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District II
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Phone: (575) 748-1283 Fax: (575) 748-9720
District III
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Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

MAR 05 2015

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION RECEIVED

1 API Number 30-015-42967		2 Pool Code 96836		3 Pool Name Red Lake; Glorieta Yeso, Northeast	
4 Property Code 313860		5 Property Name HALBERD 27- STATE COM			6 Well Number 1H
7 GRID NO. 229137		8 Operator Name COG OPERATING, LLC			9 Elevation 3680'
10 Surface Location					
11 Well or lot no. M	12 Section 28	13 Township 17S	14 Range 28E	15 Lot Idn 1003	16 Feet from the SOUTH
17 Feet from the 65		18 East/West line WEST		19 County EDDY	
20 Bottom Hole Location If Different From Surface					
21 Well or lot no. M	22 Section 27	23 Township 17S	24 Range 28E	25 Lot Idn 976	26 Feet from the SOUTH
27 Feet from the 330		28 East/West line WEST		29 County EDDY	
30 Dedicated Acres 1.60		31 Joint or Infill		32 Consolidation Code	
33 Order No.					

No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.

		11 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or undivided mineral interest in the land including the proposed bottom hole location or has a right to drill this well at the location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. Signature: <i>Kelly J. Holly</i> Date: 3-3-15 Printed Name: Kelly J. Holly E-mail Address: kholly@concho.com
12 SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. Date of Survey: 10-14-2014 Signature and Seal of Professional Surveyor: <i>Robert M. Howett</i> 19680 Certificate Number		

RRC - Firm No.: TX 10193838 NM 4655451 - Job No.: LS140388

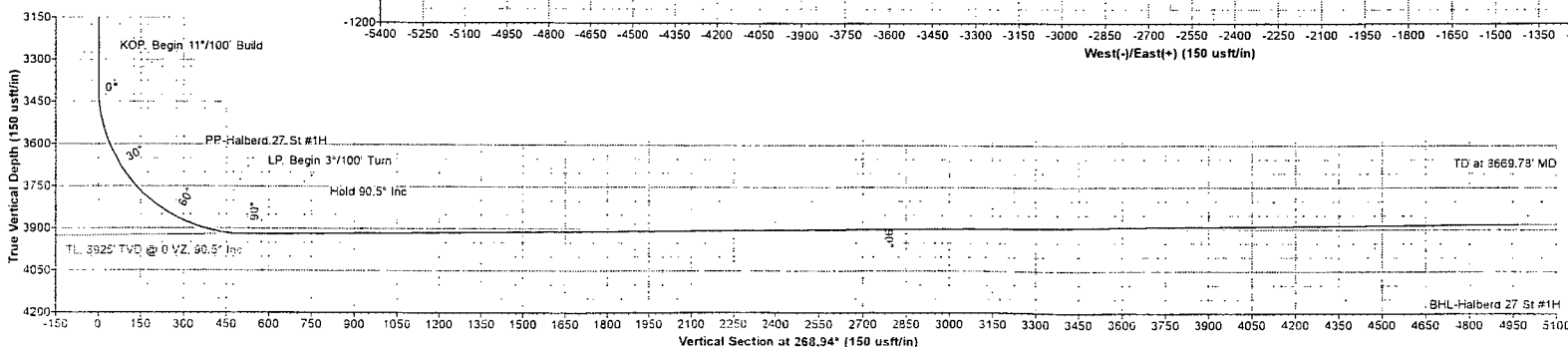
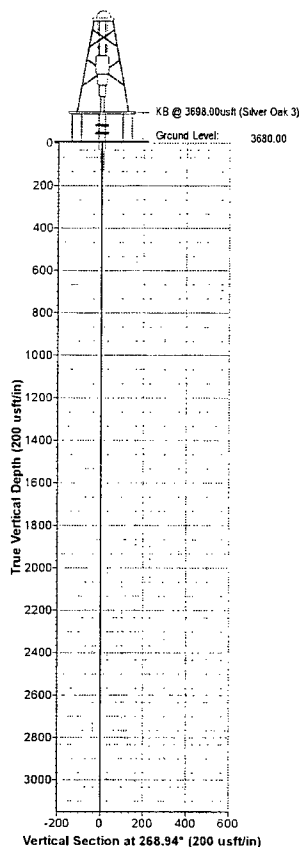
3/5/15
HOD



Project: Eddy County, NM (NAD27 NME)
Site: Halberd 27 State
Well: #1H
Wellbore: WB1
Design: Plan #1 03-02-15
Rig: Silver Oak 3



Azimuths to Grid North
True North: -0.10°
Magnetic North: 7.42°
Magnetic Field
Strength: 48452.85 nT
Dip Angle: 60.53°
Date: 3/2/2015
Model: IGRF2015



WELL DETAILS									
+N/S	+E/W	Northing	Ground Level	3680.00	Latitude	Longitude			
6.00	0.00	655242.30	Easting	554871.00	32° 48' 4.40313 N	104° 9' 17.12500 W			

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dleg	TFace	VSet	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2	3399.93	0.00	0.00	3399.93	0.00	0.00	0.00	0.00	0.00		KOP, Begin 11"/100' Budd
3	4222.66	90.50	263.28	3920.78	-61.48	-521.81	11.00	263.28	522.85		LP, Begin 3"/100' Turn
4	4438.92	90.50	269.77	3918.89	-74.59	-737.55	3.00	89.88	738.80		Hold 90.5° Inc
5	9569.77	90.50	269.77	3882.00	-91.70	-4958.20	0.00	0.00	4969.65	BHL-Halberd 27 St #1H	TD at 8569.78' MD

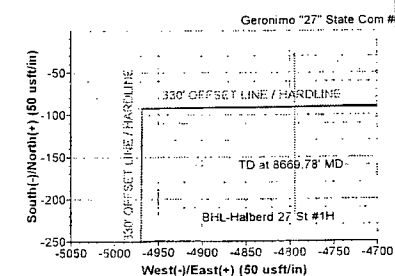
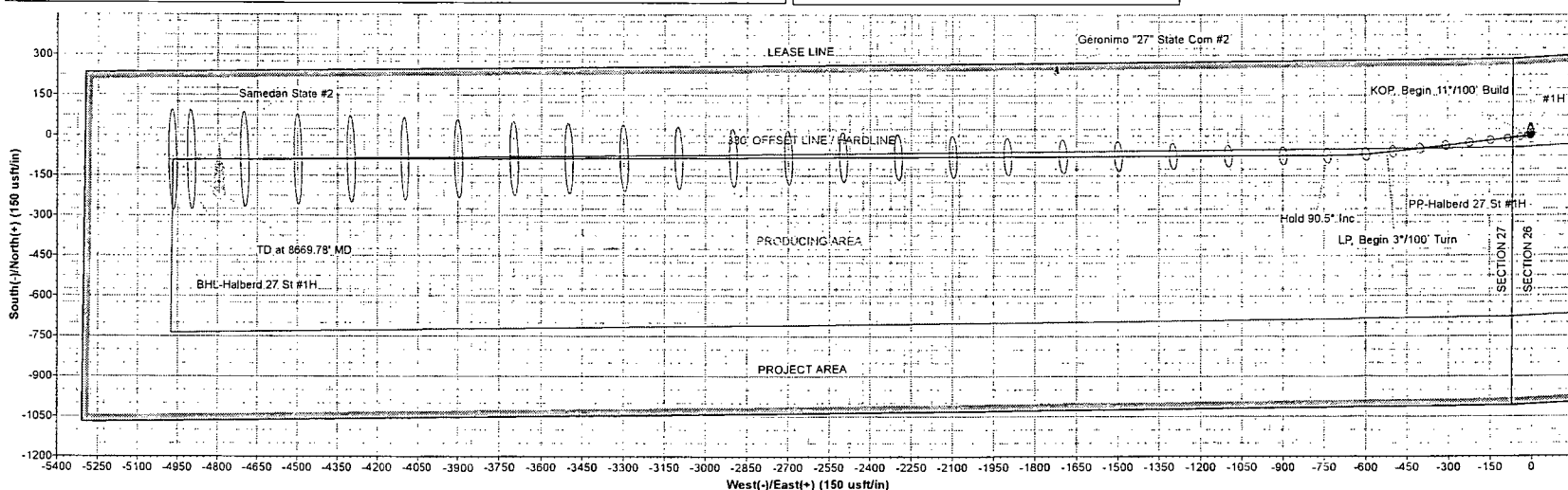
DESIGN TARGET DETAILS									
Name	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude	Shape	
BHL-Halberd 27 St #1H	3882.00	-91.70	-4868.20	655150.50	549902.80	32° 48' 3.57497 N	104° 10' 15.33444 W	Point	
PP-Halberd 27 St #1H	3906.04	-46.54	-395.00	655195.76	554476.00	32° 48' 3.94915 N	104° 9' 21.75376 W	Point	

FORMATION TOP DETAILS					
TVDPath	MDPath	Formation	DipAngle	DipDir	
3920.69	4203.70	TL 3925' TVD @ 0 VZ, 90.5° Inc	-0.50	268.91	

FORMATION TOP DETAILS					
TVDPath	MDPath	Formation	DipAngle	DipDir	
3920.69	4203.70	TL 3925' TVD @ 0 VZ, 90.5° Inc	-0.50	268.91	

FORMATION TOP DETAILS					
TVDPath	MDPath	Formation	DipAngle	DipDir	
3920.69	4203.70	TL 3925' TVD @ 0 VZ, 90.5° Inc	-0.50	268.91	

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 #1H, Grid North
Latitude: 32° 48' 4.40313 N
Longitude: 104° 9' 17.12500 W
Grid East: 554871.00
Grid North: 655242.30
Scale Factor: 1.000
Geomagnetic Model: IGRF2015
Sample Date: 02-Mar-15
Magnetic Declination: 7.51°
Dip Angle from Horizontal: 60.53°
Magnetic Field Strength: 48453
To convert a Magnetic Direction to a Grid Direction, Add 7.42°
To convert a Magnetic Direction to a True Direction, Add 7.51° East
To convert a True Direction to a Grid Direction, Subtract 0.10°





COG Operating LLC

Eddy County, NM (NAD27 NME)

Halberd 27 State

#1H

WB1

Plan: Plan #1 03-02-15

Surface: 1003' FSL, 65' FWL, Sec 26, T17S, R28E, Unit M

PP: 965' FSL, 330' FEL, Sec 27, T17S, R28E, Unit P

BHL: 975' FSL, 330' FWL, Sec 27, T17S, R28E, Unit M

Standard Planning Report

02 March, 2015





Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well #1H
Company:	COG Operating LLC	TVD Reference:	KB @ 3698.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3698.00usft (Silver Oak 3)
Site:	Halberd 27 State	North Reference:	Grid
Well:	#1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1-03-02-15		

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

Site	Halberd 27 State		
Site Position:		Northing:	657,322.00 usft
From:	Map	Easting:	554,777.30 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 48' 24.98418 N
		Longitude:	104° 9' 18.18172 W
		Grid Convergence:	0.10 °

Well	#1H		
Well Position	+N/-S	-2,079.70 usft	Northing:
	+E/-W	93.70 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 48' 4.40313 N
		Longitude:	104° 9' 17.12500 W
		Ground Level:	3,680.00 usft

Wellbore	WB1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2015	3/2/2015	7.51
			Dip Angle
			(°)
			60.53
			Field Strength
			(nT)
			48,453

Design	Plan #1-03-02-15		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			268.94

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	
3,399.93	0.00	0.00	3,399.93	0.00	0.00	0.00	0.00	0.00	0.00	
4,222.66	90.50	263.28	3,920.78	-61.48	-521.81	11.00	11.00	0.00	263.28	
4,438.92	90.50	269.77	3,918.89	-74.59	-737.55	3.00	0.00	3.00	89.98	
8,669.77	90.50	269.77	3,882.00	-91.70	-4,968.20	0.00	0.00	0.00	0.00	BHL-Halberd 27 St #1



Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well #1H
Company:	COG Operating LLC	TVD Reference:	KB @ 3698.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3698.00usft (Silver Oak 3)
Site:	Halberd 27 State	North Reference:	Grid
Well:	#1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1 03-02-15		

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
3,399.93	0.00	0.00	3,399.93	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Begin 11°/100' Build									
3,500.00	11.01	263.28	3,499.39	-1.12	-9.52	9.54	11.00	11.00	0.00
3,600.00	22.01	263.28	3,595.12	-4.44	-37.69	37.77	11.00	11.00	0.00
3,700.00	33.01	263.28	3,683.68	-9.84	-83.49	83.66	11.00	11.00	0.00
3,800.00	44.01	263.28	3,761.81	-17.11	-145.23	145.52	11.00	11.00	0.00
3,900.00	55.01	263.28	3,826.64	-26.00	-220.64	221.08	11.00	11.00	0.00
4,000.00	66.01	263.28	3,875.80	-36.17	-306.95	307.57	11.00	11.00	0.00
4,093.81	76.33	263.28	3,906.04	-46.54	-395.02	395.81	11.00	11.00	0.00
PP-Halberd 27 St #1H									
4,100.00	77.01	263.28	3,907.47	-47.25	-400.99	401.80	11.00	11.00	0.00
4,200.00	88.01	263.28	3,920.49	-58.83	-499.31	500.31	11.00	11.00	0.00
4,203.70	88.42	263.28	3,920.60	-59.27	-502.99	503.99	11.00	11.00	0.00
TL 3925' TVD @ 0.1° VZ, 90.5° Inc									
4,222.66	90.50	263.28	3,920.78	-61.48	-521.81	522.85	11.00	11.00	0.00
LP, Begin 3°/100' Turn									
4,300.00	90.50	265.60	3,920.11	-68.98	-598.78	599.95	3.00	0.00	3.00
4,400.00	90.50	268.60	3,919.23	-74.03	-698.63	699.88	3.00	0.00	3.00
4,438.92	90.50	269.77	3,918.89	-74.59	-737.55	738.80	3.00	0.00	3.00
Hold 90.5° Inc									
4,500.00	90.50	269.77	3,918.36	-74.83	-798.62	799.87	0.00	0.00	0.00
4,600.00	90.50	269.77	3,917.49	-75.24	-898.62	899.86	0.00	0.00	0.00
4,700.00	90.50	269.77	3,916.62	-75.64	-998.62	999.84	0.00	0.00	0.00
4,800.00	90.50	269.77	3,915.74	-76.05	-1,098.61	1,099.83	0.00	0.00	0.00
4,900.00	90.50	269.77	3,914.87	-76.45	-1,198.61	1,199.81	0.00	0.00	0.00
5,000.00	90.50	269.77	3,914.00	-76.86	-1,298.60	1,299.80	0.00	0.00	0.00
5,100.00	90.50	269.77	3,913.13	-77.26	-1,398.60	1,399.78	0.00	0.00	0.00
5,200.00	90.50	269.77	3,912.26	-77.67	-1,498.59	1,499.77	0.00	0.00	0.00
5,300.00	90.50	269.77	3,911.38	-78.07	-1,598.59	1,599.76	0.00	0.00	0.00
5,400.00	90.50	269.77	3,910.51	-78.47	-1,698.58	1,699.74	0.00	0.00	0.00
5,500.00	90.50	269.77	3,909.64	-78.88	-1,798.58	1,799.73	0.00	0.00	0.00
5,600.00	90.50	269.77	3,908.77	-79.28	-1,898.57	1,899.71	0.00	0.00	0.00
5,700.00	90.50	269.77	3,907.90	-79.69	-1,998.57	1,999.70	0.00	0.00	0.00
5,800.00	90.50	269.77	3,907.02	-80.09	-2,098.56	2,099.69	0.00	0.00	0.00
5,900.00	90.50	269.77	3,906.15	-80.50	-2,198.56	2,199.67	0.00	0.00	0.00
6,000.00	90.50	269.77	3,905.28	-80.90	-2,298.56	2,299.66	0.00	0.00	0.00
6,100.00	90.50	269.77	3,904.41	-81.31	-2,398.55	2,399.64	0.00	0.00	0.00
6,200.00	90.50	269.77	3,903.54	-81.71	-2,498.55	2,499.63	0.00	0.00	0.00
6,300.00	90.50	269.77	3,902.66	-82.11	-2,598.54	2,599.61	0.00	0.00	0.00
6,400.00	90.50	269.77	3,901.79	-82.52	-2,698.54	2,699.60	0.00	0.00	0.00
6,500.00	90.50	269.77	3,900.92	-82.92	-2,798.53	2,799.59	0.00	0.00	0.00
6,600.00	90.50	269.77	3,900.05	-83.33	-2,898.53	2,899.57	0.00	0.00	0.00
6,700.00	90.50	269.77	3,899.18	-83.73	-2,998.52	2,999.56	0.00	0.00	0.00
6,800.00	90.50	269.77	3,898.30	-84.14	-3,098.52	3,099.54	0.00	0.00	0.00
6,900.00	90.50	269.77	3,897.43	-84.54	-3,198.51	3,199.53	0.00	0.00	0.00
7,000.00	90.50	269.77	3,896.56	-84.95	-3,298.51	3,299.52	0.00	0.00	0.00
7,100.00	90.50	269.77	3,895.69	-85.35	-3,398.50	3,399.50	0.00	0.00	0.00
7,200.00	90.50	269.77	3,894.82	-85.76	-3,498.50	3,499.49	0.00	0.00	0.00
7,300.00	90.50	269.77	3,893.94	-86.16	-3,598.50	3,599.47	0.00	0.00	0.00
7,400.00	90.50	269.77	3,893.07	-86.56	-3,698.49	3,699.46	0.00	0.00	0.00
7,500.00	90.50	269.77	3,892.20	-86.97	-3,798.49	3,799.44	0.00	0.00	0.00
7,600.00	90.50	269.77	3,891.33	-87.37	-3,898.48	3,899.43	0.00	0.00	0.00
7,700.00	90.50	269.77	3,890.46	-87.78	-3,998.48	3,999.42	0.00	0.00	0.00



Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well #1H
Company:	COG Operating LLC	TVD Reference:	KB @ 3698.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3698.00usft (Silver Oak 3)
Site:	Halberd 27 State	North Reference:	Grid
Well:	#1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1 03-02-15		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,800.00	90.50	269.77	3,889.58	-88.18	-4,098.47	4,099.40	0.00	0.00	0.00
7,900.00	90.50	269.77	3,888.71	-88.59	-4,198.47	4,199.39	0.00	0.00	0.00
8,000.00	90.50	269.77	3,887.84	-88.99	-4,298.46	4,299.37	0.00	0.00	0.00
8,100.00	90.50	269.77	3,886.97	-89.40	-4,398.46	4,399.36	0.00	0.00	0.00
8,200.00	90.50	269.77	3,886.10	-89.80	-4,498.45	4,499.35	0.00	0.00	0.00
8,300.00	90.50	269.77	3,885.22	-90.20	-4,598.45	4,599.33	0.00	0.00	0.00
8,400.00	90.50	269.77	3,884.35	-90.61	-4,698.44	4,699.32	0.00	0.00	0.00
8,500.00	90.50	269.77	3,883.48	-91.01	-4,798.44	4,799.30	0.00	0.00	0.00
8,600.00	90.50	269.77	3,882.61	-91.42	-4,898.44	4,899.29	0.00	0.00	0.00
8,669.77	90.50	269.77	3,882.00	-91.70	-4,968.20	4,969.05	0.00	0.00	0.00

TD at 8669.78' MD - BHL-Halberd 27 St #1H

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-Halberd 27 St #1H	0.00	0.01	3,882.00	-91.70	-4,968.20	655,150.60	549,902.80	32° 48' 3.57497 N	104° 10' 15.33444 W
- plan hits target center									
- Point									
PP-Halberd 27 St #1H	0.00	0.00	3,906.04	-46.54	-395.00	655,195.76	554,476.00	32° 48' 3.94915 N	104° 9' 21.75376 W
- plan hits target center									
- Point									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,203.70	3,920.60	TL, 3925' TVD @ 0 VZ, 90.5° Inc		-0.50	268.91

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
3,399.93	3,399.93	0.00	0.00	KOP, Begin 11°/100' Build
4,222.66	3,920.78	-61.48	-521.81	LP, Begin 3°/100' Turn
4,438.92	3,918.89	-74.59	-737.55	Hold 90.5° Inc
8,669.77	3,882.00	-91.70	-4,968.20	TD at 8669.78' MD



COG Operating LLC

Eddy County, NM (NAD27 NME)

Halberd 27 State

#1H

WB1

Plan #1 03-02-15

Anticollision Report

02 March, 2015



PHOENIX
TECHNOLOGY SERVICES



Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3698.00usft (Silver Oak 3)
Reference Site:	Halberd 27 State	MD Reference:	KB @ 3698.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #1 03-02-15	Offset TVD Reference:	Offset Datum

Reference	Plan #1 03-02-15		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 50.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	Error Surface:	Circular Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 3/2/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	8,669.75	Plan #1 03-02-15 (WB1)	PHX+MWD+IGRF	PHX+MWD+IGRF v3: standard declination

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Geronimo "27" State Com						
#2 - WB1 - As-Drilled	8,496.18	3,867.02	7.77	-182.04	0.041	Level 1, CC, ES, SF
Samedan State						
#2 - WB1 - As-Drilled	5,423.06	3,884.55	315.45	243.10	4.360	CC, ES
#2 - WB1 - As-Drilled	5,500.00	3,883.88	324.70	249.45	4.315	SF

Offset Design													Offset Site Error:	0.00 usft
Geronimo "27" State Com - #2 - WB1 - As-Drilled													Offset Well Error:	0.00 usft
Survey Program: 202-MWD														
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)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	-90.34	-28.27	-4,794.65	4,794.77					
50.00	50.00	32.96	32.96	0.06	0.04	-90.34	-28.29	-4,794.65	4,794.74	4,794.64	0.09	N/A		
100.00	100.00	82.90	82.90	0.15	0.09	-90.34	-28.42	-4,794.65	4,794.74	4,794.50	0.24	N/A		
150.00	150.00	132.84	132.84	0.33	0.14	-90.34	-28.65	-4,794.65	4,794.74	4,794.27	0.47	N/A		
200.00	200.00	182.77	182.77	0.51	0.20	-90.35	-28.99	-4,794.65	4,794.74	4,794.04	0.70	6,841.792		
250.00	250.00	232.71	232.71	0.68	0.29	-90.35	-29.44	-4,794.65	4,794.74	4,793.77	0.97	4,943.563		
300.00	300.00	282.65	282.64	0.86	0.40	-90.36	-29.99	-4,794.65	4,794.75	4,793.48	1.26	3,799.832		
350.00	350.00	332.58	332.57	1.04	0.51	-90.37	-30.64	-4,794.65	4,794.75	4,793.20	1.55	3,065.899		
400.00	400.00	382.51	382.49	1.22	0.62	-90.38	-31.40	-4,794.65	4,794.75	4,792.91	1.85	2,597.819		
450.00	450.00	432.46	432.44	1.40	0.74	-90.39	-32.25	-4,794.65	4,794.76	4,792.62	2.14	2,240.831		
500.00	500.00	482.45	482.42	1.58	0.85	-90.40	-33.12	-4,794.65	4,794.77	4,792.33	2.43	1,970.884		
550.00	550.00	532.45	532.41	1.76	0.97	-90.41	-33.99	-4,794.65	4,794.77	4,792.05	2.73	1,758.985		
600.00	600.00	582.44	582.39	1.94	1.08	-90.42	-34.87	-4,794.65	4,794.78	4,791.76	3.02	1,588.227		
650.00	650.00	632.43	632.38	2.12	1.19	-90.43	-35.74	-4,794.65	4,794.79	4,791.47	3.31	1,447.689		
700.00	700.00	682.42	682.36	2.30	1.31	-90.44	-36.61	-4,794.65	4,794.79	4,791.19	3.61	1,329.989		
750.00	750.00	732.42	732.35	2.48	1.42	-90.45	-37.48	-4,794.65	4,794.80	4,790.90	3.90	1,229.985		
800.00	800.00	782.41	782.33	2.66	1.54	-90.46	-38.36	-4,794.65	4,794.81	4,790.61	4.19	1,143.968		
850.00	850.00	832.40	832.32	2.84	1.65	-90.47	-39.23	-4,794.65	4,794.81	4,790.33	4.48	1,069.196		
900.00	900.00	882.39	882.30	3.01	1.76	-90.48	-40.10	-4,794.65	4,794.82	4,790.04	4.78	1,003.599		
950.00	950.00	932.39	932.28	3.19	1.88	-90.49	-40.97	-4,794.65	4,794.83	4,789.76	5.07	945.587		
1,000.00	1,000.00	982.38	982.27	3.37	1.99	-90.50	-41.85	-4,794.65	4,794.83	4,789.47	5.36	893.914		
1,050.00	1,050.00	1,032.37	1,032.25	3.55	2.10	-90.51	-42.72	-4,794.65	4,794.84	4,789.19	5.66	847.597		

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 #1H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3698.00usft (Silver Oak 3)
Reference Site:	Halberd 27 State	MD Reference:	KB @ 3698.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #1 03-02-15	Offset TVD Reference:	Offset Datum

Offset Design Geronimo "27" State Com - #2 - WB1 - As-Drilled													Offset Site Error: 0.00 usft	
Survey Program: 202-MWD													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning	
Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	(usft)	(usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Centres (usft)	Ellipses (usft)	Separation (usft)	Factor		
1,100.00	1,100.00	1,082.36	1,082.24	3.73	2.22	-90.52	-43.59	-4,794.65	4,794.85	4,788.90	5.95	805.843		
1,150.00	1,150.00	1,132.37	1,132.24	3.91	2.32	-90.53	-44.46	-4,794.65	4,794.86	4,788.63	6.23	769.349		
1,200.00	1,200.00	1,182.38	1,182.25	4.09	2.42	-90.54	-45.30	-4,794.65	4,794.87	4,788.35	6.51	736.311		
1,250.00	1,250.00	1,232.40	1,232.25	4.27	2.52	-90.55	-46.12	-4,794.65	4,794.87	4,788.08	6.79	705.994		
1,300.00	1,300.00	1,282.41	1,282.26	4.45	2.62	-90.56	-46.92	-4,794.65	4,794.88	4,787.81	7.07	678.074		
1,350.00	1,350.00	1,332.43	1,332.27	4.63	2.72	-90.57	-47.70	-4,794.65	4,794.89	4,787.54	7.35	652.279		
1,400.00	1,400.00	1,382.44	1,382.28	4.81	2.82	-90.58	-48.45	-4,794.65	4,794.90	4,787.27	7.63	628.374		
1,450.00	1,450.00	1,432.46	1,432.29	4.99	2.92	-90.59	-49.19	-4,794.65	4,794.90	4,786.99	7.91	606.159		
1,500.00	1,500.00	1,482.48	1,482.30	5.17	3.02	-90.60	-49.90	-4,794.65	4,794.91	4,786.72	8.19	585.462		
1,550.00	1,550.00	1,532.49	1,532.31	5.34	3.12	-90.60	-50.59	-4,794.65	4,794.92	4,786.45	8.47	566.131		
1,600.00	1,600.00	1,582.51	1,582.33	5.52	3.23	-90.61	-51.25	-4,794.65	4,794.93	4,786.18	8.75	548.036		
1,650.00	1,650.00	1,632.51	1,632.32	5.70	3.33	-90.62	-51.91	-4,794.65	4,794.93	4,785.90	9.03	530.940		
1,700.00	1,700.00	1,682.50	1,682.31	5.88	3.43	-90.63	-52.56	-4,794.65	4,794.94	4,785.63	9.31	514.876		
1,750.00	1,750.00	1,732.50	1,732.30	6.06	3.53	-90.64	-53.22	-4,794.65	4,794.95	4,785.35	9.59	499.755		
1,800.00	1,800.00	1,782.49	1,782.29	6.24	3.64	-90.64	-53.87	-4,794.65	4,794.95	4,785.08	9.88	485.497		
1,850.00	1,850.00	1,832.49	1,832.29	6.42	3.74	-90.65	-54.52	-4,794.65	4,794.96	4,784.80	10.16	472.030		
1,900.00	1,900.00	1,882.49	1,882.28	6.60	3.84	-90.66	-55.18	-4,794.65	4,794.97	4,784.53	10.44	459.290		
1,950.00	1,950.00	1,932.48	1,932.27	6.78	3.94	-90.67	-55.83	-4,794.65	4,794.98	4,784.26	10.72	447.220		
2,000.00	2,000.00	1,982.48	1,982.26	6.96	4.05	-90.67	-56.49	-4,794.65	4,794.98	4,783.98	11.00	435.768		
2,050.00	2,050.00	2,032.47	2,032.25	7.14	4.15	-90.68	-57.14	-4,794.65	4,794.99	4,783.71	11.29	424.888		
2,100.00	2,100.00	2,082.47	2,082.24	7.32	4.26	-90.69	-57.80	-4,794.65	4,795.00	4,783.43	11.57	414.381		
2,150.00	2,150.00	2,132.46	2,132.23	7.50	4.37	-90.70	-58.45	-4,794.65	4,795.01	4,783.15	11.86	404.213		
2,200.00	2,200.00	2,182.46	2,182.23	7.67	4.48	-90.71	-59.11	-4,794.65	4,795.02	4,782.86	12.15	394.532		
2,250.00	2,250.00	2,232.46	2,232.22	7.85	4.59	-90.71	-59.76	-4,794.65	4,795.02	4,782.58	12.44	385.304		
2,300.00	2,300.00	2,282.45	2,282.21	8.03	4.70	-90.72	-60.41	-4,794.65	4,795.03	4,782.30	12.74	376.497		
2,350.00	2,350.00	2,332.45	2,332.20	8.21	4.81	-90.73	-61.07	-4,794.65	4,795.04	4,782.01	13.03	368.085		
2,400.00	2,400.00	2,382.44	2,382.19	8.39	4.93	-90.74	-61.72	-4,794.65	4,795.05	4,781.73	13.32	360.040		
2,450.00	2,450.00	2,432.44	2,432.18	8.57	5.04	-90.75	-62.38	-4,794.65	4,795.06	4,781.45	13.61	352.339		
2,500.00	2,500.00	2,482.43	2,482.17	8.75	5.15	-90.75	-63.03	-4,794.65	4,795.07	4,781.17	13.90	344.961		
2,550.00	2,550.00	2,532.43	2,532.17	8.93	5.26	-90.76	-63.69	-4,794.65	4,795.08	4,780.88	14.19	337.885		
2,600.00	2,600.00	2,582.43	2,582.16	9.11	5.37	-90.77	-64.34	-4,794.65	4,795.08	4,780.60	14.48	331.086		
2,650.00	2,650.00	2,632.42	2,632.15	9.29	5.49	-90.78	-64.99	-4,794.65	4,795.09	4,780.32	14.77	324.554		
2,700.00	2,700.00	2,682.42	2,682.14	9.47	5.60	-90.78	-65.65	-4,794.65	4,795.10	4,780.04	15.07	318.276		
2,750.00	2,750.00	2,732.40	2,732.12	9.65	5.71	-90.79	-66.31	-4,794.65	4,795.11	4,779.75	15.36	312.231		
2,800.00	2,800.00	2,782.36	2,782.08	9.83	5.82	-90.80	-66.98	-4,794.65	4,795.12	4,779.47	15.65	306.407		
2,850.00	2,850.00	2,832.33	2,832.04	10.00	5.94	-90.81	-67.68	-4,794.65	4,795.13	4,779.19	15.94	300.797		
2,900.00	2,900.00	2,882.30	2,882.00	10.18	6.05	-90.82	-68.40	-4,794.65	4,795.14	4,778.91	16.23	295.388		
2,950.00	2,950.00	2,932.26	2,931.96	10.36	6.16	-90.83	-69.14	-4,794.65	4,795.15	4,778.63	16.53	290.171		
3,000.00	3,000.00	2,982.23	2,981.92	10.54	6.27	-90.84	-69.90	-4,794.65	4,795.16	4,778.34	16.82	285.134		
3,050.00	3,050.00	3,032.19	3,031.88	10.72	6.39	-90.84	-70.69	-4,794.65	4,795.17	4,778.06	17.11	280.270		
3,100.00	3,100.00	3,082.15	3,081.83	10.90	6.50	-90.85	-71.49	-4,794.65	4,795.19	4,777.78	17.40	275.569		
3,150.00	3,150.00	3,132.11	3,131.79	11.08	6.61	-90.86	-72.32	-4,794.65	4,795.20	4,777.50	17.69	271.023		
3,200.00	3,200.00	3,182.08	3,181.74	11.26	6.73	-90.87	-73.16	-4,794.65	4,795.21	4,777.23	17.98	266.625		
3,250.00	3,250.00	3,232.06	3,231.72	11.44	6.83	-90.88	-74.03	-4,794.65	4,795.22	4,776.95	18.27	262.424		
3,300.00	3,300.00	3,282.09	3,281.74	11.62	6.94	-90.89	-74.88	-4,794.65	4,795.24	4,776.68	18.55	258.443		
3,350.00	3,350.00	3,332.12	3,331.77	11.80	7.04	-90.90	-75.71	-4,794.65	4,795.25	4,776.41	18.84	254.580		
3,399.93	3,399.93	3,382.08	3,381.72	11.98	7.14	-90.91	-76.51	-4,794.65	4,795.26	4,776.15	19.12	250.837		
3,450.00	3,449.92	3,432.11	3,431.74	12.15	7.24	5.83	-77.29	-4,794.65	4,792.88	4,773.49	19.39	247.130		
3,500.00	3,499.39	3,481.62	3,481.25	12.32	7.34	5.91	-78.03	-4,794.65	4,785.75	4,766.09	19.67	243.339		
3,550.00	3,547.93	3,530.22	3,529.84	12.50	7.44	6.05	-78.74	-4,794.65	4,773.94	4,754.00	19.94	239.406		
3,600.00	3,595.12	3,577.46	3,577.08	12.68	7.54	6.27	-79.41	-4,794.65	4,757.55	4,737.33	20.22	235.270		
3,650.00	3,640.50	3,622.91	3,622.52	12.88	7.63	6.57	-80.03	-4,794.65	4,736.74	4,716.22	20.52	230.858		

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 #1H
Project:	Eddy County, NM (NAD27 - NME)	TVD Reference:	KB @ 3698.00usft (Silver Oak 3)
Reference Site:	Halberd 27 State	MD Reference:	KB @ 3698.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #1 03-02-15	Offset TVD Reference:	Offset Datum

Offset Design Geronimo "27" State Com - #2 - WB1 - As-Drilled														Offset Site Error: 0.00 usft	
Survey Program: 202-MWD														Offset Well Error: 0.00 usft	
Reference				Offset		Semi Major Axis			Distance						
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside	Offset Wellbore Centre	Between	Between	Minimum	Separation	Warning			
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Centres (usft)	Ellipses (usft)	Separation (usft)			Factor	
3,700.00	3,683.68	3,666.14	3,665.75	13.12	7.72	6.98	-80.60	-4,794.65	4,711.69	4,690.85	20.84	226.053			
3,750.00	3,724.23	3,706.74	3,706.35	13.41	7.81	7.51	-81.13	-4,794.65	4,682.65	4,661.43	21.22	220.713			
3,800.00	3,761.81	3,744.36	3,743.96	13.78	7.88	8.21	-81.62	-4,794.65	4,649.87	4,628.21	21.66	214.697			
3,850.00	3,796.05	3,778.65	3,778.25	14.24	7.95	9.14	-82.07	-4,794.65	4,613.66	4,591.47	22.19	207.894			
3,900.00	3,826.64	3,809.31	3,808.90	14.83	8.02	10.40	-82.47	-4,794.65	4,574.36	4,551.52	22.84	200.262			
3,950.00	3,853.31	3,836.03	3,835.63	15.55	8.07	12.17	-82.82	-4,794.65	4,532.32	4,508.70	23.62	191.854			
4,000.00	3,875.80	3,858.59	3,858.18	16.43	8.12	14.77	-83.12	-4,794.65	4,487.94	4,463.40	24.55	182.828			
4,050.00	3,893.91	3,876.77	3,876.36	17.46	8.15	18.85	-83.36	-4,794.65	4,441.63	4,416.02	25.61	173.418			
4,100.00	3,907.47	3,890.40	3,889.99	18.63	8.18	25.95	-83.54	-4,794.65	4,393.81	4,367.00	26.81	163.899			
4,150.00	3,916.35	3,899.36	3,898.95	19.91	8.20	40.31	-83.65	-4,794.65	4,344.92	4,316.80	28.12	154.539			
4,200.00	3,920.49	3,903.57	3,903.16	21.30	8.21	72.71	-83.71	-4,794.65	4,295.42	4,265.91	29.51	145.565			
4,250.00	3,920.54	3,903.70	3,903.29	22.77	8.21	95.02	-83.71	-4,794.65	4,245.71	4,214.73	30.98	137.033			
4,300.00	3,920.11	3,903.32	3,902.91	24.28	8.21	96.75	-83.71	-4,794.65	4,195.90	4,163.41	32.49	129.158			
4,350.00	3,919.67	3,902.93	3,902.52	25.88	8.21	100.30	-83.70	-4,794.65	4,146.00	4,111.91	34.08	121.637			
4,400.00	3,919.23	3,902.52	3,902.11	27.48	8.21	111.51	-83.69	-4,794.65	4,096.03	4,060.35	35.68	114.787			
4,450.00	3,918.80	3,902.09	3,901.68	29.14	8.21	168.26	-83.69	-4,794.65	4,046.03	4,008.69	37.35	108.339			
4,500.00	3,918.36	3,901.66	3,901.24	30.83	8.21	168.11	-83.68	-4,794.65	3,996.04	3,957.00	39.03	102.377			
4,550.00	3,917.92	3,901.22	3,900.81	32.55	8.20	167.95	-83.68	-4,794.65	3,946.04	3,905.28	40.76	96.815			
4,600.00	3,917.49	3,900.79	3,900.38	34.28	8.20	167.79	-83.67	-4,794.65	3,896.04	3,853.56	42.49	91.702			
4,650.00	3,917.05	3,900.36	3,899.94	36.05	8.20	167.63	-83.67	-4,794.65	3,846.04	3,801.79	44.25	86.916			
4,700.00	3,916.62	3,899.92	3,899.51	37.81	8.20	167.46	-83.66	-4,794.65	3,796.04	3,750.03	46.01	82.496			
4,750.00	3,916.18	3,899.49	3,899.08	39.61	8.20	167.29	-83.65	-4,794.65	3,746.05	3,698.24	47.81	78.357			
4,800.00	3,915.74	3,899.06	3,898.64	41.40	8.20	167.12	-83.65	-4,794.65	3,696.05	3,646.45	49.60	74.516			
4,850.00	3,915.31	3,898.62	3,898.21	43.22	8.20	166.94	-83.64	-4,794.65	3,646.05	3,594.64	51.42	70.914			
4,900.00	3,914.87	3,898.19	3,897.78	45.03	8.20	166.75	-83.64	-4,794.65	3,596.05	3,542.82	53.23	67.557			
4,950.00	3,914.44	3,897.76	3,897.34	46.86	8.20	166.56	-83.63	-4,794.65	3,546.05	3,490.99	55.06	64.402			
5,000.00	3,914.00	3,897.32	3,896.91	48.70	8.20	166.37	-83.63	-4,794.65	3,496.06	3,439.16	56.89	61.450			
5,050.00	3,913.56	3,896.89	3,896.48	50.54	8.20	166.17	-83.62	-4,794.65	3,446.06	3,387.32	58.74	58.669			
5,100.00	3,913.13	3,896.46	3,896.04	52.39	8.19	165.96	-83.62	-4,794.65	3,396.06	3,335.48	60.58	56.057			
5,150.00	3,912.69	3,896.02	3,895.61	54.24	8.19	165.75	-83.61	-4,794.65	3,346.06	3,283.83	62.44	53.591			
5,200.00	3,912.26	3,895.59	3,895.18	56.10	8.19	165.54	-83.60	-4,794.65	3,296.06	3,231.77	64.29	51.267			
5,250.00	3,911.82	3,895.16	3,894.74	57.96	8.19	165.31	-83.60	-4,794.65	3,246.07	3,179.91	66.16	49.067			
5,300.00	3,911.38	3,894.72	3,894.31	59.83	8.19	165.08	-83.59	-4,794.65	3,196.07	3,128.05	68.02	46.987			
5,350.00	3,910.95	3,894.29	3,893.88	61.70	8.19	164.85	-83.59	-4,794.65	3,146.07	3,076.18	69.89	45.014			
5,400.00	3,910.51	3,893.86	3,893.45	63.57	8.19	164.60	-83.58	-4,794.65	3,096.07	3,024.31	71.76	43.144			
5,450.00	3,910.08	3,893.42	3,893.01	65.45	8.19	164.35	-83.58	-4,794.65	3,046.07	2,972.44	73.64	41.365			
5,500.00	3,909.64	3,892.99	3,892.58	67.33	8.19	164.09	-83.57	-4,794.65	2,996.08	2,920.56	75.52	39.675			
5,550.00	3,909.20	3,892.56	3,892.15	69.21	8.19	163.83	-83.56	-4,794.65	2,946.08	2,868.68	77.40	38.064			
5,600.00	3,908.77	3,892.12	3,891.71	71.09	8.19	163.55	-83.56	-4,794.65	2,896.08	2,816.80	79.28	36.530			
5,650.00	3,908.33	3,891.69	3,891.28	72.98	8.19	163.27	-83.55	-4,794.65	2,846.08	2,764.92	81.17	35.065			
5,700.00	3,907.90	3,891.26	3,890.85	74.87	8.18	162.97	-83.55	-4,794.65	2,796.09	2,713.03	83.05	33.667			
5,750.00	3,907.46	3,890.82	3,890.41	76.76	8.18	162.67	-83.54	-4,794.65	2,746.09	2,661.15	84.94	32.329			
5,800.00	3,907.02	3,890.39	3,889.98	78.65	8.18	162.36	-83.54	-4,794.65	2,696.09	2,609.26	86.83	31.050			
5,850.00	3,906.59	3,889.96	3,889.55	80.54	8.18	162.03	-83.53	-4,794.65	2,646.09	2,557.37	88.72	29.824			
5,900.00	3,906.15	3,889.52	3,889.11	82.44	8.18	161.70	-83.52	-4,794.65	2,596.09	2,505.48	90.62	28.649			
5,950.00	3,905.72	3,889.09	3,888.68	84.33	8.18	161.35	-83.52	-4,794.65	2,546.10	2,453.58	92.51	27.521			
6,000.00	3,905.28	3,888.66	3,888.25	86.23	8.18	160.99	-83.51	-4,794.65	2,496.10	2,401.69	94.41	26.439			
6,050.00	3,904.84	3,888.22	3,887.81	88.13	8.18	160.62	-83.51	-4,794.65	2,446.10	2,349.79	96.31	25.399			
6,100.00	3,904.41	3,887.79	3,887.38	90.03	8.18	160.24	-83.50	-4,794.65	2,396.10	2,297.90	98.20	24.399			
6,150.00	3,903.97	3,887.36	3,886.95	91.93	8.18	159.84	-83.50	-4,794.65	2,346.10	2,246.00	100.10	23.436			
6,200.00	3,903.54	3,886.92	3,886.51	93.83	8.18	159.42	-83.49	-4,794.65	2,296.11	2,194.10	102.01	22.510			
6,250.00	3,903.10	3,886.49	3,886.08	95.73	8.17	158.99	-83.48	-4,794.65	2,246.11	2,142.20	103.91	21.617			

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 #1H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3698.00usft (Silver Oak 3)
Reference Site:	Halberd 27 State	MD Reference:	KB @ 3698.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #1 03-02-15	Offset TVD Reference:	Offset Datum

Offset Design Geronimo 27 State Com - #2 WB1 - As-Drilled														Offset Site Error: 0.00 usft	
Survey Program: 202-MWD														Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis				Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre -N-S (usft)	-E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
6,300.00	3,902.66	3,886.06	3,885.65	97.64	8.17	158.54	-83.48	-4,794.65	2,196.11	2,090.30	105.81	20.755			
6,350.00	3,902.23	3,885.62	3,885.21	99.54	8.17	158.08	-83.47	-4,794.65	2,146.11	2,038.40	107.71	19.924			
6,400.00	3,901.79	3,885.19	3,884.78	101.44	8.17	157.60	-83.47	-4,794.65	2,096.11	1,986.50	109.62	19.122			
6,450.00	3,901.36	3,884.76	3,884.35	103.35	8.17	157.09	-83.46	-4,794.65	2,046.12	1,934.60	111.52	18.347			
6,500.00	3,900.92	3,884.32	3,883.91	105.26	8.17	156.57	-83.46	-4,794.65	1,996.12	1,882.69	113.43	17.598			
6,550.00	3,900.48	3,883.89	3,883.48	107.16	8.17	156.02	-83.45	-4,794.65	1,946.12	1,830.79	115.33	16.874			
6,600.00	3,900.05	3,883.46	3,883.05	109.07	8.17	155.45	-83.45	-4,794.65	1,896.12	1,778.89	117.24	16.173			
6,650.00	3,899.61	3,883.02	3,882.61	110.98	8.17	154.85	-83.44	-4,794.65	1,846.13	1,726.98	119.15	15.495			
6,700.00	3,899.18	3,882.59	3,882.18	112.89	8.17	154.23	-83.43	-4,794.65	1,796.13	1,675.07	121.05	14.837			
6,750.00	3,898.74	3,882.16	3,881.75	114.80	8.17	153.57	-83.43	-4,794.65	1,746.13	1,623.17	122.96	14.201			
6,800.00	3,898.30	3,881.72	3,881.31	116.71	8.16	152.89	-83.42	-4,794.65	1,696.13	1,571.26	124.87	13.583			
6,850.00	3,897.87	3,881.29	3,880.88	118.62	8.16	152.18	-83.42	-4,794.65	1,646.14	1,519.36	126.78	12.984			
6,900.00	3,897.43	3,880.86	3,880.45	120.53	8.16	151.43	-83.41	-4,794.65	1,596.14	1,467.45	128.69	12.403			
6,950.00	3,897.00	3,880.42	3,880.01	122.44	8.16	150.64	-83.41	-4,794.65	1,546.14	1,415.54	130.60	11.839			
7,000.00	3,896.56	3,879.99	3,879.58	124.35	8.16	149.82	-83.40	-4,794.65	1,496.14	1,363.63	132.51	11.291			
7,050.00	3,896.12	3,879.56	3,879.15	126.26	8.16	148.96	-83.39	-4,794.65	1,446.15	1,311.72	134.42	10.758			
7,100.00	3,895.69	3,879.12	3,878.71	128.17	8.16	148.05	-83.39	-4,794.65	1,396.15	1,259.81	136.33	10.241			
7,150.00	3,895.25	3,878.69	3,878.28	130.09	8.16	147.09	-83.38	-4,794.65	1,346.15	1,207.91	138.25	9.737			
7,200.00	3,894.82	3,878.26	3,877.85	132.00	8.16	146.08	-83.38	-4,794.65	1,296.15	1,156.00	140.16	9.248			
7,250.00	3,894.38	3,877.82	3,877.41	133.91	8.16	145.02	-83.37	-4,794.65	1,246.16	1,104.09	142.07	8.771			
7,300.00	3,893.94	3,877.39	3,876.98	135.83	8.16	143.90	-83.37	-4,794.65	1,196.16	1,052.18	143.98	8.308			
7,350.00	3,893.51	3,876.96	3,876.55	137.74	8.15	142.72	-83.36	-4,794.65	1,146.16	1,000.27	145.90	7.856			
7,400.00	3,893.07	3,876.52	3,876.11	139.65	8.15	141.47	-83.35	-4,794.65	1,096.17	948.36	147.81	7.416			
7,450.00	3,892.64	3,876.09	3,875.68	141.57	8.15	140.16	-83.35	-4,794.65	1,046.17	896.45	149.72	6.987			
7,500.00	3,892.20	3,875.66	3,875.25	143.48	8.15	138.77	-83.34	-4,794.65	996.17	844.54	151.64	6.569			
7,550.00	3,891.76	3,875.22	3,874.81	145.40	8.15	137.30	-83.34	-4,794.65	946.18	792.62	153.55	6.162			
7,600.00	3,891.33	3,874.79	3,874.38	147.31	8.15	135.74	-83.33	-4,794.65	896.18	740.71	155.46	5.765			
7,650.00	3,890.89	3,874.36	3,873.95	149.23	8.15	134.10	-83.33	-4,794.65	846.18	688.80	157.38	5.377			
7,700.00	3,890.46	3,873.92	3,873.51	151.15	8.15	132.36	-83.32	-4,794.65	796.19	636.89	159.29	4.998			
7,750.00	3,890.02	3,873.49	3,873.08	153.06	8.15	130.52	-83.31	-4,794.65	746.19	584.98	161.21	4.629			
7,800.00	3,889.58	3,873.06	3,872.65	154.98	8.15	128.58	-83.31	-4,794.65	696.20	533.07	163.12	4.268			
7,850.00	3,889.15	3,872.62	3,872.21	156.89	8.15	126.53	-83.30	-4,794.65	646.20	481.16	165.04	3.915			
7,900.00	3,888.71	3,872.19	3,871.78	158.81	8.15	124.38	-83.30	-4,794.65	596.21	429.25	166.96	3.571			
7,950.00	3,888.28	3,871.76	3,871.35	160.73	8.14	122.10	-83.29	-4,794.65	546.21	377.34	168.87	3.234			
8,000.00	3,887.84	3,871.32	3,870.92	162.64	8.14	119.71	-83.29	-4,794.65	496.22	325.43	170.79	2.905			
8,050.00	3,887.40	3,870.89	3,870.48	164.56	8.14	117.21	-83.28	-4,794.65	446.23	273.53	172.70	2.584			
8,100.00	3,886.97	3,870.46	3,870.05	166.48	8.14	114.59	-83.27	-4,794.65	396.24	221.62	174.62	2.269			
8,150.00	3,886.53	3,870.02	3,869.62	168.40	8.14	111.86	-83.27	-4,794.65	346.25	169.72	176.54	1.961			
8,200.00	3,886.10	3,869.59	3,869.18	170.31	8.14	109.03	-83.26	-4,794.65	296.27	117.82	178.45	1.660			
8,250.00	3,885.66	3,869.16	3,868.75	172.23	8.14	106.11	-83.26	-4,794.65	246.29	65.92	180.37	1.365 Level 3			
8,300.00	3,885.22	3,868.72	3,868.32	174.15	8.14	103.09	-83.25	-4,794.65	196.33	14.04	182.29	1.077 Level 2			
8,350.00	3,884.79	3,868.29	3,867.88	176.07	8.14	100.01	-83.25	-4,794.65	146.38	-37.82	184.21	0.795 Level 1			
8,400.00	3,884.35	3,867.86	3,867.45	177.99	8.14	96.87	-83.24	-4,794.65	96.49	-89.63	186.12	0.518 Level 1			
8,450.00	3,883.92	3,867.42	3,867.02	179.90	8.14	93.70	-83.24	-4,794.65	46.83	-141.21	188.04	0.249 Level 1			
8,496.18	3,883.51	3,867.02	3,866.62	181.68	8.13	90.75	-83.23	-4,794.65	7.77	-182.04	189.81	0.041 Level 1, CC, ES, SF			
8,500.00	3,883.48	3,866.99	3,866.58	181.82	8.13	90.51	-83.23	-4,794.65	8.66	-181.30	189.96	0.046 Level 1			
8,550.00	3,883.04	3,866.56	3,866.15	183.74	8.13	87.31	-83.22	-4,794.65	54.38	-137.50	191.88	0.283 Level 1			
8,600.00	3,882.61	3,866.12	3,865.72	185.66	8.13	84.14	-83.22	-4,794.65	104.11	-89.69	193.79	0.537 Level 1			
8,650.00	3,882.17	3,865.69	3,865.28	187.58	8.13	81.01	-83.21	-4,794.65	154.01	-41.70	195.71	0.787 Level 1			
8,669.77	3,882.00	3,865.52	3,865.11	188.34	8.13	79.79	-83.21	-4,794.65	173.76	-22.71	196.47	0.884 Level 1			

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 #1H
Project:	Eddy County, NM (NAD27-NME)	TVD Reference:	KB @ 3698.00usft (Silver Oak 3)
Reference Site:	Halberd 27 State	MD Reference:	KB @ 3698.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #1.03-02-15	Offset TVD Reference:	Offset Datum

Offset Design Samedan State - #2 - WB1 - As-Drilled													Offset Site Error:	0.00 usft
Survey Program: 535-MWD													Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Warning								
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-81.43	259.60	-1,722.94	1,742.61					
50.00	50.00	22.05	22.05	0.06	0.02	-81.43	259.59	-1,722.94	1,742.39	1,742.30	0.08	N/A		
100.00	100.00	72.15	72.15	0.15	0.08	-81.43	259.57	-1,722.94	1,742.38	1,742.15	0.23	7,631.642		
150.00	150.00	122.26	122.26	0.33	0.14	-81.43	259.53	-1,722.94	1,742.38	1,741.91	0.46	3,756.004		
200.00	200.00	172.36	172.36	0.51	0.19	-81.44	259.47	-1,722.94	1,742.37	1,741.67	0.70	2,490.977		
250.00	250.00	222.47	222.47	0.68	0.25	-81.44	259.39	-1,722.94	1,742.36	1,741.42	0.94	1,863.378		
300.00	300.00	272.58	272.58	0.86	0.31	-81.44	259.29	-1,722.94	1,742.34	1,741.17	1.17	1,488.375		
350.00	350.00	322.68	322.68	1.04	0.36	-81.45	259.17	-1,722.94	1,742.32	1,740.92	1.41	1,239.017		
400.00	400.00	372.79	372.79	1.22	0.42	-81.45	259.03	-1,722.94	1,742.30	1,740.66	1.64	1,061.218		
450.00	450.00	422.89	422.89	1.40	0.48	-81.46	258.87	-1,722.94	1,742.28	1,740.40	1.88	928.040		
500.00	500.00	473.00	473.00	1.58	0.53	-81.46	258.68	-1,722.94	1,742.25	1,740.14	2.11	824.557		
550.00	550.00	523.10	523.10	1.76	0.59	-81.47	258.48	-1,722.94	1,742.22	1,739.87	2.35	741.833		
600.00	600.00	573.13	573.13	1.94	0.69	-81.48	258.26	-1,722.94	1,742.19	1,739.56	2.63	663.204		
650.00	650.00	623.13	623.13	2.12	0.80	-81.48	258.04	-1,722.94	1,742.16	1,739.24	2.92	596.905		
700.00	700.00	673.13	673.12	2.30	0.91	-81.49	257.83	-1,722.94	1,742.12	1,738.91	3.21	542.655		
750.00	750.00	723.13	723.12	2.48	1.03	-81.50	257.61	-1,722.94	1,742.09	1,738.59	3.50	497.443		
800.00	800.00	773.13	773.12	2.66	1.14	-81.50	257.39	-1,722.94	1,742.06	1,738.27	3.79	459.184		
850.00	850.00	823.13	823.12	2.84	1.25	-81.51	257.17	-1,722.94	1,742.03	1,737.94	4.09	426.299		
900.00	900.00	873.13	873.12	3.01	1.36	-81.52	256.95	-1,722.94	1,742.00	1,737.62	4.38	397.880		
950.00	950.00	923.13	923.12	3.19	1.48	-81.52	256.73	-1,722.94	1,741.96	1,737.29	4.67	373.012		
1,000.00	1,000.00	973.13	973.12	3.37	1.59	-81.53	256.52	-1,722.94	1,741.93	1,736.97	4.96	351.069		
1,050.00	1,050.00	1,023.12	1,023.12	3.55	1.70	-81.54	256.30	-1,722.94	1,741.90	1,736.65	5.25	331.563		
1,100.00	1,100.00	1,073.12	1,073.12	3.73	1.81	-81.55	256.08	-1,722.94	1,741.87	1,736.32	5.55	314.111		
1,150.00	1,150.00	1,123.12	1,123.12	3.91	1.93	-81.55	255.86	-1,722.94	1,741.83	1,736.00	5.84	298.403		
1,200.00	1,200.00	1,173.12	1,173.12	4.09	2.04	-81.56	255.64	-1,722.94	1,741.80	1,735.67	6.13	284.191		
1,250.00	1,250.00	1,223.12	1,223.11	4.27	2.15	-81.57	255.43	-1,722.94	1,741.77	1,735.35	6.42	271.270		
1,300.00	1,300.00	1,273.12	1,273.11	4.45	2.26	-81.57	255.21	-1,722.94	1,741.74	1,735.03	6.71	259.473		
1,350.00	1,350.00	1,323.12	1,323.11	4.63	2.38	-81.58	254.99	-1,722.94	1,741.71	1,734.70	7.00	248.659		
1,400.00	1,400.00	1,373.12	1,373.11	4.81	2.49	-81.59	254.77	-1,722.94	1,741.67	1,734.38	7.30	238.710		
1,450.00	1,450.00	1,423.12	1,423.11	4.99	2.60	-81.60	254.55	-1,722.94	1,741.64	1,734.05	7.59	229.526		
1,500.00	1,500.00	1,473.12	1,473.11	5.17	2.71	-81.60	254.33	-1,722.94	1,741.61	1,733.73	7.88	221.022		
1,550.00	1,550.00	1,523.12	1,523.11	5.34	2.83	-81.61	254.12	-1,722.94	1,741.58	1,733.41	8.17	213.126		
1,600.00	1,600.00	1,573.22	1,573.21	5.52	2.94	-81.62	253.89	-1,722.94	1,741.55	1,733.08	8.46	205.766		
1,650.00	1,650.00	1,623.33	1,623.32	5.70	3.05	-81.63	253.64	-1,722.94	1,741.51	1,732.75	8.76	198.895		
1,700.00	1,700.00	1,673.45	1,673.43	5.88	3.17	-81.63	253.37	-1,722.94	1,741.47	1,732.42	9.05	192.468		
1,750.00	1,750.00	1,723.56	1,723.54	6.06	3.28	-81.64	253.07	-1,722.94	1,741.43	1,732.09	9.34	186.443		
1,800.00	1,800.00	1,773.67	1,773.65	6.24	3.39	-81.65	252.76	-1,722.94	1,741.38	1,731.75	9.63	180.783		
1,850.00	1,850.00	1,823.78	1,823.77	6.42	3.50	-81.67	252.42	-1,722.94	1,741.33	1,731.41	9.92	175.455		
1,900.00	1,900.00	1,873.89	1,873.88	6.60	3.62	-81.68	252.06	-1,722.94	1,741.28	1,731.06	10.22	170.433		
1,950.00	1,950.00	1,924.00	1,923.99	6.78	3.73	-81.69	251.67	-1,722.94	1,741.22	1,730.72	10.51	165.689		
2,000.00	2,000.00	1,974.11	1,974.09	6.96	3.84	-81.70	251.26	-1,722.94	1,741.17	1,730.36	10.80	161.201		
2,050.00	2,050.00	2,024.21	2,024.19	7.14	3.96	-81.72	250.84	-1,722.94	1,741.10	1,730.01	11.09	156.950		
2,100.00	2,100.00	2,074.21	2,074.19	7.32	4.07	-81.73	250.40	-1,722.94	1,741.04	1,729.66	11.39	152.918		
2,150.00	2,150.00	2,124.21	2,124.18	7.50	4.18	-81.75	249.96	-1,722.94	1,740.98	1,729.30	11.68	149.088		
2,200.00	2,200.00	2,174.21	2,174.18	7.67	4.29	-81.76	249.53	-1,722.94	1,740.92	1,728.95	11.97	145.445		
2,250.00	2,250.00	2,224.20	2,224.17	7.85	4.41	-81.77	249.09	-1,722.94	1,740.85	1,728.59	12.26	141.975		
2,300.00	2,300.00	2,274.20	2,274.17	8.03	4.52	-81.79	248.65	-1,722.94	1,740.79	1,728.24	12.55	138.667		
2,350.00	2,350.00	2,324.20	2,324.17	8.21	4.63	-81.80	248.22	-1,722.94	1,740.73	1,727.88	12.85	135.509		
2,400.00	2,400.00	2,374.20	2,374.16	8.39	4.75	-81.82	247.78	-1,722.94	1,740.67	1,727.53	13.14	132.492		
2,450.00	2,450.00	2,424.20	2,424.16	8.57	4.86	-81.83	247.35	-1,722.94	1,740.60	1,727.17	13.43	129.606		
2,500.00	2,500.00	2,474.19	2,474.15	8.75	4.97	-81.84	246.91	-1,722.94	1,740.54	1,726.82	13.72	126.842		
2,550.00	2,550.00	2,524.19	2,524.15	8.93	5.08	-81.86	246.47	-1,722.94	1,740.48	1,726.47	14.01	124.194		

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 #1H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3698.00usft (Silver Oak 3)
Reference Site:	Halberd 27 State	MD Reference:	KB @ 3698.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #1 03-02-15	Offset TVD Reference:	Offset Datum

Offset Design Samedan State - #2 - WB1 - As-Drilled														Offset Site Error:	0.00 usft
Survey Program: 535-MWD														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
2,600.00	2,600.00	2,574.19	2,574.15	9.11	5.20	-81.87	246.04	-1,722.94	1,740.42	1,726.11	14.31	121.654			
2,650.00	2,650.00	2,624.19	2,624.14	9.29	5.31	-81.89	245.60	-1,722.94	1,740.36	1,725.76	14.60	119.216			
2,700.00	2,700.00	2,674.19	2,674.14	9.47	5.42	-81.90	245.16	-1,722.94	1,740.30	1,725.41	14.89	116.873			
2,750.00	2,750.00	2,724.18	2,724.14	9.65	5.54	-81.92	244.73	-1,722.94	1,740.23	1,725.05	15.18	114.621			
2,800.00	2,800.00	2,774.18	2,774.13	9.83	5.65	-81.93	244.29	-1,722.94	1,740.17	1,724.70	15.47	112.454			
2,850.00	2,850.00	2,824.18	2,824.13	10.00	5.76	-81.94	243.86	-1,722.94	1,740.11	1,724.35	15.77	110.366			
2,900.00	2,900.00	2,874.18	2,874.12	10.18	5.87	-81.96	243.42	-1,722.94	1,740.05	1,723.99	16.06	108.355			
2,950.00	2,950.00	2,924.18	2,924.12	10.36	5.99	-81.97	242.98	-1,722.94	1,739.99	1,723.64	16.35	106.416			
3,000.00	3,000.00	2,974.18	2,974.12	10.54	6.10	-81.99	242.55	-1,722.94	1,739.93	1,723.29	16.64	104.545			
3,050.00	3,050.00	3,024.14	3,024.08	10.72	6.21	-82.00	242.11	-1,722.94	1,739.87	1,722.94	16.93	102.768			
3,100.00	3,100.00	3,074.03	3,073.97	10.90	6.31	-82.01	241.69	-1,722.94	1,739.81	1,722.60	17.21	101.106			
3,150.00	3,150.00	3,123.92	3,123.86	11.08	6.41	-82.03	241.30	-1,722.94	1,739.76	1,722.27	17.49	99.498			
3,200.00	3,200.00	3,173.81	3,173.75	11.26	6.50	-82.04	240.93	-1,722.94	1,739.70	1,721.94	17.76	97.939			
3,250.00	3,250.00	3,223.71	3,223.64	11.44	6.60	-82.05	240.58	-1,722.94	1,739.66	1,721.61	18.04	96.429			
3,300.00	3,300.00	3,273.60	3,273.53	11.62	6.70	-82.06	240.25	-1,722.94	1,739.61	1,721.29	18.32	94.965			
3,350.00	3,350.00	3,323.49	3,323.43	11.80	6.80	-82.07	239.94	-1,722.94	1,739.57	1,720.97	18.60	93.544			
3,399.93	3,399.93	3,373.32	3,373.25	11.98	6.90	-82.08	239.65	-1,722.94	1,739.53	1,720.65	18.87	92.168			
3,450.00	3,449.92	3,423.21	3,423.14	12.15	7.00	14.72	239.39	-1,722.94	1,737.16	1,718.02	19.15	90.729			
3,500.00	3,499.39	3,472.57	3,472.50	12.32	7.09	14.97	239.15	-1,722.94	1,730.19	1,710.77	19.42	89.113			
3,550.00	3,547.93	3,521.09	3,521.01	12.50	7.19	15.41	238.93	-1,722.94	1,718.66	1,698.98	19.69	87.302			
3,600.00	3,595.12	3,568.35	3,568.28	12.68	7.28	16.05	238.71	-1,722.94	1,702.70	1,682.73	19.97	85.281			
3,650.00	3,640.50	3,613.82	3,613.75	12.88	7.38	16.93	238.49	-1,722.94	1,682.45	1,662.19	20.26	83.042			
3,700.00	3,683.68	3,657.08	3,657.01	13.12	7.46	18.11	238.26	-1,722.94	1,658.11	1,637.53	20.58	80.553			
3,750.00	3,724.23	3,697.72	3,697.65	13.41	7.54	19.64	238.04	-1,722.94	1,629.93	1,608.98	20.95	77.783			
3,800.00	3,761.81	3,735.38	3,735.30	13.78	7.62	21.62	237.82	-1,722.94	1,598.17	1,576.78	21.40	74.698			
3,850.00	3,796.05	3,769.70	3,769.63	14.24	7.69	24.21	237.62	-1,722.94	1,563.15	1,541.23	21.93	71.286			
3,900.00	3,826.64	3,800.38	3,800.30	14.83	7.75	27.60	237.43	-1,722.94	1,525.22	1,502.64	22.58	67.559			
3,950.00	3,853.31	3,827.12	3,827.04	15.55	7.80	32.10	237.26	-1,722.94	1,484.74	1,461.38	23.36	63.568			
4,000.00	3,875.80	3,849.68	3,849.61	16.43	7.85	38.11	237.11	-1,722.94	1,442.12	1,417.84	24.28	59.397			
4,050.00	3,893.91	3,867.86	3,867.78	17.46	7.89	46.18	236.99	-1,722.94	1,397.77	1,372.43	25.34	55.153			
4,100.00	3,907.47	3,881.48	3,881.40	18.63	7.91	56.81	236.90	-1,722.94	1,352.14	1,325.60	26.54	50.950			
4,150.00	3,916.35	3,890.42	3,890.35	19.91	7.93	70.06	236.84	-1,722.94	1,305.68	1,277.83	27.85	46.890			
4,200.00	3,920.49	3,894.60	3,894.53	21.30	7.94	84.90	236.81	-1,722.94	1,258.84	1,229.60	29.24	43.054			
4,250.00	3,920.54	3,894.70	3,894.62	22.77	7.94	91.64	236.81	-1,722.94	1,212.01	1,181.29	30.71	39.463			
4,300.00	3,920.11	3,894.29	3,894.22	24.28	7.94	91.71	236.81	-1,722.94	1,165.01	1,132.79	32.22	36.162			
4,350.00	3,919.67	3,893.88	3,893.80	25.88	7.94	91.79	236.81	-1,722.94	1,117.82	1,084.00	33.81	33.057			
4,400.00	3,919.23	3,893.45	3,893.38	27.48	7.94	91.88	236.82	-1,722.94	1,070.44	1,035.02	35.41	30.227			
4,450.00	3,918.80	3,893.02	3,892.94	29.14	7.94	91.93	236.82	-1,722.94	1,022.88	985.81	37.08	27.589			
4,500.00	3,918.36	3,892.59	3,892.51	30.83	7.94	91.85	236.82	-1,722.94	975.44	936.68	38.76	25.165			
4,550.00	3,917.92	3,892.15	3,892.07	32.55	7.93	91.77	236.82	-1,722.94	928.27	887.79	40.49	22.927			
4,600.00	3,917.49	3,891.71	3,891.64	34.28	7.93	91.69	236.83	-1,722.94	881.41	839.20	42.22	20.879			
4,650.00	3,917.05	3,891.28	3,891.20	36.05	7.93	91.61	236.83	-1,722.94	834.92	790.94	43.98	18.984			
4,700.00	3,916.62	3,890.84	3,890.77	37.81	7.93	91.54	236.83	-1,722.94	788.85	743.11	45.74	17.245			
4,750.00	3,916.18	3,890.41	3,890.33	39.61	7.93	91.46	236.84	-1,722.94	743.30	695.76	47.54	15.636			
4,800.00	3,915.74	3,889.97	3,889.90	41.40	7.93	91.38	236.84	-1,722.94	698.35	649.02	49.33	14.156			
4,850.00	3,915.31	3,889.54	3,889.46	43.22	7.93	91.30	236.84	-1,722.94	654.13	602.99	51.15	12.790			
4,900.00	3,914.87	3,889.10	3,889.02	45.03	7.93	91.22	236.85	-1,722.94	610.81	557.85	52.96	11.533			
4,950.00	3,914.44	3,888.67	3,888.59	46.86	7.93	91.14	236.85	-1,722.94	568.58	513.79	54.79	10.377			
5,000.00	3,914.00	3,888.23	3,888.15	48.70	7.93	91.06	236.85	-1,722.94	527.71	471.09	56.62	9.320			
5,050.00	3,913.56	3,887.79	3,887.72	50.54	7.93	90.98	236.85	-1,722.94	488.55	430.08	58.47	8.356			
5,100.00	3,913.13	3,887.36	3,887.28	52.39	7.92	90.90	236.86	-1,722.94	451.52	391.21	60.31	7.486			
5,150.00	3,912.69	3,886.92	3,886.85	54.24	7.92	90.82	236.86	-1,722.94	417.22	355.05	62.17	6.711			

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 #1H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3698.00usft (Silver Oak 3)
Reference Site:	Halberd 27 State	MD Reference:	KB @ 3698.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #103-02-15	Offset TVD Reference:	Offset Datum

Offset Design Samedan State - #2 - WB1 - As-Drilled														Offset Site Error:	0.00 usft
Survey Program: 535-MWD														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)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
5,200.00	3,912.26	3,886.49	3,886.41	56.10	7.92	90.74	236.86	-1,722.94	386.35	322.33	64.02	6.035			
5,250.00	3,911.82	3,886.05	3,885.98	57.96	7.92	90.67	236.87	-1,722.94	359.81	293.92	65.89	5.461			
5,300.00	3,911.38	3,885.62	3,885.54	59.83	7.92	90.59	236.87	-1,722.94	338.61	270.86	67.75	4.998			
5,350.00	3,910.95	3,885.18	3,885.11	61.70	7.92	90.51	236.87	-1,722.94	323.80	254.18	69.62	4.651			
5,400.00	3,910.51	3,884.75	3,884.67	63.57	7.92	90.43	236.87	-1,722.94	316.30	244.80	71.49	4.424			
5,423.06	3,910.31	3,884.55	3,884.47	64.44	7.92	90.39	236.88	-1,722.94	315.45	243.10	72.36	4.360 CC, ES			
5,450.00	3,910.08	3,884.31	3,884.23	65.45	7.92	90.35	236.88	-1,722.94	316.60	243.23	73.37	4.315			
5,500.00	3,909.64	3,883.88	3,883.80	67.33	7.92	90.27	236.88	-1,722.94	324.70	249.45	75.25	4.315 SF			
5,550.00	3,909.20	3,883.44	3,883.36	69.21	7.92	90.19	236.88	-1,722.94	340.03	262.91	77.13	4.409			
5,600.00	3,908.77	3,883.00	3,882.93	71.09	7.92	90.11	236.89	-1,722.94	361.68	282.68	79.01	4.578			
5,650.00	3,908.33	3,882.57	3,882.49	72.98	7.92	90.03	236.89	-1,722.94	388.60	307.70	80.90	4.804			
5,700.00	3,907.90	3,882.13	3,882.06	74.87	7.91	89.95	236.89	-1,722.94	419.76	336.98	82.78	5.071			
5,750.00	3,907.46	3,881.70	3,881.62	76.76	7.91	89.87	236.90	-1,722.94	454.30	369.63	84.67	5.365			
5,800.00	3,907.02	3,881.26	3,881.19	78.65	7.91	89.80	236.90	-1,722.94	491.51	404.95	86.56	5.678			
5,850.00	3,906.59	3,880.83	3,880.75	80.54	7.91	89.72	236.90	-1,722.94	530.82	442.37	88.45	6.001			
5,900.00	3,906.15	3,880.39	3,880.31	82.44	7.91	89.64	236.90	-1,722.94	571.81	481.46	90.35	6.329			
5,950.00	3,905.72	3,879.96	3,879.88	84.33	7.91	89.56	236.91	-1,722.94	614.13	521.88	92.24	6.658			
6,000.00	3,905.28	3,879.52	3,879.44	86.23	7.91	89.48	236.91	-1,722.94	657.53	563.39	94.14	6.985			
6,050.00	3,904.84	3,879.08	3,879.01	88.13	7.91	89.40	236.91	-1,722.94	701.81	605.77	96.04	7.308			
6,100.00	3,904.41	3,878.65	3,878.57	90.03	7.91	89.32	236.92	-1,722.94	746.81	648.87	97.94	7.626			
6,150.00	3,903.97	3,878.21	3,878.14	91.93	7.91	89.24	236.92	-1,722.94	792.41	692.57	99.84	7.937			
6,200.00	3,903.54	3,877.78	3,877.70	93.83	7.91	89.16	236.92	-1,722.94	838.51	736.77	101.74	8.242			
6,250.00	3,903.10	3,877.34	3,877.27	95.73	7.90	89.08	236.93	-1,722.94	885.03	781.40	103.64	8.540			
6,300.00	3,902.66	3,876.91	3,876.83	97.64	7.90	89.00	236.93	-1,722.94	931.92	826.38	105.54	8.830			
6,350.00	3,902.23	3,876.47	3,876.40	99.54	7.90	88.93	236.93	-1,722.94	979.11	871.67	107.44	9.113			
6,400.00	3,901.79	3,876.04	3,875.96	101.44	7.90	88.85	236.93	-1,722.94	1,026.57	917.22	109.35	9.388			
6,450.00	3,901.36	3,875.60	3,875.52	103.35	7.90	88.77	236.94	-1,722.94	1,074.26	963.01	111.25	9.656			
6,500.00	3,900.92	3,875.17	3,875.09	105.26	7.90	88.69	236.94	-1,722.94	1,122.15	1,008.99	113.16	9.917			
6,550.00	3,900.48	3,874.73	3,874.65	107.16	7.90	88.61	236.94	-1,722.94	1,170.22	1,055.15	115.06	10.170			
6,600.00	3,900.05	3,874.29	3,874.22	109.07	7.90	88.53	236.95	-1,722.94	1,218.44	1,101.47	116.97	10.417			
6,650.00	3,899.61	3,873.86	3,873.78	110.98	7.90	88.45	236.95	-1,722.94	1,266.80	1,147.92	118.88	10.656			
6,700.00	3,899.18	3,873.42	3,873.35	112.89	7.90	88.37	236.95	-1,722.94	1,315.28	1,194.49	120.78	10.889			
6,750.00	3,898.74	3,872.99	3,872.91	114.80	7.90	88.29	236.96	-1,722.94	1,363.87	1,241.18	122.69	11.116			
6,800.00	3,898.30	3,872.55	3,872.48	116.71	7.90	88.21	236.96	-1,722.94	1,412.56	1,287.96	124.60	11.337			
6,850.00	3,897.87	3,872.12	3,872.04	118.62	7.89	88.14	236.96	-1,722.94	1,461.34	1,334.83	126.51	11.551			
6,900.00	3,897.43	3,871.68	3,871.60	120.53	7.89	88.06	236.96	-1,722.94	1,510.20	1,381.77	128.42	11.760			
6,950.00	3,897.00	3,871.25	3,871.17	122.44	7.89	87.98	236.97	-1,722.94	1,559.13	1,428.79	130.33	11.963			
7,000.00	3,896.56	3,870.81	3,870.73	124.35	7.89	87.90	236.97	-1,722.94	1,608.12	1,475.88	132.24	12.160			
7,050.00	3,896.12	3,870.37	3,870.30	126.26	7.89	87.82	236.97	-1,722.94	1,657.18	1,523.02	134.15	12.353			
7,100.00	3,895.69	3,869.94	3,869.86	128.17	7.89	87.74	236.98	-1,722.94	1,706.29	1,570.22	136.06	12.540			
7,150.00	3,895.25	3,869.50	3,869.43	130.09	7.89	87.66	236.98	-1,722.94	1,755.45	1,617.47	137.98	12.723			
7,200.00	3,894.82	3,869.07	3,868.99	132.00	7.89	87.58	236.98	-1,722.94	1,804.65	1,664.77	139.89	12.901			
7,250.00	3,894.38	3,868.63	3,868.56	133.91	7.89	87.50	236.98	-1,722.94	1,853.90	1,712.10	141.80	13.074			
7,300.00	3,893.94	3,868.20	3,868.12	135.83	7.89	87.43	236.99	-1,722.94	1,903.19	1,759.48	143.71	13.243			
7,350.00	3,893.51	3,867.76	3,867.69	137.74	7.89	87.35	236.99	-1,722.94	1,952.52	1,806.89	145.63	13.408			
7,400.00	3,893.07	3,867.33	3,867.25	139.65	7.88	87.27	236.99	-1,722.94	2,001.87	1,854.33	147.54	13.568			
7,450.00	3,892.64	3,866.89	3,866.81	141.57	7.88	87.19	237.00	-1,722.94	2,051.26	1,901.81	149.45	13.725			
7,500.00	3,892.20	3,866.45	3,866.38	143.48	7.88	87.11	237.00	-1,722.94	2,100.68	1,949.31	151.37	13.878			
7,550.00	3,891.76	3,866.02	3,865.94	145.40	7.88	87.03	237.00	-1,722.94	2,150.12	1,996.84	153.28	14.027			
7,600.00	3,891.33	3,865.58	3,865.51	147.31	7.88	86.95	237.00	-1,722.94	2,199.59	2,044.40	155.20	14.173			
7,650.00	3,890.89	3,865.15	3,865.07	149.23	7.88	86.87	237.01	-1,722.94	2,249.09	2,091.98	157.11	14.315			
7,700.00	3,890.46	3,864.71	3,864.64	151.15	7.88	86.79	237.01	-1,722.94	2,298.60	2,139.58	159.03	14.454			

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 #1H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3698.00usft (Silver Oak 3)
Reference Site:	Halberd 27 State	MD Reference:	KB @ 3698.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #1:03-02-15	Offset TVD Reference:	Offset Datum

Offset Design													Samedan State - #2 - WB1 - As-Drilled		Offset Site Error: 0.00 usft	
Survey Program: 535-MWD													Offset Well Error: 0.00 usft			
Reference		Offset		Semi Major Axis			Distance						Warning			
Measured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation				
Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	(usft)	(usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Centres (usft)	Ellipses (usft)	Separation (usft)	Factor				
7,750.00	3,890.02	3,864.28	3,864.20	153.06	7.88	86.72	237.01	-1,722.94	2,348.14	2,187.20	160.94	14.590				
7,800.00	3,889.58	3,863.84	3,863.77	154.98	7.88	86.64	237.02	-1,722.94	2,397.69	2,234.83	162.86	14.723				
7,850.00	3,889.15	3,863.41	3,863.33	156.89	7.88	86.56	237.02	-1,722.94	2,447.26	2,282.49	164.77	14.852				
7,900.00	3,888.71	3,862.97	3,862.89	158.81	7.88	86.48	237.02	-1,722.94	2,496.85	2,330.16	166.69	14.979				
7,950.00	3,888.28	3,862.53	3,862.46	160.73	7.87	86.40	237.03	-1,722.94	2,546.46	2,377.85	168.60	15.103				
8,000.00	3,887.84	3,862.10	3,862.02	162.64	7.87	86.32	237.03	-1,722.94	2,596.08	2,425.56	170.52	15.225				
8,050.00	3,887.40	3,861.66	3,861.59	164.56	7.87	86.24	237.03	-1,722.94	2,645.71	2,473.28	172.44	15.343				
8,100.00	3,886.97	3,861.23	3,861.15	166.48	7.87	86.16	237.03	-1,722.94	2,695.36	2,521.01	174.35	15.459				
8,150.00	3,886.53	3,860.79	3,860.72	168.40	7.87	86.09	237.04	-1,722.94	2,745.02	2,568.75	176.27	15.573				
8,200.00	3,886.10	3,860.36	3,860.28	170.31	7.87	86.01	237.04	-1,722.94	2,794.69	2,616.51	178.18	15.684				
8,250.00	3,885.66	3,859.92	3,859.85	172.23	7.87	85.93	237.04	-1,722.94	2,844.38	2,664.28	180.10	15.793				
8,300.00	3,885.22	3,859.49	3,859.41	174.15	7.87	85.85	237.05	-1,722.94	2,894.07	2,712.05	182.02	15.900				
8,350.00	3,884.79	3,859.05	3,858.97	176.07	7.87	85.77	237.05	-1,722.94	2,943.78	2,759.84	183.94	16.004				
8,400.00	3,884.35	3,858.61	3,858.54	177.99	7.87	85.69	237.05	-1,722.94	2,993.49	2,807.64	185.85	16.107				
8,450.00	3,883.92	3,858.18	3,858.10	179.90	7.87	85.61	237.05	-1,722.94	3,043.22	2,855.45	187.77	16.207				
8,500.00	3,883.48	3,857.74	3,857.67	181.82	7.87	85.54	237.06	-1,722.94	3,092.95	2,903.26	189.69	16.305				
8,550.00	3,883.04	3,857.31	3,857.23	183.74	7.86	85.46	237.06	-1,722.94	3,142.69	2,951.09	191.61	16.402				
8,600.00	3,882.61	3,856.87	3,856.80	185.66	7.86	85.38	237.06	-1,722.94	3,192.44	2,998.92	193.52	16.496				
8,650.00	3,882.17	3,856.44	3,856.36	187.58	7.86	85.30	237.07	-1,722.94	3,242.20	3,046.76	195.44	16.589				
8,669.77	3,882.00	3,856.26	3,856.19	188.34	7.86	85.27	237.07	-1,722.94	3,261.87	3,065.67	196.20	16.625				



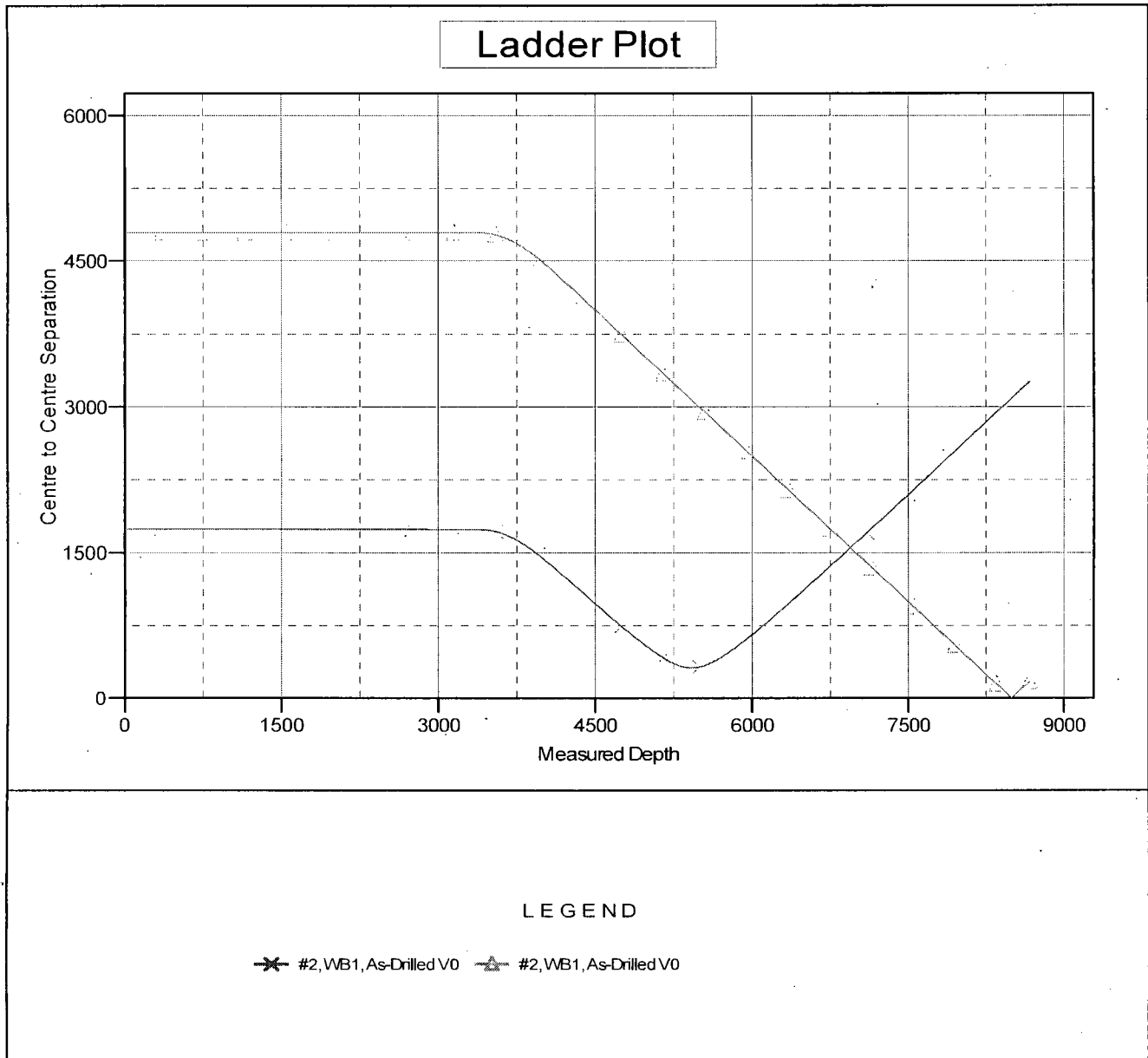
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3698.00usft (Silver Oak 3)
Reference Site:	Halberd 27 State	MD Reference:	KB @ 3698.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #1-03-02-15	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 3698.00usft (Silver Oak 3)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

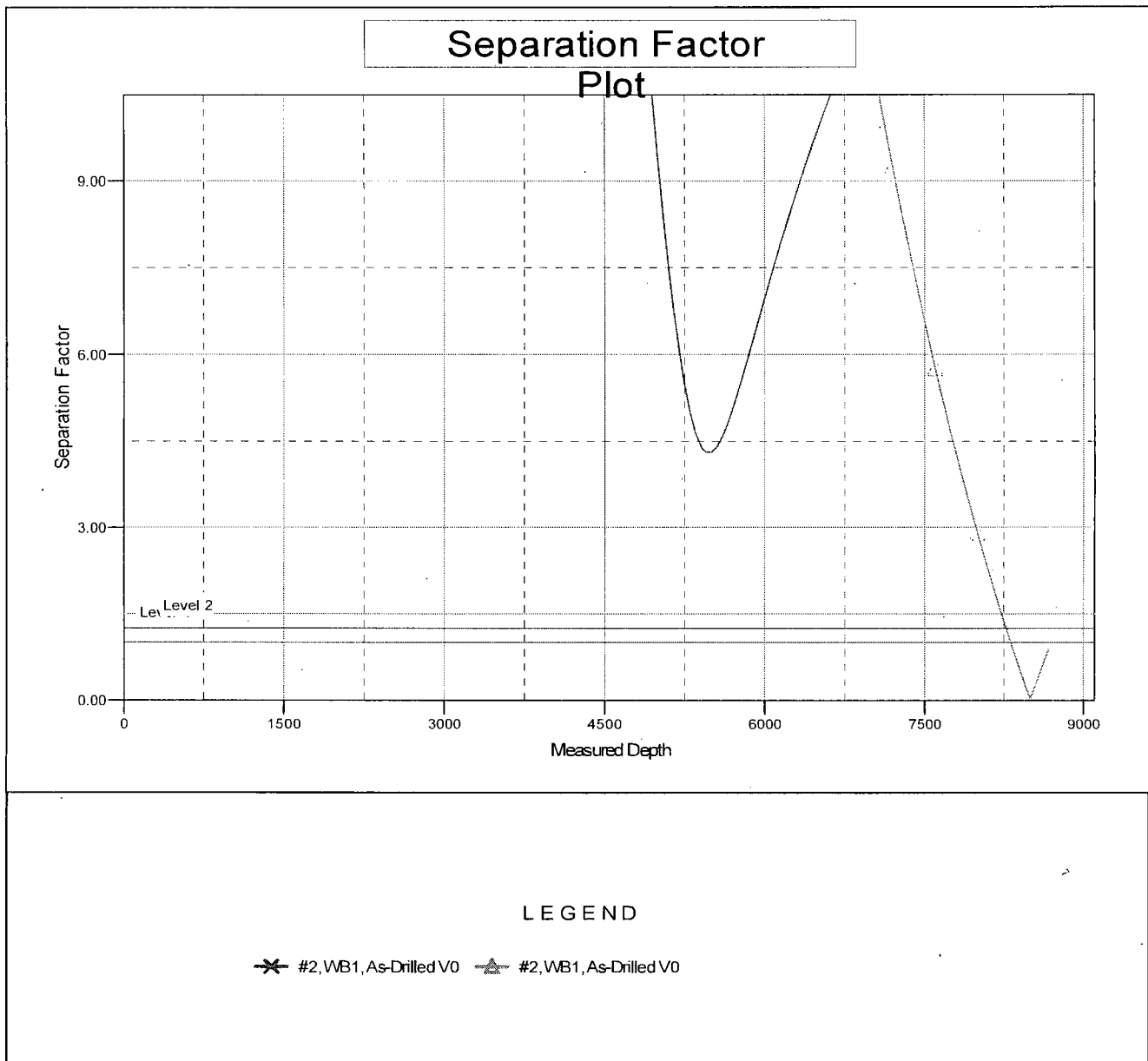
Coordinates are relative to: #1H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.10°



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3698.00usft (Silver Oak 3)
Reference Site:	Halberd 27 State	MD Reference:	KB @ 3698.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#1H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #1 03-02-15	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 3698.00usft (Silver Oak 3)
 Offset Depths are relative to Offset Datum
 Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #1H
 Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
 Grid Convergence at Surface is: 0.10°



District I
1623 N. French Dr., Hobbs, NM 88240
Phone: (575) 993-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3463

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

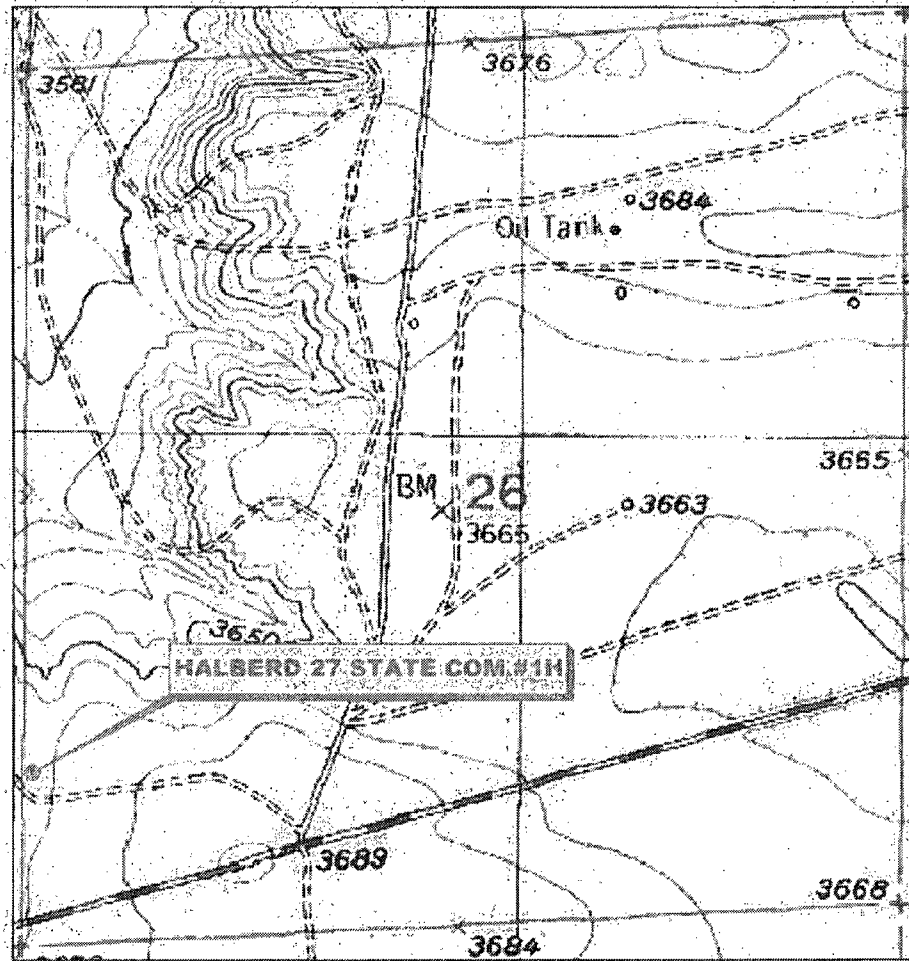
1 API Number 30-015-		2 Pool Code 96836		3 Pool Name Red Lake; Glorieta Yeso, Northeast	
4 Property Code 313860		5 Property Name HALBERD 27 STATE COM			6 Well Number 1H
7 OGRID NO. 229137		8 Operator Name COG OPERATING, LLC			9 Elevation 3680'
10 Surface Location					
UL or lot no. M	Section 26	Township 17S	Range 28E	Lot Idn 1003	Feet from the SOUTH
				Feet from the 65	East/West line WEST
				County EDDY	
11 Bottom Hole Location If Different From Surface					
UL or lot no. M	Section 27	Township 17S	Range 28E	Lot Idn 976	Feet from the SOUTH
				Feet from the 330	East/West line WEST
				County EDDY	
12 Dedicated Acres 160		13 Joint or Infill		14 Consolidation Code	
				15 Order No.	

No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.

		OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or undivided mineral interest in the land including the proposed bottom hole location or has a right to drill this well in this location pursuant to a contract with an owner of such a mineral or working interest, or is a voluntary pooling agreement or a compulsory pooling order, as required by the division. Signature: <i>Kelly J. Holly</i> Date: 3-3-15 Printed Name: Kelly J. Holly E-mail Address: kholly@concho.com
GEODETIC DATA NAD 27 GRID - NM EAST SURFACE LOCATION N 655242.3 - E 554871.0 LAT: 32.80122316° N LONG: 104.15475697° W BOTTOM LOCATION N 655151.4 - E 549902.8 CORNER DATA NAD 27 GRID - NM EAST A. FOUND BRASS CAP "1941" N 654171.7 - E 549562.6 B. FOUND BRASS CAP "1941" N 656782.8 - E 549589.7 C. FOUND BRASS CAP "1941" N 659394.4 - E 549615.6 D. FOUND BRASS CAP "1941" N 659403.5 - E 552227.1 E. FOUND BRASS CAP "1941" N 659411.7 - E 554838.6 F. FOUND BRASS CAP "1941" N 659612.6 - E 557438.4 G. FOUND BRASS CAP "1941" N 659806.8 - E 560025.7 H. FOUND BRASS CAP "1941" N 657151.1 - E 560029.7 I. FOUND BRASS CAP "1941" N 654489.2 - E 560017.8 J. FOUND BRASS CAP "1941" N 654360.8 - E 557407.3 K. FOUND BRASS CAP "1941" N 654234.8 - E 554798.0 L. FOUND BRASS CAP "1941" N 654203.5 - E 552180.8 M. FOUND BRASS CAP "1941" N 656823.2 - E 554818.4 1. CALCULATED CORNER N 655297.8 - E 556102.7 2. CALCULATED CORNER N 655601.5 - E 556111.6 3. CALCULATED CORNER N 655529.0 - E 554808.2 4. CALCULATED CORNER N 655477.2 - E 549516.2		SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. 10-14-2014 Date of Survey Signature and Seal of Professional Surveyor 19680 Certificate Number

RRC - Firm No.: TX 10193838 NM 4655451 - Job No.: LS140388

LOCATION VERIFICATION MAP



SECTION 26, TWP. 17 SOUTH, RGE. 28 EAST,
N. M. P. M., EDDY CO., NEW MEXICO

OPERATOR: COG Operating, LLC

LEASE: Halberd 27 State Com

WELL NO.: 1H

ELEVATION: 3680'

LOCATION: 1003' FSL & 65' FWL

CONTOUR INTERVAL: 10'

USGS TOPO. SOURCE MAP:

Red Lake, NM (1955)

Firm No.: TX 101938JB, NM 4655451

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NO.	REVISION	DATE
JOB NO.:	LS140388	
DWG. NO.:	140388LV	

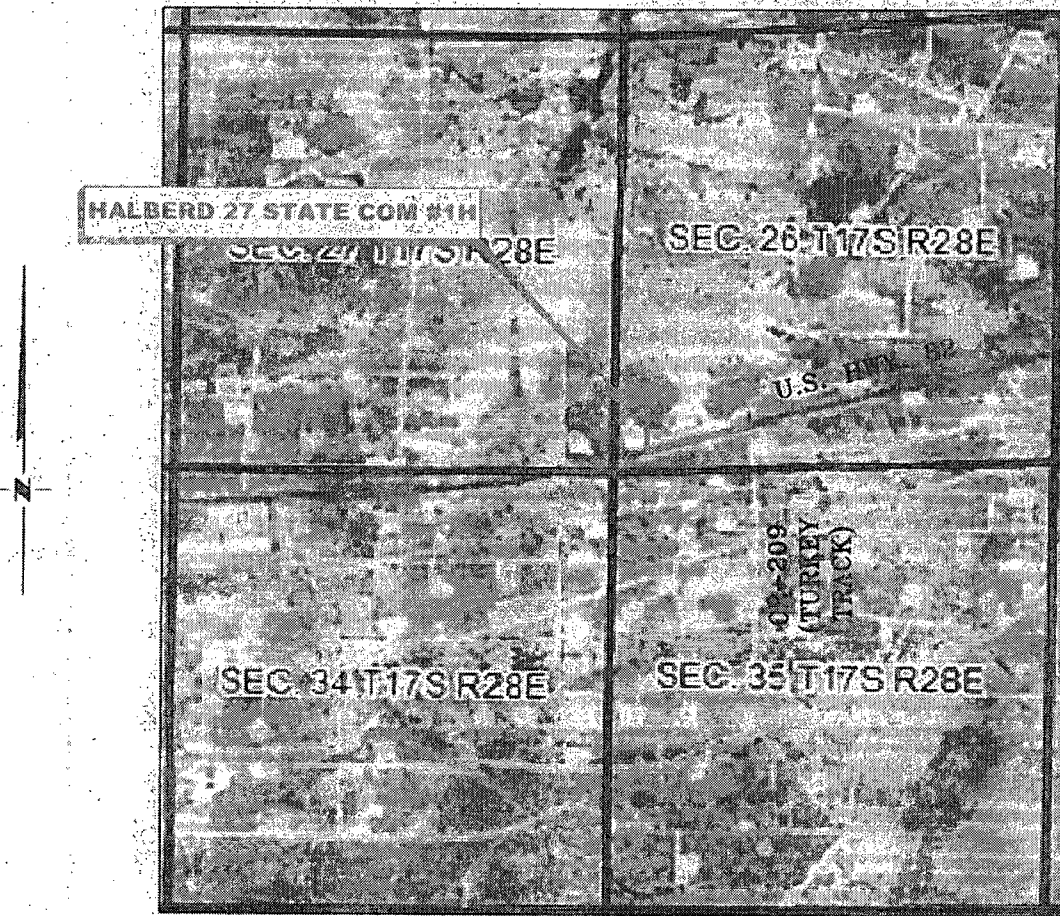
RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 954-8200

SCALE: 1" = 1000'
DATE: 10-14-2014
SURVEYED BY: GB/DH
DRAWN BY: ARJ
APPROVED BY: RMH
SHEET: 1 OF 1

VICINITY MAP

NOT TO SCALE



SECTION 26, TWP. 17 SOUTH, RGE. 28 EAST,
N. M. P. M., EDDY CO., NEW MEXICO

OPERATOR: COG Operating, LLC

LOCATION: 1003' FSL & 65' FWL

LEASE: Halberd 27 State Com

ELEVATION: 3680'

WELL NO.: 1H

Firm No.: TX 10193838 NM 4655451

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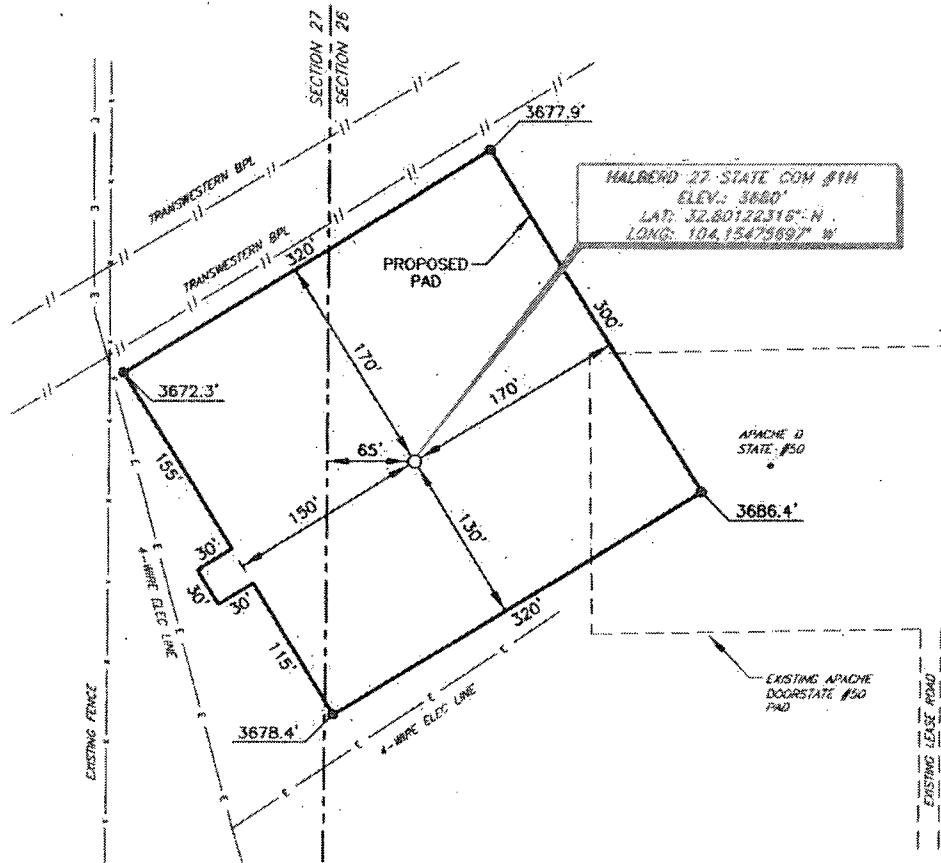
NO.	REVISION	DATE
JOB. NO.	LS140388	
DWG. NO.	140388VM	

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: NTS
DATE: 10-14-2014
SURVEYED BY: GB/DH
DRAWN BY: ARJ
APPROVED BY: RMH
SHEET: 1 OF 1

COG OPERATING, LLC
 HALBERD 27 STATE COM #1H
 (1003' FSL & 65' FWL)
 SECTION 26, T17S, R28E
 N. M. P. M., EDDY CO., NEW MEXICO



DIRECTIONS TO LOCATION

From the intersection of U.S. Hwy. 82 and CR-209 (Turkey Track),
 Go North on CR-209 approx. 30 feet to a lease road;

Turn left on a lease road and go West approx. 0.2 miles to
 a lease road;

Turn right on a lease road and go North approx 0.1 miles
 to the Apache Doorstate #50;

Location is approx. 265 feet West of the existing Apache D State #50.

SCALE: 1" = 100'

BEARINGS ARE
 MAG 27 GRID - NM EAST
 DISTANCES ARE
 GROUND

Form No. TX 10183A38 NM 4655451

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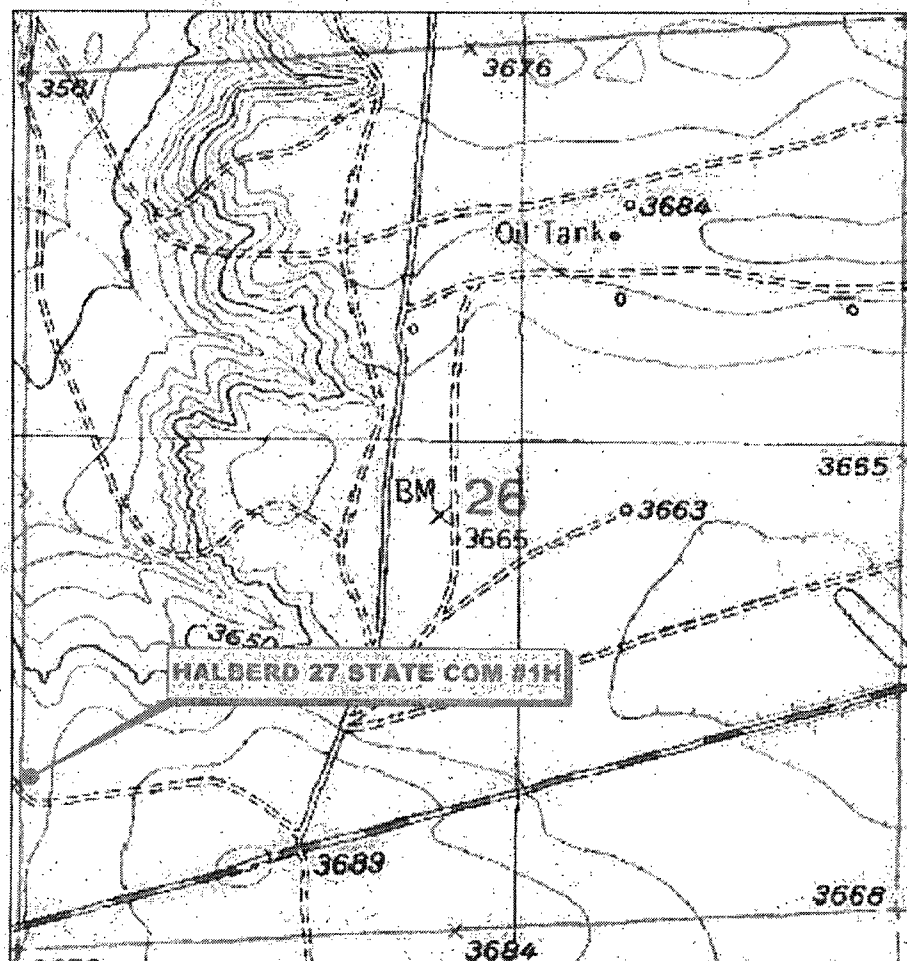
NO.	REVISION	DATE
JOB NO.	LS140388	
DWG. NO.	140388PAD	

RRC

308 W. BROADWAY ST., HOBBS, NM 88240. (575) 964-8200

SCALE: 1" = 100'
DATE: 10-14-2014
SURVEYED BY: GB/DH
DRAWN BY: ARJ
APPROVED BY: RMH
SHEET: 1 OF 1

LOCATION VERIFICATION MAP



SECTION 26, TWP. 17 SOUTH, RGE. 28 EAST,
N. M. P. M., EDDY CO., NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Halberd 27 State Com
WELL NO.: 1H
ELEVATION: 3680'

LOCATION: 1003' FSL & 65' FWL
CONTOUR INTERVAL: 10'
USGS TOPO. SOURCE MAP:
Red Lake, NM (1955)

Firm No. TX 10193818 NM 4655451

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NO.	REVISION	DATE
JOB NO.	LS140388	
DWG. NO.	140388LVM	

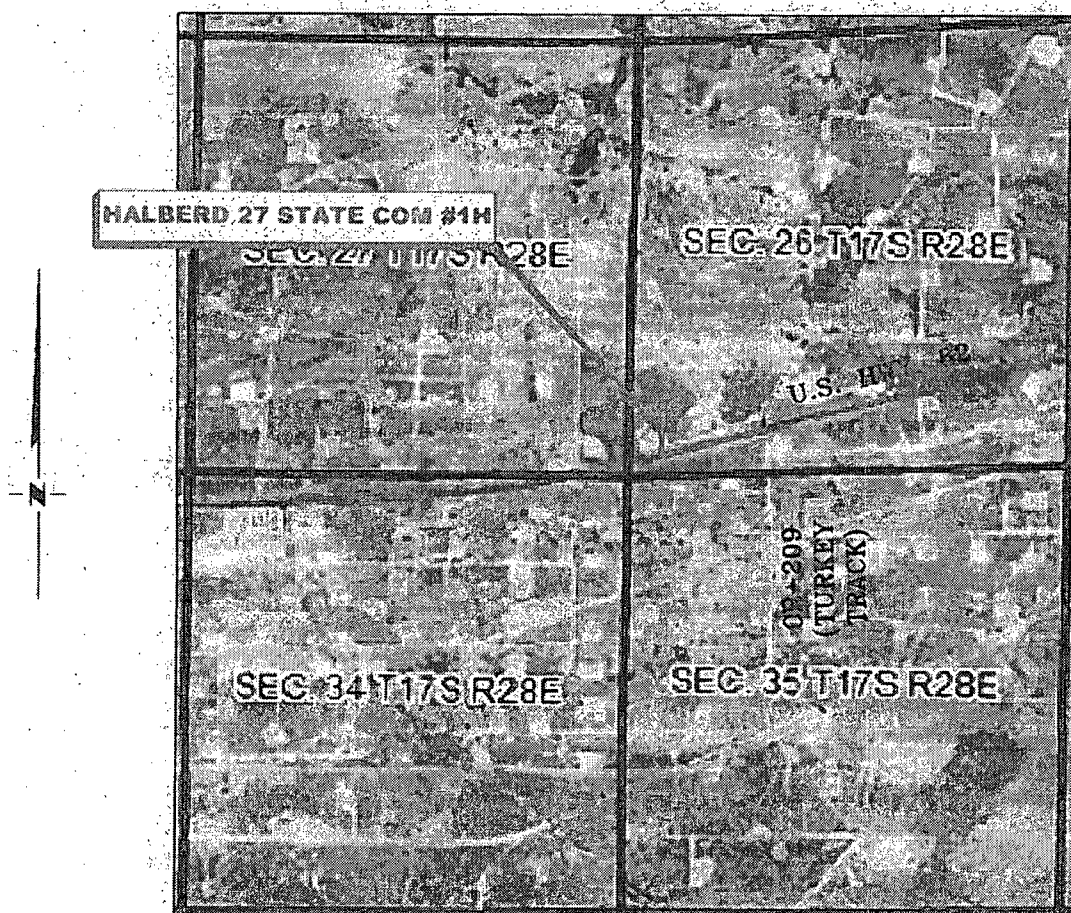
RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'
DATE: 10-14-2014
SURVEYED BY: GB/DH
DRAWN BY: ARJ
APPROVED BY: RMH
SHEET: 1 OF 1

VICINITY MAP

NOT TO SCALE



SECTION 26, TWP. 17 SOUTH, RGE. 28 EAST,
N. M. P. M., EDDY CO., NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Halberd 27 State Com
WELL NO.: 1H

LOCATION: 1003' FSL & 65' FWL
ELEVATION: 3680'

Firm No.: TX 10193838 NM 4655451

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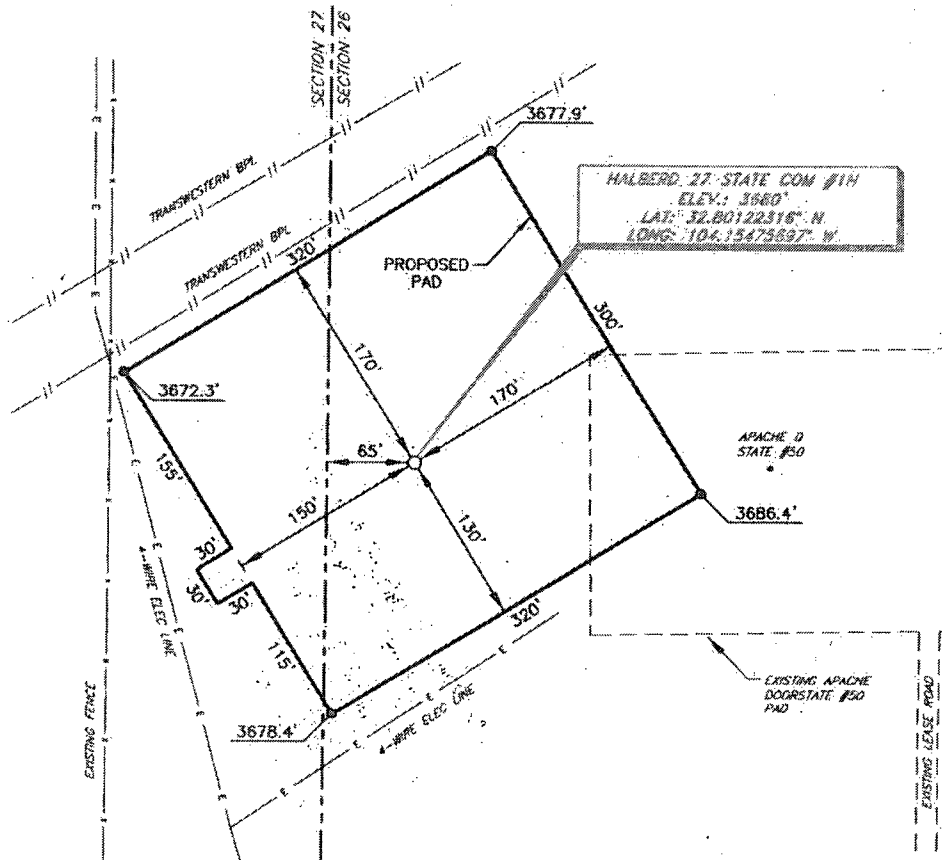
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JOB NO.	LS140388	
DWG. NO.	140388VM	

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (505) 964-8200

SCALE: NTS
DATE: 10-14-2014
SURVEYED BY: GB/DH
DRAWN BY: ARJ
APPROVED BY: RMH
SHEET : 1 OF 1

COG OPERATING, LLC
 HALBERD 27 STATE COM #1H
 (1003' FSL & 65' FWL)
 SECTION 26, T17S, R28E
 N. M. P. M., EDDY CO., NEW MEXICO



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

Firm No. TX 10193838 NM 4655451

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NO.	REVISION	DATE
JOB NO.	LS140388	
DWG. NO.	140388PAD	

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (505) 964-8200

SCALE: 1" = 100'
DATE: 10-14-2014
SURVEYED BY: GB/DH
DRAWN BY: ARJ
APPROVED BY: RMH
SHEET: 1 OF 1