

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

WELL API NO. 30-015-39779
5. Indicate Type of Lease STATE ☐ FEE ☒
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name Stonewall 9 Fee
8. Well Number 4H
9. OGRID Number 229137
10. Pool name or Wildcat Atoka; Glorieta Yeso 3250

11. Elevation (Show whether DR, RKB, RT, GR, etc.) 3339'
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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.)

1. Type of Well: Oil Well ☒ Gas Well ☐ Other ☐

2. Name of Operator
COG Operating LLC

3. Address of Operator
One Concho Center - 600 W Illinois Ave Midland, TX 79701

4. Well Location
Unit Letter **A** : **150** feet from the **NORTH** line and **990** feet from the **EAST** line
Section **9** Township **19S** Range **26E** NMPM County **EDDY**

11. Elevation (Show whether DR, RKB, RT, GR, etc.)
3339'

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

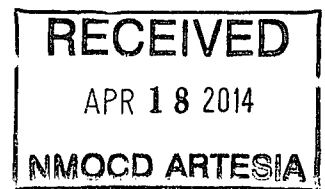
NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
DOWNHOLE COMMINGLE ☐			
OTHER: Change TVD ☒		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 permission to change the TVD:

FROM: 2750' TVD ; 7434' MD
TO: / 3142' TVD ; 7812' MD

A revised directional plan is attached.



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 4/16/2014

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 4-18-2014

Conditions of Approval (if any):



COG Operating LLC

Eddy County, NM (NAD27 NME)

Stonewall 9 Fee

#4H

WB1

Plan: Plan #1 04-03-14

Standard Planning Report

03 April, 2014





Phoenix Technology Services
Planning Report



Database:	GCR-DB	Local Co-ordinate Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	GL @ 3339.00usft
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	GL @ 3339.00usft
Site:	Stonewall 9 Fee	North Reference:	Grid
Well:	#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1_04-03-14		

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

Site:	Stonewall 9 Fee		
Site Position:		Northing:	611,835.50 usft
From:	Map	Easting:	482,702.00 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 40' 55.28160 N
		Longitude:	104° 23' 22.39586 W
		Grid Convergence:	-0.03 °

Well	#4H					
Well Position	+N/-S	16.70 usft	Northing:	611,852.20 usft	Latitude:	32° 40' 55.45931 N
	+E/-W	2,565.10 usft	Easting:	485,267.10 usft	Longitude:	104° 22' 52.38292 W
Position Uncertainty	0.00 usft	Wellhead Elevation:		Ground Level:	3,339.00 usft	

Wellbore	WB1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	04/03/14	7.65	60.40	48,523

Design					Plan #1_04-03-14				
Audit Notes:									
Version:		Phase:		PLAN		Tie On Depth:		0.00	
Vertical Section:		Depth From (TVD)		+N/-S		+E/-W		Direction	
		(usft)		(usft)		(usft)		(°)	
		0.00		0.00		0.00		178.43	

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,628.25	0.00	0.00	2,628.25	0.00	0.00	0.00	0.00	0.00	0.00	
3,447.34	90.10	176.50	3,149.12	-520.81	31.85	11.00	11.00	0.00	176.50	
3,519.87	90.10	178.68	3,148.99	-593.27	34.91	3.00	0.00	3.00	90.00	
7,812.26	90.10	178.68	3,141.50	-4,884.50	134.10	0.00	0.00	0.00	0.00	PBHL-Stonewall 9 #4H



Phoenix Technology Services
Planning Report



Database:	GCR-DB	Local Co-ordinate/Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	GL @ 3339.00usft
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	GL @ 3339.00usft
Site:	Stonewall 9 Fee	North Reference:	Grid
Well:	#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1: 04-03-14		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,628.25	0.00	0.00	2,628.25	0.00	0.00	0.00	0.00	0.00	0.00
KOP, 11°/100' Build									
2,700.00	7.89	176.50	2,699.77	-4.92	0.30	4.93	11.00	11.00	0.00
2,800.00	18.89	176.50	2,796.90	-28.01	1.71	28.04	11.00	11.00	0.00
2,900.00	29.89	176.50	2,887.84	-69.17	4.23	69.26	11.00	11.00	0.00
3,000.00	40.89	176.50	2,969.23	-126.89	7.76	127.05	11.00	11.00	0.00
3,075.31	49.18	176.50	3,022.40	-180.02	11.01	180.26	11.00	11.00	0.00
PP-Stonewall 9 #4H									
3,100.00	51.89	176.50	3,038.10	-199.05	12.17	199.31	11.00	11.00	0.00
3,200.00	62.89	176.50	3,091.90	-283.00	17.31	283.37	11.00	11.00	0.00
3,300.00	73.89	176.50	3,128.67	-375.66	22.98	376.15	11.00	11.00	0.00
3,400.00	84.89	176.50	3,147.05	-473.62	28.97	474.23	11.00	11.00	0.00
3,441.74	89.48	176.50	3,149.10	-515.22	31.51	515.89	11.00	11.00	0.00
TL-3150° TVD @ 0 VZ 90.1° Inc									
3,447.34	90.10	176.50	3,149.12	-520.81	31.85	521.48	11.00	11.00	0.00
LP- Begin 3°/100' Turn									
3,500.00	90.10	178.08	3,149.03	-573.41	34.34	574.13	3.00	0.00	3.00
3,519.87	90.10	178.68	3,148.99	-593.27	34.91	594.00	3.00	0.00	3.00
Hold 90.1° Inc, 178.68° Azm									
3,600.00	90.10	178.68	3,148.85	-673.38	36.76	674.13	0.00	0.00	0.00
3,700.00	90.10	178.68	3,148.68	-773.35	39.07	774.13	0.00	0.00	0.00
3,800.00	90.10	178.68	3,148.50	-873.32	41.38	874.13	0.00	0.00	0.00
3,900.00	90.10	178.68	3,148.33	-973.29	43.69	974.13	0.00	0.00	0.00
4,000.00	90.10	178.68	3,148.16	-1,073.27	46.00	1,074.13	0.00	0.00	0.00
4,100.00	90.10	178.68	3,147.98	-1,173.24	48.31	1,174.13	0.00	0.00	0.00
4,200.00	90.10	178.68	3,147.81	-1,273.21	50.62	1,274.12	0.00	0.00	0.00
4,300.00	90.10	178.68	3,147.63	-1,373.19	52.93	1,374.12	0.00	0.00	0.00
4,400.00	90.10	178.68	3,147.46	-1,473.16	55.25	1,474.12	0.00	0.00	0.00
4,500.00	90.10	178.68	3,147.28	-1,573.13	57.56	1,574.12	0.00	0.00	0.00
4,600.00	90.10	178.68	3,147.11	-1,673.11	59.87	1,674.12	0.00	0.00	0.00
4,700.00	90.10	178.68	3,146.93	-1,773.08	62.18	1,774.12	0.00	0.00	0.00
4,800.00	90.10	178.68	3,146.76	-1,873.05	64.49	1,874.12	0.00	0.00	0.00
4,900.00	90.10	178.68	3,146.58	-1,973.03	66.80	1,974.12	0.00	0.00	0.00
5,000.00	90.10	178.68	3,146.41	-2,073.00	69.11	2,074.12	0.00	0.00	0.00
5,100.00	90.10	178.68	3,146.23	-2,172.97	71.42	2,174.11	0.00	0.00	0.00
5,200.00	90.10	178.68	3,146.06	-2,272.95	73.73	2,274.11	0.00	0.00	0.00
5,300.00	90.10	178.68	3,145.89	-2,372.92	76.04	2,374.11	0.00	0.00	0.00
5,400.00	90.10	178.68	3,145.71	-2,472.89	78.35	2,474.11	0.00	0.00	0.00
5,500.00	90.10	178.68	3,145.54	-2,572.87	80.67	2,574.11	0.00	0.00	0.00
5,600.00	90.10	178.68	3,145.36	-2,672.84	82.98	2,674.11	0.00	0.00	0.00
5,700.00	90.10	178.68	3,145.19	-2,772.81	85.29	2,774.11	0.00	0.00	0.00
5,800.00	90.10	178.68	3,145.01	-2,872.78	87.60	2,874.11	0.00	0.00	0.00
5,900.00	90.10	178.68	3,144.84	-2,972.76	89.91	2,974.11	0.00	0.00	0.00
6,000.00	90.10	178.68	3,144.66	-3,072.73	92.22	3,074.10	0.00	0.00	0.00
6,100.00	90.10	178.68	3,144.49	-3,172.70	94.53	3,174.10	0.00	0.00	0.00
6,200.00	90.10	178.68	3,144.31	-3,272.68	96.84	3,274.10	0.00	0.00	0.00
6,300.00	90.10	178.68	3,144.14	-3,372.65	99.15	3,374.10	0.00	0.00	0.00
6,400.00	90.10	178.68	3,143.97	-3,472.62	101.46	3,474.10	0.00	0.00	0.00
6,500.00	90.10	178.68	3,143.79	-3,572.60	103.77	3,574.10	0.00	0.00	0.00
6,600.00	90.10	178.68	3,143.62	-3,672.57	106.09	3,674.10	0.00	0.00	0.00
6,700.00	90.10	178.68	3,143.44	-3,772.54	108.40	3,774.10	0.00	0.00	0.00
6,800.00	90.10	178.68	3,143.27	-3,872.52	110.71	3,874.10	0.00	0.00	0.00
6,900.00	90.10	178.68	3,143.09	-3,972.49	113.02	3,974.09	0.00	0.00	0.00



Phoenix Technology Services
Planning Report



Database:	GCR/DB	Local Co-ordinate Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	GL @ 3339.00usft
Project:	Eddy County, NM (NAD27/NME)	MD Reference:	GL @ 3339.00usft
Site:	Stonewall 9 Fee	North Reference:	Grid
Well:	#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1 04-03-14		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,000.00	90.10	178.68	3,142.92	-4,072.46	115.33	4,074.09	0.00	0.00	0.00
7,100.00	90.10	178.68	3,142.74	-4,172.44	117.64	4,174.09	0.00	0.00	0.00
7,200.00	90.10	178.68	3,142.57	-4,272.41	119.95	4,274.09	0.00	0.00	0.00
7,300.00	90.10	178.68	3,142.39	-4,372.38	122.26	4,374.09	0.00	0.00	0.00
7,400.00	90.10	178.68	3,142.22	-4,472.35	124.57	4,474.09	0.00	0.00	0.00
7,500.00	90.10	178.68	3,142.05	-4,572.33	126.88	4,574.09	0.00	0.00	0.00
7,600.00	90.10	178.68	3,141.87	-4,672.30	129.19	4,674.09	0.00	0.00	0.00
7,700.00	90.10	178.68	3,141.70	-4,772.27	131.51	4,774.09	0.00	0.00	0.00
7,800.00	90.10	178.68	3,141.52	-4,872.25	133.82	4,874.08	0.00	0.00	0.00
7,812.26	90.10	178.68	3,141.50	-4,884.50	134.10	4,886.34	0.00	0.00	0.00

TD at 7812.26 - PBHL-Stonewall 9 #4H

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PP-Stonewall 9 #4H	0.00	0.00	3,022.39	-180.00	11.01	611,672.20	485,278.11	32° 40' 53.67815 N	104° 22' 52.25315 W
- plan hits target center									
- Point									
PBHL-Stonewall 9 #4H	0.00	360.00	3,141.50	-4,884.50	134.10	606,967.70	485,401.20	32° 40' 7.12455 N	104° 22' 50.78833 W
- plan hits target center									
- Point									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,441.74	3,149.10	TL, 3150' TVD @ 0 VZ, 90.1° Inc		-0.10	178.43

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,628.25	2,628.25	0.00	0.00	KOP, 11°/100' Build
3,447.34	3,149.12	-520.81	31.85	LP, Begin 3°/100' Turn
3,519.87	3,148.99	-593.27	34.91	Hold 90.1° Inc, 178.68° Azm
7,812.26	3,141.50	-4,884.50	134.10	TD at 7812.26



COG Operating LLC

Eddy County, NM (NAD27 NME)

Stonewall 9 Fee

#4H

WB1

Plan #1 04-03-14

Anticollision Report

03 April, 2014





Phoenix Technology Services

Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	GL @ 3339'00usft
Reference Site:	Stonewall 9 Fee	MD Reference:	GL @ 3339'00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	WB1	Database:	GCR DB
Reference Design:	Plan #1 04-03-14	Offset TVD Reference:	Offset Datum

Reference	Plan #1 04-03-14		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00 usft	Error Surface:	Circular Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	04/03/14		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	7,812.10	Plan #1 04-03-14 (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						
Sherman 4 Fee						
#4H - OH / Job #1310484 - Surveys (JW 4)	0.00	13.65	304.56	304.55	10,000.000	CC, ES
#4H - OH / Job #1310484 - Surveys (JW 4)	2,628.25	2,615.00	336.88	326.53	32.551	SF

Offset Design										Sherman 4 Fee - #4H - OH // Job #1310484 - Surveys (JW 4)		Offset Site Error:		0.00 usft	
Survey Program:										100-VES-ISCWSA-GYRO-3 2521-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		
0.00	0.00	13.65	13.65	0.00	0.01	-10.35	299.61	-54.70	304.56	304.55	0.01	N/A CC, ES			
100.00	100.00	111.39	111.39	0.11	0.11	-10.37	300.09	-54.91	305.09	304.87	0.22	1,401.985			
200.00	200.00	211.13	211.12	0.34	0.29	-10.45	300.87	-55.51	305.96	305.34	0.63	486.885			
300.00	300.00	309.76	309.74	0.56	0.48	-10.58	301.87	-56.40	307.13	306.09	1.04	295.813			
400.00	400.00	408.33	408.30	0.79	0.66	-10.76	303.27	-57.63	308.75	307.31	1.45	213.141			
500.00	500.00	508.02	507.96	1.01	0.85	-10.99	304.93	-59.23	310.69	308.83	1.86	166.963			
600.00	600.00	610.55	610.47	1.24	1.04	-11.24	306.21	-60.83	312.21	309.94	2.28	137.115			
700.00	700.00	712.08	711.99	1.46	1.23	-11.49	306.78	-62.38	313.06	310.37	2.69	116.405			
800.00	800.00	811.89	811.78	1.69	1.41	-11.80	307.13	-64.18	313.78	310.68	3.10	101.284			
900.00	900.00	913.51	913.38	1.91	1.60	-12.15	307.13	-66.11	314.16	310.66	3.51	89.542			
1,000.00	1,000.00	1,012.30	1,012.15	2.14	1.78	-12.53	307.09	-68.22	314.58	310.67	3.91	80.360			
1,100.00	1,100.00	1,112.24	1,112.07	2.36	1.97	-12.84	307.29	-70.03	315.17	310.85	4.33	72.869			
1,200.00	1,200.00	1,211.67	1,211.48	2.58	2.15	-13.11	307.63	-71.62	315.87	311.13	4.74	66.698			
1,300.00	1,300.00	1,310.97	1,310.77	2.81	2.34	-13.38	308.20	-73.32	316.81	311.67	5.15	61.555			
1,400.00	1,400.00	1,412.20	1,411.98	3.03	2.53	-13.69	308.56	-75.14	317.59	312.03	5.56	57.110			
1,500.00	1,500.00	1,510.78	1,510.54	3.26	2.71	-14.03	308.95	-77.20	318.47	312.50	5.97	53.342			
1,600.00	1,600.00	1,610.23	1,609.97	3.48	2.90	-14.38	309.58	-79.37	319.62	313.24	6.38	50.082			
1,700.00	1,700.00	1,708.68	1,708.38	3.71	3.08	-14.71	310.59	-81.54	321.16	314.37	6.79	47.287			
1,800.00	1,800.00	1,809.76	1,809.43	3.93	3.27	-15.04	311.63	-83.75	322.72	315.51	7.21	44.781			
1,900.00	1,900.00	1,909.47	1,909.11	4.16	3.46	-15.40	312.51	-86.10	324.20	316.58	7.62	42.551			
2,000.00	2,000.00	2,010.00	2,009.62	4.38	3.65	-15.78	313.30	-88.55	325.61	317.57	8.03	40.535			
2,100.00	2,100.00	2,109.65	2,109.22	4.61	3.84	-16.18	314.04	-91.10	327.02	318.58	8.44	38.725			
2,200.00	2,200.00	2,210.25	2,209.79	4.83	4.03	-16.57	314.73	-93.64	328.39	319.53	8.86	37.070			
2,300.00	2,300.00	2,310.52	2,310.03	5.06	4.21	-16.92	315.33	-95.94	329.63	320.36	9.27	35.552			
2,400.00	2,400.00	2,410.56	2,410.04	5.28	4.40	-17.33	315.82	-98.53	330.85	321.17	9.68	34.164			

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



Phoenix Technology Services
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	GL @ 3339.00usft
Reference Site:	Stonewall 9 Fee	MD Reference:	GL @ 3339.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	WB1	Database:	GCR DB
Reference Design:	Plan #1_04-03-14	Offset TVD Reference:	Offset Datum

Offset Design: Sherman 4 Fee - #4H - OH / Job #1310484 - Surveys (JW 4)													Offset Site Error: 0.00 usft	
Survey Program: 100-VES-ISCWSA-GYRO-3 2521-MWD													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Hightside Tooface (ft)	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)				
2,500.00	2,500.00	2,510.49	2,509.93	5.51	4.54	-17.80	316.04	-101.49	331.97	321.92	10.04	33.057		
2,600.00	2,600.00	2,595.19	2,594.57	5.73	4.55	-18.00	318.05	-103.36	334.98	324.70	10.28	32.576		
2,628.25	2,628.25	2,615.00	2,614.33	5.80	4.55	-17.96	319.36	-103.52	336.88	326.53	10.35	32.551 SF		
2,650.00	2,649.99	2,634.08	2,633.35	5.84	4.56	165.56	320.97	-103.60	339.10	328.71	10.40	32.620		
2,700.00	2,699.77	2,670.24	2,669.26	5.93	4.57	165.65	325.10	-103.53	348.82	338.33	10.49	33.247		
2,750.00	2,748.89	2,707.00	2,705.54	6.02	4.58	165.85	331.01	-103.09	364.99	354.39	10.60	34.428		
2,800.00	2,796.90	2,727.08	2,725.15	6.13	4.59	165.69	335.27	-102.62	387.57	376.85	10.72	36.169		
2,850.00	2,843.36	2,747.39	2,744.72	6.23	4.60	165.43	340.62	-101.87	416.47	405.63	10.84	38.433		
2,900.00	2,887.84	2,770.00	2,766.12	6.35	4.62	165.14	347.85	-100.73	450.93	439.96	10.97	41.116		
2,950.00	2,929.93	2,778.52	2,774.06	6.52	4.63	163.80	350.90	-100.22	489.79	478.64	11.15	43.937		
3,000.00	2,969.23	2,790.14	2,784.78	6.74	4.65	162.00	355.31	-99.49	532.35	520.96	11.39	46.738		
3,050.00	3,005.40	2,801.00	2,794.69	7.03	4.66	159.09	359.69	-98.75	577.71	566.02	11.69	49.406		
3,100.00	3,038.10	2,801.00	2,794.69	7.39	4.66	152.28	359.69	-98.75	625.11	613.06	12.05	51.876		
3,150.00	3,067.02	2,811.92	2,804.56	7.82	4.68	141.71	364.29	-97.99	673.77	661.27	12.50	53.914		
3,200.00	3,091.90	2,814.30	2,806.71	8.32	4.68	112.84	365.30	-97.83	723.24	710.24	13.00	55.636		
3,250.00	3,112.52	2,813.92	2,806.37	8.88	4.68	62.01	365.14	-97.85	772.96	759.40	13.56	56.990		
3,300.00	3,128.67	2,811.01	2,803.75	9.50	4.68	32.50	363.90	-98.06	822.48	808.29	14.18	57.995		
3,350.00	3,140.22	2,801.00	2,794.69	10.18	4.66	20.22	359.69	-98.75	871.38	856.54	14.84	58.724		
3,400.00	3,147.05	2,801.00	2,794.69	10.89	4.66	14.79	359.69	-98.75	919.21	903.65	15.55	59.100		
3,447.34	3,149.12	2,801.00	2,794.69	11.60	4.66	11.70	359.69	-98.75	963.37	947.11	16.26	59.255		
3,500.00	3,149.03	2,787.58	2,782.43	12.36	4.64	15.06	354.31	-99.65	1,011.67	994.66	17.01	59.485		
3,519.87	3,148.99	2,785.28	2,780.31	12.64	4.64	16.36	353.43	-99.80	1,029.96	1,012.68	17.28	59.588		
3,600.00	3,148.85	2,770.00	2,766.12	13.86	4.62	15.94	347.85	-100.73	1,104.17	1,085.69	18.48	59.747		
3,700.00	3,148.68	2,770.00	2,766.12	15.49	4.62	15.94	347.85	-100.73	1,197.45	1,177.34	20.11	59.536		
3,800.00	3,148.50	2,770.00	2,766.12	17.17	4.62	15.94	347.85	-100.73	1,291.73	1,269.94	21.79	59.288		
3,900.00	3,148.33	2,752.61	2,749.70	18.87	4.61	15.48	342.17	-101.63	1,386.30	1,362.82	23.48	59.046		
4,000.00	3,148.16	2,739.00	2,736.68	20.60	4.59	15.11	338.28	-102.21	1,481.71	1,456.52	25.20	58.807		
4,100.00	3,147.98	2,739.00	2,736.68	22.35	4.59	15.11	338.28	-102.21	1,577.42	1,550.47	26.94	58.547		
4,200.00	3,147.81	2,739.00	2,736.68	24.11	4.59	15.11	338.28	-102.21	1,673.62	1,644.92	28.70	58.307		
4,300.00	3,147.63	2,739.00	2,736.68	25.88	4.59	15.11	338.28	-102.21	1,770.25	1,739.78	30.48	58.088		
4,400.00	3,147.46	2,739.00	2,736.68	27.66	4.59	15.11	338.28	-102.21	1,867.23	1,834.98	32.26	57.887		
4,500.00	3,147.28	2,722.81	2,721.00	29.45	4.59	14.68	334.28	-102.74	1,964.12	1,930.08	34.04	57.707		
4,600.00	3,147.11	2,707.00	2,705.54	31.24	4.58	14.25	331.01	-103.09	2,061.69	2,025.87	35.82	57.553		
4,700.00	3,146.93	2,707.00	2,705.54	33.04	4.58	14.25	331.01	-103.09	2,159.14	2,121.52	37.62	57.390		
4,800.00	3,146.76	2,707.00	2,705.54	34.85	4.58	14.25	331.01	-103.09	2,256.81	2,217.38	39.43	57.242		
4,900.00	3,146.58	2,707.00	2,705.54	36.66	4.58	14.25	331.01	-103.09	2,354.67	2,313.44	41.23	57.106		
5,000.00	3,146.41	2,707.00	2,705.54	38.47	4.58	14.25	331.01	-103.09	2,452.71	2,409.67	43.04	56.981		
5,100.00	3,146.23	2,707.00	2,705.54	40.28	4.58	14.25	331.01	-103.09	2,550.90	2,506.05	44.86	56.867		
5,200.00	3,146.06	2,707.00	2,705.54	42.10	4.58	14.25	331.01	-103.09	2,649.23	2,602.56	46.67	56.761		
5,300.00	3,145.89	2,707.00	2,705.54	43.91	4.58	14.25	331.01	-103.09	2,747.68	2,699.19	48.49	56.663		
5,400.00	3,145.71	2,692.29	2,691.06	45.73	4.57	13.86	328.41	-103.31	2,846.04	2,795.73	50.31	56.575		
5,500.00	3,145.54	2,677.00	2,675.96	47.55	4.57	13.48	326.04	-103.48	2,944.73	2,892.61	52.12	56.497		
5,600.00	3,145.36	2,677.00	2,675.96	49.38	4.57	13.48	326.04	-103.48	3,043.31	2,989.37	53.94	56.415		
5,700.00	3,145.19	2,677.00	2,675.96	51.20	4.57	13.48	326.04	-103.48	3,141.98	3,086.21	55.77	56.339		
5,800.00	3,145.01	2,677.00	2,675.96	53.03	4.57	13.48	326.04	-103.48	3,240.73	3,183.14	57.59	56.268		
5,900.00	3,144.84	2,677.00	2,675.96	54.85	4.57	13.48	326.04	-103.48	3,339.56	3,280.14	59.42	56.202		
6,000.00	3,144.66	2,677.00	2,675.96	56.68	4.57	13.48	326.04	-103.48	3,438.46	3,377.21	61.25	56.140		
6,100.00	3,144.49	2,677.00	2,675.96	58.51	4.57	13.48	326.04	-103.48	3,537.41	3,474.34	63.08	56.082		
6,200.00	3,144.31	2,677.00	2,675.96	60.34	4.57	13.48	326.04	-103.48	3,636.43	3,571.52	64.91	56.027		
6,300.00	3,144.14	2,677.00	2,675.96	62.17	4.57	13.48	326.04	-103.48	3,735.49	3,668.76	66.73	55.975		
6,400.00	3,143.97	2,677.00	2,675.96	64.00	4.57	13.48	326.04	-103.48	3,834.61	3,766.04	68.56	55.927		
6,500.00	3,143.79	2,662.61	2,661.70	65.83	4.56	13.12	324.10	-103.58	3,933.61	3,863.22	70.39	55.881		

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



Phoenix Technology Services
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	GL @ 3339.00usft
Reference Site:	Stonewall 9 Fee	MD Reference:	GL @ 3339.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	WB1	Database:	GCR DB
Reference Design:	Plan #1 04-03-14	Offset TVD Reference:	Offset Datum

Offset Design Sherman 4 Fee- #4H - OH//Job #1310484 - Surveys (JW 4)													Offset Site Error: 0.00 usft	
Survey Program: 100-VES-ISCWSA-GYRO-3 2521-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	
6,600.00	3,143.62	2,660.43	2,659.54	67.66	4.56	13.07	323.82	-103.58	4,032.77	3,960.54	72.22	55.838		
6,700.00	3,143.44	2,646.00	2,645.20	69.49	4.56	12.73	322.16	-103.61	4,132.06	4,058.01	74.05	55.800		
6,800.00	3,143.27	2,646.00	2,645.20	71.32	4.56	12.73	322.16	-103.61	4,231.25	4,155.37	75.88	55.760		
6,900.00	3,143.09	2,646.00	2,645.20	73.16	4.56	12.73	322.16	-103.61	4,330.47	4,252.76	77.72	55.721		
7,000.00	3,142.92	2,646.00	2,645.20	74.99	4.56	12.73	322.16	-103.61	4,429.73	4,350.18	79.55	55.685		
7,100.00	3,142.74	2,646.00	2,645.20	76.82	4.56	12.73	322.16	-103.61	4,529.02	4,447.64	81.38	55.650		
7,200.00	3,142.57	2,646.00	2,645.20	78.66	4.56	12.73	322.16	-103.61	4,628.34	4,545.13	83.22	55.617		
7,300.00	3,142.39	2,646.00	2,645.20	80.49	4.56	12.73	322.16	-103.61	4,727.69	4,642.64	85.05	55.586		
7,400.00	3,142.22	2,646.00	2,645.20	82.33	4.56	12.73	322.16	-103.61	4,827.07	4,740.18	86.89	55.556		
7,500.00	3,142.05	2,646.00	2,645.20	84.16	4.56	12.73	322.16	-103.61	4,926.47	4,837.75	88.72	55.528		
7,600.00	3,141.87	2,646.00	2,645.20	86.00	4.56	12.73	322.16	-103.61	5,025.90	4,935.34	90.56	55.500		
7,700.00	3,141.70	2,646.00	2,645.20	87.83	4.56	12.73	322.16	-103.61	5,125.35	5,032.96	92.39	55.474		
7,800.00	3,141.52	2,646.00	2,645.20	89.67	4.56	12.73	322.16	-103.61	5,224.82	5,130.59	94.23	55.449		
7,812.26	3,141.50	2,646.00	2,645.20	89.89	4.56	12.73	322.16	-103.61	5,237.01	5,142.56	94.45	55.446		
7,812.73	3,141.50	2,646.00	2,645.20	89.90	4.56	12.73	322.16	-103.61	5,237.48	5,143.02	94.46	55.447		

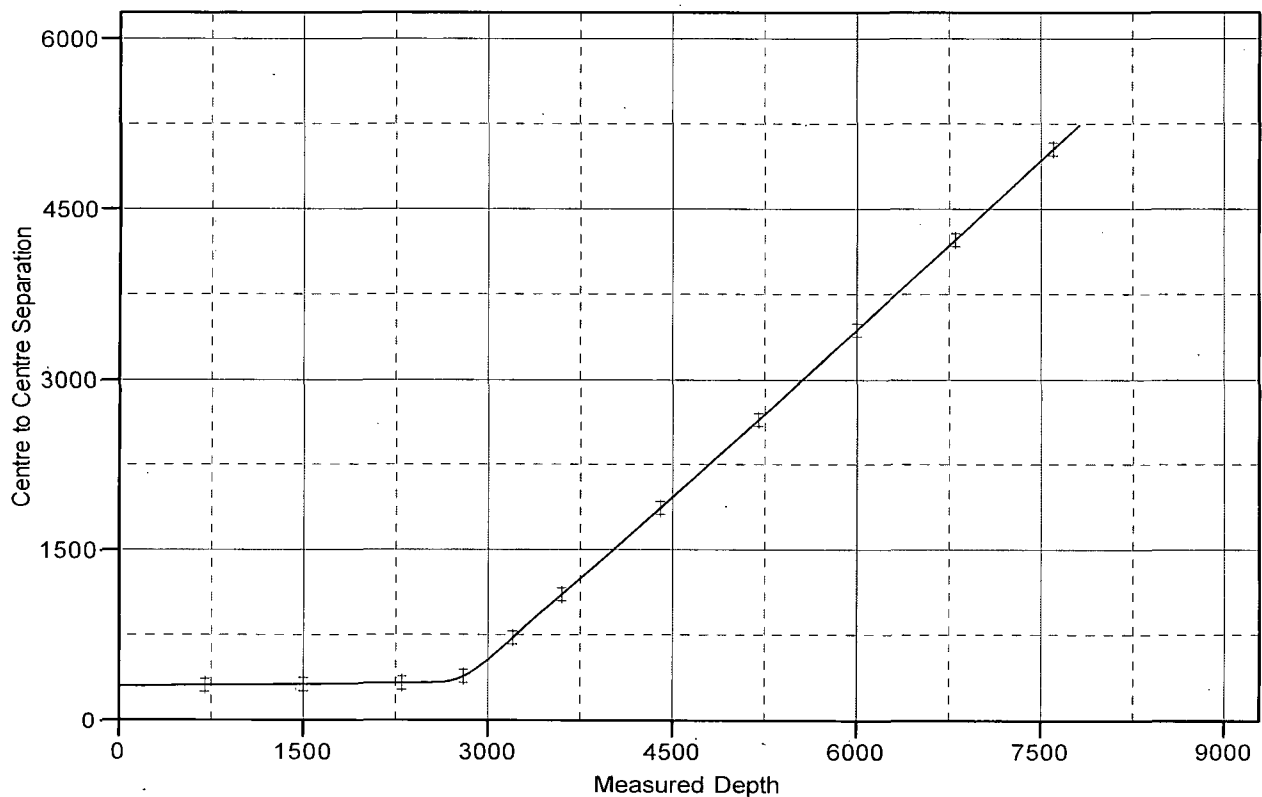


Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	GL @ 3339.00usft
Reference Site:	Stonewall, 9 Feet	MD Reference:	GL @ 3339.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	WB1	Database:	GCR DB
Reference Design:	Plan #1 04-03-14	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL @ 3339.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #4H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: -0.03°

Ladder Plot



LEGEND

— #4H, OH/Job #1310484, Surveys (JW4) V0



Phoenix Technology Services
Anticollision Report

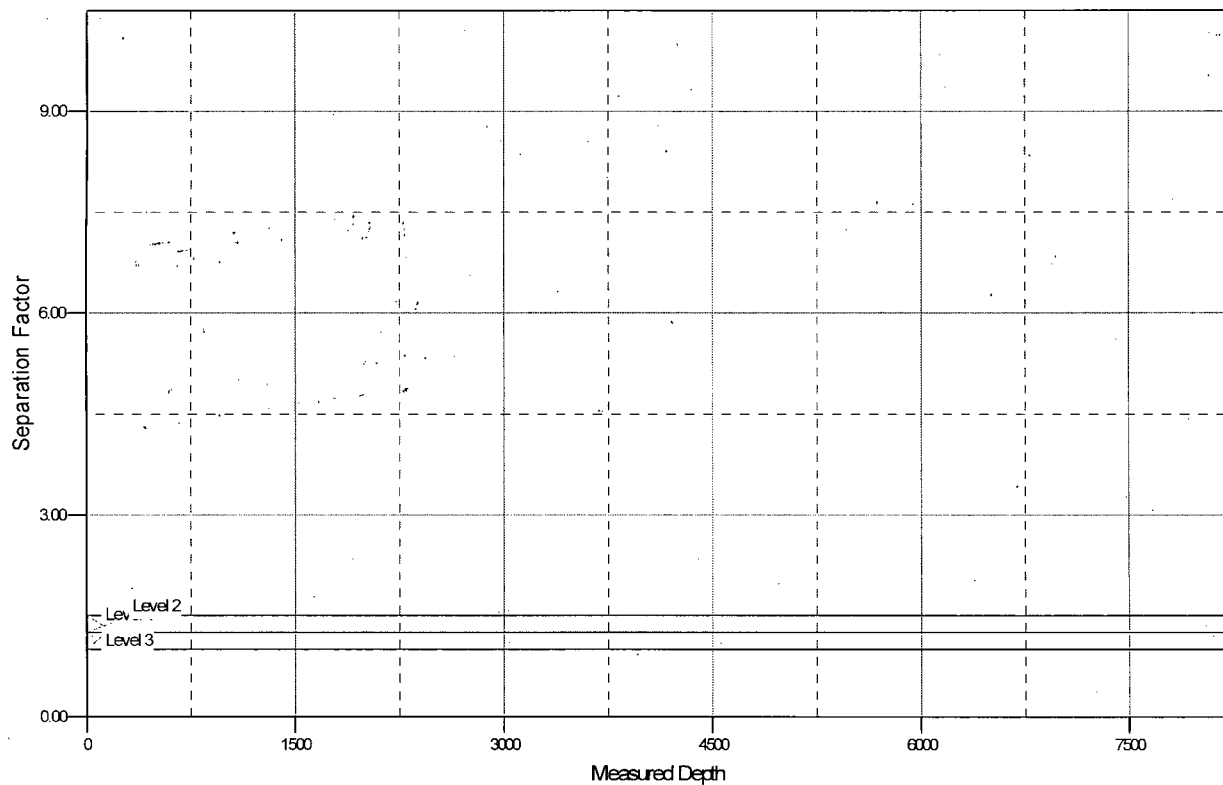


Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	GL @ 3339.00usft
Reference Site:	Stonewall 9 Fee	MD Reference:	GL @ 3339.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	WB1	Database:	GCR DB
Reference Design:	Plan #1 04-03-14	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL @ 3339.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #4H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: -0.03°

Separation Factor Plot



LEGEND

—●— #4H, OH / Job #1310484, Surveys (JW4) V0