

Submit 1 Copy To Appropriate District
Office
District I -- (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II -- (575) 748-1283
811 S. First St., Artesia, NM 88210
District III -- (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV -- (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM
87505

State of New Mexico
Energy, Minerals and Natural Resources

Form C-103
Revised August 1, 2011

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)		WELL API NO. 30-015-42004
1. Type of Well: Oil Well ☒ Gas Well ☐ Other ☐		5. Indicate Type of Lease STATE ☐ FEE ☒
2. Name of Operator COG Operating LLC		6. State Oil & Gas Lease No.
3. Address of Operator One Concho Center - 600 W Illinois Ave Midland, TX 79701		7. Lease Name or Unit Agreement Name Arabian 6 Fee
4. Well Location Unit Letter: M : 150 feet from the SOUTH line and 210 feet from the WEST line Section 31 Township 18S Range 26E NMPM County EDDY		8. Well Number 10H
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 3446'		9. OGRID Number 229137
		10. Pool name or Wildcat Atoka; Glorieta Yeso 3250

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐
DOWNHOLE COMMINGLE ☐

OTHER: **Update Directional Plan** ☒

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS ☐ P AND A ☐
CASING/CEMENT JOB ☐

OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

COG Operating LLC respectfully requests to update the Directional Plan for this well.

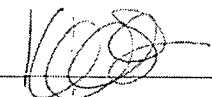
Reason for the change is to avoid a Non-Standard location.

Attached is the revised C-102 and directional plan for your review.

Spud Date:

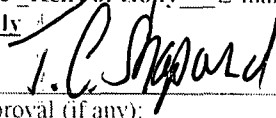
Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE  TITLE Permitting Tech DATE 02/18/2014

Type or print name Kelly J. Holly E-mail address: kholly@concho.com PHONE: 432-685-4384

For State Use Only

APPROVED BY:  TITLE "Geologist" DATE 2-19-2014

Conditions of Approval (if any):



Project: Eddy County, NM (NAD 27 NME)
Site: Arabian 6 Fee
Well: #10H
Wellbore: WB1
Design: Plan #2 02-17-14
Rig: Original Well Elev



PHOENIX
TECHNOLOGY SERVICES



Azimuths to Grid North
True North: 0.05°
Magnetic North: 7.75°
Magnetic Field
Strength: 48549.1nT
Dip Angle: 60.41°
Date: 1/8/2014
Model: IGRF2010_14

WELL DETAILS

+N-S	+E-W	Northing	Ground Level	3446.00	Latitude	Longitude
0.00	0.00	617366.00	470764.90	32° 41' 49.92519 N	104° 25' 42.12416 W	

SECTION DETAILS

Sec	MD	inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSecl	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2	2360.00	0.00	360.00	2360.00	0.00	0.00	0.00	360.00	0.00		
3	3182.73	90.50	180.60	2880.85	-495.58	174.52	11.00	160.60	504.48		KOP, 11.00°/100' Build
4	3629.25	90.50	180.00	2875.16	-1129.80	282.95	3.00	89.81	1143.72		LP, Hold 90.50° Inc, 3.00°/100' Turn
5	7812.70	90.50	180.00	2840.40	-5113.10	283.20	0.00	0.00	5120.94	BHL Arabian 6 Fee 10H	Hold 90.50° Inc TD at 7812.70

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape
BHL Arabian 6 Fee 10H	2840.40	-5113.10	283.20	612252.90	471048.10	32° 40' 59.33036 N	104° 25' 38.75694 W	Point

plan has 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

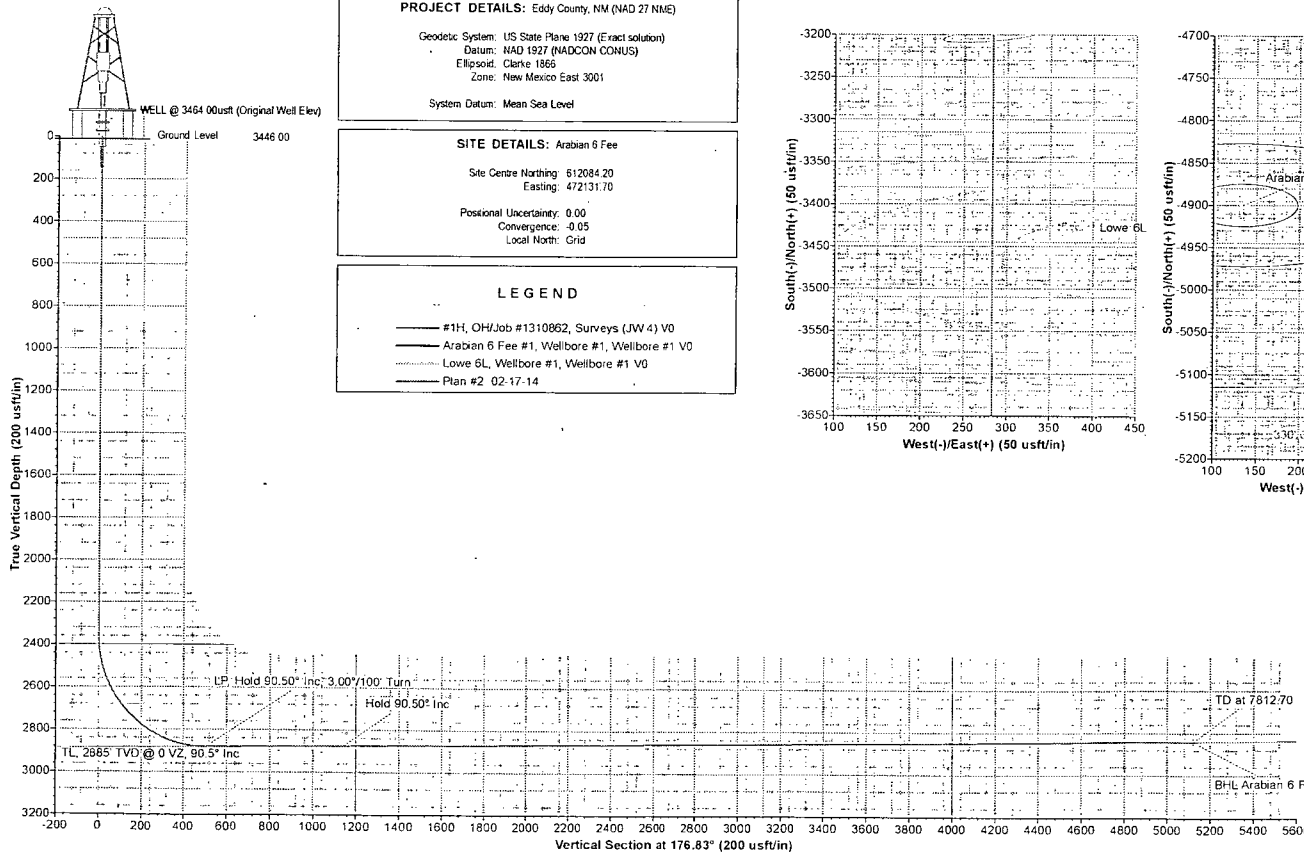
SITE DETAILS: Arabian 6 Fee

Site Centre Northing: 512084.20
Easting: 472131.70

Positional Uncertainty: 0.00
Convergence: -0.05
Local North: Grid

LEGEND

- #1H, OH/Job #1310862, Surveys (JW 4) V0
- Arabian 6 Fee #1, Wellbore #1, Wellbore #1 V0
- Lowe 6L, Wellbore #1, Wellbore #1 V0
- Plan #2 02-17-14



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 #10H, Grid North

Latitude: 32° 41' 49.92519 N
Longitude: 104° 25' 42.12416 W

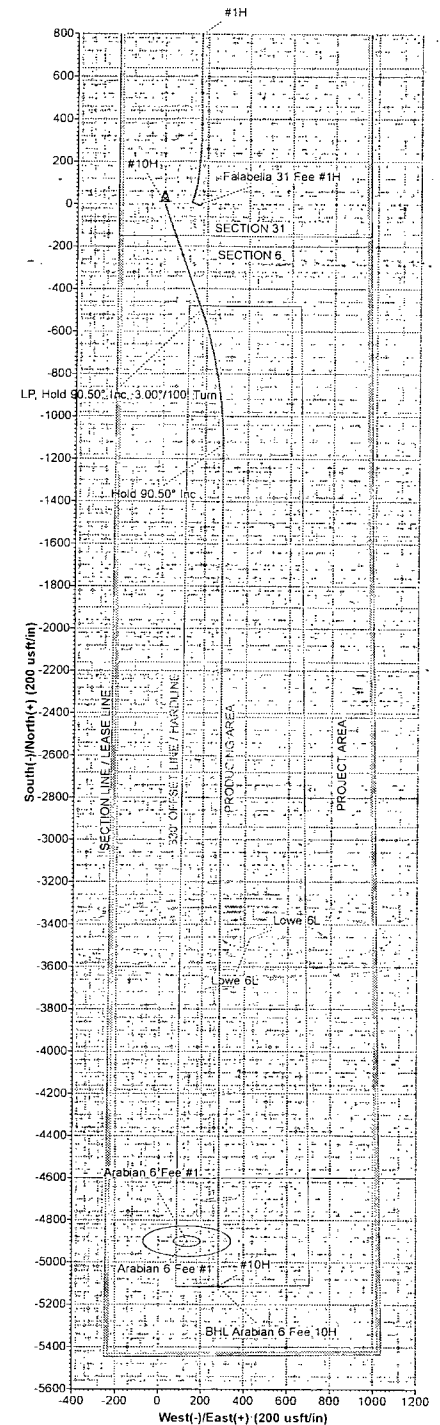
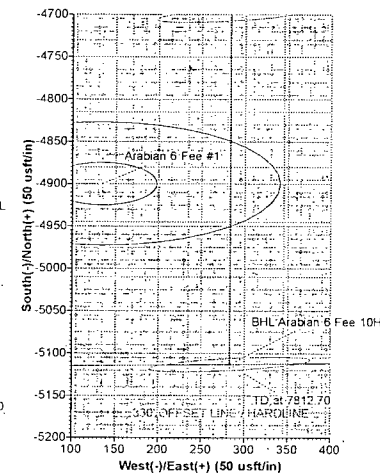
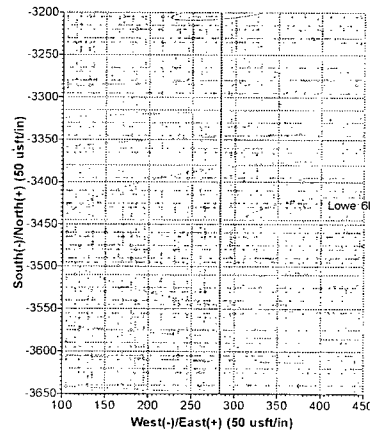
Grid East: 470764.90
Grid North: 617366.00
Scale Factor: 1.000

Geomagnetic Model: IGRF2010_14
Sample Date: 08-Jan-14
Magnetic Declination: 7.70°
Dip Angle from Horizontal: 60.41°
Magnetic Field Strength: 48549

To convert a Magnetic Direction to a Grid Direction, Add 7.75°
To convert a Magnetic Direction to a True Direction, Add 7.70° East
To convert a True Direction to a Grid Direction, Add 0.05°

FORMATION TOP DETAILS

IVDPath	MDPath	Formation	DipAngle	DpDr
2880.79	3186.93	TL, 2885' TVD @ 0 VZ, 90.5° Inc	-0.50	180.00





COG Operating LLC

Eddy County, NM (NAD 27 NME)

Arabian 6 Fee

#10H

WB1

Plan: Plan #2 02-17-14

Surface: 150' FSL, 210' FWL, Sec 31, T18S, R26E, Lot #4

PP: 330' FNL, 382' FWL, Sec 6, T19S, R26E, Lot #4

BHL: 330' FSL, 530' FWL, Sec 6, T19S, R26E, Lot #4

Standard Planning Report

17 February, 2014



PHOENIX
TECHNOLOGY SERVICES

Database:	Compass 5000 GCR DB	Local Co-ordinate Reference:	Well #10H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3464.00usft (Original Well Elev)
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	WELL @ 3464.00usft (Original Well Elev)
Site:	Arabian 6 Fee	North Reference:	Grid
Well:	#10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #2 02-17-14		

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:	Arabian 6 Fee		
Site Position:		Northing:	612,084.20 usft
From:	Map	Easting:	472,131.70 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 40' 57.67030 N
		Longitude:	104° 25' 26.07641 W
		Grid Convergence:	-0.05 "

Well	#10H					
Well Position	+N/-S	5,281.80 usft	Northing:	617,366.00 usft	Latitude:	32° 41' 49.92520 N
	+E/-W	-1,366.80 usft	Easting:	470,764.90 usft	Longitude:	104° 25' 42.12416 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,446.00 usft

Wellbore		WB1			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	1/8/2014	7.70	60.41	48,549

Design:	Plan #2 02-17-14			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	176.83

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,360.00	0.00	360.00	2,360.00	0.00	0.00	0.00	0.00	0.00	360.00	
3,182.73	90.50	160.60	2,880.85	-495.58	174.52	11.00	11.00	0.00	160.60	
3,829.25	90.50	180.00	2,875.16	-1,129.80	282.95	3.00	0.00	3.00	89.91	
7,812.70	90.50	180.00	2,840.40	-5,113.10	283.20	0.00	0.00	0.00	0.00	BHL Arabian 6 Fee 1C



Planning Report



Database: Compass 5000 GCR DB
Company: COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Site: Arabian 6 Fee
Well: #10H
Wellbore: WB1
Design: Plan #2 02-17-14

Local Co-ordinate Reference: Well #10H
TVD Reference: WELL @ 3464.00usft (Original Well Elev)
MD Reference: WELL @ 3464.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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
100.00	0.00	360.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	360.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	360.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	360.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	360.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	360.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	360.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	360.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	360.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	360.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	360.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	360.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	360.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	360.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	360.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	360.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	360.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	360.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	360.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	360.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	360.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	360.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	360.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,360.00	0.00	360.00	2,360.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, 11.00°/100' Build									
2,400.00	4.40	160.60	2,399.96	-1.45	0.51	1.47	11.00	11.00	0.00
2,500.00	15.40	160.60	2,498.32	-17.64	6.21	17.96	11.00	11.00	0.00
2,600.00	26.40	160.60	2,591.60	-51.24	18.04	52.16	11.00	11.00	0.00
2,700.00	37.40	160.60	2,676.36	-101.00	35.57	102.82	11.00	11.00	0.00
2,800.00	48.40	160.60	2,749.51	-165.11	58.15	168.07	11.00	11.00	0.00
2,900.00	59.40	160.60	2,808.34	-241.21	84.94	245.53	11.00	11.00	0.00
3,000.00	70.40	160.60	2,850.69	-326.49	114.98	332.35	11.00	11.00	0.00
3,100.00	81.40	160.60	2,875.01	-417.83	147.14	425.33	11.00	11.00	0.00
3,168.93	88.98	160.60	2,880.79	-482.58	169.94	491.23	11.00	11.00	0.00
TL, 2885' TVD @ 0 VZ, 90.5° Inc									
3,182.73	90.50	160.60	2,880.85	-495.59	174.52	504.48	11.00	11.00	0.00
LP, Hold 90.50° Inc, 3.00°/100' Turn									
3,200.00	90.50	161.12	2,880.70	-511.90	180.19	521.08	3.00	0.00	3.00
3,300.00	90.50	164.12	2,879.82	-607.32	210.06	618.01	3.00	0.00	3.00
3,400.00	90.51	167.12	2,878.94	-704.17	234.89	716.08	3.00	0.00	3.00
3,500.00	90.51	170.12	2,878.06	-802.19	254.62	815.04	3.00	0.00	3.00
3,600.00	90.51	173.12	2,877.17	-901.11	269.19	914.62	3.00	0.00	3.00
3,700.00	90.50	176.12	2,876.29	-1,000.65	278.57	1,014.53	3.00	0.00	3.00
3,800.00	90.50	179.12	2,875.41	-1,100.55	282.73	1,114.50	3.00	0.00	3.00
3,829.25	90.50	180.00	2,875.16	-1,129.80	282.95	1,143.72	3.00	0.00	3.00
Hold 90.50° Inc									
3,900.00	90.50	180.00	2,874.54	-1,200.54	282.96	1,214.36	0.00	0.00	0.00
4,000.00	90.50	180.00	2,873.67	-1,300.54	282.96	1,314.20	0.00	0.00	0.00
4,100.00	90.50	180.00	2,872.79	-1,400.54	282.97	1,414.04	0.00	0.00	0.00
4,200.00	90.50	180.00	2,871.92	-1,500.53	282.97	1,513.89	0.00	0.00	0.00
4,300.00	90.50	180.00	2,871.05	-1,600.53	282.98	1,613.73	0.00	0.00	0.00
4,400.00	90.50	180.00	2,870.18	-1,700.53	282.99	1,713.57	0.00	0.00	0.00
4,500.00	90.50	180.00	2,869.30	-1,800.52	282.99	1,813.42	0.00	0.00	0.00



Planning Report



Database: Compass 5000 GCR DB
Company: COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Site: Arabian 6 Fee
Well: #10H
Wellbore: WB1
Design: Plan #2 02-17-14

Local Co-ordinate Reference:

TVD Reference:

MD Reference:

North Reference:

Survey Calculation Method:

Well #10H

WELL @ 3464.00usft (Original Well Elev)

WELL @ 3464.00usft (Original Well Elev)

Grid

Minimum Curvature

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)
4,600.00	90.50	180.00	2,868.43	-1,900.52	283.00	1,913.26	0.00	0.00	0.00
4,700.00	90.50	180.00	2,867.56	-2,000.51	283.01	2,013.10	0.00	0.00	0.00
4,800.00	90.50	180.00	2,866.69	-2,100.51	283.01	2,112.95	0.00	0.00	0.00
4,900.00	90.50	180.00	2,865.81	-2,200.51	283.02	2,212.79	0.00	0.00	0.00
5,000.00	90.50	180.00	2,864.94	-2,300.50	283.02	2,312.63	0.00	0.00	0.00
5,100.00	90.50	180.00	2,864.07	-2,400.50	283.03	2,412.48	0.00	0.00	0.00
5,200.00	90.50	180.00	2,863.20	-2,500.50	283.04	2,512.32	0.00	0.00	0.00
5,300.00	90.50	180.00	2,862.32	-2,600.49	283.04	2,612.16	0.00	0.00	0.00
5,400.00	90.50	180.00	2,861.45	-2,700.49	283.05	2,712.01	0.00	0.00	0.00
5,500.00	90.50	180.00	2,860.58	-2,800.48	283.06	2,811.85	0.00	0.00	0.00
5,600.00	90.50	180.00	2,859.71	-2,900.48	283.06	2,911.70	0.00	0.00	0.00
5,700.00	90.50	180.00	2,858.83	-3,000.48	283.07	3,011.54	0.00	0.00	0.00
5,800.00	90.50	180.00	2,857.96	-3,100.47	283.07	3,111.38	0.00	0.00	0.00
5,900.00	90.50	180.00	2,857.09	-3,200.47	283.08	3,211.23	0.00	0.00	0.00
6,000.00	90.50	180.00	2,856.22	-3,300.46	283.09	3,311.07	0.00	0.00	0.00
6,100.00	90.50	180.00	2,855.34	-3,400.46	283.09	3,410.91	0.00	0.00	0.00
6,200.00	90.50	180.00	2,854.47	-3,500.46	283.10	3,510.76	0.00	0.00	0.00
6,300.00	90.50	180.00	2,853.60	-3,600.45	283.11	3,610.60	0.00	0.00	0.00
6,400.00	90.50	180.00	2,852.73	-3,700.45	283.11	3,710.44	0.00	0.00	0.00
6,500.00	90.50	180.00	2,851.85	-3,800.45	283.12	3,810.29	0.00	0.00	0.00
6,600.00	90.50	180.00	2,850.98	-3,900.44	283.12	3,910.13	0.00	0.00	0.00
6,700.00	90.50	180.00	2,850.11	-4,000.44	283.13	4,009.97	0.00	0.00	0.00
6,800.00	90.50	180.00	2,849.24	-4,100.43	283.14	4,109.82	0.00	0.00	0.00
6,900.00	90.50	180.00	2,848.36	-4,200.43	283.14	4,209.66	0.00	0.00	0.00
7,000.00	90.50	180.00	2,847.49	-4,300.43	283.15	4,309.50	0.00	0.00	0.00
7,100.00	90.50	180.00	2,846.62	-4,400.42	283.16	4,409.35	0.00	0.00	0.00
7,200.00	90.50	180.00	2,845.75	-4,500.42	283.16	4,509.19	0.00	0.00	0.00
7,300.00	90.50	180.00	2,844.87	-4,600.42	283.17	4,609.03	0.00	0.00	0.00
7,400.00	90.50	180.00	2,844.00	-4,700.41	283.17	4,708.88	0.00	0.00	0.00
7,500.00	90.50	180.00	2,843.13	-4,800.41	283.18	4,808.72	0.00	0.00	0.00
7,600.00	90.50	180.00	2,842.26	-4,900.40	283.19	4,908.57	0.00	0.00	0.00
7,700.00	90.50	180.00	2,841.38	-5,000.40	283.19	5,008.41	0.00	0.00	0.00
7,800.00	90.50	180.00	2,840.51	-5,100.40	283.20	5,108.25	0.00	0.00	0.00
7,812.70	90.50	180.00	2,840.40	-5,113.10	283.20	5,120.93	0.00	0.00	0.00

TD at 7812.70

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									
BHL Arabian 6 Fee 10H	0.00	360.00	2,840.40	-5,113.10	283.20	612,252.90	471,048.10	32° 40' 59.33036 N	104° 25' 38.75694 W
- plan hits target center									
- Point									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,168.93	2,880.79	TL, 2885' TVD @ 0 VZ, 90.5° Inc		-0.50	180.00



Planning Report



Database: Compass 5000 GCR DB
Company: COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Site: Arabian 6 Fee
Well: #10H
Wellbore: WB1
Design: Plan #2 02-17-14

Local Co-ordinate Reference:
TVD Reference: WELL @ 3464.00usft (Original Well Elev)
MD Reference: WELL @ 3464.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,360.00	2,360.00	0.00	0.00	KOP, 11.00°/100' Build
3,182.73	2,880.85	-495.59	174.52	LP, Hold 90.50° Inc, 3.00°/100' Turn
3,829.25	2,875.16	-1,129.80	282.95	Hold 90.50° Inc
7,812.70	2,840.40	-5,113.10	283.20	TD at 7812.70



COG Operating LLC

Eddy County, NM (NAD 27 NME)

Arabian 6 Fee

#10H

WB1

Plan #2 02-17-14

Anticollision Report

17 February, 2014



PHOENIX
TECHNOLOGY SERVICES



Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Arabian 6 Fee
Site Error: 0.00 usft
Reference Well: #10H
Well Error: 0.00 usft
Reference Wellbore: WB1
Reference Design: Plan #2 02-17-14

Local Co-ordinate Reference: Well #10H
TVD Reference: WELL @ 3464.00usft (Original Well Elev)
MD Reference: WELL @ 3464.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR DB
Offset TVD Reference: Reference Datum

Reference Plan #2 02-17-14

Filter type: NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method: MD Interval 50.00usft
Depth Range: Unlimited
Results Limited by: Maximum center-center distance of 10,000.00 usft
Warning Levels Evaluated at: 2.00 Sigma
Error Model: ISCWSA
Scan Method: Closest Approach 3D
Error Surface: Circular Conic
Casing Method: Not applied

Survey Tool Program Date 2/17/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	7,812.70	Plan #2 02-17-14 (WB1)	MWD	MWD - Standard

Summary

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Arabian 6 Fee						
Arabian 6 Fee #1 - Wellbore #1 - Wellbore #1	7,599.36	2,785.45	148.39	-79.16	0.652	Level 1, CC
Arabian 6 Fee #1 - Wellbore #1 - Wellbore #1	7,600.00	2,785.44	148.39	-79.17	0.652	Level 1, ES, SF
Lowe 6L - Wellbore #1 - Wellbore #1	6,163.67	2,798.18	142.70	-80.91	0.638	Level 1, CC, ES, SF
Falabella 31 Fee						
#1H - OH/Job #1310862 - Surveys (JW 4)	2,266.39	2,256.12	126.20	117.36	14.269	CC, ES
#1H - OH/Job #1310862 - Surveys (JW 4)	2,300.00	2,284.56	126.86	117.93	14.214	SF

Offset Design Arabian 6 Fee - Arabian 6 Fee #1 - Wellbore #1 - Wellbore #1

Survey Program: 293-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)	Azimuth from North (°)	Offset Wellbore +N-S (usft)	Centre +E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	57.00	0.00	0.00	178.42	-4.899.70	134.80	4.901.89				
50.00	50.00	0.00	57.00	0.04	0.00	178.42	-4.899.70	134.80	4.901.56				
57.00	57.00	0.00	57.00	0.04	0.00	178.42	-4.899.70	134.80	4.901.55				
100.00	100.00	16.43	73.43	0.09	0.36	178.42	-4.899.79	134.80	4.901.72	4.901.27	0.45	N/A	
150.00	150.00	79.27	136.27	0.20	1.73	178.42	-4.900.05	134.80	4.901.93	4.900.00	1.93	2,540.386	
200.00	200.00	142.11	199.11	0.32	3.09	178.42	-4.900.15	134.80	4.902.00	4.898.59	3.41	1,437.754	
250.00	250.00	204.94	261.94	0.43	4.46	178.42	-4.900.08	134.80	4.901.94	4.897.06	4.89	1,002.586	
300.00	300.00	293.00	349.99	0.54	6.38	178.42	-4.899.70	134.80	4.901.81	4.894.89	6.92	708.552	
349.99	349.99	293.00	349.99	0.65	6.38	178.42	-4.899.70	134.80	4.901.55	4.894.52	7.03	697.191	
350.00	350.00	293.00	349.99	0.65	6.38	178.42	-4.899.70	134.80	4.901.55	4.894.52	7.03	697.190	
400.00	400.00	323.75	380.74	0.77	8.18	178.42	-4.899.84	134.80	4.901.73	4.892.78	8.95	547.681	
450.00	450.00	386.86	443.85	0.88	11.89	178.42	-4.900.00	134.80	4.901.86	4.889.09	12.77	383.813	
500.00	500.00	540.00	596.95	0.99	20.89	178.42	-4.899.70	134.80	4.902.51	4.880.63	21.88	224.029	
550.00	550.00	540.00	596.95	1.10	20.89	178.42	-4.899.70	134.80	4.901.78	4.879.78	22.00	222.851	
600.00	600.00	564.28	621.23	1.22	22.29	178.42	-4.899.58	134.80	4.901.48	4.877.98	23.50	208.547	
650.00	650.00	606.58	663.53	1.33	24.72	178.42	-4.899.43	134.80	4.901.31	4.875.26	26.05	188.182	
700.00	700.00	648.88	705.83	1.44	27.15	178.42	-4.899.35	134.80	4.901.21	4.872.62	28.59	171.440	
737.92	737.92	680.97	737.92	1.53	28.99	178.42	-4.899.33	134.80	4.901.19	4.870.67	30.52	160.603	
750.00	750.00	691.19	748.14	1.55	29.58	178.42	-4.899.33	134.80	4.901.19	4.870.06	31.13	157.434	
800.00	800.00	733.51	790.45	1.67	32.01	178.42	-4.899.38	134.80	4.901.25	4.867.57	33.67	145.546	
850.00	850.00	822.00	878.91	1.78	37.09	178.42	-4.899.70	134.80	4.901.64	4.862.77	38.87	126.099	

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



Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #10H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	WELL @ 3464.00usft (Original Well Elev)
Reference Site:	Arabian 6 Fee	MD Reference:	WELL @ 3464.00usft (Original Well Elev)
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:	Compass 5000 GCR DB
Reference Design:	Plan.#2 02-17-14	Offset TVD Reference:	Reference Datum

Offset Design Arabian 6 Fee - Arabian 6 Fee #1 - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 usft
Survey Program: 293-INC												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)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
878.95	878.95	822.00	878.91	1.84	37.09	178.42	-4.899.70	134.80	4.901.55	4.862.62	38.94	125.886	
900.00	900.00	835.45	892.36	1.89	37.74	178.42	-4.899.72	134.80	4.901.58	4.861.95	39.63	123.690	
950.00	950.00	889.10	946.00	2.00	40.31	178.42	-4.899.79	134.80	4.901.64	4.859.33	42.31	115.855	
1,000.00	1,000.00	942.74	999.65	2.12	42.87	178.42	-4.899.81	134.80	4.901.66	4.856.68	44.99	108.953	
1,050.00	1,050.00	996.38	1,053.28	2.23	45.44	178.42	-4.899.79	134.80	4.901.65	4.853.98	47.67	102.827	
1,053.79	1,053.79	1,000.45	1,057.35	2.24	45.64	178.42	-4.899.79	134.80	4.901.65	4.853.77	47.87	102.390	
1,100.00	1,100.00	1,074.00	1,130.89	2.34	49.16	178.42	-4.899.70	134.80	4.901.65	4.850.15	51.50	95.183	
1,150.00	1,150.00	1,103.51	1,160.39	2.45	50.50	178.42	-4.899.63	134.80	4.901.50	4.848.54	52.95	92.564	
1,200.00	1,200.00	1,149.70	1,206.58	2.56	52.60	178.42	-4.899.55	134.80	4.901.41	4.846.24	55.17	88.846	
1,250.00	1,250.00	1,195.89	1,252.77	2.68	54.71	178.42	-4.899.51	134.80	4.901.36	4.843.98	57.38	85.416	
1,286.37	1,286.37	1,229.49	1,286.37	2.76	56.23	178.42	-4.899.50	134.80	4.901.35	4.842.36	58.99	83.084	
1,300.00	1,300.00	1,242.08	1,298.96	2.79	56.81	178.42	-4.899.50	134.80	4.901.35	4.841.76	59.60	82.242	
1,350.00	1,350.00	1,288.27	1,345.15	2.90	58.91	178.42	-4.899.53	134.80	4.901.38	4.839.57	61.81	79.295	
1,400.00	1,400.00	1,385.00	1,441.86	3.01	63.31	178.42	-4.899.70	134.80	4.901.73	4.835.41	66.33	73.903	
1,441.86	1,441.86	1,385.00	1,441.86	3.11	63.31	178.42	-4.899.70	134.80	4.901.55	4.835.13	66.42	73.796	
1,450.00	1,450.00	1,388.94	1,445.80	3.13	63.47	178.42	-4.899.70	134.80	4.901.56	4.834.96	66.60	73.598	
1,500.00	1,500.00	1,439.94	1,496.79	3.24	65.54	178.42	-4.899.74	134.80	4.901.60	4.832.81	68.78	71.261	
1,550.00	1,550.00	1,490.93	1,547.78	3.35	67.62	178.42	-4.899.77	134.80	4.901.62	4.830.66	70.97	69.069	
1,600.00	1,600.00	1,541.92	1,598.78	3.46	69.69	178.42	-4.899.79	134.80	4.901.64	4.828.49	73.15	67.007	
1,650.00	1,650.00	1,592.91	1,649.77	3.58	71.76	178.42	-4.899.80	134.80	4.901.65	4.826.31	75.34	65.064	
1,700.00	1,700.00	1,643.90	1,700.76	3.69	73.83	178.42	-4.899.79	134.80	4.901.65	4.824.13	77.52	63.231	
1,750.00	1,750.00	1,694.89	1,751.75	3.80	75.90	178.42	-4.899.78	134.80	4.901.63	4.821.93	79.70	61.498	
1,800.00	1,800.00	1,745.89	1,802.74	3.91	77.97	178.42	-4.899.76	134.80	4.901.61	4.819.72	81.89	59.858	
1,806.40	1,806.40	1,752.41	1,809.26	3.93	78.24	178.42	-4.899.75	134.80	4.901.61	4.819.44	82.17	59.654	
1,850.00	1,850.00	1,825.00	1,881.83	4.03	81.19	178.42	-4.899.70	134.80	4.901.66	4.816.44	85.21	57.522	
1,881.83	1,881.83	1,825.00	1,881.83	4.10	81.19	178.42	-4.899.70	134.80	4.901.55	4.816.27	85.29	57.472	
1,900.00	1,900.00	1,834.98	1,891.81	4.14	81.68	178.42	-4.899.72	134.80	4.901.58	4.815.76	85.81	57.118	
1,950.00	1,950.00	1,886.87	1,943.70	4.25	84.21	178.42	-4.899.79	134.80	4.901.65	4.813.19	88.46	55.409	
2,000.00	2,000.00	1,938.76	1,995.58	4.36	86.75	178.42	-4.899.85	134.80	4.901.71	4.810.60	91.11	53.799	
2,050.00	2,050.00	1,990.64	2,047.47	4.48	89.28	178.42	-4.899.89	134.80	4.901.74	4.807.98	93.76	52.280	
2,100.00	2,100.00	2,042.53	2,099.35	4.59	91.82	178.42	-4.899.90	134.80	4.901.76	4.805.35	96.41	50.844	
2,150.00	2,150.00	2,094.41	2,151.23	4.70	94.36	178.42	-4.899.90	134.80	4.901.76	4.802.70	99.06	49.485	
2,200.00	2,200.00	2,146.29	2,203.12	4.81	96.89	178.42	-4.899.88	134.80	4.901.73	4.800.03	101.70	48.196	
2,250.00	2,250.00	2,198.18	2,255.00	4.92	99.43	178.42	-4.899.84	134.80	4.901.69	4.797.34	104.35	46.973	
2,256.22	2,256.22	2,204.63	2,261.45	4.94	99.74	178.42	-4.899.83	134.80	4.901.69	4.797.00	104.68	46.825	
2,300.00	2,300.00	2,296.00	2,352.78	5.04	104.21	178.42	-4.899.70	134.80	4.901.84	4.792.59	109.24	44.870	
2,350.00	2,350.00	2,296.00	2,352.78	5.15	104.21	178.42	-4.899.70	134.80	4.901.55	4.792.20	109.36	44.822	
2,400.00	2,399.96	2,319.98	2,376.76	5.25	105.85	178.43	-4.899.82	134.80	4.900.27	4.789.16	111.11	44.104	
2,450.00	2,449.55	2,375.21	2,431.99	5.35	109.65	178.45	-4.900.05	134.80	4.894.55	4.779.56	114.99	42.563	
2,500.00	2,498.32	2,429.52	2,486.30	5.45	113.38	178.49	-4.900.21	134.80	4.884.28	4.765.45	118.83	41.104	
2,550.00	2,545.81	2,482.39	2,539.16	5.56	117.01	178.55	-4.900.32	134.80	4.869.56	4.746.99	122.57	39.729	
2,600.00	2,591.60	2,533.32	2,590.09	5.67	120.51	178.62	-4.900.36	134.80	4.850.53	4.724.34	126.18	38.440	
2,650.00	2,635.25	2,581.83	2,638.60	5.82	123.84	178.71	-4.900.35	134.80	4.827.37	4.697.71	129.67	37.229	
2,700.00	2,676.36	2,627.46	2,684.23	6.04	126.98	178.82	-4.900.30	134.80	4.800.32	4.667.31	133.02	36.088	
2,750.00	2,714.57	2,669.79	2,726.56	6.33	129.88	178.94	-4.900.21	134.80	4.769.64	4.633.43	136.21	35.016	
2,800.00	2,749.51	2,801.00	2,857.67	6.69	138.90	179.07	-4.899.70	134.80	4.736.44	4.590.85	145.59	32.533	
2,850.00	2,780.86	2,801.00	2,857.67	7.14	138.90	179.22	-4.899.70	134.80	4.698.93	4.552.90	146.04	32.177	
2,900.00	2,808.34	2,801.00	2,857.67	7.67	138.90	179.39	-4.899.70	134.80	4.659.02	4.512.46	146.57	31.788	
2,950.00	2,831.68	2,801.00	2,857.67	8.28	138.90	179.56	-4.899.70	134.80	4.617.02	4.469.84	147.18	31.370	
3,000.00	2,850.69	2,801.00	2,857.67	8.97	138.90	179.75	-4.899.70	134.80	4.573.26	4.425.39	147.86	30.929	
3,050.00	2,865.18	2,815.93	2,872.60	9.72	140.07	179.95	-4.899.67	134.80	4.528.07	4.378.29	149.78	30.231	
3,100.00	2,875.01	2,825.38	2,882.05	10.52	140.81	179.84	-4.899.66	134.80	4.481.85	4.330.52	151.33	29.617	

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



Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Arabian 6 Fee
Site Error: 0.00 usft
Reference Well: #10H
Well Error: 0.00 usft
Reference Wellbore: WB1
Reference Design: Plan #2 02-17-14

Local Co-ordinate/Reference: Well #10H
TVD Reference: WELL @ 3464.00usft (Original Well Elev)
MD Reference: WELL @ 3464.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR DB
Offset TVD Reference: Reference Datum

Offset Design Arabian 6 Fee - Arabian 6 Fee #1 - Wellbore #1 - Wellbore #1														Offset Site Error: 0.00 usft
Survey Program: 293-INC														Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Distance		Between		Minimum		Separation		Warning
Measured	Vertical	Measured	Vertical	Reference	Offset	Azimuth	Offset Wellbore Centre	Between	Between	Centres	Ellipses	Separation	Factor	
Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	(usft)	(usft)	from North (°)	+N/-S (usft)	+E/-W (usft)	Centres (usft)	Ellipses (usft)	Separation (usft)	Factor		
3,150.00	2,880.11	2,830.25	2,886.92	11.36	141.19	-179.63	-4,899.65	134.80	4,435.02	4,282.47	152.55	29.072		
3,200.00	2,880.70	2,830.75	2,887.42	12.21	141.23	-179.41	-4,899.65	134.80	4,387.99	4,234.54	153.45	28.596		
3,250.00	2,880.26	2,830.26	2,886.93	13.03	141.19	-179.20	-4,899.65	134.80	4,340.67	4,186.45	154.22	28.145		
3,300.00	2,879.82	2,829.76	2,886.43	13.85	141.15	-179.00	-4,899.65	134.80	4,293.00	4,138.00	155.00	27.697		
3,350.00	2,879.38	2,829.26	2,885.93	14.69	141.12	-178.81	-4,899.65	134.80	4,244.99	4,089.19	155.80	27.246		
3,400.00	2,878.94	2,828.76	2,885.43	15.53	141.08	-178.63	-4,899.65	134.80	4,196.68	4,040.08	156.60	26.798		
3,450.00	2,878.50	2,828.26	2,884.92	16.38	141.04	-178.47	-4,899.65	134.80	4,148.08	3,990.67	157.41	26.352		
3,500.00	2,878.06	2,827.75	2,884.42	17.22	141.00	-178.33	-4,899.66	134.80	4,099.22	3,941.00	158.22	25.908		
3,550.00	2,877.61	2,827.25	2,883.92	18.07	140.96	-178.19	-4,899.66	134.80	4,050.12	3,891.10	159.03	25.468		
3,600.00	2,877.17	2,826.74	2,883.41	18.92	140.92	-178.07	-4,899.66	134.80	4,000.81	3,840.98	159.83	25.031		
3,650.00	2,876.73	2,826.24	2,882.91	19.75	140.88	-177.97	-4,899.66	134.80	3,951.32	3,790.69	160.63	24.599		
3,700.00	2,876.29	2,825.73	2,882.40	20.59	140.84	-177.89	-4,899.66	134.80	3,901.66	3,740.23	161.43	24.170		
3,750.00	2,875.85	2,825.23	2,881.90	21.41	140.80	-177.82	-4,899.66	134.80	3,851.88	3,689.67	162.21	23.746		
3,800.00	2,875.41	2,824.73	2,881.39	22.24	140.76	-177.77	-4,899.66	134.80	3,801.99	3,639.00	163.00	23.325		
3,850.00	2,874.97	2,824.22	2,880.89	23.05	140.72	-177.74	-4,899.66	134.80	3,752.05	3,588.27	163.77	22.910		
3,900.00	2,874.54	2,823.72	2,880.39	23.87	140.68	-177.71	-4,899.66	134.80	3,702.09	3,537.54	164.55	22.498		
3,950.00	2,874.10	2,823.22	2,879.89	24.69	140.64	-177.68	-4,899.66	134.80	3,652.13	3,486.80	165.33	22.090		
4,000.00	2,873.67	2,822.72	2,879.39	25.52	140.60	-177.64	-4,899.66	134.80	3,602.18	3,436.06	166.12	21.684		
4,050.00	2,873.23	2,822.21	2,878.88	26.35	140.56	-177.61	-4,899.66	134.80	3,552.22	3,385.31	166.91	21.282		
4,100.00	2,872.79	2,821.71	2,878.38	27.19	140.52	-177.58	-4,899.67	134.80	3,502.27	3,334.56	167.71	20.893		
4,150.00	2,872.36	2,821.21	2,877.88	28.03	140.48	-177.54	-4,899.67	134.80	3,452.32	3,283.80	168.51	20.487		
4,200.00	2,871.92	2,820.70	2,877.37	28.88	140.44	-177.50	-4,899.67	134.80	3,402.37	3,233.05	169.32	20.094		
4,250.00	2,871.48	2,820.20	2,876.87	29.73	140.40	-177.47	-4,899.67	134.80	3,352.42	3,182.28	170.13	19.705		
4,300.00	2,871.05	2,819.69	2,876.36	30.58	140.36	-177.43	-4,899.67	134.80	3,302.47	3,131.52	170.95	19.319		
4,350.00	2,870.61	2,819.19	2,875.86	31.44	140.32	-177.39	-4,899.67	134.80	3,252.52	3,080.76	171.77	18.936		
4,400.00	2,870.18	2,818.68	2,875.35	32.30	140.28	-177.35	-4,899.67	134.80	3,202.58	3,029.99	172.59	18.556		
4,450.00	2,869.74	2,818.18	2,874.85	33.17	140.25	-177.31	-4,899.67	134.80	3,152.64	2,979.22	173.41	18.180		
4,500.00	2,869.30	2,817.67	2,874.34	34.03	140.21	-177.26	-4,899.67	134.80	3,102.70	2,928.46	174.24	17.807		
4,550.00	2,868.87	2,817.17	2,873.83	34.90	140.17	-177.22	-4,899.67	134.80	3,052.76	2,877.69	175.07	17.437		
4,600.00	2,868.43	2,816.66	2,873.33	35.77	140.13	-177.17	-4,899.67	134.80	3,002.82	2,826.92	175.90	17.071		
4,650.00	2,867.99	2,816.15	2,872.82	36.65	140.09	-177.12	-4,899.67	134.80	2,952.88	2,776.15	176.74	16.708		
4,700.00	2,867.56	2,815.64	2,872.31	37.53	140.05	-177.07	-4,899.68	134.80	2,902.95	2,725.38	177.57	16.348		
4,750.00	2,867.12	2,815.14	2,871.80	38.40	140.01	-177.02	-4,899.68	134.80	2,853.02	2,674.61	178.41	15.991		
4,800.00	2,866.69	2,814.63	2,871.30	39.28	139.97	-176.97	-4,899.68	134.80	2,803.09	2,623.84	179.25	15.638		
4,850.00	2,866.25	2,814.12	2,870.79	40.16	139.93	-176.91	-4,899.68	134.80	2,753.17	2,573.07	180.09	15.288		
4,900.00	2,865.81	2,813.61	2,870.28	41.05	139.89	-176.86	-4,899.68	134.80	2,703.24	2,522.31	180.93	14.941		
4,950.00	2,865.38	2,813.10	2,869.77	41.93	139.85	-176.80	-4,899.68	134.80	2,653.32	2,471.54	181.78	14.596		
5,000.00	2,864.94	2,812.59	2,869.26	42.82	139.81	-176.74	-4,899.68	134.80	2,603.40	2,420.78	182.62	14.256		
5,050.00	2,864.50	2,812.08	2,868.75	43.70	139.77	-176.67	-4,899.68	134.80	2,553.49	2,370.02	183.47	13.918		
5,100.00	2,864.07	2,811.57	2,868.24	44.59	139.73	-176.61	-4,899.68	134.80	2,503.58	2,319.26	184.32	13.583		
5,150.00	2,863.63	2,811.06	2,867.73	45.48	139.69	-176.54	-4,899.68	134.80	2,453.67	2,268.50	185.17	13.251		
5,200.00	2,863.20	2,810.55	2,867.22	46.37	139.65	-176.46	-4,899.68	134.80	2,403.77	2,217.75	186.02	12.922		
5,250.00	2,862.76	2,810.04	2,866.71	47.26	139.61	-176.39	-4,899.68	134.80	2,353.87	2,167.00	186.87	12.596		
5,300.00	2,862.32	2,809.52	2,866.19	48.16	139.57	-176.31	-4,899.69	134.80	2,303.97	2,116.25	187.72	12.273		
5,350.00	2,861.89	2,809.01	2,865.68	49.05	139.53	-176.23	-4,899.69	134.80	2,254.08	2,065.51	188.57	11.953		
5,400.00	2,861.45	2,808.50	2,865.17	49.94	139.49	-176.14	-4,899.69	134.80	2,204.19	2,014.77	189.43	11.636		
5,450.00	2,861.01	2,807.99	2,864.66	50.84	139.45	-176.05	-4,899.69	134.80	2,154.31	1,964.03	190.28	11.322		
5,500.00	2,860.58	2,807.47	2,864.14	51.73	139.41	-175.96	-4,899.69	134.80	2,104.44	1,913.30	191.14	11.010		
5,550.00	2,860.14	2,806.96	2,863.63	52.63	139.36	-175.86	-4,899.69	134.80	2,054.57	1,862.57	191.99	10.701		
5,600.00	2,859.71	2,806.45	2,863.12	53.53	139.32	-175.76	-4,899.69	134.80	2,004.70	1,811.85	192.85	10.395		
5,650.00	2,859.27	2,805.93	2,862.60	54.42	139.28	-175.65	-4,899.69	134.80	1,954.85	1,761.14	193.71	10.092		
5,700.00	2,858.83	2,805.42	2,862.09	55.32	139.24	-175.54	-4,899.69	134.80	1,905.00	1,710.43	194.57	9.791		

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



Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Arabian 6 Fee
Site Error: 0.00 usft
Reference Well: #10H
Well Error: 0.00 usft
Reference Wellbore: WBL
Reference Design: Plan #2 02-17-14

Local Co-ordinate Reference: Well #10H
TVD Reference: WELL @ 3464.00usft (Original Well Elev)
MD Reference: WELL @ 3464.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR DB
Offset TVD Reference: Reference Datum

Offset Design Arabian 6 Fee - Arabian 6 Fee #1 - Wellbore #1 - Wellbore #1													Offset Site Error: 0.00 usft
Survey Program: 293-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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,750.00	2,858.40	2,804.90	2,861.57	56.22	139.20	-175.42	-4,899.69	134.80	1,855.16	1,659.73	195.42	9.493	
5,800.00	2,857.96	2,804.39	2,861.06	57.12	139.16	-175.29	-4,899.69	134.80	1,805.32	1,609.04	196.28	9.198	
5,850.00	2,857.52	2,801.00	2,857.67	58.02	138.90	-175.15	-4,899.70	134.80	1,755.50	1,558.59	196.92	8.915	
5,900.00	2,857.09	2,801.00	2,857.67	58.92	138.90	-175.01	-4,899.70	134.80	1,705.69	1,507.87	197.82	8.623	
5,950.00	2,856.65	2,801.00	2,857.67	59.82	138.90	-174.86	-4,899.70	134.80	1,655.89	1,457.17	198.72	8.333	
6,000.00	2,856.22	2,801.00	2,857.67	60.72	138.90	-174.70	-4,899.70	134.80	1,606.10	1,406.48	199.62	8.046	
6,050.00	2,855.78	2,801.00	2,857.67	61.63	138.90	-174.53	-4,899.70	134.80	1,556.32	1,355.80	200.52	7.761	
6,100.00	2,855.34	2,801.00	2,857.67	62.53	138.90	-174.35	-4,899.70	134.80	1,506.56	1,305.13	201.42	7.480	
6,150.00	2,854.91	2,801.00	2,857.67	63.43	138.90	-174.16	-4,899.70	134.80	1,456.81	1,254.48	202.33	7.200	
6,200.00	2,854.47	2,801.00	2,857.67	64.33	138.90	-173.95	-4,899.70	134.80	1,407.08	1,203.85	203.23	6.924	
6,250.00	2,854.03	2,801.00	2,857.67	65.24	138.90	-173.73	-4,899.70	134.80	1,357.38	1,153.24	204.13	6.649	
6,300.00	2,853.60	2,801.00	2,857.67	66.14	138.90	-173.49	-4,899.70	134.80	1,307.69	1,102.65	205.04	6.378	
6,350.00	2,853.16	2,801.00	2,857.67	67.04	138.90	-173.23	-4,899.70	134.80	1,258.03	1,052.09	205.94	6.109	
6,400.00	2,852.73	2,801.00	2,857.67	67.95	138.90	-172.95	-4,899.70	134.80	1,208.40	1,001.55	206.85	5.842	
6,450.00	2,852.29	2,801.00	2,857.67	68.85	138.90	-172.65	-4,899.70	134.80	1,158.80	951.04	207.75	5.578	
6,500.00	2,851.85	2,801.00	2,857.67	69.76	138.90	-172.32	-4,899.70	134.80	1,109.23	900.57	208.66	5.316	
6,550.00	2,851.42	2,801.00	2,857.67	70.66	138.90	-171.95	-4,899.70	134.80	1,059.71	850.14	209.56	5.057	
6,600.00	2,850.98	2,801.00	2,857.67	71.57	138.90	-171.56	-4,899.70	134.80	1,010.23	799.76	210.47	4.800	
6,650.00	2,850.54	2,801.00	2,857.67	72.48	138.90	-171.12	-4,899.70	134.80	960.81	749.43	211.37	4.546	
6,700.00	2,850.11	2,801.00	2,857.67	73.38	138.90	-170.63	-4,899.70	134.80	911.44	699.16	212.28	4.294	
6,750.00	2,849.67	2,801.00	2,857.67	74.29	138.90	-170.09	-4,899.70	134.80	862.16	648.97	213.19	4.044	
6,800.00	2,849.24	2,801.00	2,857.67	75.20	138.90	-169.49	-4,899.70	134.80	812.96	598.87	214.09	3.797	
6,850.00	2,848.80	2,801.00	2,857.67	76.10	138.90	-168.80	-4,899.70	134.80	763.86	548.86	215.00	3.553	
6,900.00	2,848.36	2,801.00	2,857.67	77.01	138.90	-168.02	-4,899.70	134.80	714.89	498.98	215.91	3.311	
6,950.00	2,847.93	2,801.00	2,857.67	77.92	138.90	-167.13	-4,899.70	134.80	666.07	449.26	216.81	3.072	
7,000.00	2,847.49	2,801.00	2,857.67	78.82	138.90	-166.10	-4,899.70	134.80	617.45	399.72	217.72	2.836	
7,050.00	2,847.05	2,801.00	2,857.67	79.73	138.90	-164.89	-4,899.70	134.80	569.06	350.43	218.63	2.603	
7,100.00	2,846.62	2,801.00	2,857.67	80.64	138.90	-163.45	-4,899.70	134.80	520.97	301.43	219.54	2.373	
7,150.00	2,846.18	2,801.00	2,857.67	81.55	138.90	-161.73	-4,899.70	134.80	473.28	252.83	220.45	2.147	
7,200.00	2,845.75	2,790.94	2,847.70	82.46	138.21	-159.62	-4,899.75	134.80	426.01	205.34	220.66	1.931	
7,250.00	2,845.31	2,790.25	2,847.01	83.37	138.16	-156.99	-4,899.75	134.80	379.54	158.02	221.52	1.713	
7,300.00	2,844.87	2,789.56	2,846.32	84.27	138.11	-153.63	-4,899.76	134.80	334.10	111.71	222.39	1.502	
7,350.00	2,844.44	2,788.87	2,845.63	85.18	138.06	-149.25	-4,899.76	134.80	290.16	66.91	223.25	1.300 Level 3	
7,400.00	2,844.00	2,788.18	2,844.94	86.09	138.02	-143.34	-4,899.77	134.80	248.51	24.40	224.11	1.109 Level 2	
7,450.00	2,843.56	2,787.49	2,844.26	87.00	137.97	-135.19	-4,899.77	134.80	210.53	-14.44	224.97	0.936 Level 1	
7,500.00	2,843.13	2,786.81	2,843.57	87.91	137.92	-123.81	-4,899.77	134.80	178.58	-47.26	225.83	0.791 Level 1	
7,550.00	2,842.69	2,786.12	2,842.89	88.82	137.88	-108.40	-4,899.78	134.80	156.38	-70.31	226.70	0.690 Level 1	
7,599.36	2,842.26	2,785.45	2,842.21	89.72	137.83	-90.01	-4,899.78	134.80	148.39	-79.16	227.55	0.652 Level 1, CC	
7,600.00	2,842.26	2,785.44	2,842.20	89.73	137.83	-89.76	-4,899.78	134.80	148.39	-79.17	227.56	0.652 Level 1, ES, SF	
7,650.00	2,841.82	2,784.76	2,841.52	90.64	137.78	-71.16	-4,899.78	134.80	156.79	-71.64	228.42	0.686 Level 1	
7,700.00	2,841.38	2,784.08	2,840.84	91.55	137.73	-55.86	-4,899.79	134.80	179.29	-50.00	229.29	0.782 Level 1	
7,750.00	2,840.95	2,783.40	2,840.17	92.46	137.69	-44.58	-4,899.79	134.80	211.44	-18.71	230.15	0.919 Level 1	
7,800.00	2,840.51	2,782.73	2,839.49	93.37	137.64	-36.49	-4,899.79	134.80	249.53	18.52	231.01	1.080 Level 2	
7,812.70	2,840.40	2,782.55	2,839.32	93.60	137.63	-34.83	-4,899.79	134.80	259.85	28.62	231.23	1.124 Level 2	

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



Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #10H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	WELL @ 3464.00usft (Original Well Elev)
Reference Site:	Arabian 6 Fee	MD Reference:	WELL @ 3464.00usft (Original Well Elev)
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:	Compass 5000 GCR DB
Reference Design:	Plan #2 02-17-14	Offset TVD Reference:	Reference Datum

Offset Design Arabian 6 Fee - Lowe 6L - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 usft
Survey Program: 350-INC													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
0.00	0.00	0.00	57.00	0.00	0.00	172.99	-3,464.20	425.80	3,490.74					
50.00	50.00	0.00	57.00	0.04	0.00	172.99	-3,464.20	425.80	3,490.28	3,490.24	0.04	N/A		
57.00	57.00	0.00	57.00	0.04	0.00	172.99	-3,464.20	425.80	3,490.27	3,490.23	0.04	N/A		
100.00	100.00	15.44	72.44	0.09	0.45	172.99	-3,464.33	425.80	3,490.51	3,489.96	0.54	6,417.479		
150.00	150.00	75.89	132.88	0.20	2.22	172.99	-3,464.72	425.80	3,490.83	3,488.40	2.42	1,439.642		
200.00	200.00	136.33	193.33	0.32	3.99	172.99	-3,464.93	425.80	3,491.00	3,486.69	4.31	810.810		
250.00	250.00	196.77	253.77	0.43	5.76	172.99	-3,464.95	425.80	3,491.02	3,484.83	6.19	564.322		
300.00	300.00	257.20	314.20	0.54	7.53	172.99	-3,464.80	425.80	3,490.89	3,482.82	8.07	432.754		
350.00	350.00	350.00	406.98	0.65	10.24	172.99	-3,464.20	425.80	3,490.74	3,479.84	10.89	320.423		
400.00	400.00	350.00	406.98	0.77	10.24	172.99	-3,464.20	425.80	3,490.28	3,479.27	11.01	317.110		
419.37	419.37	362.39	419.37	0.81	10.98	172.99	-3,464.20	425.80	3,490.27	3,478.48	11.79	296.050		
450.00	450.00	393.02	450.00	0.88	12.81	172.99	-3,464.20	425.80	3,490.27	3,476.58	13.69	255.022		
500.00	500.00	443.02	500.00	0.99	15.79	172.99	-3,464.20	425.80	3,490.27	3,473.49	16.78	207.971		
550.00	550.00	493.03	550.00	1.10	18.78	172.99	-3,464.20	425.80	3,490.27	3,470.39	19.88	175.577		
600.00	600.00	543.03	600.00	1.22	21.76	172.99	-3,464.20	425.80	3,490.27	3,467.30	22.98	151.915		
650.00	650.00	593.03	650.00	1.33	24.74	172.99	-3,464.20	425.80	3,490.27	3,464.20	26.07	133.873		
700.00	700.00	643.03	700.00	1.44	27.73	172.99	-3,464.20	425.80	3,490.27	3,461.10	29.17	119.661		
750.00	750.00	693.04	750.00	1.55	30.71	172.99	-3,464.20	425.80	3,490.27	3,458.01	32.26	108.178		
800.00	800.00	743.04	800.00	1.67	33.70	172.99	-3,464.20	425.80	3,490.27	3,454.91	35.36	98.705		
850.00	850.00	845.00	901.91	1.78	39.78	172.99	-3,464.20	425.80	3,490.66	3,449.10	41.56	83.996		
900.00	900.00	845.00	901.91	1.89	39.78	172.99	-3,464.20	425.80	3,490.27	3,448.60	41.67	83.760		
917.33	917.33	860.42	917.33	1.93	40.68	172.99	-3,464.20	425.80	3,490.27	3,447.66	42.61	81.906		
950.00	950.00	893.10	950.00	2.00	42.60	172.99	-3,464.20	425.80	3,490.27	3,445.67	44.60	78.254		
1,000.00	1,000.00	943.10	1,000.00	2.12	45.53	172.99	-3,464.20	425.80	3,490.27	3,442.63	47.64	73.256		
1,050.00	1,050.00	993.10	1,050.00	2.23	48.46	172.99	-3,464.20	425.80	3,490.27	3,439.58	50.69	68.858		
1,100.00	1,100.00	1,043.10	1,100.00	2.34	51.39	172.99	-3,464.20	425.80	3,490.27	3,436.54	53.73	64.958		
1,150.00	1,150.00	1,093.11	1,150.00	2.45	54.32	172.99	-3,464.20	425.80	3,490.27	3,433.50	56.77	61.476		
1,200.00	1,200.00	1,143.11	1,200.00	2.56	57.25	172.99	-3,464.20	425.80	3,490.27	3,430.45	59.82	58.348		
1,250.00	1,250.00	1,193.11	1,250.00	2.68	60.18	172.99	-3,464.20	425.80	3,490.27	3,427.41	62.86	55.523		
1,300.00	1,300.00	1,243.11	1,300.00	2.79	63.12	172.99	-3,464.20	425.80	3,490.27	3,424.37	65.90	52.959		
1,350.00	1,350.00	1,350.00	1,406.83	2.90	69.38	172.99	-3,464.20	425.80	3,490.73	3,418.45	72.28	48.293		
1,400.00	1,400.00	1,350.00	1,406.83	3.01	69.38	172.99	-3,464.20	425.80	3,490.28	3,417.88	72.39	48.212		
1,419.30	1,419.30	1,362.47	1,419.30	3.06	70.11	172.99	-3,464.20	425.80	3,490.27	3,417.10	73.17	47.702		
1,450.00	1,450.00	1,393.17	1,450.00	3.13	71.91	172.99	-3,464.20	425.80	3,490.27	3,415.24	75.03	46.517		
1,500.00	1,500.00	1,443.17	1,500.00	3.24	74.83	172.99	-3,464.20	425.80	3,490.27	3,412.20	78.07	44.708		
1,550.00	1,550.00	1,493.18	1,550.00	3.35	77.75	172.99	-3,464.20	425.80	3,490.27	3,409.17	81.10	43.035		
1,600.00	1,600.00	1,543.18	1,600.00	3.46	80.68	172.99	-3,464.20	425.80	3,490.27	3,406.13	84.14	41.482		
1,650.00	1,650.00	1,593.18	1,650.00	3.58	83.60	172.99	-3,464.20	425.80	3,490.27	3,403.10	87.18	40.037		
1,700.00	1,700.00	1,643.18	1,700.00	3.69	86.52	172.99	-3,464.20	425.80	3,490.27	3,400.06	90.21	38.690		
1,750.00	1,750.00	1,693.19	1,750.00	3.80	89.45	172.99	-3,464.20	425.80	3,490.27	3,397.02	93.25	37.430		
1,800.00	1,800.00	1,743.19	1,800.00	3.91	92.37	172.99	-3,464.20	425.80	3,490.27	3,393.99	96.28	36.250		
1,850.00	1,850.00	1,842.00	1,898.76	4.03	98.15	172.99	-3,464.20	425.80	3,490.61	3,388.44	102.17	34.164		
1,898.76	1,898.76	1,842.00	1,898.76	4.14	98.15	172.99	-3,464.20	425.80	3,490.27	3,387.99	102.28	34.124		
1,900.00	1,900.00	1,842.00	1,898.76	4.14	98.15	172.99	-3,464.20	425.80	3,490.27	3,387.99	102.28	34.123		
1,950.00	1,950.00	1,887.05	1,943.80	4.25	101.07	172.99	-3,464.29	425.80	3,490.36	3,385.05	105.32	33.141		
2,000.00	2,000.00	1,938.60	1,995.35	4.36	104.41	172.99	-3,464.37	425.80	3,490.44	3,381.67	108.77	32.089		
2,050.00	2,050.00	1,990.16	2,046.90	4.48	107.75	172.99	-3,464.43	425.80	3,490.50	3,378.27	112.23	31.102		
2,100.00	2,100.00	2,041.71	2,098.45	4.59	111.09	172.99	-3,464.46	425.80	3,490.53	3,374.85	115.68	30.173		
2,150.00	2,150.00	2,093.26	2,150.00	4.70	114.44	172.99	-3,464.47	425.80	3,490.54	3,371.41	119.14	29.299		
2,200.00	2,200.00	2,144.81	2,201.55	4.81	117.78	172.99	-3,464.46	425.80	3,490.53	3,367.94	122.59	28.473		
2,250.00	2,250.00	2,196.35	2,253.09	4.92	121.12	172.99	-3,464.43	425.80	3,490.50	3,364.45	126.05	27.692		
2,300.00	2,300.00	2,247.90	2,304.63	5.04	124.46	172.99	-3,464.37	425.80	3,490.44	3,360.94	129.50	26.953		

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



Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Arabian 6 Fee
Site Error: 0.00 usft
Reference Well: #10H
Well Error: 0.00 usft
Reference Wellbore: WB1
Reference Design: Plan #2 02-17-14

Local Co-ordinate Reference: Well #10H
TVD Reference: WELL @ 3464.00usft (Original Well Elev)
MD Reference: WELL @ 3464.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR DB
Offset TVD Reference: Reference Datum

Offset Design Arabian 6 Fee - Lowe 6L - Wellbore #1 - Wellbore #1														Offset Site Error: 0.00 usft
Survey Program: 350-INC														Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Distance		Minimum Separation		Separation Factor		Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
2,306.14	2,306.14	2,254.23	2,310.96	5.05	124.87	172.99	-3,464.36	425.80	3,490.43	3,360.51	129.92	26.865		
2,350.00	2,350.00	2,345.00	2,401.66	5.15	130.76	172.99	-3,464.20	425.80	3,490.65	3,354.75	135.91	25.684		
2,400.00	2,399.96	2,345.00	2,401.66	5.25	130.76	173.00	-3,464.20	425.80	3,488.77	3,352.76	136.01	25.651		
2,450.00	2,449.55	2,398.80	2,455.45	5.35	134.22	173.02	-3,464.10	425.80	3,482.60	3,343.03	139.57	24.953		
2,500.00	2,498.32	2,446.12	2,502.77	5.45	137.27	173.06	-3,464.02	425.80	3,471.84	3,329.12	142.72	24.327		
2,550.00	2,545.81	2,492.20	2,548.85	5.56	140.23	173.11	-3,463.97	425.80	3,456.58	3,310.79	145.79	23.709		
2,600.00	2,591.60	2,536.64	2,593.28	5.67	143.10	173.19	-3,463.94	425.80	3,436.98	3,288.21	148.77	23.103		
2,650.00	2,635.25	2,579.02	2,635.66	5.82	145.82	173.28	-3,463.93	425.80	3,413.21	3,261.56	151.65	22.507		
2,700.00	2,676.36	2,618.95	2,675.59	6.04	148.40	173.38	-3,463.93	425.80	3,385.49	3,231.06	154.44	21.921		
2,750.00	2,714.57	2,656.08	2,712.72	6.33	150.79	173.50	-3,463.95	425.80	3,354.09	3,196.97	157.11	21.348		
2,800.00	2,749.51	2,690.06	2,746.69	6.69	152.97	173.64	-3,463.97	425.80	3,319.28	3,159.62	159.66	20.789		
2,850.00	2,780.86	2,720.57	2,777.20	7.14	154.94	173.79	-3,464.00	425.80	3,281.41	3,119.33	162.08	20.246		
2,900.00	2,808.34	2,747.34	2,803.97	7.67	156.66	173.96	-3,464.03	425.80	3,240.81	3,076.48	164.33	19.721		
2,950.00	2,831.68	2,770.11	2,826.74	8.28	158.13	174.15	-3,464.07	425.80	3,197.86	3,031.45	166.41	19.217		
3,000.00	2,850.69	2,841.00	2,897.56	8.97	162.69	174.34	-3,464.20	425.80	3,153.42	2,981.76	171.66	18.371		
3,050.00	2,865.18	2,841.00	2,897.56	9.72	162.69	174.55	-3,464.20	425.80	3,106.79	2,934.39	172.41	18.020		
3,100.00	2,875.01	2,841.00	2,897.56	10.52	162.69	174.77	-3,464.20	425.80	3,059.17	2,885.96	173.21	17.662		
3,150.00	2,880.11	2,841.00	2,897.56	11.36	162.69	175.01	-3,464.20	425.80	3,010.96	2,836.91	174.05	17.299		
3,200.00	2,880.70	2,841.00	2,897.56	12.21	162.69	175.24	-3,464.20	425.80	2,962.55	2,787.64	174.90	16.938		
3,250.00	2,880.26	2,841.00	2,897.56	13.03	162.69	175.47	-3,464.20	425.80	2,913.93	2,738.21	175.72	16.583		
3,300.00	2,879.82	2,841.00	2,897.56	13.85	162.69	175.68	-3,464.20	425.80	2,865.07	2,688.53	176.54	16.229		
3,350.00	2,879.38	2,841.00	2,897.56	14.69	162.69	175.87	-3,464.20	425.80	2,815.98	2,638.60	177.38	15.876		
3,400.00	2,878.94	2,841.00	2,897.56	15.53	162.69	176.04	-3,464.20	425.80	2,766.69	2,588.47	178.22	15.524		
3,450.00	2,878.50	2,841.00	2,897.56	16.38	162.69	176.19	-3,464.20	425.80	2,717.21	2,538.14	179.07	15.174		
3,500.00	2,878.06	2,841.00	2,897.56	17.22	162.69	176.32	-3,464.20	425.80	2,667.58	2,487.66	179.92	14.827		
3,550.00	2,877.61	2,841.00	2,897.56	18.07	162.69	176.42	-3,464.20	425.80	2,617.82	2,437.06	180.76	14.482		
3,600.00	2,877.17	2,841.00	2,897.56	18.92	162.69	176.50	-3,464.20	425.80	2,567.95	2,386.35	181.61	14.140		
3,650.00	2,876.73	2,841.00	2,897.56	19.75	162.69	176.56	-3,464.20	425.80	2,518.02	2,335.57	182.44	13.802		
3,700.00	2,876.29	2,841.00	2,897.56	20.59	162.69	176.58	-3,464.20	425.80	2,468.04	2,284.76	183.28	13.466		
3,750.00	2,875.85	2,841.00	2,897.56	21.41	162.69	176.57	-3,464.20	425.80	2,418.05	2,233.94	184.10	13.134		
3,800.00	2,875.41	2,841.00	2,897.56	22.24	162.69	176.54	-3,464.20	425.80	2,368.08	2,183.15	184.93	12.805		
3,850.00	2,874.97	2,841.00	2,897.56	23.05	162.69	176.47	-3,464.20	425.80	2,318.17	2,132.42	185.74	12.480		
3,900.00	2,874.54	2,841.00	2,897.56	23.87	162.69	176.39	-3,464.20	425.80	2,268.27	2,081.71	186.56	12.158		
3,950.00	2,874.10	2,841.00	2,897.56	24.69	162.69	176.31	-3,464.20	425.80	2,218.39	2,031.00	187.38	11.839		
4,000.00	2,873.67	2,841.00	2,897.56	25.52	162.69	176.22	-3,464.20	425.80	2,168.50	1,980.29	188.21	11.522		
4,050.00	2,873.23	2,841.00	2,897.56	26.35	162.69	176.13	-3,464.20	425.80	2,118.62	1,929.58	189.04	11.207		
4,100.00	2,872.79	2,841.00	2,897.56	27.19	162.69	176.04	-3,464.20	425.80	2,068.75	1,878.87	189.88	10.895		
4,150.00	2,872.36	2,841.00	2,897.56	28.03	162.69	175.94	-3,464.20	425.80	2,018.88	1,828.16	190.72	10.586		
4,200.00	2,871.92	2,841.00	2,897.56	28.88	162.69	175.84	-3,464.20	425.80	1,969.02	1,777.45	191.57	10.279		
4,250.00	2,871.48	2,841.00	2,897.56	29.73	162.69	175.73	-3,464.20	425.80	1,919.17	1,726.75	192.42	9.974		
4,300.00	2,871.05	2,841.00	2,897.56	30.58	162.69	175.62	-3,464.20	425.80	1,869.32	1,676.05	193.27	9.672		
4,350.00	2,870.61	2,841.00	2,897.56	31.44	162.69	175.50	-3,464.20	425.80	1,819.49	1,625.35	194.13	9.372		
4,400.00	2,870.18	2,841.00	2,897.56	32.30	162.69	175.37	-3,464.20	425.80	1,769.66	1,574.67	194.99	9.076		
4,450.00	2,869.74	2,841.00	2,897.56	33.17	162.69	175.24	-3,464.20	425.80	1,719.84	1,523.98	195.86	8.781		
4,500.00	2,869.30	2,841.00	2,897.56	34.03	162.69	175.09	-3,464.20	425.80	1,670.04	1,473.31	196.72	8.489		
4,550.00	2,868.87	2,809.19	2,865.81	34.90	160.64	174.94	-3,464.14	425.80	1,619.92	1,424.38	195.55	8.284		
4,600.00	2,868.43	2,808.86	2,865.48	35.77	160.62	174.78	-3,464.13	425.80	1,570.13	1,373.73	196.40	7.995		
4,650.00	2,867.99	2,808.52	2,865.14	36.65	160.60	174.61	-3,464.13	425.80	1,520.34	1,323.09	197.25	7.708		
4,700.00	2,867.56	2,808.18	2,864.80	37.53	160.58	174.43	-3,464.13	425.80	1,470.57	1,272.47	198.10	7.423		
4,750.00	2,867.12	2,807.84	2,864.47	38.40	160.56	174.23	-3,464.13	425.80	1,420.82	1,221.86	198.96	7.141		
4,800.00	2,866.69	2,807.51	2,864.13	39.28	160.53	174.02	-3,464.13	425.80	1,371.08	1,171.26	199.82	6.862		
4,850.00	2,866.25	2,807.17	2,863.79	40.16	160.51	173.80	-3,464.13	425.80	1,321.36	1,120.69	200.68	6.585		

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



Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Arabian 6 Fee
Site Error: 0.00 usft
Reference Well: #10H
Well Error: 0.00 usft
Reference Wellbore: WB1
Reference Design: Plan#2 02-17-14

Local Co-ordinate Reference: Well #10H
TVD Reference: WELL @ 3464.00usft (Original Well Elev)
MD Reference: WELL @ 3464.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR DB
Offset TVD Reference: Reference Datum

Offset Design Arabian 6 Fee - Lowe 6L - Wellbore #1 - Wellbore #1														Offset Site Error: 0.00 usft
Survey Program: 350-INC														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)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,900.00	2,865.81	2,806.83	2,863.45	41.05	160.49	173.55	-3,464.13	425.80	1,271.67	1,070.13	201.54	6.310		
4,950.00	2,865.38	2,806.49	2,863.11	41.93	160.47	173.29	-3,464.13	425.80	1,222.00	1,019.60	202.40	6.038		
5,000.00	2,864.94	2,806.15	2,862.77	42.82	160.45	173.00	-3,464.13	425.80	1,172.36	969.09	203.26	5.768		
5,050.00	2,864.50	2,805.81	2,862.43	43.70	160.43	172.69	-3,464.13	425.80	1,122.74	918.62	204.13	5.500		
5,100.00	2,864.07	2,805.47	2,862.10	44.59	160.40	172.35	-3,464.13	425.80	1,073.17	868.17	205.00	5.235		
5,150.00	2,863.63	2,805.13	2,861.76	45.48	160.38	171.98	-3,464.13	425.80	1,023.64	817.77	205.86	4.972		
5,200.00	2,863.20	2,804.79	2,861.42	46.37	160.36	171.57	-3,464.13	425.80	974.15	767.42	206.73	4.712		
5,250.00	2,862.76	2,804.45	2,861.08	47.26	160.34	171.12	-3,464.13	425.80	924.72	717.12	207.60	4.454		
5,300.00	2,862.32	2,804.11	2,860.73	48.16	160.32	170.61	-3,464.13	425.80	875.35	666.88	208.47	4.199		
5,350.00	2,861.89	2,803.77	2,860.39	49.05	160.29	170.05	-3,464.13	425.80	826.07	616.72	209.34	3.946		
5,400.00	2,861.45	2,803.43	2,860.05	49.94	160.27	169.41	-3,464.12	425.80	776.87	566.65	210.21	3.696		
5,450.00	2,861.01	2,803.09	2,859.71	50.84	160.25	168.69	-3,464.12	425.80	727.78	516.69	211.09	3.448		
5,500.00	2,860.58	2,802.75	2,859.37	51.73	160.23	167.86	-3,464.12	425.80	678.82	466.86	211.96	3.203		
5,550.00	2,860.14	2,802.40	2,859.03	52.63	160.21	166.91	-3,464.12	425.80	630.02	417.19	212.84	2.960		
5,600.00	2,859.71	2,802.06	2,858.68	53.53	160.18	165.79	-3,464.12	425.80	581.44	367.73	213.71	2.721		
5,650.00	2,859.27	2,801.72	2,858.34	54.42	160.16	164.47	-3,464.12	425.80	533.11	318.52	214.59	2.484		
5,700.00	2,858.83	2,801.38	2,858.00	55.32	160.14	162.89	-3,464.12	425.80	485.12	269.66	215.46	2.252		
5,750.00	2,858.40	2,801.03	2,857.65	56.22	160.12	160.96	-3,464.12	425.80	437.58	221.24	216.34	2.023		
5,800.00	2,857.96	2,800.69	2,857.31	57.12	160.10	158.57	-3,464.12	425.80	390.65	173.44	217.22	1.798		
5,850.00	2,857.52	2,800.34	2,856.97	58.02	160.07	155.53	-3,464.12	425.80	344.59	126.50	218.09	1.580		
5,900.00	2,857.09	2,800.00	2,856.62	58.92	160.05	151.57	-3,464.12	425.80	299.80	80.83	218.97	1.369 Level 3		
5,950.00	2,856.65	2,799.66	2,856.28	59.82	160.03	146.26	-3,464.12	425.80	256.93	37.08	219.85	1.169 Level 2		
6,000.00	2,856.22	2,799.31	2,855.93	60.72	160.01	138.91	-3,464.12	425.80	217.14	-3.59	220.73	0.984 Level 1		
6,050.00	2,855.78	2,798.97	2,855.59	61.63	159.98	128.53	-3,464.12	425.80	182.44	-39.17	221.61	0.823 Level 1		
6,100.00	2,855.34	2,798.62	2,855.24	62.53	159.96	114.04	-3,464.12	425.80	156.26	-66.23	222.49	0.702 Level 1		
6,150.00	2,854.91	2,798.27	2,854.90	63.43	159.94	95.47	-3,464.12	425.80	143.36	-80.01	223.37	0.642 Level 1		
6,163.67	2,854.79	2,798.18	2,854.80	63.68	159.93	90.00	-3,464.11	425.80	142.70	-80.91	223.61	0.638 Level 1, CC, ES, SF		
6,200.00	2,854.47	2,797.93	2,854.55	64.33	159.92	75.71	-3,464.11	425.80	147.26	-76.99	224.25	0.657 Level 1		
6,250.00	2,854.03	2,797.58	2,854.20	65.24	159.90	58.82	-3,464.11	425.80	166.79	-58.35	225.13	0.741 Level 1		
6,300.00	2,853.60	2,797.24	2,853.86	66.14	159.87	46.30	-3,464.11	425.80	197.36	-28.65	226.01	0.873 Level 1		
6,350.00	2,853.16	2,796.89	2,853.51	67.04	159.85	37.44	-3,464.11	425.80	234.70	7.80	226.90	1.034 Level 2		
6,400.00	2,852.73	2,796.54	2,853.16	67.95	159.83	31.12	-3,464.11	425.80	276.07	48.29	227.78	1.212 Level 2		
6,450.00	2,852.29	2,796.19	2,852.82	68.85	159.81	26.49	-3,464.11	425.80	319.92	91.26	228.66	1.399 Level 3		
6,500.00	2,851.85	2,795.84	2,852.47	69.76	159.78	22.99	-3,464.11	425.80	365.35	135.81	229.54	1.592		
6,550.00	2,851.42	2,795.50	2,852.12	70.66	159.76	20.27	-3,464.11	425.80	411.84	181.41	230.43	1.787		
6,600.00	2,850.98	2,795.15	2,851.77	71.57	159.74	18.11	-3,464.11	425.80	459.07	227.76	231.31	1.985		
6,650.00	2,850.54	2,794.80	2,851.42	72.48	159.72	16.35	-3,464.11	425.80	506.83	274.64	232.19	2.183		
6,700.00	2,850.11	2,794.45	2,851.07	73.38	159.69	14.90	-3,464.11	425.80	554.98	321.91	233.08	2.381		
6,750.00	2,849.67	2,794.10	2,850.72	74.29	159.67	13.68	-3,464.11	425.80	603.44	369.48	233.96	2.579		
6,800.00	2,849.24	2,793.75	2,850.37	75.20	159.65	12.64	-3,464.11	425.80	652.12	417.28	234.84	2.777		
6,850.00	2,848.80	2,793.40	2,850.02	76.10	159.63	11.74	-3,464.11	425.80	701.00	465.27	235.73	2.974		
6,900.00	2,848.36	2,793.05	2,849.67	77.01	159.60	10.96	-3,464.11	425.80	750.02	513.40	236.61	3.170		
6,950.00	2,847.93	2,792.70	2,849.32	77.92	159.58	10.28	-3,464.11	425.80	799.16	561.66	237.50	3.365		
7,000.00	2,847.49	2,792.35	2,848.97	78.82	159.56	9.68	-3,464.10	425.80	848.40	610.02	238.38	3.559		
7,050.00	2,847.05	2,792.00	2,848.62	79.73	159.54	9.14	-3,464.10	425.80	897.73	658.46	239.27	3.752		
7,100.00	2,846.62	2,791.65	2,848.27	80.64	159.51	8.66	-3,464.10	425.80	947.12	706.97	240.15	3.944		
7,150.00	2,846.18	2,791.29	2,847.92	81.55	159.49	8.23	-3,464.10	425.80	996.58	755.54	241.04	4.135		
7,200.00	2,845.75	2,790.94	2,847.56	82.46	159.47	7.84	-3,464.10	425.80	1,046.09	804.16	241.93	4.324		
7,250.00	2,845.31	2,790.59	2,847.21	83.37	159.44	7.48	-3,464.10	425.80	1,095.64	852.83	242.81	4.512		
7,300.00	2,844.87	2,790.24	2,846.86	84.27	159.42	7.15	-3,464.10	425.80	1,145.23	901.54	243.70	4.699		
7,350.00	2,844.44	2,789.88	2,846.51	85.18	159.40	6.86	-3,464.10	425.80	1,194.86	950.28	244.58	4.885		
7,400.00	2,844.00	2,789.53	2,846.15	86.09	159.38	6.58	-3,464.10	425.80	1,244.51	999.04	245.47	5.070		

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



Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Arabian 6 Fee
Site Error: 0.00 usft
Reference Well: #10H
Well Error: 0.00 usft
Reference Wellbore: WB1
Reference Design: Plan #2 02-17-14

Local Co-ordinate Reference: Well #10H
TVD Reference: WELL @ 3464.00usft (Original Well Elev)
MD Reference: WELL @ 3464.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR DB
Offset TVD Reference: Reference Datum

Offset Design Arabian 6 Fee - Lowe 6L - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 usft
Survey Program: 350-INC												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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
7,450.00	2,843.56	2,789.17	2,845.80	87.00	159.35	6.33	-3,464.10	425.80	1,294.20	1,047.84	246.36	5.253	
7,500.00	2,843.13	2,788.82	2,845.44	87.91	159.33	6.09	-3,464.10	425.80	1,343.90	1,096.66	247.24	5.436	
7,550.00	2,842.69	2,788.47	2,845.09	88.82	159.31	5.87	-3,464.10	425.80	1,393.63	1,145.50	248.13	5.617	
7,600.00	2,842.26	2,788.11	2,844.73	89.73	159.29	5.67	-3,464.10	425.80	1,443.37	1,194.36	249.02	5.796	
7,650.00	2,841.82	2,787.76	2,844.38	90.64	159.26	5.48	-3,464.10	425.80	1,493.13	1,243.23	249.90	5.975	
7,700.00	2,841.38	2,787.40	2,844.02	91.55	159.24	5.30	-3,464.10	425.80	1,542.91	1,292.12	250.79	6.152	
7,750.00	2,840.95	2,787.04	2,843.67	92.46	159.22	5.14	-3,464.10	425.80	1,592.70	1,341.03	251.68	6.328	
7,800.00	2,840.51	2,786.69	2,843.31	93.37	159.19	4.98	-3,464.09	425.80	1,642.51	1,389.94	252.56	6.503	
7,812.70	2,840.40	2,786.60	2,843.22	93.60	159.19	4.94	-3,464.09	425.80	1,655.16	1,402.37	252.79	6.548	



Anticollision Report



Company: COG Operating LLC
 Project: Eddy County, NM (NAD 27 NME)
 Reference Site: Arabian 6 Fee
 Site Error: 0.00 usft
 Reference Well: #10H
 Well Error: 0.00 usft
 Reference Wellbore: WB1
 Reference Design: Plan #2 02-17-14

Local Co-ordinate Reference: Well #10H
 TVD Reference: WELL @ 3464.00usft (Original Well Elev)
 MD Reference: WELL @ 3464.00usft (Original Well Elev)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: Compass 5000 GCR DB
 Offset TVD Reference: Reference Datum

Offset Design: Falabella 31 Fee - #1H - OH/Job #1310862 - Surveys (JW 4)													Offset Site Error: 0.00 usft
Survey Program: 100-VES-ISCWSA-GYRO-312230-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)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	11.00	0.00	0.00	90.20	-0.60	169.90	170.26				
50.00	50.00	38.78	49.78	0.04	0.03	90.22	-0.66	169.92	169.93	169.86	0.07	2.482079	
100.00	100.00	88.50	99.50	0.09	0.07	90.30	-0.89	170.03	170.03	169.86	0.17	1.022334	
150.00	150.00	138.84	149.84	0.20	0.15	90.42	-1.24	170.14	170.15	169.79	0.36	476.759	
200.00	200.00	189.36	200.36	0.32	0.25	90.52	-1.55	170.11	170.12	169.56	0.56	301.178	
250.00	250.00	239.69	250.69	0.43	0.34	90.63	-1.88	169.95	169.96	169.19	0.77	220.774	
300.00	300.00	289.96	300.96	0.54	0.43	90.78	-2.31	169.70	169.72	168.74	0.98	173.987	
350.00	350.00	339.96	350.95	0.65	0.53	90.95	-2.82	169.40	169.43	168.25	1.18	143.455	
400.00	400.00	389.90	400.88	0.77	0.62	91.11	-3.28	169.12	169.16	167.77	1.39	121.982	
450.00	450.00	440.15	451.14	0.88	0.71	91.27	-3.75	168.82	168.87	167.28	1.59	106.015	
500.00	500.00	490.49	501.47	0.99	0.81	91.45	-4.26	168.42	168.48	166.68	1.80	93.638	
550.00	550.00	540.43	551.40	1.10	0.90	91.65	-4.85	167.97	168.04	166.04	2.01	83.805	
600.00	600.00	590.27	601.24	1.22	1.00	91.89	-5.54	167.55	167.65	165.44	2.21	75.826	
650.00	650.00	640.29	651.25	1.33	1.09	92.16	-6.30	167.16	167.29	164.87	2.42	69.203	
700.00	700.00	690.35	701.30	1.44	1.18	92.42	-7.04	166.75	166.90	164.28	2.62	63.613	
750.00	750.00	740.69	751.63	1.55	1.28	92.64	-7.68	166.29	166.47	163.64	2.83	58.842	
800.00	800.00	791.09	802.04	1.67	1.37	92.79	-8.08	165.71	165.92	162.89	3.03	54.679	
850.00	850.00	841.30	852.24	1.78	1.46	92.88	-8.30	165.05	165.27	162.03	3.24	51.048	
900.00	900.00	891.47	902.40	1.89	1.55	92.94	-8.44	164.33	164.57	161.13	3.44	47.832	
950.00	950.00	942.03	952.96	2.00	1.64	92.98	-8.50	163.51	163.76	160.12	3.64	44.951	
1,000.00	1,000.00	992.68	1,003.59	2.12	1.73	92.97	-8.44	162.50	162.76	158.91	3.85	42.320	
1,050.00	1,050.00	1,042.59	1,053.49	2.23	1.82	92.94	-8.29	161.40	161.65	157.60	4.05	39.948	
1,100.00	1,100.00	1,092.38	1,103.27	2.34	1.91	92.88	-8.08	160.36	160.60	156.35	4.25	37.814	
1,150.00	1,150.00	1,142.52	1,153.40	2.45	2.00	92.79	-7.78	159.34	159.57	155.12	4.45	35.877	
1,200.00	1,200.00	1,192.71	1,203.57	2.56	2.08	92.66	-7.34	158.26	158.47	153.82	4.65	34.091	
1,250.00	1,250.00	1,242.82	1,253.67	2.68	2.17	92.50	-6.85	157.13	157.32	152.47	4.85	32.440	
1,300.00	1,300.00	1,292.92	1,303.76	2.79	2.26	92.36	-6.44	155.95	156.14	151.09	5.05	30.911	
1,350.00	1,350.00	1,342.71	1,353.53	2.90	2.35	92.22	-6.01	154.80	154.96	149.71	5.25	29.506	
1,400.00	1,400.00	1,392.45	1,403.25	3.01	2.44	92.02	-5.41	153.73	153.86	148.41	5.45	28.218	
1,450.00	1,450.00	1,443.05	1,453.83	3.13	2.53	91.75	-4.66	152.61	152.73	147.07	5.65	27.009	
1,500.00	1,500.00	1,493.79	1,504.55	3.24	2.62	91.44	-3.81	151.23	151.35	145.49	5.86	25.840	
1,550.00	1,550.00	1,544.21	1,554.94	3.35	2.71	91.12	-2.93	149.65	149.76	143.70	6.06	24.713	
1,600.00	1,600.00	1,594.59	1,605.28	3.46	2.80	90.81	-2.09	147.94	148.05	141.78	6.26	23.637	
1,650.00	1,650.00	1,644.89	1,655.54	3.58	2.89	90.50	-1.28	146.10	146.21	139.74	6.47	22.606	
1,700.00	1,700.00	1,695.17	1,705.77	3.69	2.98	90.20	-0.51	144.14	144.26	137.59	6.67	21.622	
1,750.00	1,750.00	1,744.65	1,755.22	3.80	3.07	89.92	0.21	142.23	142.33	135.45	6.87	20.703	
1,800.00	1,800.00	1,794.07	1,804.61	3.91	3.16	89.65	0.85	140.51	140.59	133.51	7.08	19.864	
1,850.00	1,850.00	1,844.22	1,854.72	4.03	3.26	89.39	1.47	138.85	138.94	131.66	7.28	19.079	
1,900.00	1,900.00	1,894.46	1,904.93	4.14	3.35	89.11	2.13	137.09	137.19	129.70	7.49	18.323	
1,950.00	1,950.00	1,944.21	1,954.64	4.25	3.44	88.84	2.73	135.32	135.43	127.73	7.69	17.607	
2,000.00	2,000.00	1,993.90	2,004.30	4.36	3.53	88.63	3.20	133.66	133.77	125.87	7.90	16.941	
2,050.00	2,050.00	2,044.02	2,054.39	4.48	3.63	88.43	3.62	132.02	132.14	124.04	8.10	16.311	
2,100.00	2,100.00	2,094.19	2,104.52	4.59	3.72	88.18	4.13	130.30	130.45	122.14	8.31	15.703	
2,150.00	2,150.00	2,143.43	2,153.74	4.70	3.80	87.92	4.68	128.71	128.85	120.35	8.50	15.159	
2,200.00	2,200.00	2,193.02	2,203.31	4.81	3.85	87.66	5.21	127.33	127.48	118.82	8.66	14.722	
2,250.00	2,250.00	2,241.42	2,251.69	4.92	3.88	87.40	5.73	126.17	126.31	117.51	8.81	14.343	
2,266.39	2,266.39	2,256.12	2,266.39	4.96	3.88	87.27	6.01	126.06	126.20	117.36	8.84	14.269 CC, ES	
2,300.00	2,300.00	2,284.56	2,294.79	5.04	3.89	86.74	7.20	126.54	126.66	117.93	8.92	14.214 SF	
2,350.00	2,350.00	2,329.22	2,339.07	5.15	3.90	84.58	12.25	129.04	130.08	121.03	9.05	14.371	
2,400.00	2,399.96	2,373.39	2,382.11	5.25	3.93	80.10	21.57	132.41	135.08	125.90	9.18	14.719	
2,450.00	2,449.55	2,413.54	2,420.35	5.35	3.96	73.18	33.11	136.29	142.71	133.41	9.31	15.334	
2,500.00	2,498.32	2,448.00	2,452.31	5.45	4.00	64.80	45.39	140.17	155.03	145.57	9.46	16.386	

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



Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Arabian 6 Fee
Site Error: 0.00 usft
Reference Well: #10H
Well Error: 0.00 usft
Reference Wellbore: WB1
Reference Design: Plan #2 02-17-14

Local Co-ordinate Reference: Well #10H
TVD Reference: WELL @ 3464.00usft (Original Well Elev)
MD Reference: WELL @ 3464.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR DB
Offset TVD Reference: Reference Datum

Offset Design Falabella 31 Fee - #1H - OH/Job #1310862 - Surveys (JW 4)													Offset Site Error: 0.00 ush
Survey Program: 100-VES-ISCWSA-GYRO-3 2230-MWD													Offset Well Error: 0.00 ush
Reference		Offset		Semi Major Axis		Azimuth		Offset Wellbore Centre		Distance		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	from North (°)		+N/S (usft)	+E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor
2,550.00	2,545.81	2,479.00	2,480.22	5.56	4.06	55.60		58.36	143.86	173.43	163.80	9.63	18.012
2,600.00	2,591.60	2,507.50	2,505.17	5.67	4.13	46.40		71.72	147.18	198.15	188.35	9.80	20.212
2,650.00	2,635.25	2,528.79	2,523.37	5.82	4.19	38.20		82.52	149.45	228.66	218.64	10.02	22.822
2,700.00	2,676.36	2,542.00	2,534.46	6.04	4.24	31.14		89.58	150.73	264.05	253.77	10.28	25.683
2,750.00	2,714.57	2,555.47	2,545.60	6.33	4.30	24.82		97.07	151.95	303.18	292.55	10.63	28.533
2,800.00	2,749.51	2,562.27	2,551.15	6.69	4.33	19.53		100.96	152.52	345.03	334.01	11.02	31.313
2,850.00	2,780.86	2,565.54	2,553.80	7.14	4.34	15.01		102.85	152.79	388.67	377.19	11.48	33.858
2,900.00	2,808.34	2,565.82	2,554.02	7.67	4.34	11.15		103.01	152.82	433.32	421.31	12.01	36.076
2,950.00	2,831.68	2,563.56	2,552.19	8.28	4.33	7.85		101.70	152.63	478.37	465.75	12.61	37.927
3,000.00	2,850.69	2,559.14	2,548.60	8.97	4.31	5.01		99.16	152.26	523.29	510.01	13.28	39.407
3,050.00	2,865.18	2,552.90	2,543.48	9.72	4.29	2.56		95.62	151.72	567.65	553.65	14.00	40.542
3,100.00	2,875.01	2,542.00	2,534.46	10.52	4.24	0.41		89.58	150.73	611.11	596.36	14.76	41.413
3,150.00	2,880.11	2,542.00	2,534.46	11.36	4.24	-1.34		89.58	150.73	653.38	637.78	15.60	41.889
3,200.00	2,880.70	2,526.00	2,521.01	12.21	4.19	-2.99		81.06	149.17	694.22	677.82	16.40	42.328
3,250.00	2,880.26	2,511.00	2,508.19	13.03	4.14	-4.35		73.45	147.57	735.71	718.53	17.18	42.826
3,300.00	2,879.82	2,511.00	2,508.19	13.85	4.14	-5.24		73.45	147.57	778.11	760.12	18.00	43.235
3,350.00	2,879.38	2,497.34	2,496.34	14.69	4.10	-6.09		66.82	146.03	821.29	802.49	18.81	43.671
3,400.00	2,878.94	2,479.00	2,480.22	15.53	4.06	-6.81		58.36	143.86	865.29	845.69	19.61	44.135
3,450.00	2,878.50	2,479.00	2,480.22	16.38	4.06	-7.13		58.36	143.86	909.58	889.13	20.45	44.474
3,500.00	2,878.06	2,479.00	2,480.22	17.22	4.06	-7.33		58.36	143.86	954.51	933.22	21.30	44.814
3,550.00	2,877.61	2,465.65	2,468.30	18.07	4.04	-7.58		52.56	142.25	999.71	977.59	22.12	45.199
3,600.00	2,877.17	2,459.02	2,462.33	18.92	4.02	-7.65		49.80	141.46	1,045.29	1,022.34	22.95	45.545
3,650.00	2,876.73	2,448.00	2,452.31	19.75	4.00	-7.68		45.39	140.17	1,091.15	1,067.39	23.76	45.916
3,700.00	2,876.29	2,448.00	2,452.31	20.59	4.00	-7.54		45.39	140.17	1,137.15	1,112.55	24.60	46.227
3,750.00	2,875.85	2,448.00	2,452.31	21.41	4.00	-7.34		45.39	140.17	1,183.40	1,157.98	25.42	46.554
3,800.00	2,875.41	2,435.69	2,441.00	22.24	3.99	-7.19		40.74	138.76	1,229.62	1,203.40	26.23	46.885
3,850.00	2,874.97	2,430.56	2,436.25	23.05	3.98	-6.94		38.88	138.18	1,276.00	1,248.97	27.04	47.198
3,900.00	2,874.54	2,417.00	2,423.60	23.87	3.96	-6.76		34.24	136.67	1,322.66	1,294.83	27.83	47.522
3,950.00	2,874.10	2,417.00	2,423.60	24.69	3.96	-6.50		34.24	136.67	1,369.31	1,340.66	28.66	47.786
4,000.00	2,873.67	2,417.00	2,423.60	25.52	3.96	-6.25		34.24	136.67	1,416.19	1,386.71	29.48	48.040
4,050.00	2,873.23	2,417.00	2,423.60	26.35	3.96	-6.03		34.24	136.67	1,463.28	1,432.96	30.31	48.271
4,100.00	2,872.79	2,417.00	2,423.60	27.19	3.96	-5.82		34.24	136.67	1,510.55	1,479.40	31.15	48.493
4,150.00	2,872.36	2,403.54	2,410.92	28.03	3.95	-5.70		29.97	135.25	1,557.77	1,525.79	31.98	48.709
4,200.00	2,871.92	2,399.57	2,407.16	28.88	3.95	-5.53		28.77	134.84	1,605.22	1,572.39	32.82	48.906
4,250.00	2,871.48	2,386.00	2,394.22	29.73	3.93	-5.42		24.89	133.54	1,652.90	1,619.24	33.66	49.103
4,300.00	2,871.05	2,386.00	2,394.22	30.58	3.93	-5.25		24.89	133.54	1,700.50	1,665.98	34.52	49.267
4,350.00	2,870.61	2,386.00	2,394.22	31.44	3.93	-5.10		24.89	133.54	1,748.23	1,712.86	35.37	49.420
4,400.00	2,870.18	2,386.00	2,394.22	32.30	3.93	-4.95		24.89	133.54	1,796.09	1,759.85	36.24	49.567
4,450.00	2,869.74	2,386.00	2,394.22	33.17	3.93	-4.81		24.89	133.54	1,844.06	1,806.96	37.10	49.704
4,500.00	2,869.30	2,386.00	2,394.22	34.03	3.93	-4.68		24.89	133.54	1,892.13	1,854.17	37.97	49.837
4,550.00	2,868.87	2,386.00	2,394.22	34.90	3.93	-4.56		24.89	133.54	1,940.31	1,901.47	38.84	49.960
4,600.00	2,868.43	2,372.37	2,381.12	35.77	3.92	-4.48		21.31	132.32	1,988.37	1,948.67	39.70	50.086
4,650.00	2,867.99	2,369.44	2,378.30	36.65	3.92	-4.38		20.58	132.07	2,036.62	1,996.05	40.57	50.198
4,700.00	2,867.56	2,355.00	2,364.31	37.53	3.91	-4.31		17.20	130.91	2,085.08	2,043.64	41.44	50.318
4,750.00	2,867.12	2,355.00	2,364.31	38.40	3.91	-4.21		17.20	130.91	2,133.40	2,091.08	42.32	50.415
4,800.00	2,866.69	2,355.00	2,364.31	39.28	3.91	-4.11		17.20	130.91	2,181.79	2,138.60	43.20	50.509
4,850.00	2,866.25	2,355.00	2,364.31	40.16	3.91	-4.01		17.20	130.91	2,230.26	2,186.18	44.08	50.598
4,900.00	2,865.81	2,355.00	2,364.31	41.05	3.91	-3.92		17.20	130.91	2,278.79	2,233.83	44.96	50.685
4,950.00	2,865.38	2,355.00	2,364.31	41.93	3.91	-3.84		17.20	130.91	2,327.38	2,281.54	45.84	50.766
5,000.00	2,864.94	2,355.00	2,364.31	42.82	3.91	-3.76		17.20	130.91	2,376.03	2,329.30	46.73	50.846
5,050.00	2,864.50	2,355.00	2,364.31	43.70	3.91	-3.68		17.20	130.91	2,424.74	2,377.12	47.62	50.921
5,100.00	2,864.07	2,355.00	2,364.31	44.59	3.91	-3.60		17.20	130.91	2,473.49	2,424.99	48.51	50.994

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



Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Arabian 6 Fee
Site Error: 0.00 usft
Reference Well: #10H
Well Error: 0.00 usft
Reference Wellbore: WB1
Reference Design: Plan #2 02-17-14

Local Co-ordinate Reference: Well #10H
TVD Reference: WELL @ 3464.00usft (Original Well Elev)
MD Reference: WELL @ 3464.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR DB
Offset TVD Reference: Reference Datum

Offset Design														Offset Site Error: 0.00 usft
Survey Program: 100-VES-ISCWSA.GYRO-3-2230-MWD														Offset Well Error: 0.00 usft
Reference: Falabella 31 Fee - #1H - OH/Job #1310862 - Surveys (JW 4)														
Semi Major Axis														
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre N-S (usft)	Offset Wellbore Centre E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
5,150.00	2,863.63	2,355.00	2,364.31	45.48	3.91	-3.53	17.20	130.91	2,522.30	2,472.91	49.39	51.064		
5,200.00	2,863.20	2,355.00	2,364.31	46.37	3.91	-3.46	17.20	130.91	2,571.15	2,520.87	50.28	51.132		
5,250.00	2,862.76	2,355.00	2,364.31	47.26	3.91	-3.39	17.20	130.91	2,620.05	2,568.87	51.18	51.196		
5,300.00	2,862.32	2,355.00	2,364.31	48.16	3.91	-3.33	17.20	130.91	2,668.98	2,616.92	52.07	51.259		
5,350.00	2,861.89	2,355.00	2,364.31	49.05	3.91	-3.26	17.20	130.91	2,717.96	2,665.00	52.96	51.319		
5,400.00	2,861.45	2,340.61	2,350.26	49.94	3.91	-3.23	14.24	129.83	2,766.69	2,712.84	53.85	51.378		
5,450.00	2,861.01	2,339.33	2,349.01	50.84	3.91	-3.17	14.01	129.74	2,815.68	2,760.94	54.74	51.434		
5,500.00	2,860.58	2,338.08	2,347.79	51.73	3.91	-3.12	13.78	129.65	2,864.71	2,809.07	55.64	51.488		
5,550.00	2,860.14	2,324.00	2,333.93	52.63	3.90	-3.09	11.44	128.69	2,913.99	2,857.46	56.53	51.548		
5,600.00	2,859.71	2,324.00	2,333.93	53.53	3.90	-3.03	11.44	128.69	2,963.03	2,905.60	57.43	51.597		
5,650.00	2,859.27	2,324.00	2,333.93	54.42	3.90	-2.98	11.44	128.69	3,012.10	2,953.78	58.32	51.645		
5,700.00	2,858.83	2,324.00	2,333.93	55.32	3.90	-2.93	11.44	128.69	3,061.21	3,001.99	59.22	51.691		
5,750.00	2,858.40	2,324.00	2,333.93	56.22	3.90	-2.89	11.44	128.69	3,110.34	3,050.22	60.12	51.735		
5,800.00	2,857.96	2,324.00	2,333.93	57.12	3.90	-2.84	11.44	128.69	3,159.50	3,098.48	61.02	51.778		
5,850.00	2,857.52	2,324.00	2,333.93	58.02	3.90	-2.80	11.44	128.69	3,208.68	3,146.76	61.92	51.820		
5,900.00	2,857.09	2,324.00	2,333.93	58.92	3.90	-2.75	11.44	128.69	3,257.90	3,195.07	62.82	51.860		
5,950.00	2,856.65	2,324.00	2,333.93	59.82	3.90	-2.71	11.44	128.69	3,307.13	3,243.41	63.72	51.900		
6,000.00	2,856.22	2,324.00	2,333.93	60.72	3.90	-2.67	11.44	128.69	3,356.39	3,291.76	64.62	51.938		
6,050.00	2,855.78	2,324.00	2,333.93	61.63	3.90	-2.63	11.44	128.69	3,405.66	3,340.14	65.52	51.975		
6,100.00	2,855.34	2,324.00	2,333.93	62.53	3.90	-2.59	11.44	128.69	3,454.96	3,388.54	66.43	52.011		
6,150.00	2,854.91	2,324.00	2,333.93	63.43	3.90	-2.55	11.44	128.69	3,504.28	3,436.95	67.33	52.046		
6,200.00	2,854.47	2,324.00	2,333.93	64.33	3.90	-2.52	11.44	128.69	3,553.62	3,485.39	68.23	52.081		
6,250.00	2,854.03	2,324.00	2,333.93	65.24	3.90	-2.48	11.44	128.69	3,602.98	3,533.84	69.14	52.114		
6,300.00	2,853.60	2,324.00	2,333.93	66.14	3.90	-2.45	11.44	128.69	3,652.35	3,582.31	70.04	52.147		
6,350.00	2,853.16	2,324.00	2,333.93	67.04	3.90	-2.41	11.44	128.69	3,701.74	3,630.80	70.94	52.178		
6,400.00	2,852.73	2,324.00	2,333.93	67.95	3.90	-2.38	11.44	128.69	3,751.15	3,679.30	71.85	52.209		
6,450.00	2,852.29	2,324.00	2,333.93	68.85	3.90	-2.35	11.44	128.69	3,800.57	3,727.82	72.75	52.239		
6,500.00	2,851.85	2,324.00	2,333.93	69.75	3.90	-2.32	11.44	128.69	3,850.01	3,776.35	73.66	52.268		
6,550.00	2,851.42	2,324.00	2,333.93	70.66	3.90	-2.29	11.44	128.69	3,899.46	3,824.89	74.56	52.297		
6,600.00	2,850.98	2,324.00	2,333.93	71.57	3.90	-2.26	11.44	128.69	3,948.92	3,873.45	75.47	52.325		
6,650.00	2,850.54	2,324.00	2,333.93	72.48	3.90	-2.23	11.44	128.69	3,998.40	3,922.03	76.38	52.352		
6,700.00	2,850.11	2,324.00	2,333.93	73.38	3.90	-2.20	11.44	128.69	4,047.89	3,970.61	77.28	52.378		
6,750.00	2,849.67	2,324.00	2,333.93	74.29	3.90	-2.18	11.44	128.69	4,097.40	4,019.21	78.19	52.404		
6,800.00	2,849.24	2,324.00	2,333.93	75.20	3.90	-2.15	11.44	128.69	4,146.91	4,067.82	79.10	52.429		
6,850.00	2,848.80	2,324.00	2,333.93	76.10	3.90	-2.13	11.44	128.69	4,196.44	4,116.44	80.00	52.454		
6,900.00	2,848.36	2,324.00	2,333.93	77.01	3.90	-2.10	11.44	128.69	4,245.98	4,165.07	80.91	52.478		
6,950.00	2,847.93	2,324.00	2,333.93	77.92	3.90	-2.08	11.44	128.69	4,295.53	4,213.71	81.82	52.502		
7,000.00	2,847.49	2,324.00	2,333.93	78.82	3.90	-2.05	11.44	128.69	4,345.09	4,262.36	82.72	52.525		
7,050.00	2,847.05	2,324.00	2,333.93	79.73	3.90	-2.03	11.44	128.69	4,394.66	4,311.02	83.63	52.547		
7,100.00	2,846.62	2,324.00	2,333.93	80.64	3.90	-2.01	11.44	128.69	4,444.24	4,359.70	84.54	52.569		
7,150.00	2,846.18	2,324.00	2,333.93	81.55	3.90	-1.98	11.44	128.69	4,493.82	4,408.38	85.45	52.591		
7,200.00	2,845.75	2,309.16	2,319.26	82.46	3.89	-1.97	9.46	127.77	4,543.16	4,456.81	86.35	52.612		
7,250.00	2,845.31	2,308.58	2,318.68	83.37	3.89	-1.95	9.39	127.73	4,592.75	4,505.49	87.26	52.633		
7,300.00	2,844.87	2,308.01	2,318.11	84.27	3.89	-1.93	9.32	127.70	4,642.34	4,554.17	88.17	52.653		
7,350.00	2,844.44	2,307.44	2,317.55	85.18	3.89	-1.91	9.26	127.67	4,691.94	4,602.87	89.08	52.672		
7,400.00	2,844.00	2,306.89	2,317.01	86.09	3.89	-1.89	9.20	127.64	4,741.55	4,651.57	89.99	52.692		
7,450.00	2,843.56	2,292.00	2,302.21	87.00	3.89	-1.88	7.75	126.86	4,791.41	4,700.52	90.89	52.716		
7,500.00	2,843.13	2,292.00	2,302.21	87.91	3.89	-1.86	7.75	126.86	4,841.02	4,749.22	91.80	52.734		
7,550.00	2,842.69	2,292.00	2,302.21	88.82	3.89	-1.84	7.75	126.86	4,890.63	4,797.92	92.71	52.752		
7,600.00	2,842.26	2,292.00	2,302.21	89.73	3.89	-1.82	7.75	126.86	4,940.25	4,846.63	93.62	52.769		
7,650.00	2,841.82	2,292.00	2,302.21	90.64	3.89	-1.81	7.75	126.86	4,989.88	4,895.35	94.53	52.786		
7,700.00	2,841.38	2,292.00	2,302.21	91.55	3.89	-1.79	7.75	126.86	5,039.52	4,944.08	95.44	52.803		

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



Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Arabian 6 Fee
Site Error: 0.00 usft
Reference Well: #10H
Well Error: 0.00 usft
Reference Wellbore: WB1
Reference Design: Plan #2 02-17-14

Local Co-ordinate Reference: Well #10H
TVD Reference: WELL @ 3464.00usft (Original Well Elev)
MD Reference: WELL @ 3464.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR DB
Offset TVD Reference: Reference Datum

Offset Design Falabella 31 Fee - #1H - OH/Job #1310862 - Surveys (JW 4)												Offset Site Error:	0.00 usft
Survey Program: 100-VES-ISCWSA-GYRO-3-2230-MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
7,750.00	2,840.95	2,292.00	2,302.21	92.46	3.89	-1.77	7.75	126.86	5,089.16	4,992.81	96.35	52.820	
7,800.00	2,840.51	2,292.00	2,302.21	93.37	3.89	-1.75	7.75	126.86	5,138.81	5,041.55	97.26	52.836	
7,812.70	2,840.40	2,292.00	2,302.21	93.60	3.89	-1.75	7.75	126.86	5,151.43	5,053.94	97.49	52.840	



Anticollision Report



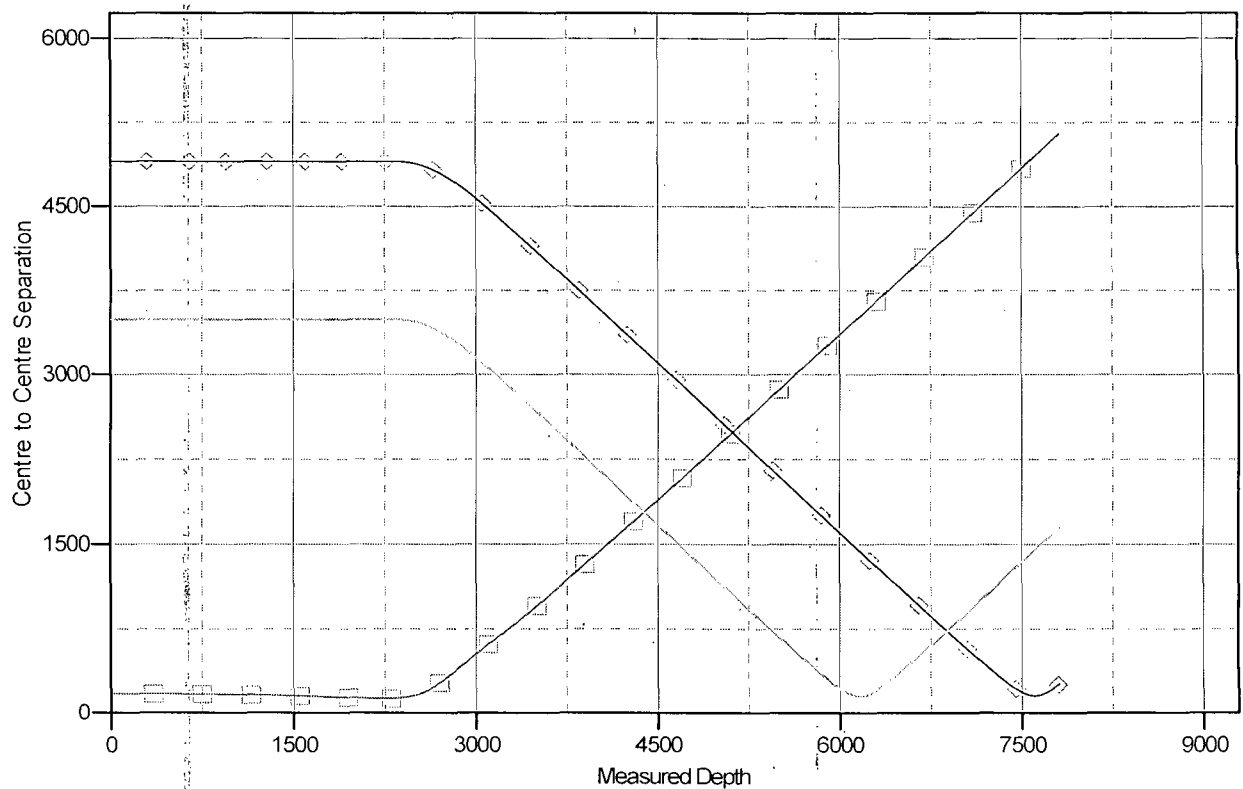
Company: COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Arabian 6 Fee
Site Error: 0.00 usft
Reference Well: #10H
Well Error: 0.00 usft
Reference Wellbore: WB1
Reference Design: Plan#2 02-17-14

Local Co-ordinate/Reference: Well #10H
TVD Reference: WELL @ 3464.00usft (Original Well Elev)
MD Reference: WELL @ 3464.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR DB
Offset TVD Reference: Reference Datum

Reference Depths are relative to WELL @ 3464.00usft (Original Well E
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

—■— #1H, OH/Job #1310862, Surveys (JV4) V0 -◆- Arabian 6 Fee #1, Wellbore #1, Wellbore #1 V0 -○- Lowe 6L, Wellbore #1, Wellbore #1 V0

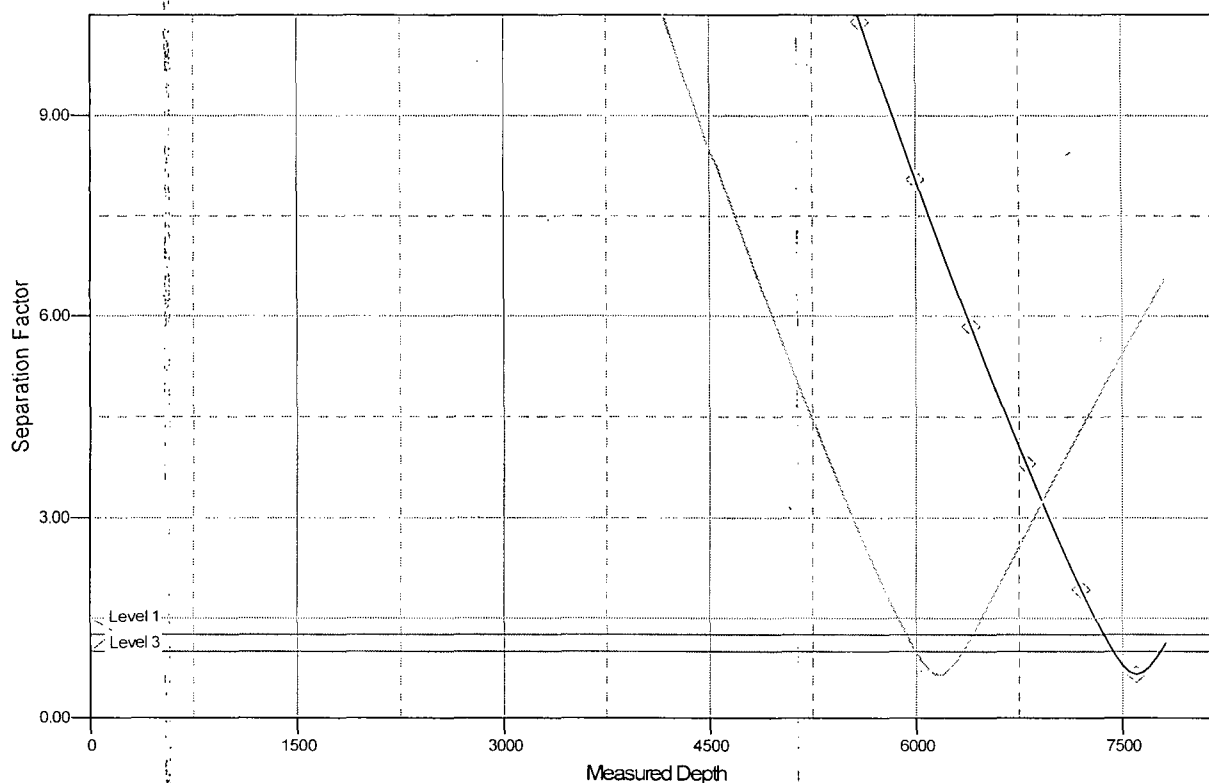
Company: COG Operating LLC
Project: Eddy County, NM (NAD 27 NME)
Reference Site: Arabian 6 Fee
Site Error: 0.00'usft
Reference Well: #10H
Well Error: 0.00'usft
Reference Wellbore: WB1
Reference Design: Plan #2 02-17-14

Local Co-ordinate Reference: Well #10H
TVD Reference: WELL @ 3464.00usft (Original Well Elev)
MD Reference: WELL @ 3464.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Compass 5000 GCR DB
Offset TVD Reference: Reference Datum

Reference Depths are relative to WELL @ 3464.00usft (Original Well E
 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

—■— #1H, OH/Job #1310862, Surveys (JV4) V0 —◆— Arabian 6 Fee #1, Wellbore #1, Wellbore #1 V0 —◇— Lowe 6L, Wellbore #1, Wellbore #1 V0