY CONSULTANTS, LLC



308 W. Broadway St., Hobbs, NM 88240 | Firm No. TX 10193838 NM 4655451 | (575) 964-8200

SCALE: 1"=1000'
DATE: 1/23/14
SURVEYED BY: GB/SM
DRAWN BY: AF
APPROVED BY: LWB
SHEET : 1 OF 1

COG OPERATING, LLC
Interim Reclamation
Beech 25 Federal #10H
(110' FSL & 240' FWL)
Section 25, T-17-S, R-27-E,
N. M. P. M., Eddy Co., New Mexico



DIRECTIONS TO LOCATION

From the intersection of U.S. Hwy. #82 and CR-204 (Hilltop):
Go Southeast on CR-204 approx. 0.8 mile.
Turn right on a lease road and go South approx. 285 feet.
Turn right and go West approx. 0.2 mile.
Turn right and go North approx. 300 feet.
Turn left and go West approx. 0.1 mile.
Turn left and go South approx. 0.1 mile to the Enron Federal #8.
The location is approx. 235 feet Southwest of the existing Limerock Resources pumping unit.

SCALE: 1" = 100'
0 50 100
BEARINGS ARE
NAD 27 GRID - NM EAST
DISTANCES ARE
GROUND.

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NO.	REVISION	DATE
JOB NO.:	LS140070	
DWG. NO.:	140070REC	

PROSPERITY CONSULTANTS, LLC



308 W. Broadway St., Hobbs, NM 88240 | Firm No.: TX 10193838 NM 4655451 | (575) 964-8200

SCALE: 1"=100'
DATE: 1/23/14
SURVEYED BY: GB/SM
DRAWN BY: AF
APPROVED BY: LWB
SHEET: 1 OF 1



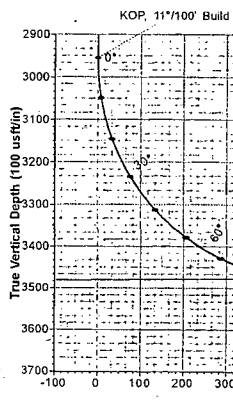
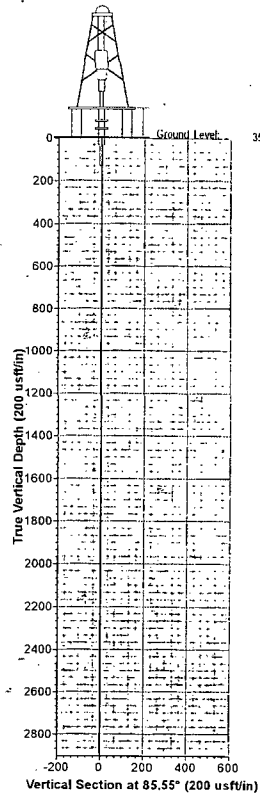
Project: Eddy County, NM (NAD 27 NME)
Site: Beech 25 Federal
Well: #10H
Wellbore: WB1
Design: Plan #1 03-04-14
Rig:



PHOENIX
TECHNOLOGY SERVICES



Azimuths to Grid North
True North: -0.05°
Magnetic North: 7.55°
Magnetic Field
Strength: 48614.9nT
Dip Angle: 60.54°
Date: 03/04/2014
Model: IGRF2010_14



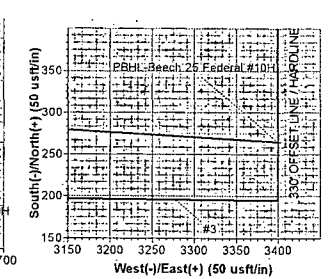
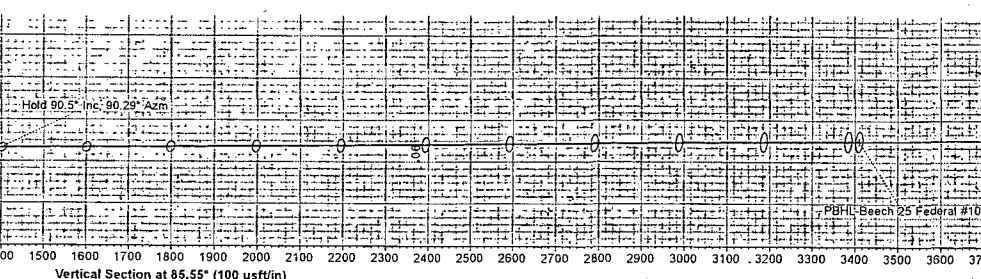
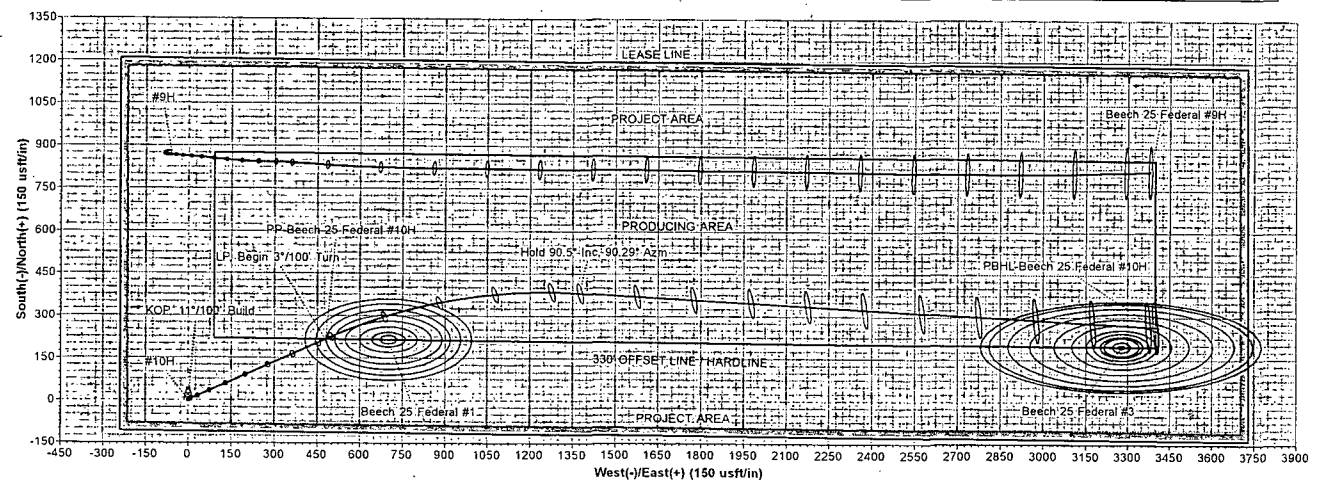
WELL DETAILS											
	+N-S	+E-W	Nothing	Ground Level	3582.00	Latitude	Longitude				
	0.00	0.00	654067.30	Easting	528823.90	32° 47' 53.10787 N	104° 14' 22.30754 W				

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSeet	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP, 11°/100' Build
2	2955.20	0.00	0.00	2955.20	0.00	0.00	0.00	0.00	0.00	0.00	LP, Begin 3°/100' Turn
3	3777.93	90.50	65.75	3476.05	215.80	479.05	11.00	65.75	494.37		Hold 90.5° Inc, 90.29° Azm
4	4695.76	90.50	93.29	3467.90	381.17	1372.88	3.00	89.88	1398.33		TD at 6725.90
5	6725.90	90.50	93.29	3450.25	264.80	3399.60	0.00	0.00	3409.90	PBHL-Beech 25 Federal #10H	

DESIGN TARGET DETAILS											
Name	TVD	+N-S	+E-W	Nothing	Easting	Latitude	Longitude	Shape			
PBHL-Beech 25 Federal #10H	3450.25	264.80	3399.60	654332.10	532223.50	32° 47' 55.59659 N	104° 13' 42.47579 W	Point			
PP-Beech 25 Federal #10H	3475.04	215.22	480.00	654283.52	529303.90	32° 47' 55.24325 N	104° 14' 16.68172 W	Point			
- plan hits target center											

PROJECT DETAILS: Eddy County, NM (NAD 27 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: Beech 25 Federal											
Site Centre Northing: 654947.50											
Easting: 528762.70											
Positional Uncertainty: 0.00											
Convergence: 0.05											
Local North: Grid											
FORMATION TOP DETAILS											
TVDPath	MDPath	Formation					DipAngle	DipDir			
3475.85	3758.15	1L, 3480' TVD @ 0 VZ, 90.5° Inc					0.50	85.55			

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 #10H, Grid North											
Latitude: 32° 47' 53.10787 N											
Longitude: 104° 14' 22.30754 W											
Grid East: 528823.90											
Grid North: 654067.30											
Scale Factor: 1.000											
Geomagnetic Model: IGRF2010_14											
Sample Date: 04-Mar-14											
Magnetic Declination: 7.60°											
Dip Angle from Horizontal: 60.54°											
Magnetic Field Strength: 48615											
To convert a Magnetic Direction to a Grid Direction, Add 7.55°											
To convert a Magnetic Direction to a True Direction, Add 7.60° East											
To convert a True Direction to a Grid Direction, Subtract 0.05°											
LEGEND											
— #1, WB1, Inc Surveys V0											
— #3, WB1, Inc Surveys V0											
— #9H, WB1/Job #1311101, Surveys (Silver Oak 3) V0											
— Plan #1 03-04-14											





COG Operating LLC

Eddy County, NM (NAD 27 NME)

Beech 25 Federal

#10H

WB1

Plan: Plan #1 03-04-14

Surface: 110' FSL, 240' FWL, Sec 25, T17S, R27E, Unit M

PP: 330' FSL, 720' FWL, Sec 25, T17S, R27E, Unit M

BHL: 400' FSL, 1654' FEL, Sec 25, T17S, R27E, Unit O

Standard Planning Report

04 March, 2014





Phoenix Technology Services
Planning Report



Database:	GCR-DB	Local Co-ordinate Reference:	Well #10H
Company:	COG Operating, LLC	TVD Reference:	GL @ 3582.00usft
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	GL @ 3582.00usft
Site:	Beech 25 Federal	North Reference:	Grid
Well:	#10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1 03-04-14		

Project:	Eddy County, NM (NAD 27 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:	Beech 25 Federal		
Site Position:		Northing:	654,947.50 usft
From:	Map	Easting:	528,762.70 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 48' 1.81838 N
		Longitude:	104° 14' 23.01541 W
		Grid Convergence:	0.05 °

Well:	#10H		
Well Position	+N/-S	-880.20 usft	Northing:
	+E/-W	61.20 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level:
			3,582.00 usft
			Latitude:
			32° 47' 53.10787 N
			Longitude:
			104° 14' 22.30754 W

Wellbore:	WB1		
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Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010_14	03/04/14	7.60	60.54	48,615

Design:	Plan #1 03-04-14		
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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	85.55

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)		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,955.20	0.00	0.00	2,955.20	0.00	0.00	0.00	0.00	0.00	0.00	
3,777.93	90.50	65.75	3,476.05	215.80	479.05	11.00	11.00	0.00	65.75	
4,695.76	90.50	93.29	3,467.90	381.17	1,372.88	3.00	0.00	3.00	89.88	
6,725.90	90.50	93.29	3,450.25	264.80	3,399.60	0.00	0.00	0.00	0.00	PBHL-Beech 25 Fede



Phoenix Technology Services
Planning Report



Database:	GCR DB	Local/Co-ordinate/Reference:	Well #10H
Company:	COG Operating LLC	TVD Reference:	GL @ 3582.00usft
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	GL @ 3582.00usft
Site:	Beech 25 Federal	North Reference:	Grid
Well:	#10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WVB.1		
Design:	Plan #1003-04-14		

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
2,954.75	0.00	0.00	2,954.75	0.00	0.00	0.00	0.00	0.00	0.00
KOP 11°/100 Build									
2,955.20	0.00	0.00	2,955.20	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	4.93	65.75	2,999.94	0.79	1.76	1.81	11.00	11.00	0.00
3,100.00	15.93	65.75	3,098.14	8.21	18.23	18.82	11.00	11.00	0.00
3,200.00	26.93	65.75	3,191.09	23.20	51.49	53.14	11.00	11.00	0.00
3,300.00	37.93	65.75	3,275.36	45.19	100.31	103.51	11.00	11.00	0.00
3,400.00	48.93	65.75	3,347.88	73.38	162.89	168.10	11.00	11.00	0.00
3,500.00	59.93	65.75	3,405.96	106.73	236.94	244.51	11.00	11.00	0.00
3,600.00	70.93	65.75	3,447.48	144.03	319.73	329.95	11.00	11.00	0.00
3,700.00	81.93	65.75	3,470.91	183.89	408.22	421.27	11.00	11.00	0.00
3,758.16	88.33	65.75	3,475.85	207.68	461.03	475.76	11.00	11.00	0.00
TL 3480 TVD @ 0VZ 90.5° Inc									
3,777.93	90.50	65.75	3,476.05	215.80	479.06	494.37	11.00	11.00	0.00
LP Begin 3°/100 Turn									
3,778.96	90.50	65.78	3,476.04	216.22	480.00	495.34	3.00	0.01	3.00
PP Beech 25 Federal #10H									
3,800.00	90.50	66.41	3,475.86	224.75	499.23	515.18	3.00	0.01	3.00
3,900.00	90.51	69.41	3,474.98	262.34	591.88	610.46	3.00	0.01	3.00
4,000.00	90.51	72.41	3,474.09	295.04	686.36	707.20	3.00	0.00	3.00
4,100.00	90.51	75.41	3,473.20	322.75	782.43	805.13	3.00	0.00	3.00
4,200.00	90.51	78.41	3,472.30	345.39	879.82	903.99	3.00	0.00	3.00
4,300.00	90.51	81.41	3,471.41	362.90	978.26	1,003.49	3.00	0.00	3.00
4,400.00	90.51	84.41	3,470.51	375.23	1,077.48	1,103.37	3.00	0.00	3.00
4,500.00	90.51	87.41	3,469.62	382.36	1,177.21	1,203.35	3.00	0.00	3.00
4,600.00	90.50	90.41	3,468.74	384.26	1,277.18	1,303.16	3.00	0.00	3.00
4,695.76	90.50	93.29	3,467.90	381.17	1,372.87	1,398.33	3.00	-0.01	3.00
Hold 90.5° Inc 90.29° Azm									
4,700.00	90.50	93.29	3,467.86	380.92	1,377.11	1,402.53	0.00	0.00	0.00
4,800.00	90.50	93.29	3,466.99	375.19	1,476.94	1,501.62	0.00	0.00	0.00
4,900.00	90.50	93.29	3,466.12	369.46	1,576.77	1,600.70	0.00	0.00	0.00
5,000.00	90.50	93.29	3,465.25	363.73	1,676.60	1,699.79	0.00	0.00	0.00
5,100.00	90.50	93.29	3,464.38	358.00	1,776.43	1,798.87	0.00	0.00	0.00
5,200.00	90.50	93.29	3,463.52	352.26	1,876.27	1,897.96	0.00	0.00	0.00
5,300.00	90.50	93.29	3,462.65	346.53	1,976.10	1,997.04	0.00	0.00	0.00
5,400.00	90.50	93.29	3,461.78	340.80	2,075.93	2,096.13	0.00	0.00	0.00
5,500.00	90.50	93.29	3,460.91	335.07	2,175.76	2,195.21	0.00	0.00	0.00
5,600.00	90.50	93.29	3,460.04	329.34	2,275.59	2,294.30	0.00	0.00	0.00
5,700.00	90.50	93.29	3,459.17	323.60	2,375.43	2,393.38	0.00	0.00	0.00
5,800.00	90.50	93.29	3,458.30	317.87	2,475.26	2,492.47	0.00	0.00	0.00
5,900.00	90.50	93.29	3,457.43	312.14	2,575.09	2,591.55	0.00	0.00	0.00
6,000.00	90.50	93.29	3,456.56	306.41	2,674.92	2,690.64	0.00	0.00	0.00
6,100.00	90.50	93.29	3,455.69	300.68	2,774.75	2,789.72	0.00	0.00	0.00
6,200.00	90.50	93.29	3,454.82	294.94	2,874.58	2,888.81	0.00	0.00	0.00
6,300.00	90.50	93.29	3,453.95	289.21	2,974.42	2,987.89	0.00	0.00	0.00
6,400.00	90.50	93.29	3,453.08	283.48	3,074.25	3,086.98	0.00	0.00	0.00
6,500.00	90.50	93.29	3,452.21	277.75	3,174.08	3,186.06	0.00	0.00	0.00
6,600.00	90.50	93.29	3,451.34	272.02	3,273.91	3,285.15	0.00	0.00	0.00
6,700.00	90.50	93.29	3,450.48	266.28	3,373.74	3,384.23	0.00	0.00	0.00
6,725.90	90.50	93.29	3,450.25	264.80	3,399.60	3,409.90	0.00	0.00	0.00
TD at 6725.90 PBHL Beech 25 Federal #10H									



Phoenix Technology Services
Planning Report



Database:	GCR DB	Local Co-ordinate Reference:	Well #10H
Company:	COG Operating LLC	TVD Reference:	GL @ 3582.00usft
Project:	Eddy County, NM (NAD 27, NME)	MD Reference:	GL @ 3582.00usft
Site:	Beech 25 Federal	North Reference:	Grid
Well:	#10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1 03-04-14		

Design Targets									
Target Name	hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	
Shape									Latitude Longitude
PBHL-Beech 25 Federal	- plan hits target center	0.00	0.00	3,450.25	264.80	3,399.60	654,332.10	532,223.50	32° 47' 55.69659 N 104° 13' 42.47579 W
	- Point								
PP-Beech 25 Federal #1	- plan hits target center	0.00	0.00	3,476.04	216.22	480.00	654,283.53	529,303.90	32° 47' 55.24325 N 104° 14' 16.68172 W
	- Point								

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,758.16	3,475.85	TL, 3480' TVD @ 0 VZ, 90.5° Inc		-0.50	85.55

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
2,954.75	2,954.75	0.00	0.00	KOP, 11°/100' Build
3,777.93	3,476.05	215.80	479.06	LP, Begin 3°/100' Turn
4,695.76	3,467.90	381.17	1,372.87	Hold 90.5° Inc, 90.29° Azm
6,725.90	3,450.25	264.80	3,399.60	TD at 6725.90



COG Operating LLC

Eddy County, NM (NAD 27 NME)

Beech 25 Federal

#10H

WB1

Plan #1 03-04-14

Anticollision Report

04 March, 2014



PHOENIX
TECHNOLOGY SERVICES



Phoenix Technology Services
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well #10H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GL @ 3582.00usft
Reference Site:	Beech 25 Federal	MD Reference:	GL @ 3582.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	#10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at:	2.00 sigma
Reference Wellbore:	WB1	Database:	GCR DB
Reference Design:	Plan #1 03-04-14	Offset TVD Reference:	Offset Datum

Reference:	Plan #1 03-04-14		
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 10,000.00 usft	Error Surface:	Circular Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date: 03/04/14		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	6,725.70	Plan #1 03-04-14 (WB1)	MWD	MWD - Standard

Site Name	Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Beech 25 Federal							
#1 - WB1 - Inc Surveys		3,988.36	3,505.50	80.70	93.16	0.464	Level 1 CC, ES, SF
#3 - WB1 - Inc Surveys		6,608.52	3,482.66	75.97	164.72	0.316	Level 1 CC, ES, SF
#9H - WB1/Job #1311101 - Surveys (Silver Oak 3)		4,594.30	4,630.90	434.29	364.11	6.188	CC
#9H - WB1/Job #1311101 - Surveys (Silver Oak 3)		6,100.00	6,135.43	505.56	354.31	3.342	ES
#9H - WB1/Job #1311101 - Surveys (Silver Oak 3)		6,725.90	6,738.00	552.81	368.01	2.991	SF

Beech 25 Federal - #1 - WB1 - Inc Surveys												Offset Site Error: 0.00 usft
Survey Program: 384-INC		Offset		Semi Major Axis		Offset Wellbore Centre		Distance		Separation		Warning
Measured Vertical	Measured Vertical	Reference	Offset	Reference	Highside	Offset Wellbore Centre	Between	Between	Minimum	Separation		
Depth	Depth	Depth	Depth	Depth	Toolface	N/S	E/W	Centres	Ellipses	Separation	Factor	
(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
0.00	0.00	31.77	31.77	0.00	0.59	72.96	214.57	700.10	732.24	731.65	0.59	1,240.056
100.00	100.00	131.26	131.26	0.11	2.44	72.98	214.33	700.10	732.17	729.62	2.55	286.925
151.00	151.00	182.01	182.01	0.23	3.38	72.98	214.30	700.10	732.17	728.58	3.61	202.848
200.00	200.00	230.75	230.75	0.34	4.29	72.98	214.33	700.10	732.17	727.55	4.63	158.293
300.00	300.00	330.23	330.23	0.56	6.14	72.96	214.57	700.10	732.24	725.54	6.70	109.306
400.00	400.00	431.85	431.84	0.79	10.16	72.97	214.38	700.10	732.19	721.24	10.95	66.871
500.00	500.00	531.31	531.30	1.01	15.14	72.99	214.12	700.10	732.11	715.96	16.16	45.316
553.98	553.98	585.00	584.99	1.13	17.83	73.00	214.08	700.10	732.10	713.13	18.97	38.600
600.00	600.00	630.77	630.76	1.24	20.13	72.99	214.11	700.10	732.11	710.75	21.36	34.272
700.00	700.00	730.21	730.20	1.46	25.11	72.98	214.35	700.10	732.18	705.61	26.57	27.560
800.00	800.00	830.56	830.51	1.69	30.22	72.95	214.77	700.10	732.30	700.40	31.90	22.954
900.00	900.00	931.56	931.50	1.91	35.63	72.95	214.77	700.10	732.30	694.76	37.54	19.509
1,000.00	1,000.00	1,031.38	1,031.31	2.14	40.79	72.96	214.56	700.10	732.24	689.32	42.92	17.059
1,100.00	1,100.00	1,131.18	1,131.10	2.36	45.89	72.97	214.47	700.10	732.21	683.96	48.25	15.174
1,143.90	1,143.90	1,174.99	1,174.91	2.46	48.14	72.97	214.46	700.10	732.21	681.62	50.59	14.472
1,200.00	1,200.00	1,230.96	1,230.88	2.58	51.00	72.97	214.48	700.10	732.22	678.63	53.58	13.665
1,300.00	1,300.00	1,330.75	1,330.66	2.81	56.10	72.96	214.58	700.10	732.25	673.33	58.91	12.429
1,400.00	1,400.00	1,430.32	1,430.19	3.03	60.99	72.94	214.84	700.10	732.32	668.29	64.03	11.437
1,500.00	1,500.00	1,530.70	1,530.57	3.26	65.56	72.92	215.13	700.10	732.41	663.59	68.81	10.643
1,600.00	1,600.00	1,631.09	1,630.96	3.48	70.12	72.91	215.23	700.10	732.44	658.84	73.60	9.952
1,700.00	1,700.00	1,731.49	1,731.35	3.71	74.68	72.92	215.16	700.10	732.42	654.03	78.39	9.344
1,800.00	1,800.00	1,831.90	1,831.75	3.93	79.24	72.94	214.90	700.10	732.34	649.17	83.17	8.805

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 #10H
Project:	Eddy County NM (NAD27 NME)	TVD Reference:	GL @ 3582.00usft
Reference Site:	Beech 251 Federal	MD Reference:	GL @ 3582.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	#10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at:	2.00 sigma
Reference Wellbore:	WB1	Database:	GCR DB
Reference Design:	Plan # 1403-04-14	Offset TVD Reference:	Offset Datum

Offset Design: Beech 251 Federal - #10 WB1 - Inc Surveys														Offset Site Error:	0.00 usft
Survey Program: 354-INC														Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Semi-Major Axis (ft)	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	
1,900.00	1,900.00	1,931.55	1,931.38	4.16	83.48	72.96		214.61	700.10	732.25	644.61	87.64	8.355		
2,000.00	2,000.00	2,031.36	2,031.19	4.38	87.42	72.97		214.47	700.10	732.22	640.42	91.80	7.976		
2,100.00	2,100.00	2,131.18	2,131.01	4.61	91.35	72.97		214.43	700.10	732.20	636.24	95.96	7.630		
2,101.33	2,101.33	2,132.50	2,132.33	4.61	91.40	72.97		214.43	700.10	732.20	636.19	96.01	7.626		
2,200.00	2,200.00	2,230.99	2,230.81	4.83	95.28	72.97		214.47	700.10	732.21	632.10	100.12	7.314		
2,300.00	2,300.00	2,330.79	2,330.62	5.06	99.22	72.96		214.60	700.10	732.25	627.98	104.28	7.022		
2,400.00	2,400.00	2,431.58	2,431.38	5.28	103.85	72.96		214.60	700.10	732.25	623.12	109.13	6.710		
2,500.00	2,500.00	2,531.41	2,531.21	5.51	108.09	72.97		214.47	700.10	732.21	617.62	114.59	6.390		
2,600.00	2,600.00	2,631.23	2,631.03	5.73	114.32	72.97		214.41	700.10	732.20	612.15	120.05	6.099		
2,613.28	2,613.28	2,644.49	2,644.28	5.76	115.02	72.97		214.41	700.10	732.20	611.42	120.78	6.062		
2,700.00	2,700.00	2,731.08	2,730.85	5.96	119.56	72.97		214.44	700.10	732.21	606.69	125.51	5.834		
2,800.00	2,800.00	2,830.87	2,830.66	6.18	124.79	72.96		214.56	700.10	732.24	601.27	130.97	5.591		
2,900.00	2,900.00	2,930.41	2,930.15	6.41	129.86	72.94		214.79	700.10	732.31	596.05	136.26	5.374		
2,955.20	2,955.20	2,985.81	2,985.55	6.53	132.38	72.93		214.99	700.10	732.37	593.45	138.91	5.272		
3,000.00	2,999.94	3,030.73	3,030.47	6.63	134.43	7.22		215.10	700.10	730.49	589.43	141.06	5.179		
3,050.00	3,049.48	3,080.46	3,080.19	6.74	136.70	7.37		215.19	700.10	723.89	580.45	143.44	5.047		
3,100.00	3,098.14	3,129.31	3,129.04	6.86	138.92	7.65		215.23	700.10	712.60	566.82	145.78	4.888		
3,150.00	3,145.49	3,176.84	3,176.57	6.98	141.09	8.08		215.23	700.10	696.73	548.66	148.07	4.705		
3,200.00	3,191.09	3,222.59	3,222.32	7.12	143.18	8.69		215.19	700.10	676.43	526.13	150.30	4.501		
3,250.00	3,234.51	3,266.15	3,265.88	7.31	145.16	9.53		215.13	700.10	651.90	499.43	152.47	4.276		
3,300.00	3,275.36	3,307.11	3,306.84	7.55	147.03	10.66		215.03	700.10	623.38	468.80	154.58	4.033		
3,350.00	3,313.27	3,345.10	3,344.82	7.86	148.76	12.20		214.91	700.10	591.14	434.52	156.62	3.774		
3,400.00	3,347.88	3,379.75	3,379.47	8.25	150.34	14.31		214.78	700.10	555.51	396.92	158.59	3.503		
3,450.00	3,378.87	3,410.17	3,409.87	8.74	151.60	17.23		214.70	700.10	516.85	356.51	160.35	3.223		
3,500.00	3,405.96	3,437.26	3,436.96	9.34	152.51	21.43		214.70	700.10	475.58	313.73	161.85	2.938		
3,550.00	3,428.90	3,460.20	3,459.90	10.05	153.27	27.60		214.70	700.10	432.09	268.77	163.32	2.646		
3,600.00	3,447.48	3,478.78	3,478.48	10.86	153.89	36.78		214.70	700.10	386.88	222.13	164.75	2.348		
3,650.00	3,461.53	3,492.83	3,492.53	11.75	154.36	50.03		214.70	700.10	340.47	174.36	166.11	2.050		
3,700.00	3,470.91	3,502.21	3,501.91	12.71	154.67	66.90		214.70	700.10	293.50	126.11	167.39	1.753		
3,750.00	3,475.55	3,506.85	3,506.55	13.73	154.83	83.61		214.70	700.10	246.72	78.16	168.56	1.464 Level 3		
3,777.93	3,476.05	3,507.36	3,507.05	14.32	154.85	91.10		214.70	700.10	221.05	51.89	169.16	1.307 Level 3		
3,800.00	3,475.86	3,507.16	3,506.86	14.79	154.84	91.01		214.70	700.10	201.12	31.49	169.63	1.186 Level 2		
3,900.00	3,474.98	3,505.28	3,505.98	17.01	154.81	90.52		214.70	700.10	118.25	-53.58	171.82	0.688 Level 1		
3,988.36	3,474.19	3,505.50	3,505.19	19.08	154.78	90.00		214.70	700.10	80.70	-93.16	173.86	0.464 Level 1, CC, ES, SF		
4,000.00	3,474.09	3,505.40	3,505.09	19.35	154.78	89.93		214.70	700.10	81.51	-92.62	174.13	0.468 Level 1		
4,100.00	3,473.20	3,504.50	3,504.20	21.76	154.75	89.35		214.70	700.10	135.84	-40.67	176.51	0.770 Level 1		
4,200.00	3,472.30	3,503.61	3,503.30	24.23	154.72	88.87		214.70	700.10	222.21	43.26	178.95	1.242 Level 2		
4,300.00	3,471.41	3,502.71	3,502.41	26.74	154.69	88.55		214.70	700.10	315.18	133.75	181.43	1.737		
4,400.00	3,470.51	3,501.82	3,501.51	29.27	154.66	88.37		214.70	700.10	410.11	226.17	183.93	2.230		
4,500.00	3,469.62	3,500.92	3,500.62	31.82	154.63	88.31		214.70	700.10	505.71	319.26	186.45	2.712		
4,600.00	3,468.74	3,500.04	3,499.74	34.37	154.60	88.33		214.70	700.10	601.47	412.50	188.98	3.183		
4,695.76	3,467.90	3,499.20	3,498.90	36.82	154.57	88.39		214.70	700.10	693.07	501.67	191.39	3.621		
4,700.00	3,467.86	3,499.17	3,498.86	36.93	154.57	88.38		214.70	700.10	697.12	505.62	191.50	3.640		
4,800.00	3,466.99	3,498.30	3,497.99	39.48	154.54	88.14		214.70	700.10	793.24	599.22	194.03	4.088		
4,900.00	3,466.12	3,497.43	3,497.12	42.07	154.51	87.89		214.70	700.10	890.23	693.64	196.58	4.529		
5,000.00	3,465.25	3,496.56	3,496.25	44.67	154.49	87.65		214.70	700.10	987.81	788.55	199.16	4.960		
5,100.00	3,464.38	3,495.69	3,495.38	47.30	154.46	87.41		214.70	700.10	1,085.83	884.08	201.75	5.382		
5,200.00	3,463.52	3,494.82	3,494.52	49.94	154.43	87.17		214.70	700.10	1,184.18	979.82	204.36	5.795		
5,300.00	3,462.65	3,493.95	3,493.65	52.59	154.40	86.92		214.70	700.10	1,282.79	1,075.80	206.99	6.197		
5,400.00	3,461.78	3,493.08	3,492.78	55.25	154.37	86.68		214.70	700.10	1,381.60	1,171.98	209.62	6.591		
5,500.00	3,460.91	3,492.21	3,491.91	57.92	154.34	86.44		214.70	700.10	1,480.56	1,268.30	212.26	6.975		
5,600.00	3,460.04	3,491.34	3,491.04	60.60	154.31	86.20		214.70	700.10	1,579.66	1,364.74	214.92	7.350		

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



Phoenix Technology Services
Anticollision Report



Company:	COC Operating LLC	Local Co-ordinate/Reference:	Well #10H
Project:	Eddy County, NM (NAD:27/NME)	TVD/Reference:	GL @ 3582.00usft
Reference Site:	Beech 25 Federal	MD/Reference:	GL @ 3582.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	±2.00 sigma
Reference Wellbore:	WB1	Database:	GCR/DB
Reference Design:	Plan #1403-04-14	Offset TVD/Reference:	Offset Datum

Offset Design: Beech 25 Federal #1 WB1 - Inc Surveys														Offset Site Error: 0.00 usft	
Survey Program: 354-INC														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)	Highside Toolface (°)	Offset Wellbore Centre N-S (usft)	Offset Wellbore Centre E-W (usft)	Between Centres N (usft)	Between Centres E (usft)	Minimum Separation (usft)	Separation Factor	Warning		
5,700.00	3,459.17	3,490.47	3,490.17	63.29	154.28	85.95	214.70	700.10	1,678.86	1,461.29	217.58	7.716			
5,800.00	3,458.30	3,489.60	3,489.30	65.99	154.25	85.71	214.70	700.10	1,778.15	1,557.91	220.24	8.074			
5,900.00	3,457.43	3,488.73	3,488.43	68.69	154.22	85.47	214.70	700.10	1,877.52	1,654.61	222.91	8.423			
6,000.00	3,456.56	3,487.87	3,487.56	71.39	154.20	85.23	214.70	700.10	1,976.95	1,751.36	225.59	8.764			
6,100.00	3,455.69	3,487.00	3,486.69	74.10	154.17	84.99	214.70	700.10	2,076.43	1,848.17	228.27	9.096			
6,200.00	3,454.82	3,486.13	3,485.82	76.82	154.14	84.74	214.70	700.10	2,175.96	1,945.01	230.95	9.422			
6,300.00	3,453.95	3,485.26	3,484.95	79.53	154.11	84.50	214.70	700.10	2,275.54	2,041.90	233.64	9.739			
6,400.00	3,453.08	3,484.39	3,484.08	82.25	154.08	84.26	214.70	700.10	2,375.14	2,138.81	236.33	10.050			
6,500.00	3,452.21	3,483.52	3,483.21	84.98	154.05	84.02	214.70	700.10	2,474.78	2,235.76	239.03	10.354			
6,600.00	3,451.34	3,482.65	3,482.34	87.70	154.02	83.78	214.70	700.10	2,574.45	2,332.73	241.72	10.650			
6,700.00	3,450.48	3,481.78	3,481.48	90.43	153.99	83.54	214.70	700.10	2,674.14	2,429.72	244.42	10.941			
6,725.90	3,450.25	3,481.55	3,481.25	91.14	153.98	83.48	214.70	700.10	2,699.96	2,454.84	245.12	11.015			

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 #10H
Project:	Eddy County NM (NAD 27 NME)	TVD Reference:	GL @ 3582.00usft
Reference Site:	Beech 25 Federal	MD Reference:	GL @ 3582.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	WB1	Database:	GCRDB
Reference Design:	Plan# 11-03-04-14	Offset TVD Reference:	Offset Datum

Offset Design: Beech 25 Federal - #3 - WB1 - Inc Surveys														Offset Site Error: 0.00 usft	
Survey Program: 250-INC														Offset Well Error: 0.00 usft	
Reference	Offset	Semi-Major Axis		Reference	Offset	Highside	Offset Wellbore Centre		Distance		Minimum	Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	N-S (usft)	E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor			
0.00	0.00	31.64	31.64	0.00	0.60	86.59	195.58	3,278.10	3,283.93	3,283.32	0.60	5,430.146			
100.00	100.00	130.96	130.96	0.11	2.50	86.59	195.43	3,278.10	3,283.92	3,281.31	2.62	1,255.795			
200.00	200.00	230.28	230.28	0.34	4.40	86.58	195.62	3,278.10	3,283.93	3,279.19	4.74	693.171			
298.00	298.00	329.00	329.00	0.56	7.93	86.59	195.61	3,278.10	3,283.93	3,275.44	8.49	386.814			
300.00	300.00	330.99	330.99	0.56	8.01	86.59	195.61	3,278.10	3,283.93	3,275.36	8.57	383.023			
400.00	400.00	430.66	430.64	0.79	11.96	86.58	195.75	3,278.10	3,283.94	3,271.19	12.75	257.566			
500.00	500.00	530.97	530.95	1.01	15.84	86.58	195.85	3,278.10	3,283.95	3,267.09	16.85	194.843			
600.00	600.00	631.29	631.27	1.24	19.72	86.58	195.79	3,278.10	3,283.94	3,262.98	20.96	156.684			
700.00	700.00	731.03	731.00	1.46	23.33	86.58	195.70	3,278.10	3,283.94	3,259.14	24.79	132.452			
800.00	800.00	831.03	831.00	1.69	26.69	86.58	195.70	3,278.10	3,283.94	3,255.56	28.38	115.712			
900.00	900.00	931.03	931.00	1.91	30.06	86.58	195.70	3,278.10	3,283.94	3,251.97	31.97	102.729			
1,000.00	1,000.00	1,031.36	1,031.32	2.14	33.70	86.58	195.63	3,278.10	3,283.93	3,248.09	35.84	91.630			
1,100.00	1,100.00	1,131.09	1,131.05	2.36	37.75	86.59	195.53	3,278.10	3,283.93	3,243.81	40.11	81.869			
1,115.96	1,115.96	1,147.00	1,146.96	2.40	38.40	86.59	195.53	3,278.10	3,283.93	3,243.13	40.79	80.501			
1,200.00	1,200.00	1,230.81	1,230.77	2.58	41.80	86.59	195.58	3,278.10	3,283.93	3,239.55	44.38	73.989			
1,300.00	1,300.00	1,331.42	1,331.36	2.81	46.22	86.58	195.64	3,278.10	3,283.93	3,234.91	49.03	66.982			
1,400.00	1,400.00	1,431.18	1,431.11	3.03	51.40	86.59	195.52	3,278.10	3,283.93	3,229.49	54.44	60.327			
1,444.42	1,444.42	1,475.49	1,475.43	3.13	53.70	86.59	195.51	3,278.10	3,283.93	3,227.09	56.84	57.777			
1,500.00	1,500.00	1,530.93	1,530.86	3.26	56.58	86.59	195.53	3,278.10	3,283.93	3,224.08	59.84	54.876			
1,600.00	1,600.00	1,630.68	1,630.61	3.48	61.77	86.58	195.66	3,278.10	3,283.93	3,218.68	65.25	50.328			
1,700.00	1,700.00	1,731.10	1,731.00	3.71	67.44	86.58	195.70	3,278.10	3,283.94	3,212.79	71.15	46.158			
1,800.00	1,800.00	1,831.00	1,830.88	3.93	72.56	86.58	195.83	3,278.10	3,283.94	3,207.45	76.49	42.931			
1,900.00	1,900.00	1,931.45	1,931.32	4.16	76.93	86.58	195.64	3,278.10	3,283.93	3,202.85	81.08	40.500			
1,996.87	1,996.87	2,028.00	2,027.87	4.38	80.74	86.59	195.56	3,278.10	3,283.93	3,198.82	85.11	38.584			
2,000.00	2,000.00	2,031.12	2,030.99	4.38	80.86	86.59	195.56	3,278.10	3,283.93	3,198.69	85.24	38.525			
2,100.00	2,100.00	2,130.79	2,130.66	4.61	84.79	86.58	195.65	3,278.10	3,283.93	3,194.53	89.40	36.734			
2,200.00	2,200.00	2,231.34	2,231.19	4.83	89.69	86.59	195.58	3,278.10	3,283.93	3,189.41	94.52	34.744			
2,259.89	2,259.89	2,291.04	2,290.89	4.97	92.79	86.59	195.55	3,278.10	3,283.93	3,186.17	97.75	33.594			
2,300.00	2,300.00	2,331.03	2,330.87	5.06	94.86	86.59	195.57	3,278.10	3,283.93	3,184.01	99.92	32.865			
2,400.00	2,400.00	2,430.77	2,430.59	5.28	100.04	86.58	195.71	3,278.10	3,283.94	3,178.61	105.33	31.179			
2,500.00	2,500.00	2,531.11	2,530.93	5.51	105.22	86.58	195.83	3,278.10	3,283.94	3,173.22	110.73	29.658			
2,600.00	2,600.00	2,631.46	2,631.27	5.73	110.40	86.58	195.78	3,278.10	3,283.94	3,167.81	116.13	28.278			
2,700.00	2,700.00	2,731.21	2,731.00	5.96	115.23	86.58	195.70	3,278.10	3,283.94	3,162.75	121.18	27.099			
2,800.00	2,800.00	2,831.21	2,831.00	6.18	119.79	86.58	195.70	3,278.10	3,283.94	3,157.97	125.97	26.070			
2,900.00	2,900.00	2,931.21	2,931.00	6.41	124.35	86.58	195.70	3,278.10	3,283.94	3,153.18	130.75	25.116			
2,955.20	2,955.20	2,966.42	2,966.20	6.53	126.86	86.58	195.70	3,278.10	3,283.94	3,150.54	133.39	24.619			
3,000.00	2,999.94	3,031.54	3,031.30	6.63	129.18	20.92	195.62	3,278.10	3,282.13	3,146.32	135.81	24.167			
3,050.00	3,049.48	3,080.99	3,080.75	6.74	131.77	21.21	195.54	3,278.10	3,275.89	3,137.38	138.51	23.651			
3,100.00	3,098.14	3,129.57	3,129.33	6.86	134.31	21.72	195.48	3,278.10	3,265.24	3,124.08	141.16	23.131			
3,150.00	3,145.49	3,176.84	3,176.60	6.98	136.78	22.48	195.45	3,278.10	3,260.30	3,106.54	143.76	22.610			
3,200.00	3,191.09	3,222.36	3,222.12	7.12	139.15	23.51	195.43	3,278.10	3,231.20	3,084.92	146.28	22.089			
3,250.00	3,234.51	3,265.72	3,265.48	7.31	141.42	24.85	195.43	3,278.10	3,208.14	3,059.41	148.73	21.571			
3,300.00	3,275.36	3,306.52	3,306.28	7.55	143.55	26.59	195.45	3,278.10	3,181.34	3,030.24	151.10	21.055			
3,350.00	3,313.27	3,344.39	3,344.14	7.86	145.53	28.79	195.48	3,278.10	3,151.06	2,997.68	153.39	20.543			
3,400.00	3,347.88	3,378.97	3,378.72	8.25	147.34	31.59	195.51	3,278.10	3,117.60	2,962.01	155.59	20.038			
3,450.00	3,378.87	3,409.95	3,409.70	8.74	148.96	35.15	195.55	3,278.10	3,081.28	2,923.58	157.70	19.539			
3,500.00	3,405.96	3,437.04	3,436.80	9.34	150.37	39.68	195.60	3,278.10	3,042.46	2,882.74	159.72	19.049			
3,550.00	3,428.90	3,460.00	3,459.75	10.05	151.57	45.45	195.64	3,278.10	3,001.51	2,839.88	161.62	18.571			
3,600.00	3,447.48	3,478.61	3,478.36	10.86	152.54	52.74	195.68	3,278.10	2,958.82	2,795.42	163.40	18.108			
3,650.00	3,461.53	3,492.82	3,492.53	11.75	153.30	61.78	195.70	3,278.10	2,914.81	2,749.76	165.05	17.660			
3,700.00	3,470.91	3,502.20	3,501.91	12.71	153.85	72.51	195.70	3,278.10	2,869.90	2,703.34	166.56	17.230			
3,750.00	3,475.55	3,506.84	3,506.55	13.73	154.12	84.36	195.70	3,278.10	2,824.51	2,656.66	167.85	16.827			

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



Phoenix Technology Services
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #10H
Project:	Eddy County, NM (NAD:27 NME)	TVD Reference:	GL @ 3582.00usft
Reference Site:	Beech 25 Federal	MD Reference:	GL @ 3582.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	#10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at:	2.00 sigma
Reference Wellbore:	WB1	Database:	GCR DB
Reference Design:	Plan # 1 03-04-14	Offset TVD Reference:	Offset Datum

Offset Design: Beech 25 Federal #3 WB1 Inc Surveys														Offset Site Error:
Survey Program: 250 INC														Offset Well Error:
References:														0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Semi-Major Axis (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
3,777.93	3,476.05	3,507.34	3,507.05	14.32	154.15	91.09		195.70	3,278.10	2,799.12	2,630.65	168.47	16.615	
3,800.00	3,475.86	3,507.15	3,506.86	14.79	154.14	91.12		195.70	3,278.10	2,779.02	2,610.10	168.93	16.451	
3,900.00	3,474.98	3,506.27	3,505.98	17.01	154.09	91.25		195.70	3,278.10	2,687.05	2,515.95	171.10	15.705	
4,000.00	3,474.09	3,505.38	3,505.09	19.35	154.04	91.42		195.70	3,278.10	2,593.64	2,420.26	173.38	14.959	
4,100.00	3,473.20	3,504.49	3,504.20	21.76	153.98	91.63		195.70	3,278.10	2,498.90	2,323.15	175.74	14.219	
4,200.00	3,472.30	3,503.60	3,503.30	24.23	153.93	91.90		195.70	3,278.10	2,402.95	2,224.78	178.16	13.487	
4,300.00	3,471.41	3,502.70	3,502.41	26.74	153.88	92.27		195.70	3,278.10	2,305.91	2,125.29	180.62	12.767	
4,400.00	3,470.51	3,501.80	3,501.51	29.27	153.83	92.83		195.70	3,278.10	2,207.93	2,024.83	183.10	12.059	
4,500.00	3,469.62	3,500.91	3,500.62	31.82	153.77	93.77		195.70	3,278.10	2,109.16	1,923.57	185.60	11.364	
4,600.00	3,468.74	3,500.03	3,499.74	34.37	153.72	95.77		195.70	3,278.10	2,009.79	1,821.69	188.10	10.685	
4,695.76	3,467.90	3,499.19	3,498.90	36.82	153.67	102.35		195.70	3,278.10	1,914.23	1,723.74	190.49	10.049	
4,700.00	3,467.86	3,499.16	3,498.86	36.93	153.67	102.32		195.70	3,278.10	1,909.99	1,719.40	190.60	10.021	
4,800.00	3,466.99	3,498.29	3,497.99	39.48	153.62	101.70		195.70	3,278.10	1,810.08	1,616.98	193.11	9.374	
4,900.00	3,466.12	3,497.42	3,497.12	42.07	153.57	101.06		195.70	3,278.10	1,710.18	1,514.54	195.64	8.741	
5,000.00	3,465.25	3,496.55	3,496.25	44.67	153.52	100.43		195.70	3,278.10	1,610.29	1,412.09	198.19	8.125	
5,100.00	3,464.38	3,495.68	3,495.38	47.30	153.47	99.80		195.70	3,278.10	1,510.41	1,309.64	200.77	7.523	
5,200.00	3,463.52	3,494.81	3,494.52	49.94	153.42	99.16		195.70	3,278.10	1,410.55	1,207.19	203.36	6.936	
5,300.00	3,462.65	3,493.94	3,493.65	52.59	153.37	98.52		195.70	3,278.10	1,310.71	1,104.75	205.96	6.364	
5,400.00	3,461.78	3,493.07	3,492.78	55.25	153.32	97.88		195.70	3,278.10	1,210.89	1,002.33	208.57	5.806	
5,500.00	3,460.91	3,492.20	3,491.91	57.92	153.27	97.23		195.70	3,278.10	1,111.11	899.92	211.19	5.261	
5,600.00	3,460.04	3,491.33	3,491.04	60.60	153.22	96.58		195.70	3,278.10	1,011.37	797.55	213.82	4.730	
5,700.00	3,459.17	3,490.46	3,490.17	63.29	153.17	95.94		195.70	3,278.10	911.69	695.23	216.46	4.212	
5,800.00	3,458.30	3,490.00	3,489.71	65.99	153.14	95.59		195.70	3,278.10	812.09	592.96	219.13	3.706	
5,900.00	3,457.43	3,490.00	3,489.71	68.69	153.14	95.59		195.70	3,278.10	712.59	490.76	221.83	3.212	
6,000.00	3,456.56	3,488.03	3,487.78	71.39	153.04	94.15		195.70	3,278.10	613.26	388.83	224.43	2.733	
6,100.00	3,455.69	3,487.15	3,486.90	74.10	152.99	93.49		195.69	3,278.10	514.18	287.09	227.09	2.264	
6,200.00	3,454.82	3,486.27	3,486.02	76.82	152.94	92.83		195.69	3,278.10	415.54	185.78	229.76	1.809	
6,300.00	3,453.95	3,485.39	3,485.14	79.53	152.90	92.16		195.69	3,278.10	317.76	85.33	232.43	1.367 Level 3	
6,400.00	3,453.08	3,484.50	3,484.25	82.25	152.85	91.50		195.69	3,278.10	221.95	-13.15	235.10	0.944 Level 1	
6,500.00	3,452.21	3,483.62	3,483.37	84.98	152.81	90.83		195.69	3,278.10	132.49	-105.29	237.78	0.557 Level 1	
6,600.00	3,451.34	3,482.74	3,482.49	87.70	152.76	90.17		195.68	3,278.10	76.45	-164.01	240.46	0.318 Level 1	
6,608.52	3,451.27	3,482.66	3,482.42	87.93	152.76	90.11		195.68	3,278.10	75.97	-164.72	240.69	0.316 Level 1, CC, ES, SF	
6,700.00	3,450.48	3,481.86	3,481.61	90.43	152.71	89.50		195.68	3,278.10	118.88	-124.26	243.14	0.489 Level 1	
6,725.90	3,450.25	3,481.63	3,481.38	91.14	152.70	89.33		195.68	3,278.10	139.78	-104.05	243.84	0.573 Level 1	

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 #10H
Project:	Eddy County NM (NAD 27 NME)	TVD Reference:	GL @ 3582.00 usft
Reference Site:	Beech 25 Federal	MD Reference:	GL @ 3582.00 usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	WVB1	Database:	GCR:DB
Reference Design:	Plan # 103-04-14	Offset TVD Reference:	Offset Datum

Offset Design: Beech 25 Federal - #9H - WVB1/Job # 13111015 Surveys (Silver Oak 3)														Offset Site Error:
Survey Program: 100-VES-HSCWSA-GYRO-3-2874-MWD														Offset Well Error:
Reference: 100-VES-HSCWSA-GYRO-3-2874-MWD														0.00 usft
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	
0.00	0.00	20.83	20.83	0.00	0.02	-3.98	880.21	-61.24	882.34	882.32	0.02	N/A		
100.00	100.00	116.49	116.48	0.11	0.12	-4.05	880.55	-62.34	882.77	882.54	0.23	3,847.373		
200.00	200.00	217.41	217.39	0.34	0.30	-4.15	881.02	-63.85	883.34	882.70	0.64	1,382.033		
300.00	300.00	317.82	317.79	0.56	0.49	-4.24	881.37	-65.42	883.81	882.75	1.05	840.920		
400.00	400.00	415.93	415.89	0.79	0.67	-4.34	881.89	-66.99	884.45	882.99	1.46	605.982		
500.00	500.00	519.97	519.92	1.01	0.87	-4.43	882.22	-68.29	884.86	882.98	1.88	470.899		
600.00	600.00	620.25	620.19	1.24	1.06	-4.50	882.38	-69.45	885.11	882.82	2.29	386.214		
700.00	700.00	722.54	722.46	1.46	1.25	-4.59	882.31	-70.87	885.16	882.45	2.71	326.888		
800.00	800.00	822.44	822.36	1.69	1.43	-4.68	882.17	-72.16	885.12	882.00	3.12	283.771		
900.00	900.00	922.74	922.65	1.91	1.62	-4.74	882.02	-73.13	885.04	881.51	3.53	250.635		
1,000.00	1,000.00	1,023.00	1,022.91	2.14	1.81	-4.80	881.92	-74.06	885.02	881.08	3.94	224.441		
1,100.00	1,100.00	1,126.38	1,126.28	2.36	2.00	-4.88	881.40	-75.33	884.63	880.27	4.36	202.891		
1,200.00	1,200.00	1,225.05	1,224.94	2.58	2.18	-4.96	880.99	-76.50	884.31	879.54	4.77	185.475		
1,300.00	1,300.00	1,327.83	1,327.71	2.81	2.37	-5.04	880.27	-77.67	883.71	878.53	5.18	170.516		
1,400.00	1,400.00	1,426.10	1,425.97	3.03	2.55	-5.12	879.73	-78.76	883.26	877.67	5.59	158.036		
1,500.00	1,500.00	1,527.96	1,527.83	3.26	2.74	-5.19	878.94	-79.84	882.57	876.57	6.00	147.048		
1,600.00	1,600.00	1,624.73	1,624.59	3.48	2.92	-5.23	878.53	-80.42	882.21	875.80	6.41	137.731		
1,700.00	1,700.00	1,728.54	1,728.40	3.71	3.11	-5.27	877.88	-81.04	881.64	874.82	6.82	129.258		
1,800.00	1,800.00	1,828.08	1,827.93	3.93	3.29	-5.33	877.09	-81.88	880.92	873.69	7.23	121.882		
1,900.00	1,900.00	1,926.16	1,926.01	4.16	3.47	-5.37	876.47	-82.42	880.34	872.71	7.63	115.345		
2,000.00	2,000.00	2,024.91	2,024.76	4.38	3.66	-5.41	876.10	-82.99	880.03	871.99	8.04	109.461		
2,100.00	2,100.00	2,127.09	2,126.94	4.61	3.85	-5.46	875.52	-83.71	879.53	871.07	8.45	104.030		
2,200.00	2,200.00	2,226.50	2,226.34	4.83	4.03	-5.51	874.98	-84.36	879.05	870.18	8.86	99.177		
2,300.00	2,300.00	2,327.11	2,326.94	5.06	4.22	-5.54	874.32	-84.83	878.44	869.17	9.27	94.732		
2,400.00	2,400.00	2,424.62	2,424.46	5.28	4.39	-5.56	873.96	-85.09	878.09	868.42	9.68	90.747		
2,500.00	2,500.00	2,526.75	2,526.59	5.51	4.58	-5.58	873.48	-85.29	877.65	867.56	10.09	87.023		
2,600.00	2,600.00	2,626.91	2,626.74	5.73	4.75	-5.58	872.99	-85.29	877.16	866.67	10.48	83.671		
2,700.00	2,700.00	2,728.70	2,728.53	5.96	4.92	-5.57	872.31	-85.08	876.47	865.59	10.88	80.553		
2,800.00	2,800.00	2,828.84	2,828.67	6.18	5.06	-5.57	871.59	-85.01	875.76	864.51	11.25	77.878		
2,900.00	2,900.00	2,936.61	2,936.42	6.41	5.11	-5.50	870.60	-83.78	874.74	863.22	11.52	75.964		
2,955.20	2,955.20	3,003.19	3,002.79	6.53	5.12	-5.18	869.50	-78.84	873.44	861.79	11.65	74.959		
3,000.00	2,999.94	3,047.73	3,046.90	6.63	5.14	-70.85	868.75	-72.69	871.50	859.73	11.77	74.064		
3,050.00	3,049.48	3,105.28	3,103.14	6.74	5.17	-70.94	867.99	-60.61	867.74	855.83	11.91	72.843		
3,100.00	3,098.14	3,175.30	3,169.72	6.86	5.24	-71.16	866.49	-39.10	861.62	849.52	12.09	71.242		
3,150.00	3,145.49	3,237.45	3,226.32	6.98	5.33	-71.61	864.32	-13.60	852.83	840.52	12.31	69.268		
3,200.00	3,191.09	3,296.04	3,277.02	7.12	5.49	-72.28	862.11	15.64	842.11	829.50	12.61	66.777		
3,250.00	3,234.51	3,357.91	3,327.31	7.31	5.80	-73.14	859.29	51.51	829.26	816.16	13.11	63.272		
3,300.00	3,275.36	3,437.63	3,385.07	7.55	6.50	-73.89	854.42	106.09	814.00	799.95	14.05	57.950		
3,350.00	3,313.27	3,490.21	3,417.17	7.86	7.19	-75.01	850.13	147.47	795.98	780.94	15.04	52.915		
3,400.00	3,347.88	3,525.22	3,435.36	8.25	7.74	-76.49	847.81	177.28	777.33	761.34	15.99	48.625		
3,450.00	3,378.87	3,559.20	3,450.34	8.74	8.34	-78.04	846.20	207.73	758.39	741.31	17.06	44.394		
3,500.00	3,405.98	3,596.00	3,463.63	9.34	9.06	-79.58	845.24	242.01	739.39	720.99	18.40	40.182		
3,550.00	3,428.90	3,640.91	3,478.13	10.05	10.02	-81.05	844.58	285.13	720.09	700.02	20.07	35.878		
3,600.00	3,447.48	3,720.15	3,489.27	10.86	11.87	-81.91	841.40	363.11	699.00	676.28	22.72	30.765		
3,650.00	3,461.53	3,764.14	3,491.62	11.75	12.95	-83.65	838.57	406.94	676.28	651.59	24.70	27.385		
3,700.00	3,470.91	3,806.19	3,491.73	12.71	14.00	-85.65	835.88	448.91	653.26	626.55	26.71	24.456		
3,750.00	3,475.55	3,847.79	3,491.77	13.73	15.05	-88.06	833.36	490.43	630.14	601.35	28.78	21.893		
3,777.93	3,476.05	3,870.43	3,491.78	14.32	15.84	-89.60	832.08	513.03	617.25	587.30	29.95	20.609		
3,800.00	3,475.86	3,888.43	3,491.76	14.79	16.10	-89.61	831.11	531.00	607.23	576.34	30.89	19.660		
3,900.00	3,474.98	3,970.82	3,491.36	17.01	18.24	-89.60	827.35	613.30	565.44	530.19	35.25	16.040		
4,000.00	3,474.09	4,055.85	3,490.49	19.35	20.47	-89.54	824.83	698.29	529.96	490.13	39.82	13.308		
4,100.00	3,473.20	4,146.75	3,490.15	21.76	22.89	-89.54	823.28	789.18	500.60	455.95	44.65	11.212		

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



Phoenix Technology Services
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #10H
Project:	Eddy County, NM (NAD 27/NME)	TVD Reference:	GL @ 3582.00usft
Reference Site:	Beech 25 Federal	MD Reference:	GL @ 3582.00usft
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	#10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at:	2.00/sigma
Reference Wellbore:	WB1	Database:	GCR/DB
Reference Design:	Plan #1-03-04-14	Offset TVD Reference:	Offset Datum

Offset Design: Beech 25 Federal #9H - WB1/Job #1311101 - Surveys (Silver Oak 3)														Offset Site Error:	0.00usft
Survey Program: 100-VES-ISCWSA-GYRO-12874-MWD														Offset Well Error:	0.00usft
Reference	Offset	Semi-Major Axis		Reference		Highside	Offset Wellbore Centre		Distance	Between	Between	Minimum	Separation	Warning	
Measured	Vertical	Measured	Vertical	Reference	Offset	To Surface	N-S	E-W	Between	Centres	Ellipses	Separation	Factor		
Depth	Depth	Depth	Depth	(usft)	(usft)	(ft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)			
(usft)	(usft)	(usft)	(usft)												
4,200.00	3,472.30	4,242.26	3,488.99	24.23	25.44	-89.46	822.09	884.67	476.76	427.08	49.67	9.598			
4,300.00	3,471.41	4,339.76	3,488.31	26.74	28.07	-89.44	821.36	982.17	458.50	403.70	54.81	8.366			
4,400.00	3,470.51	4,441.10	3,487.97	29.27	30.81	-89.47	820.03	1,083.50	444.86	384.78	60.08	7.405			
4,500.00	3,469.62	4,538.01	3,486.56	31.82	33.43	-89.36	818.99	1,180.40	436.67	371.42	65.26	6.692			
4,594.30	3,468.79	4,630.90	3,485.97	34.23	35.96	-89.36	818.55	1,273.28	434.29	364.11	70.19	6.188 CC			
4,600.00	3,468.74	4,636.63	3,485.91	34.37	36.11	-89.36	818.53	1,279.01	434.30	363.81	70.49	6.161			
4,695.76	3,467.90	4,728.02	3,484.34	36.82	38.60	-89.24	818.31	1,370.38	437.18	361.77	75.42	5.797			
4,700.00	3,467.86	4,731.84	3,484.28	36.93	38.70	-89.24	818.33	1,374.21	437.45	361.82	75.63	5.784			
4,800.00	3,466.99	4,832.28	3,483.25	39.48	41.44	-89.23	819.49	1,474.63	444.34	363.42	80.92	5.491			
4,900.00	3,466.12	4,941.25	3,482.95	42.07	44.41	-89.32	818.87	1,583.60	449.49	363.01	86.48	5.198			
5,000.00	3,465.25	5,039.72	3,481.94	44.67	47.11	-89.30	817.28	1,682.05	453.62	361.84	91.78	4.942			
5,100.00	3,464.38	5,133.07	3,479.43	47.30	49.66	-89.10	816.75	1,775.36	458.80	361.85	96.95	4.732			
5,200.00	3,463.52	5,239.57	3,476.49	49.94	52.57	-88.86	816.51	1,881.82	464.36	361.86	102.51	4.530			
5,300.00	3,462.65	5,335.58	3,474.29	52.59	55.20	-88.71	815.61	1,977.80	469.19	361.41	107.79	4.353			
5,400.00	3,461.78	5,442.08	3,472.06	55.25	58.12	-88.56	814.39	2,084.27	473.81	360.44	113.37	4.179			
5,500.00	3,460.91	5,536.44	3,469.71	57.92	60.71	-88.39	813.33	2,178.59	478.46	359.83	118.63	4.033			
5,600.00	3,460.04	5,642.64	3,467.78	60.60	63.62	-88.29	811.74	2,284.76	482.70	358.47	124.22	3.886			
5,700.00	3,459.17	5,739.89	3,466.15	63.29	66.29	-88.21	810.18	2,381.98	486.85	357.27	129.58	3.757			
5,800.00	3,458.30	5,838.57	3,465.10	65.99	69.00	-88.20	808.84	2,480.65	491.23	356.25	134.99	3.639			
5,900.00	3,457.43	5,936.38	3,463.84	68.69	71.69	-88.17	808.10	2,578.44	496.22	355.85	140.37	3.535			
6,000.00	3,456.56	6,038.74	3,463.11	71.39	74.50	-88.21	807.10	2,680.80	500.96	355.07	145.89	3.434			
6,100.00	3,455.69	6,135.43	3,461.85	74.10	77.15	-88.18	805.98	2,777.48	505.56	354.31	151.26	3.342 ES			
6,200.00	3,454.82	6,230.31	3,461.81	76.82	79.76	-88.28	806.11	2,872.35	511.39	354.82	156.58	3.266			
6,300.00	3,453.95	6,327.74	3,461.55	79.53	82.43	-88.37	806.70	2,969.78	517.70	355.74	161.97	3.196			
6,400.00	3,453.08	6,422.32	3,461.81	82.25	85.03	-88.51	807.95	3,064.35	524.73	357.45	167.28	3.137			
6,500.00	3,452.21	6,517.89	3,461.38	84.98	87.65	-88.57	810.22	3,159.89	532.81	360.19	172.62	3.087			
6,600.00	3,451.34	6,614.82	3,459.74	87.70	90.30	-88.51	812.98	3,256.77	541.41	363.41	178.00	3.042			
6,700.00	3,450.48	6,713.18	3,456.92	90.43	92.99	-88.33	816.20	3,355.04	550.46	367.04	183.42	3.001			
6,725.90	3,450.25	6,738.00	3,456.19	91.14	93.67	-88.28	817.03	3,379.83	552.81	368.01	184.81	2.991 SF			

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: #10H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	GL @ 3582.00usft
Reference Site:	Beech 25 Federal	MD Reference:	GL @ 3582.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	WB1	Database:	GCR DB
Reference Design:	Plan #1-03-04-14	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL @ 3582.00usft

Offset Depths are relative to Offset Datum

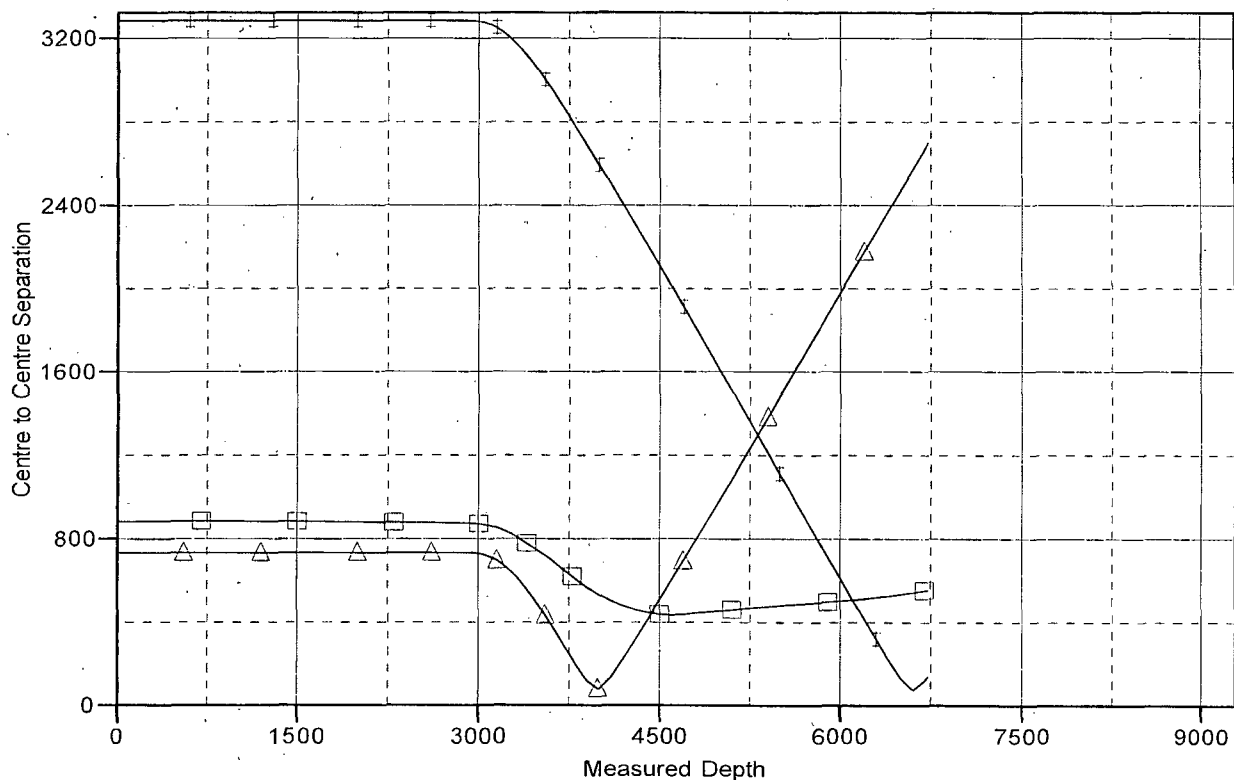
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #10H

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30

Grid Convergence at Surface is: 0.05°

Ladder Plot



LEGEND

#1, WB1, Inc Surveys V0

#3, WB1, Inc Surveys V0

#9H, WB1/Job #1311101, Surveys (Silver Oak 3)

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



Phoenix Technology Services
Anticollision Report

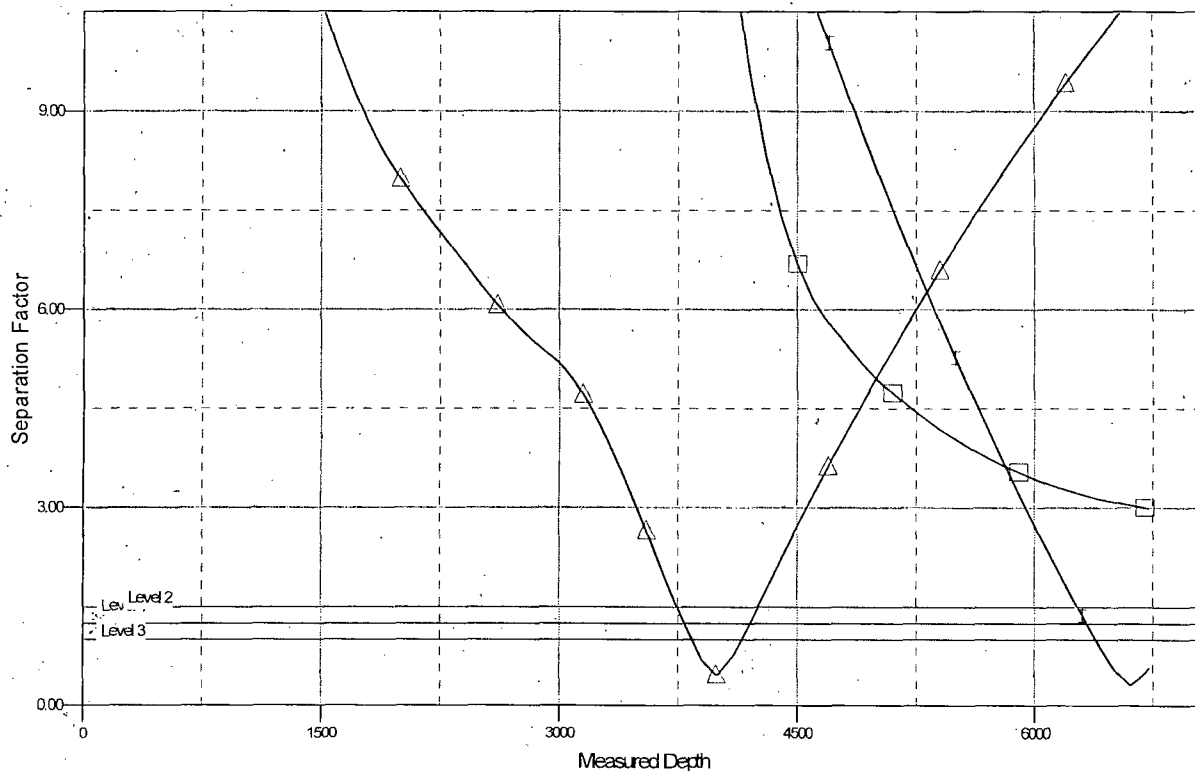


Company:	COG Operating LLC	Local Co-ordinate Reference:	Well: #10H
Project:	Eddy County, NM (NAD 27/NME)	TVD Reference:	GL @ 3582.00usft
Reference Site:	Beech 25 Federal	MD Reference:	GL @ 3582.00usft
Site Error:	0'00.0usft	North Reference:	Grid
Reference Well:	#10H	Survey Calculation Method:	Minimum Curvature
Well Error:	0'00.0usft	Output errors are at:	2.00 sigma
Reference Wellbore:	WB1	Database:	GCR DB
Reference Design:	Plan #1-03-04-14	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL @ 3582.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #10H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.05°

Separation Factor Plot



LEGEND

- #1, WB1, Inc Surveys V0
- #3, WB1, Inc Surveys V0
- #9H, WB1/Job #1311101, Surveys (Silver Oak 3