

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

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

Form C-103
Revised August 1, 2011

WELL API NO. 30-015-39842	
5. Indicate Type of Lease STATE ☒ FEE ☐	
6. State Oil & Gas Lease No.	
7. Lease Name or Unit Agreement Name Patton 5 Fee	
8. Well Number 4H	
9. OGRID Number 229137	
10. Pool name or Wildcat Atoka; Glorieta-Yeso	
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 3368' GR	

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

NOTICE OF INTENTION TO:

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

OTHER: Deepen ☒

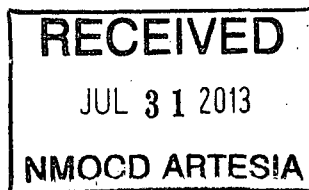
SUBSEQUENT REPORT OF:

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

OTHER: ☐

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

Please see the attached deepening procedure.



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

Robyn M. Odom

TITLE

Regulatory Analyst

DATE 07/30/2013

Type or print name

Robyn M. Odom

E-mail address:

rododom@concho.com

PHONE:

432-685-4385

For State Use Only

APPROVED BY:

T. C. Shapard

TITLE

Boo/gest

DATE

8/1/2013

Conditions of Approval (if any):

Patton 5 Fee #4H
30-015-39842

Deepening Procedure:

1. MIRU pulling unit
2. LD production equipment
3. Sqz San Andres w/ +/-400sxs of Class C neat.
4. Drill out squeeze. Test squeeze to 500psi for 20 minutes using chart recorder.
5. RD pulling unit. RU drilling rig. PU 6-1/8" bit and drill 4-3/4" hole.
6. KO and drill 12°/100' BUR curve to 3227' MD, 2934' TVD @ 83.1° azimuth.
7. Drill lateral to 7414' MD, 2971' TVD.
8. Run 4-1/2", 11.6# L-80 LTC w/DV at 1700'.
9. Cement w/250sxs Class H/Acid soluble cement. Open DV tool and circulate out excess cement from 1700'. Close DV tool
10. RDMO rig.

Completion Procedure:

1. MIRU well service unit, NU BOPE and test.
2. TIH w/ bit, drill out DV tool at 1700', clean out to float collar (PBTD), TOH.
3. TIH w/ TCP guns and perforate stage 1 (7024'-7340'), TOH.
4. ND BOPE, NU frac stack. RDMO well service unit.
5. MIRU frac equip/wireline equip.
6. Stimulate the Lower Paddock (Yeso) lateral with a propped hydraulic fracture treatment in 8 stages:
 - a. Treat down 4-1/2 casing with 261,000 lbs sand and 204,000 gals per stage (total treatment for well = 2,088,000 lbs and 1,632,000 gals).
 - b. Use plug and perf method, pumping down plug and guns between stages.
 - c. Perforations in Lower Paddock lateral from 3200' to 7340' MD
7. RDMO frac equip/wireline equip.
8. MIRU well service unit. ND frac stack, NU BOPE and test.
9. TIH w/ bit and drill out frac plugs, clean out lateral to float collar (PBTD), TOH.
10. Back off or cut 4-1/2" casing at 1700' (DV tool). Leave 4-1/2" liner from 1700' to 7414' (TD).
11. TIH w/ production tubing and ESP, NU wellhead.
12. RDMO well service unit.
13. Put well on production.

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

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

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-39842		Pool Code 3250		Pool Name ATOKA; GLORIETA-YESO					
Property Code 38945		Property Name PATTON 5 FEE						Well Number 4H	
OGRID No. 229137		Operator Name COG OPERATING, LLC						Elevation 3368'	
Surface Location									
UL or lot No. E	Section 5	Township 19-S	Range 26-E	Lot Idn	Feet from the 2310	North/South line NORTH	Feet from the 235	East/West line WEST	County EDDY
Bottom Hole Location If Different From Surface									
UL or lot No. H	Section 5	Township 19-S	Range 26-E	Lot Idn	Feet from the 2260	North/South line NORTH	Feet from the 350	East/West line EAST	County EDDY
Penetration Point Location									
UL or lot No. E	Section 5	Township 19-S	Range 26-E	Lot Idn	Feet from the 2291	North/South line NORTH	Feet from the 615	East/West line WEST	County EDDY
Dedicated Acres 160		Joint or Infill		Consolidation Code		Order No.			

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

				OPERATOR CERTIFICATION I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. Signature: <i>Robyn M. Odom</i> Date: 7/30/2013 Printed Name: Robyn M. Odom E-mail Address: Rodom@concho.com	
CORNER COORDINATES TABLE A - Y=615893.1 N, X=475705.6 E B - Y=615918.3 N, X=480980.0 E C - Y=614586.2 N, X=475716.8 E D - Y=614603.7 N, X=480986.4 E				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. NOVEMBER 9, 2011 Date of Survey: _____ Signature: <i>Ronald J. Eidson</i> Seal of Professional Surveyor: _____ Certificate Number: 3239 REL. W.O. 12110139 JWSC W.O. 13.13.0864	



CURRENT WELLBORE DIAGRAM

API: 30-015-39842
SPUD: 5/9/2012
FRR: 5/23/2012
RIG: JW #4

Patton 5 Fee #4H
Lakewood - Atoka; Glorieta-Yeso Field
Eddy County, NM

Sec 5, T-19S, R-26E
SHL: 2310' FNL & 235' FWL
GL: 3,368'
KB: 3,381'
ZERO: 13.0' AGL

HOLE SIZE	MW (ppg)	BHST (°F)		EVALUATION
17-1/2"	8.4			No Logs
8-3/4"	8.8			No Logs
8-3/4"	8.8	100 F		Mud Log

Production Tubing Detail
2-7/8" 6.50# J-55 EUE 8rd
EOT @ 1,955'
SN @ 1,932'
Tbg Anchor @ 1,671' (18 pts tension)

Pump
2-1/2 x 1-1/2 x 20' RHBC-MRTS
w/ 12' slotted drainer on bottom
16 1-1/2 sinker bars
59 1" KD steel rods
1-1/2" x 26' polish rod

Surface Casing @ 1225'
9 5/8" 36# J-55 STC
Circulated 200 sx cmt to surface

7" Production Casing @ 2,095'
7" 26# L-80 LTC
Circulated 240 sx cmt to surface.
PBD @ 2,046' (FC)

San Andres Perfs 1,836'-1,845' (40 holes, 4 spf)
Acidized w/ 1500 gals 15% NEFE
Frac w/ 2 Mgal 15% NEFE, 36 Mgal XL gel, 45 Mlbs 16/30 Brown, 15 Mlbs
16/30 CRC, 50 bpm @ 3,005 psi down 7" casing. FG 1.04 psi/ft

8-3/4" Lateral (Plugged Back)
Plugged back with 1,000 sx cement from 5,065'(TD) to 2,095'.
TOC @ 2,095'

Plugged Back Lateral
& Curve Section:

KOP @ 2,125
EOC @ 2,915'
EOL @ 5,065'

Average TVD of Lateral 2,686'

TD of 8-3/4" Lateral @ 5,065'
(plugged)

Updated by	C Rohwer
Date:	7/12/2013



PROPOSED WELLBORE AT RIG RELEASE

API: 30-015-39842
SPUD:
FRR:
RIG:

Patton 5 Fee #4H Lakewood - Atoka; Glorieta-Yeso Field Eddy County, NM

Sec 5, T-19S, R-26E
SHL: 2310' FNL & 235' FWL
BHL: 2260' FNL & 350' FEL (est)
GL: 3,368'
KB: 3,381'
ZERO: 13.0' AGL

HOLE SIZE	MW (ppg)	BHST (°F)		EVALUATION
17-1/2"	8.4			No Logs
8-3/4"	8.8			No Logs
6-1/8"	8.8	100 F		Mud Log

DV tool @ 1,700'

Surface Casing @ 1,225'
9 5/8" 36# J-55 STC
circulated 200 sacks cement to surface
TOC @ surface

7" Intermediate Casing @ 2,095'
7" 26# L-80 LTC
circulated 240 sacks cement to surface
TOC @ surface

KOP @ 2,413'
EOC @ 3,227'
EOL @ 7,414'

Avg TVD in Lateral 2,953'

Production Casing @ 7,414'
4-1/2" 11.60# L-80 LTC
TOC @ 1700' (DV tool)

Updated by	C Rohwer
Date:	7/16/2013



PROPOSED WELLBORE AFTER COMPLETION

API: 30-015-39842
SPUD:
FRR:
RIG:

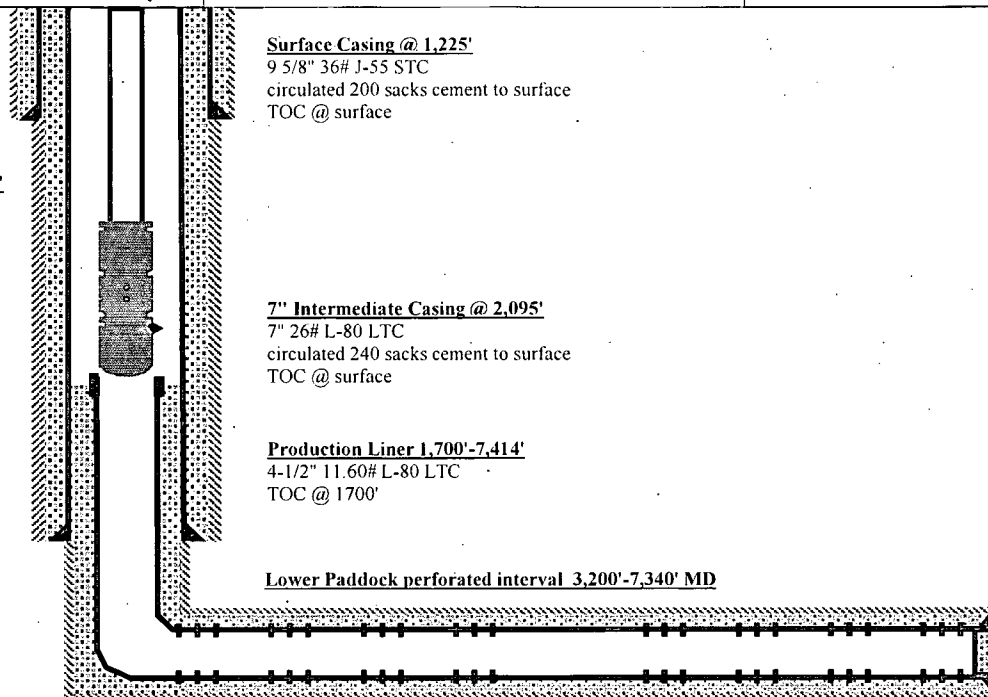
Patton 5 Fee #4H
Lakewood - Atoka; Glorieta-Yeso Field
Eddy County, NM

Sec 5, T-19S, R-26E
SHL: 2310' FNL & 235' FWL
BHL: 2260' FNL & 350' FEL (est)
GL: 3,368'
KB: 3,381'
ZERO: 13.0' AGL

HOLE SIZE	MW (ppg)	BHST (°F)		EVALUATION
17-1/2"	8.4			No Logs
8-3/4"	8.8			No Logs
6-1/8"	8.8	100 F		Mud Log

2-7/8" Production Tubing 0-1,660'
2-7/8" 6.50# J-55 EUE 8rd

ESP (electric submersible pump)
@ 1,690'



Surface Casing @ 1,225'
9 5/8" 36# J-55 STC
circulated 200 sacks cement to surface
TOC @ surface

7" Intermediate Casing @ 2,095'
7" 26# L-80 LTC
circulated 240 sacks cement to surface
TOC @ surface

Production Liner 1,700'-7,414'
4-1/2" 11.60# L-80 LTC
TOC @ 1700'

Lower Paddock perforated interval 3,200'-7,340' MD

KOP @ 2,413'
EOC @ 3,227'
EOL @ 7,414'
Avg TVD in Lateral 2,953'

Production Liner 1,700'-7,414'
4-1/2" 11.60# L-80 LTC
TOC @ 1700'

Updated by	C Rohwer
Date:	7/16/2013



COG Operating LLC

Eddy County, New Mexico (NAD 27 NME)

Patton 5 Fee

#4H

Re-Entry

Plan #4 07-10-13

Anticollision Report

10 July, 2013



PHOENIX
TECHNOLOGY SERVICES



Phoenix Technology Services
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, New Mexico (NAD 27 NME)	TVD Reference:	GL @ 3368.00usft
Reference Site:	Patton 5 Fee	MD Reference:	GL @ 3368.00usft
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:	Re-Entry	Database:	GCR DB
Reference Design:	Plan #4 07-10-13	Offset TVD Reference:	Offset Datum

Reference	Plan #4 07-10-13		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	Error Surface:	Circular Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	07/10/13		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	2,000.00	OH Surveys (OH)	MWD	MWD - Standard	
2,000.00	7,414.38	Plan #4 07-10-13 (Re-Entry)	MWD	MWD - Standard	

Summary	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Site Name						
Offset Well - Wellbore - Design						
Collision						
Collision #1 - OH - Inc Surveys	5,225.85	2,930.85	100.53	-302.57	0.249	Level 1, CC, ES, SF
Nearburg Ivey Com						
#1 - OH - Inc Surveys	7,089.03	2,946.20	262.18	29.24	1.126	Level 2, CC
#1 - OH - Inc Surveys	7,100.00	2,946.30	262.41	29.16	1.125	Level 2, ES, SF
Patton 5 Fee						
#4H - OH - OH	2,000.00	2,000.00	0.00	0.00	0.000	Level 1, CC, SF
#4H - OH - OH	2,049.25	2,049.25	0.10	-0.06	0.633	Level 1, ES

Offset Design	Collision - Collision #1 - OH - Inc Surveys	Offset Site Error	0.00 usft
Survey Program	2700-INC	Offset Well Error	0.00 usft
Reference	Offset	Semi Major Axis	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)
Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre
N/S (usft)	E/W (usft)	Between Centres (usft)	Between Ellipses (usft)
Minimum Separation (usft)	Separation Factor	Warning	
2,000.00	1,999.79	1,975.09	1,974.97
2,084.00	2,083.79	2,058.60	2,058.51
2,100.00	2,099.79	2,074.50	2,074.41
2,200.00	2,199.79	2,173.89	2,173.82
2,300.00	2,299.79	2,273.23	2,273.19
2,400.00	2,399.79	2,372.53	2,372.51
2,413.75	2,413.54	2,386.18	2,386.16
2,450.00	2,449.76	2,422.14	2,422.12
2,500.00	2,499.39	2,471.43	2,471.41
2,550.00	2,548.24	2,519.93	2,519.92
2,600.00	2,595.84	2,567.22	2,567.21
2,650.00	2,641.77	2,612.85	2,612.85
2,700.00	2,685.59	2,656.41	2,656.41
2,750.00	2,726.91	2,700.00	2,697.81
2,800.00	2,765.35	2,743.32	2,741.10
2,850.00	2,800.54	2,778.81	2,776.57
2,900.00	2,832.17	2,810.71	2,808.45
2,950.00	2,859.95	2,838.72	2,836.44

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, New Mexico (NAD 27 NME)	TVD Reference:	GL @ 3368.00usft
Reference Site:	Patton 5 Fee	MD Reference:	GL @ 3368.00usft
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:	Re-Entry	Database:	GCR DB
Reference Design:	Plan #4, 07-10-13	Offset TVD Reference:	Offset Datum

Offset Design: Collision - Collision #1 - OH - Inc Surveys													Offset Site Error:
Survey Program: 2700-INC													0.00 usft
Reference													Offset Well Error:
Offset													0.00 usft
Semi Major Axis													
Measured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning
Depth	Depth	Depth	Depth	Depth	Depth	Depth	N-S	E-W	Centres	Ellipses	Separation	Factor	
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)		
3,000.00	2,883.62	2,862.58	2,860.28	6.94	324.87	11.81	76.39	2,514.35	2,219.57	1,887.75	331.82	6.689	
3,050.00	2,902.95	2,882.06	2,879.75	8.10	328.09	15.04	76.44	2,514.35	2,173.67	1,837.47	336.19	6.466	
3,100.00	2,917.79	2,897.00	2,894.68	9.33	330.56	20.56	76.45	2,514.35	2,126.15	1,786.26	339.89	6.255	
3,150.00	2,927.98	2,907.26	2,904.92	10.60	332.25	31.56	76.45	2,514.35	2,077.43	1,734.58	342.85	6.059	
3,200.00	2,933.43	2,912.73	2,910.40	11.90	333.16	58.14	76.44	2,514.35	2,027.99	1,682.92	345.06	5.877	
3,227.39	2,934.39	2,913.70	2,911.36	12.62	333.32	85.00	76.44	2,514.35	2,000.75	1,654.81	345.94	5.784	
3,300.00	2,935.02	2,914.32	2,911.99	14.55	333.42	82.31	76.44	2,514.35	1,928.39	1,580.42	347.97	5.542	
3,324.05	2,935.23	2,914.53	2,912.20	15.20	333.45	80.60	76.44	2,514.35	1,904.38	1,555.73	348.65	5.462	
3,400.00	2,935.89	2,915.19	2,912.85	17.23	333.56	80.97	76.44	2,514.35	1,828.55	1,477.75	350.80	5.213	
3,500.00	2,936.77	2,916.06	2,913.72	19.92	333.71	81.45	76.44	2,514.35	1,728.71	1,375.08	353.63	4.888	
3,600.00	2,937.64	2,916.92	2,914.58	22.63	333.85	81.93	76.44	2,514.35	1,628.89	1,272.42	356.48	4.569	
3,700.00	2,938.51	2,917.79	2,915.45	25.34	333.99	82.42	76.44	2,514.35	1,529.10	1,169.77	359.33	4.255	
3,800.00	2,939.38	2,918.65	2,916.31	28.05	334.13	82.90	76.43	2,514.35	1,429.34	1,067.15	362.19	3.946	
3,900.00	2,940.26	2,919.51	2,917.17	30.77	334.28	83.39	76.43	2,514.35	1,329.61	964.56	365.05	3.642	
4,000.00	2,941.13	2,920.37	2,918.03	33.49	334.42	83.87	76.43	2,514.35	1,229.92	862.01	367.91	3.343	
4,100.00	2,942.00	2,921.23	2,918.89	36.21	334.56	84.36	76.43	2,514.35	1,130.29	759.51	370.78	3.048	
4,200.00	2,942.87	2,922.09	2,919.75	38.94	334.70	84.84	76.43	2,514.35	1,030.72	657.08	373.64	2.759	
4,300.00	2,943.75	2,922.95	2,920.61	41.67	334.84	85.33	76.43	2,514.35	931.26	554.74	376.51	2.473	
4,400.00	2,944.62	2,923.81	2,921.46	44.39	334.99	85.81	76.43	2,514.35	831.91	452.53	379.38	2.193	
4,500.00	2,945.49	2,924.66	2,922.32	47.12	335.13	86.30	76.42	2,514.35	732.75	350.50	382.25	1.917	
4,600.00	2,946.36	2,925.52	2,923.17	49.85	335.27	86.78	76.42	2,514.35	633.85	248.73	385.12	1.646	
4,700.00	2,947.24	2,926.37	2,924.03	52.58	335.41	87.27	76.42	2,514.35	535.35	147.36	387.99	1.380 Level 3	
4,800.00	2,948.11	2,927.23	2,924.88	55.31	335.55	87.75	76.42	2,514.35	437.54	46.67	390.86	1.119 Level 2	
4,900.00	2,948.98	2,928.08	2,925.73	58.05	335.69	88.24	76.42	2,514.35	340.99	-52.75	393.74	0.866 Level 1	
5,000.00	2,949.86	2,928.93	2,926.58	60.78	335.83	88.72	76.41	2,514.35	247.20	-149.41	396.61	0.623 Level 1	
5,100.00	2,950.73	2,929.78	2,927.43	63.51	335.97	89.20	76.41	2,514.35	161.06	-238.42	399.48	0.403 Level 1	
5,200.00	2,951.60	2,930.63	2,928.28	66.24	336.11	89.69	76.41	2,514.35	103.79	-298.56	402.35	0.258 Level 1	
5,225.85	2,951.83	2,930.85	2,928.50	66.95	336.15	89.81	76.41	2,514.35	100.53	-302.57	403.10	0.249 Level 1, CC, ES, SF	
5,300.00	2,952.47	2,931.48	2,929.13	68.98	336.25	90.17	76.41	2,514.35	124.91	-280.31	405.23	0.308 Level 1	
5,316.38	2,952.62	2,931.61	2,929.27	69.42	336.27	90.25	76.41	2,514.35	135.28	-270.42	405.70	0.333 Level 1	
5,400.00	2,953.35	2,932.33	2,929.98	71.71	336.39	90.60	76.40	2,514.35	200.15	-207.96	408.10	0.490 Level 1	
5,500.00	2,954.22	2,933.20	2,930.85	74.45	336.54	90.94	76.40	2,514.35	288.81	-122.18	410.99	0.703 Level 1	
5,558.08	2,954.73	2,933.71	2,931.36	76.04	336.62	91.09	76.40	2,514.35	342.36	-70.30	412.66	0.830 Level 1	
5,600.00	2,955.10	2,934.08	2,931.73	77.18	336.68	91.26	76.40	2,514.35	381.63	-32.24	413.87	0.922 Level 1	
5,700.00	2,955.98	2,934.97	2,932.62	79.92	336.83	91.66	76.40	2,514.35	477.13	60.38	416.75	1.145 Level 2	
5,800.00	2,956.85	2,935.86	2,933.51	82.66	336.98	92.07	76.39	2,514.35	574.16	154.53	419.64	1.368 Level 3	
5,900.00	2,957.73	2,936.75	2,934.39	85.40	337.12	92.47	76.39	2,514.35	672.07	249.54	422.52	1.591	
6,000.00	2,958.61	2,937.64	2,935.28	88.14	337.27	92.87	76.39	2,514.35	770.51	345.10	425.41	1.811	
6,100.00	2,959.48	2,938.53	2,936.17	90.88	337.42	93.27	76.39	2,514.35	869.30	441.00	428.30	2.030	
6,200.00	2,960.36	2,939.42	2,937.07	93.63	337.56	93.67	76.38	2,514.35	968.35	537.15	431.19	2.246	
6,300.00	2,961.23	2,940.31	2,937.96	96.37	337.71	94.08	76.38	2,514.35	1,067.57	633.48	434.08	2.459	
6,400.00	2,962.11	2,941.21	2,938.85	99.12	337.86	94.48	76.38	2,514.35	1,166.92	729.94	436.98	2.670	
6,500.00	2,962.99	2,942.10	2,939.74	101.87	338.01	94.88	76.37	2,514.35	1,266.37	826.50	439.87	2.879	
6,600.00	2,963.86	2,943.00	2,940.64	104.61	338.15	95.28	76.37	2,514.35	1,365.90	923.14	442.77	3.085	
6,700.00	2,964.74	2,943.89	2,941.53	107.36	338.30	95.69	76.37	2,514.35	1,465.50	1,019.84	445.66	3.288	
6,800.00	2,965.62	2,944.79	2,942.43	110.11	338.45	96.09	76.36	2,514.35	1,565.15	1,116.59	448.56	3.489	
6,900.00	2,966.49	2,945.69	2,943.33	112.86	338.60	96.49	76.36	2,514.35	1,664.84	1,213.38	451.46	3.688	
7,000.00	2,967.37	2,946.59	2,944.23	115.61	338.75	96.89	76.35	2,514.35	1,764.56	1,310.20	454.36	3.884	
7,100.00	2,968.24	2,947.49	2,945.13	118.36	338.90	97.29	76.35	2,514.35	1,864.31	1,407.05	457.26	4.077	
7,200.00	2,969.12	2,948.39	2,946.03	121.11	339.04	97.69	76.35	2,514.35	1,964.09	1,503.93	460.16	4.268	
7,300.00	2,970.00	2,949.29	2,946.93	123.87	339.19	98.09	76.34	2,514.35	2,063.89	1,600.83	463.06	4.457	
7,400.00	2,970.87	2,950.19	2,947.83	126.62	339.34	98.49	76.34	2,514.35	2,163.71	1,697.74	465.96	4.644	

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, New Mexico (NAD 27 NME)	TVD Reference:	GL @ 3368.00usft
Reference Site:	Patton 5 Fee	MD Reference:	GL @ 3368.00usft
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:	Re-Entry	Database:	GCR DB
Reference Design:	Plan #4 07-10-13	Offset TVD Reference:	Offset Datum

Offset Design:	Collision - Collision #1 - OH - Inc Surveys										Offset Site Error:	0.00 usft
Survey Program:	12700-INC										Offset Well Error:	0.00 usft
Reference	Offset	Semi-Major Axis		Distance		Minimum Separation		Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre N-S (usft)	Offset Wellbore Centre E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor
7,414.47	2,971.00	2,950.32	2,947.96	127.02	339.36	98.55	76.34	2,514.35	2,178.15	1,711.77	466.38	4.670
7,415.37	2,971.01	2,950.33	2,947.97	127.04	339.37	98.55	76.34	2,514.35	2,179.05	1,712.65	466.40	4.672



Phoenix Technology Services
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, New Mexico (NAD 27 NME)	TVD Reference:	GL @ 3368.00usft
Reference Site:	Patton 5 Fee	MD Reference:	GL @ 3368.00usft
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:	Re-Entry	Database:	GCR DB
Reference Design:	Plan #4 07-10-13	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:
Nearburg Ivey Com - #1 - OH - Inc Surveys													0.00 usft
Survey Program: 116-INC													Offset Well Error:
Reference													0.00 usft
Measured	Vertical	Measured	Vertical	Semi-Major Axis		Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning
Depth	Depth	Depth	Depth	Reference	Offset	Toolface	+N-S	+E-W	Centres	Ellipses	Separation	Factor	
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
2,000.00	1,999.79	1,977.78	1,977.62	0.00	85.16	-65.78	359.29	4,382.50	4,398.20	4,313.04	85.16	51.648	
2,084.00	2,083.79	2,061.51	2,061.35	0.09	87.52	84.96	359.14	4,382.50	4,398.06	4,310.44	87.62	50.196	
2,100.00	2,099.79	2,077.45	2,077.30	0.13	87.97	84.96	359.12	4,382.50	4,398.05	4,309.95	88.10	49.921	
2,200.00	2,199.79	2,177.13	2,176.97	0.33	90.79	84.96	359.03	4,382.50	4,398.05	4,306.92	91.13	48.264	
2,259.04	2,258.83	2,235.99	2,235.83	0.46	92.45	84.96	359.02	4,382.50	4,398.04	4,305.13	92.92	47.332	
2,300.00	2,299.79	2,276.81	2,276.65	0.56	93.61	84.96	359.02	4,382.50	4,398.05	4,303.88	94.16	46.706	
2,400.00	2,399.79	2,376.50	2,376.33	0.78	96.43	84.96	359.10	4,382.50	4,398.05	4,300.85	97.20	45.245	
2,413.75	2,413.54	2,390.20	2,390.04	0.81	96.81	84.96	359.11	4,382.50	4,398.05	4,300.43	97.62	45.052	
2,450.00	2,449.76	2,426.31	2,426.15	0.89	97.83	1.87	359.17	4,382.50	4,398.80	4,298.07	98.73	44.533	
2,500.00	2,499.39	2,475.79	2,475.63	1.05	99.23	1.89	359.26	4,382.50	4,390.95	4,290.67	100.28	43.787	
2,550.00	2,548.24	2,523.91	2,523.74	1.24	100.73	1.93	359.41	4,382.50	4,380.37	4,278.40	101.97	42.957	
2,600.00	2,595.84	2,571.84	2,571.67	1.44	102.34	1.99	359.58	4,382.50	4,365.17	4,261.38	103.78	42.060	
2,650.00	2,641.77	2,618.08	2,617.91	1.67	103.89	2.09	359.70	4,382.50	4,345.47	4,239.91	105.55	41.168	
2,700.00	2,685.59	2,662.20	2,662.03	2.06	105.37	2.21	359.78	4,382.50	4,321.46	4,214.03	107.42	40.228	
2,750.00	2,726.91	2,703.80	2,703.63	2.58	106.76	2.37	359.83	4,382.50	4,293.36	4,184.01	109.34	39.265	
2,800.00	2,765.35	2,742.48	2,742.31	3.23	108.06	2.59	359.85	4,382.50	4,261.42	4,150.14	111.29	38.292	
2,850.00	2,800.54	2,777.90	2,777.73	4.00	109.24	2.88	359.84	4,382.50	4,225.96	4,112.71	113.24	37.318	
2,900.00	2,832.17	2,809.73	2,809.56	4.88	110.31	3.27	359.82	4,382.50	4,187.28	4,072.09	115.19	36.351	
2,950.00	2,859.95	2,837.67	2,837.50	5.86	111.25	3.81	359.78	4,382.50	4,145.75	4,028.64	117.11	35.400	
3,000.00	2,883.62	2,861.47	2,861.30	6.94	112.05	4.61	359.74	4,382.50	4,101.75	3,982.76	118.99	34.472	
3,050.00	2,902.95	2,880.91	2,880.74	8.10	112.70	5.86	359.70	4,382.50	4,055.68	3,934.88	120.80	33.574	
3,100.00	2,917.79	2,895.82	2,895.65	9.33	113.20	8.07	359.66	4,382.50	4,007.98	3,885.46	122.52	32.712	
3,150.00	2,927.98	2,906.05	2,905.88	10.60	113.54	12.95	359.64	4,382.50	3,959.08	3,834.94	124.14	31.892	
3,200.00	2,933.43	2,911.51	2,911.34	11.90	113.72	30.83	359.62	4,382.50	3,909.43	3,783.80	125.63	31.119	
3,227.39	2,934.39	2,912.47	2,912.30	12.62	113.75	76.97	359.62	4,382.50	3,882.08	3,755.70	126.38	30.718	
3,300.00	2,935.02	2,913.09	2,912.91	14.55	113.78	-6.80	359.62	4,382.50	3,809.48	3,681.16	128.33	29.686	
3,324.05	2,935.23	2,913.29	2,913.12	15.20	113.78	-58.12	359.62	4,382.50	3,785.44	3,656.46	128.98	29.349	
3,400.00	2,935.89	2,913.94	2,913.77	17.23	113.80	-58.64	359.61	4,382.50	3,709.50	3,578.46	131.04	28.309	
3,500.00	2,936.77	2,914.80	2,914.63	19.92	113.83	-59.34	359.61	4,382.50	3,609.51	3,475.75	133.76	26.985	
3,600.00	2,937.64	2,915.66	2,915.49	22.63	113.86	-60.05	359.61	4,382.50	3,509.52	3,373.03	136.49	25.713	
3,700.00	2,938.51	2,916.51	2,916.34	25.34	113.89	-60.76	359.61	4,382.50	3,409.54	3,270.31	139.23	24.489	
3,800.00	2,939.38	2,917.37	2,917.20	28.05	113.92	-61.49	359.60	4,382.50	3,309.55	3,167.58	141.97	23.312	
3,900.00	2,940.26	2,918.23	2,918.06	30.77	113.95	-62.23	359.60	4,382.50	3,209.57	3,064.85	144.72	22.178	
4,000.00	2,941.13	2,919.08	2,918.91	33.49	113.98	-62.98	359.60	4,382.50	3,109.59	2,962.12	147.47	21.087	
4,100.00	2,942.00	2,919.94	2,919.77	36.21	114.00	-63.73	359.60	4,382.50	3,009.60	2,859.38	150.22	20.035	
4,200.00	2,942.87	2,920.79	2,920.62	38.94	114.03	-64.50	359.59	4,382.50	2,909.62	2,756.65	152.97	19.020	
4,300.00	2,943.75	2,921.65	2,921.48	41.67	114.06	-65.28	359.59	4,382.50	2,809.64	2,653.91	155.73	18.042	
4,400.00	2,944.62	2,922.50	2,922.33	44.39	114.09	-66.06	359.59	4,382.50	2,709.66	2,551.18	158.49	17.097	
4,500.00	2,945.49	2,923.36	2,923.19	47.12	114.12	-66.86	359.59	4,382.50	2,609.69	2,448.44	161.24	16.185	
4,600.00	2,946.36	2,924.21	2,924.04	49.85	114.15	-67.67	359.58	4,382.50	2,509.71	2,345.71	164.00	15.303	
4,700.00	2,947.24	2,925.07	2,924.90	52.58	114.18	-68.48	359.58	4,382.50	2,409.74	2,242.98	166.76	14.450	
4,800.00	2,948.11	2,925.92	2,925.75	55.31	114.21	-69.30	359.58	4,382.50	2,309.76	2,140.24	169.52	13.625	
4,900.00	2,948.98	2,926.78	2,926.61	58.05	114.23	-70.14	359.58	4,382.50	2,209.79	2,037.51	172.28	12.827	
5,000.00	2,949.86	2,927.63	2,927.46	60.78	114.26	-70.98	359.57	4,382.50	2,109.83	1,934.78	175.04	12.053	
5,100.00	2,950.73	2,928.49	2,928.31	63.51	114.29	-71.83	359.57	4,382.50	2,009.86	1,832.06	177.80	11.304	
5,200.00	2,951.60	2,929.34	2,929.17	66.24	114.32	-72.69	359.57	4,382.50	1,909.90	1,729.34	180.56	10.577	
5,300.00	2,952.47	2,930.19	2,930.02	68.98	114.35	-73.55	359.57	4,382.50	1,809.94	1,626.62	183.32	9.873	
5,316.38	2,952.62	2,930.33	2,930.16	69.42	114.35	-73.70	359.57	4,382.50	1,793.57	1,609.79	183.78	9.760	
5,400.00	2,953.35	2,931.05	2,930.88	71.71	114.38	-83.59	359.56	4,382.50	1,710.07	1,523.98	186.09	9.190	
5,500.00	2,954.22	2,931.93	2,931.76	74.45	114.41	-86.41	359.56	4,382.50	1,610.63	1,421.77	188.86	8.528	
5,558.08	2,954.73	2,932.45	2,932.28	76.04	114.42	-87.19	359.56	4,382.50	1,553.22	1,362.76	190.46	8.155	
5,600.00	2,955.10	2,932.83	2,932.65	77.18	114.44	-87.27	359.56	4,382.50	1,511.92	1,320.30	191.62	7.890	

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, New Mexico (NAD 27 NME)	TVD Reference:	GL @ 3368.00usft
Reference Site:	Patton 5 Fee	MD Reference:	GL @ 3368.00usft
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:	Re-Entry	Database:	GCR DB
Reference Design:	Plan #4 07-10-13	Offset TVD Reference:	Offset Datum

Offset Design Nearburg lvey Com - #1 - OH - Inc Surveys														Offset Site Error:	0.00 usft
Survey Program 116-INC														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	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)					
5,700.00	2,955.98	2,933.72	2,933.55	79.92	114.47	-87.47	359.55	4,382.50	1,413.54	1,219.16	194.39	7.272			
5,800.00	2,956.85	2,934.62	2,934.45	82.66	114.50	-87.66	359.55	4,382.50	1,315.41	1,118.26	197.16	6.672			
5,900.00	2,957.73	2,935.52	2,935.35	85.40	114.53	-87.86	359.55	4,382.50	1,217.59	1,017.66	199.93	6.090			
6,000.00	2,958.61	2,936.42	2,936.24	88.14	114.56	-88.06	359.55	4,382.50	1,120.14	917.45	202.70	5.526			
6,100.00	2,959.48	2,937.31	2,937.14	90.88	114.59	-88.25	359.54	4,382.50	1,023.19	817.72	205.47	4.980			
6,200.00	2,960.36	2,938.21	2,938.04	93.63	114.62	-88.45	359.54	4,382.50	926.89	718.65	208.24	4.451			
6,300.00	2,961.23	2,939.11	2,938.94	96.37	114.65	-88.64	359.54	4,382.50	831.46	620.44	211.02	3.940			
6,400.00	2,962.11	2,940.01	2,939.84	99.12	114.68	-88.84	359.53	4,382.50	737.24	523.44	213.80	3.448			
6,500.00	2,962.99	2,940.91	2,940.73	101.87	114.71	-89.04	359.53	4,382.50	644.76	428.19	216.57	2.977			
6,600.00	2,963.86	2,941.80	2,941.63	104.61	114.74	-89.23	359.53	4,382.50	554.90	335.55	219.35	2.530			
6,700.00	2,964.74	2,942.70	2,942.53	107.36	114.77	-89.43	359.52	4,382.50	469.15	247.02	222.13	2.112			
6,800.00	2,965.62	2,943.60	2,943.43	110.11	114.80	-89.62	359.52	4,382.50	390.25	165.34	224.91	1.735			
6,900.00	2,966.49	2,944.50	2,944.33	112.86	114.83	-89.82	359.52	4,382.50	323.24	95.55	227.69	1.420	Level 3		
7,000.00	2,967.37	2,945.40	2,945.23	115.61	114.86	-90.02	359.52	4,382.50	276.90	46.43	230.47	1.201	Level 2		
7,089.03	2,968.15	2,946.20	2,946.03	118.06	114.89	-90.19	359.51	4,382.50	262.18	29.24	232.95	1.126	Level 2, CC		
7,100.00	2,968.24	2,946.30	2,946.13	118.36	114.89	-90.21	359.51	4,382.50	262.41	29.16	233.25	1.125	Level 2, ES, SF		
7,200.00	2,969.12	2,947.20	2,947.03	121.11	114.92	-90.41	359.51	4,382.50	284.68	48.65	236.03	1.206	Level 2		
7,300.00	2,970.00	2,948.10	2,947.93	123.87	114.95	-90.61	359.51	4,382.50	336.49	97.67	238.82	1.409	Level 3		
7,400.00	2,970.87	2,949.00	2,948.83	126.62	114.98	-90.80	359.50	4,382.50	406.70	165.10	241.60	1.683			
7,414.47	2,971.00	2,949.13	2,948.96	127.02	114.98	-90.83	359.50	4,382.50	417.87	175.87	242.00	1.727			
7,415.37	2,971.01	2,949.14	2,948.97	127.04	114.98	-90.83	359.50	4,382.50	418.57	176.55	242.02	1.729			



Phoenix Technology Services
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, New Mexico (NAD 27 NME)	TVD Reference:	GL @ 3368.00usft
Reference Site:	Patton 5 Fee	MD Reference:	GL @ 3368.00usft
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:	Re-Entry	Database:	GCR.DB
Reference Design:	Plan #4 07-10-13	Offset TVD Reference:	Offset Datum

Offset Design Patton 5 Fee - #4H - OH - OH													Offset Site Error:
Survey Program: 100-MWD													Offset Well Error:
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
2,000.00	1,999.79	2,000.00	1,999.79	0.00	0.00	0.00	-26.91	1.29	0.00	0.00	0.00	0.000	Level 1, CC, SF
2,049.25	2,049.04	2,049.25	2,049.04	0.06	0.10	33.88	-27.23	1.41	0.10	-0.06	0.16	0.633	Level 1, ES
2,084.00	2,083.79	2,084.00	2,083.78	0.09	0.18	-174.45	-27.47	1.42	0.29	0.02	0.27	1.073	Level 2
2,100.00	2,099.79	2,100.00	2,099.78	0.13	0.21	-172.38	-27.57	1.39	0.40	0.06	0.34	1.191	Level 2
2,200.00	2,199.79	2,199.46	2,198.97	0.33	0.46	75.69	-25.81	6.81	5.60	4.81	0.79	7.058	
2,300.00	2,299.79	2,293.73	2,290.48	0.56	0.78	68.13	-16.89	27.07	29.14	27.81	1.33	21.854	
2,400.00	2,399.79	2,377.87	2,367.78	0.78	0.99	67.80	-4.28	57.55	68.53	66.76	1.77	38.688	
2,413.75	2,413.54	2,388.41	2,377.04	0.81	1.02	67.99	-2.59	62.28	75.08	73.26	1.82	41.150	
2,450.00	2,449.76	2,415.54	2,400.36	0.89	1.08	-14.27	1.97	75.37	92.53	90.55	1.98	46.697	
2,500.00	2,499.39	2,452.32	2,430.73	1.05	1.26	-13.60	8.56	95.02	115.82	113.51	2.31	50.116	
2,550.00	2,548.24	2,488.34	2,458.92	1.24	1.59	-13.35	15.67	116.28	138.17	135.35	2.83	48.894	
2,600.00	2,595.84	2,524.44	2,485.71	1.44	1.96	-13.39	23.42	139.19	159.18	155.77	3.41	46.686	
2,650.00	2,641.77	2,559.32	2,510.04	1.67	2.38	-13.52	31.30	162.90	178.86	174.82	4.04	44.254	
2,700.00	2,685.59	2,598.00	2,535.08	2.06	2.89	-13.73	40.21	190.99	197.23	192.29	4.94	39.899	
2,750.00	2,726.91	2,630.00	2,554.29	2.58	3.36	-13.72	47.20	215.61	213.87	207.93	5.94	36.017	
2,800.00	2,765.35	2,661.00	2,571.51	3.23	3.84	-13.64	53.64	240.56	228.91	221.84	7.07	32.370	
2,850.00	2,800.54	2,700.10	2,591.15	4.00	4.51	-13.54	61.09	273.53	242.14	233.63	8.50	28.480	
2,900.00	2,832.17	2,736.06	2,607.21	4.88	5.16	-13.22	66.72	305.19	253.39	243.36	10.03	25.257	
2,950.00	2,859.95	2,773.02	2,621.65	5.86	5.86	-12.75	71.31	338.90	262.61	250.89	11.72	22.402	
3,000.00	2,883.62	2,810.26	2,634.46	6.94	6.60	-12.20	74.86	373.68	269.35	255.81	13.55	19.886	
3,050.00	2,902.95	2,849.00	2,645.70	8.10	7.41	-11.59	77.68	410.64	273.87	258.36	15.51	17.653	
3,100.00	2,917.79	2,880.00	2,653.15	9.33	8.09	-11.13	79.65	440.67	276.22	258.81	17.41	15.863	
3,150.00	2,927.98	2,922.29	2,661.41	10.60	9.04	-10.57	81.95	482.07	276.08	256.43	19.64	14.055	
3,200.00	2,933.43	2,962.45	2,667.51	11.90	9.98	-9.92	82.98	521.75	273.08	251.20	21.88	12.480	
3,227.39	2,934.39	2,984.66	2,670.22	12.62	10.50	-9.52	83.12	543.79	270.18	247.06	23.13	11.683	
3,300.00	2,935.02	3,044.07	2,675.26	14.55	11.93	-8.42	82.20	602.97	263.35	236.87	26.48	9.946	
3,324.05	2,935.23	3,064.84	2,676.38	15.20	12.44	-8.04	81.63	623.70	261.91	234.28	27.63	9.478	
3,400.00	2,935.89	3,130.00	2,678.28	17.23	14.05	-6.70	79.88	688.81	259.43	228.15	31.29	8.292	
3,500.00	2,936.77	3,228.25	2,678.95	19.92	16.55	-4.69	77.58	787.03	258.69	222.22	36.48	7.092	
3,521.10	2,936.95	3,248.93	2,679.01	20.49	17.09	-4.28	77.18	807.70	258.67	221.09	37.58	6.883	
3,600.00	2,937.64	3,326.46	2,679.01	22.63	19.10	-2.84	76.10	885.23	258.95	217.22	41.73	6.206	
3,700.00	2,938.51	3,426.32	2,678.93	25.34	21.73	-1.11	75.27	985.08	259.62	212.56	47.06	5.516	
3,800.00	2,939.38	3,524.53	2,678.58	28.05	24.34	0.43	75.15	1,083.29	260.81	208.42	52.39	4.978	
3,900.00	2,940.26	3,622.16	2,677.58	30.77	26.95	1.87	75.32	1,180.92	262.86	205.14	57.72	4.554	
4,000.00	2,941.13	3,723.03	2,675.75	33.49	29.67	3.34	75.49	1,281.77	265.85	202.70	63.16	4.209	
4,100.00	2,942.00	3,834.30	2,677.07	36.21	32.67	4.97	75.65	1,393.03	266.03	197.15	68.88	3.862	
4,200.00	2,942.87	3,936.42	2,681.47	38.94	35.43	6.41	76.45	1,495.04	263.20	188.83	74.37	3.539	
4,300.00	2,943.75	4,033.33	2,684.95	41.67	38.06	7.90	76.69	1,591.89	261.33	181.60	79.73	3.278	
4,400.00	2,944.62	4,130.54	2,687.53	44.39	40.71	9.42	76.71	1,689.07	260.61	175.51	85.10	3.062	
4,410.25	2,944.71	4,140.49	2,687.75	44.67	40.98	9.58	76.68	1,699.01	260.61	174.95	85.65	3.043	
4,500.00	2,945.49	4,227.33	2,689.19	47.12	43.35	11.04	76.11	1,785.84	261.14	170.67	90.47	2.886	
4,600.00	2,946.36	4,323.84	2,689.75	49.85	45.98	12.68	75.12	1,882.34	263.07	167.23	95.83	2.745	
4,700.00	2,947.24	4,421.22	2,689.20	52.58	48.64	14.22	74.25	1,979.71	266.30	165.08	101.22	2.631	
4,800.00	2,948.11	4,526.99	2,689.07	55.31	51.52	15.86	73.42	2,085.48	269.30	162.46	106.84	2.521	
4,900.00	2,948.98	4,626.60	2,690.64	58.05	54.25	17.55	72.28	2,185.07	270.96	158.67	112.29	2.413	
5,000.00	2,949.86	4,731.36	2,692.97	60.78	57.11	19.19	71.86	2,289.80	272.00	154.11	117.89	2.307	
5,100.00	2,950.73	4,830.95	2,695.71	63.51	59.83	20.57	72.48	2,389.35	272.40	149.05	123.34	2.208	
5,200.00	2,951.60	4,930.71	2,698.07	66.24	62.56	21.72	74.16	2,489.06	272.91	144.10	128.80	2.119	
5,300.00	2,952.47	5,029.35	2,699.82	68.98	65.26	22.70	76.35	2,587.67	273.87	139.64	134.23	2.040	
5,316.38	2,952.62	5,045.71	2,700.08	69.42	65.71	22.86	76.72	2,604.02	274.07	138.94	135.13	2.028	
5,400.00	2,953.35	5,064.00	2,700.36	71.71	66.21	23.22	77.14	2,622.30	282.02	144.10	137.92	2.045	
5,500.00	2,954.22	5,064.00	2,700.36	74.45	66.21	24.30	77.14	2,622.30	318.97	178.31	140.66	2.268	

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, New Mexico (NAD 27 NME)	TVD Reference:	GL @ 3368.00usft
Reference Site:	Patton 5 Fee	MD Reference:	GL @ 3368.00usft
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:	Re-Entry	Database:	GCR DB
Reference Design:	Plan #4 07-10-13	Offset TVD Reference:	Offset Datum

Offset Design Patton 5 Fee - #4H - OH - OH													Offset Site Error
Survey Program 100-MWD													Offset Well Error
Reference	Offset	Semi Major Axis		Distance		Minimum		Separation		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,558.08	2,954.73	5,064.00	2,700.36	76.04	66.21	25.34	77.14	2,622.30	351.11	208.86	142.24	2.468	
5,600.00	2,955.10	5,064.00	2,700.36	77.18	66.21	25.34	77.14	2,622.30	377.97	234.58	143.39	2.636	
5,700.00	2,955.98	5,064.00	2,700.36	79.92	66.21	25.34	77.14	2,622.30	451.41	305.29	146.13	3.089	
5,800.00	2,956.85	5,064.00	2,700.36	82.66	66.21	25.34	77.14	2,622.30	533.56	384.69	148.87	3.584	
5,900.00	2,957.73	5,064.00	2,700.36	85.40	66.21	25.34	77.14	2,622.30	620.97	469.36	151.61	4.096	
6,000.00	2,958.61	5,064.00	2,700.36	88.14	66.21	25.34	77.14	2,622.30	711.70	557.35	154.35	4.611	
6,100.00	2,959.48	5,064.00	2,700.36	90.88	66.21	25.34	77.14	2,622.30	804.63	647.54	157.09	5.122	
6,200.00	2,960.36	5,064.00	2,700.36	93.63	66.21	25.34	77.14	2,622.30	899.08	739.24	159.83	5.625	
6,300.00	2,961.23	5,064.00	2,700.36	96.37	66.21	25.34	77.14	2,622.30	994.61	832.03	162.58	6.118	
6,400.00	2,962.11	5,064.00	2,700.36	99.12	66.21	25.34	77.14	2,622.30	1,090.94	925.62	165.33	6.599	
6,500.00	2,962.99	5,064.00	2,700.36	101.87	66.21	25.34	77.14	2,622.30	1,187.89	1,019.81	168.07	7.068	
6,600.00	2,963.86	5,064.00	2,700.36	104.61	66.21	25.34	77.14	2,622.30	1,285.30	1,114.48	170.82	7.524	
6,700.00	2,964.74	5,064.00	2,700.36	107.36	66.21	25.34	77.14	2,622.30	1,383.08	1,209.51	173.57	7.968	
6,800.00	2,965.62	5,064.00	2,700.36	110.11	66.21	25.34	77.14	2,622.30	1,481.15	1,304.83	176.32	8.400	
6,900.00	2,966.49	5,064.00	2,700.36	112.86	66.21	25.34	77.14	2,622.30	1,579.47	1,400.40	179.07	8.821	
7,000.00	2,967.37	5,064.00	2,700.36	115.61	66.21	25.34	77.14	2,622.30	1,677.99	1,496.17	181.82	9.229	
7,100.00	2,968.24	5,064.00	2,700.36	118.36	66.21	25.34	77.14	2,622.30	1,776.67	1,592.10	184.57	9.626	
7,200.00	2,969.12	5,064.00	2,700.36	121.11	66.21	25.34	77.14	2,622.30	1,875.49	1,688.17	187.32	10.012	
7,300.00	2,970.00	5,064.00	2,700.36	123.87	66.21	25.34	77.14	2,622.30	1,974.43	1,784.36	190.07	10.388	
7,400.00	2,970.87	5,064.00	2,700.36	126.62	66.21	25.34	77.14	2,622.30	2,073.47	1,880.65	192.83	10.753	
7,414.47	2,971.00	5,064.00	2,700.36	127.02	66.21	25.34	77.14	2,622.30	2,087.81	1,894.59	193.22	10.805	
7,415.37	2,971.01	5,064.00	2,700.36	127.03	66.21	25.34	77.14	2,622.30	2,088.70	1,895.46	193.24	10.809	



Phoenix Technology Services
Anticollision Report



Company:	GOG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, New Mexico (NAD 27 NME)	TVD Reference:	GL @ 3368.00usft
Reference Site:	Patton 5 Fee	MD Reference:	GL @ 3368.00usft
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:	Re-Entry	Database:	GCR DB
Reference Design:	Plan #4_07-10-13	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL @ 3368.00usft

Offset Depths are relative to Offset Datum

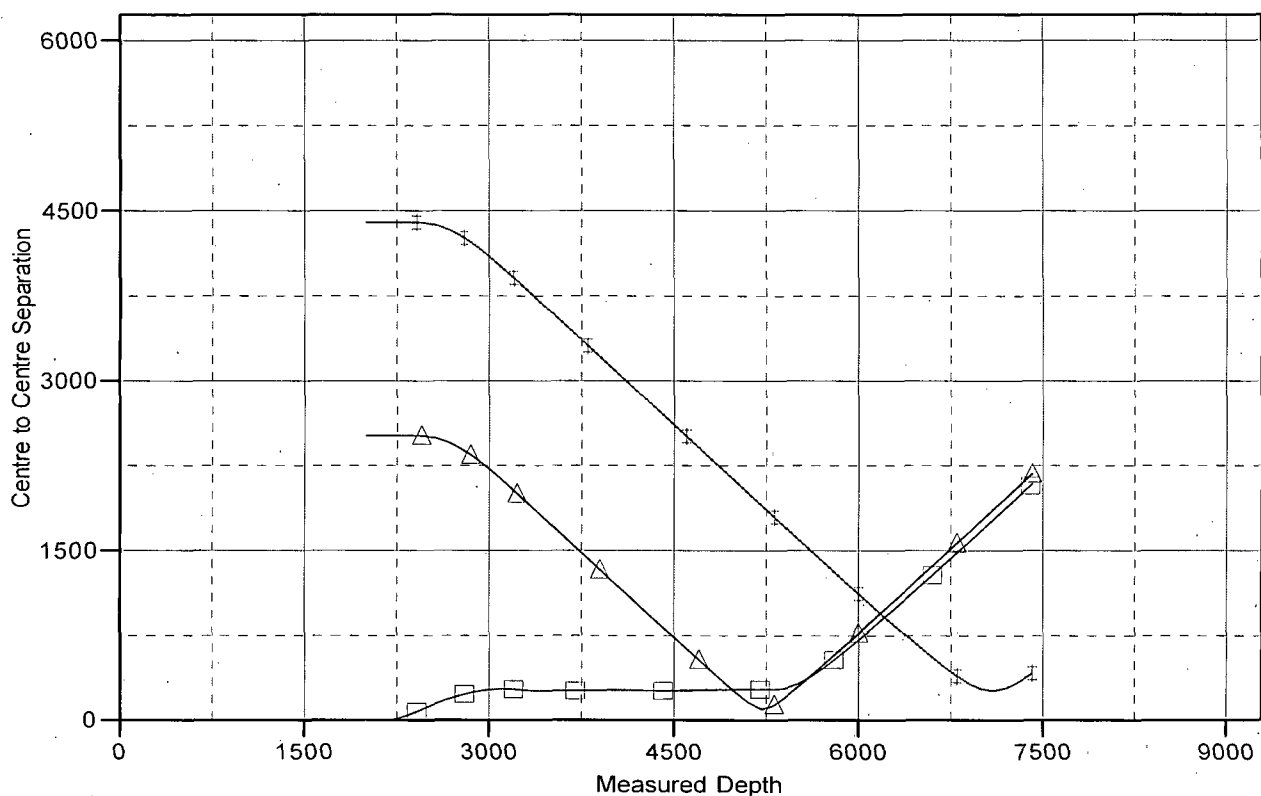
Central Meridian is 104° 19' 60.000000 W

Coordinates are relative to: #4H

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

Grid Convergence at Surface is: -0.04°

Ladder Plot



LEGEND

■ #4H, OH, OH V0

▲ Collision#1, OH, Inc Surveys V0

✕ #1, OH, Inc Surveys V0



Phoenix Technology Services
Anticollision Report

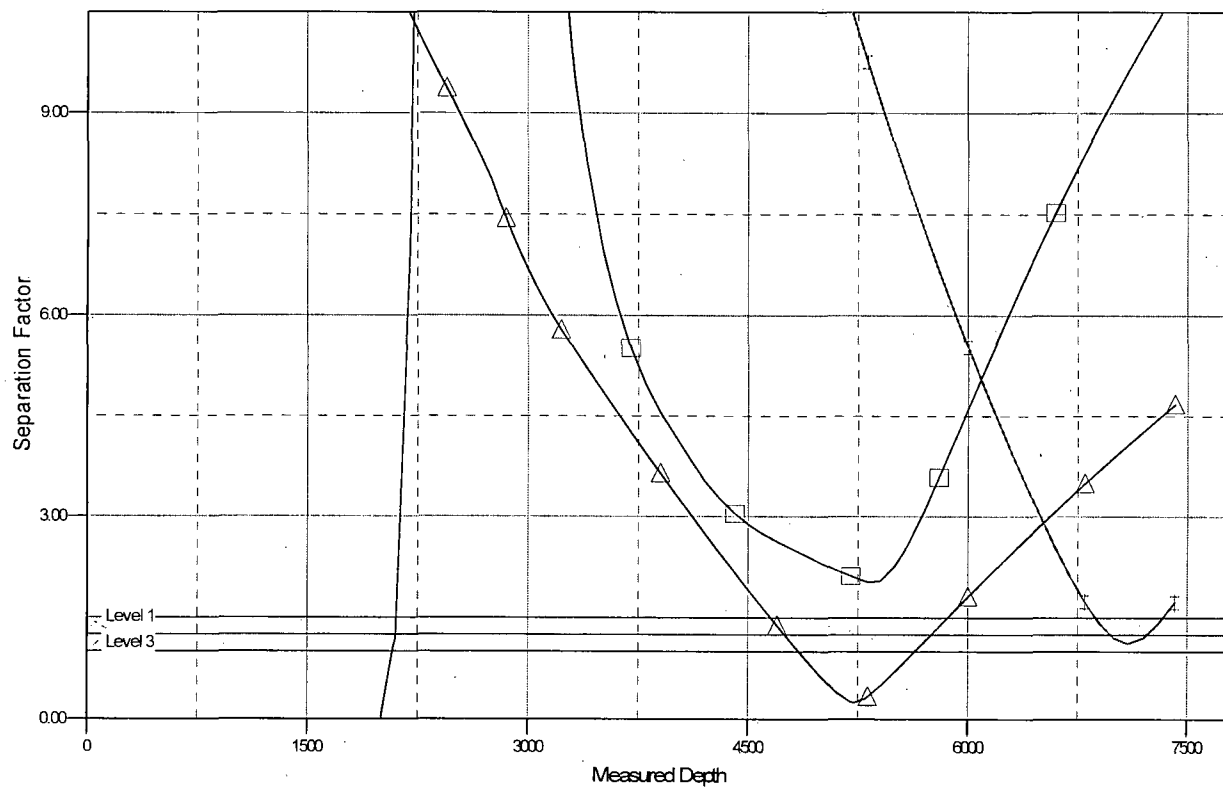


Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, New Mexico (NAD 27, NME)	TVD Reference:	GL @ 3368.00usft
Reference Site:	Patton, SiFee	MD Reference:	GL @ 3368.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#4H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Re-Entry	Database:	GCR DB
Reference Design:	Plan #4, 07-10-13	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL @ 3368.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.000000 W

Coordinates are relative to: #4H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: -0.04°

Separation Factor Plot



LEGEND

■ #4H, OH, OH V0

▲ Collision#1, OH, Inc Surveys V0

✱ #1, OH, Inc Surveys V0



COG Operating LLC

Eddy County, New Mexico (NAD 27 NME)

Patton 5 Fee

#4H

Re-Entry

Plan: Plan #4 07-10-13

Surface: 2310' FNL, 235' FWL, Sec 5, T19S, R26E, Unit E

PP: 2291' FNL, 615' FWL, Sec 5, T19S, R26E, Unit E

BHL: 2260' FNL, 350' FEL, Sec 5, T19S, R26E, Unit H

Standard Planning Report

10 July, 2013





Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
2,000.00	0.42	150.74	1,999.79	-26.91	1.29	0.00	0.00	0.00	0.00	
2,084.00	0.00	0.00	2,083.79	-27.18	1.44	0.50	-0.50	0.00	180.00	
2,413.75	0.00	0.00	2,413.54	-27.18	1.44	0.00	0.00	0.00	0.00	
3,227.39	89.50	83.10	2,934.39	34.85	514.03	11.00	11.00	0.00	83.10	
3,324.05	89.50	86.00	2,935.23	44.03	610.24	3.00	0.00	3.00	90.01	
5,316.38	89.50	86.00	2,952.62	183.00	2,597.64	0.00	0.00	0.00	0.00	
5,558.08	89.50	93.25	2,954.73	184.58	2,839.17	3.00	0.00	3.00	90.05	
7,414.47	89.50	93.25	2,971.00	79.30	4,692.50	0.00	0.00	0.00	0.00	PBHL-Patton 5 #5H



Phoenix Technology Services
Planning Report



Database:	GCR DB	Local Co-ordinate Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	GL @ 3368.00usft
Project:	Eddy County, New Mexico (NAD 27 NME)	MD Reference:	GL @ 3368.00usft
Site:	Patton 5 Fee	North Reference:	Grid
Well:	#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Re-Entry		
Design:	Plan #4 07-10-13		

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)	
2,000.00	0.42	150.74	1,999.79	-26.91	1.29	0.84	0.00	0.00	0.00	
Start Drop -0.50										
2,084.00	0.00	0.00	2,083.79	-27.18	1.44	0.98	0.50	-0.50	0.00	
Start 329.75 hold at 2084.00 MD										
2,100.00	0.00	0.00	2,099.79	-27.18	1.44	0.98	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,199.79	-27.18	1.44	0.98	0.00	0.00	0.00	
2,300.00	0.00	0.00	2,299.79	-27.18	1.44	0.98	0.00	0.00	0.00	
2,400.00	0.00	0.00	2,399.79	-27.18	1.44	0.98	0.00	0.00	0.00	
2,413.75	0.00	0.00	2,413.54	-27.18	1.44	0.98	0.00	0.00	0.00	
KOP Start Build 11.00										
2,500.00	9.49	83.10	2,499.39	-26.32	8.52	8.07	11.00	11.00	0.00	
2,600.00	20.49	83.10	2,595.84	-23.22	34.15	33.75	11.00	11.00	0.00	
2,700.00	31.49	83.10	2,685.59	-17.96	77.58	77.27	11.00	11.00	0.00	
2,800.00	42.49	83.10	2,765.35	-10.75	137.22	137.02	11.00	11.00	0.00	
2,900.00	53.49	83.10	2,832.17	-1.84	210.87	210.81	11.00	11.00	0.00	
3,000.00	64.49	83.10	2,883.62	8.44	295.82	295.92	11.00	11.00	0.00	
3,090.58	74.45	83.10	2,915.34	18.62	379.93	380.19	11.00	11.00	0.00	
PP-Patton 5 #5H										
3,100.00	75.49	83.10	2,917.79	19.72	388.96	389.24	11.00	11.00	0.00	
3,200.00	86.49	83.10	2,933.43	31.56	486.86	487.33	11.00	11.00	0.00	
3,227.39	89.50	83.10	2,934.39	34.85	514.03	514.54	11.00	11.00	0.00	
LP Start Turn 3.00										
3,300.00	89.50	85.28	2,935.02	42.20	586.26	586.89	3.00	0.00	3.00	
3,324.05	89.50	86.00	2,935.23	44.03	610.24	610.90	3.00	0.00	3.00	
Start 1992.33 hold at 3324.05 MD										
3,400.00	89.50	86.00	2,935.89	49.33	686.00	686.74	0.00	0.00	0.00	
3,500.00	89.50	86.00	2,936.77	56.30	785.76	786.60	0.00	0.00	0.00	
3,600.00	89.50	86.00	2,937.64	63.28	885.51	886.45	0.00	0.00	0.00	
3,700.00	89.50	86.00	2,938.51	70.25	985.26	986.31	0.00	0.00	0.00	
3,800.00	89.50	86.00	2,939.38	77.23	1,085.02	1,086.16	0.00	0.00	0.00	
3,900.00	89.50	86.00	2,940.26	84.20	1,184.77	1,186.02	0.00	0.00	0.00	
4,000.00	89.50	86.00	2,941.13	91.18	1,284.52	1,285.88	0.00	0.00	0.00	
4,100.00	89.50	86.00	2,942.00	98.16	1,384.27	1,385.73	0.00	0.00	0.00	
4,200.00	89.50	86.00	2,942.87	105.13	1,484.03	1,485.59	0.00	0.00	0.00	
4,300.00	89.50	86.00	2,943.75	112.11	1,583.78	1,585.45	0.00	0.00	0.00	
4,400.00	89.50	86.00	2,944.62	119.08	1,683.53	1,685.30	0.00	0.00	0.00	
4,500.00	89.50	86.00	2,945.49	126.06	1,783.28	1,785.16	0.00	0.00	0.00	
4,600.00	89.50	86.00	2,946.36	133.03	1,883.04	1,885.01	0.00	0.00	0.00	
4,700.00	89.50	86.00	2,947.24	140.01	1,982.79	1,984.87	0.00	0.00	0.00	
4,800.00	89.50	86.00	2,948.11	146.98	2,082.54	2,084.73	0.00	0.00	0.00	
4,900.00	89.50	86.00	2,948.98	153.96	2,182.29	2,184.58	0.00	0.00	0.00	
5,000.00	89.50	86.00	2,949.86	160.93	2,282.05	2,284.44	0.00	0.00	0.00	
5,100.00	89.50	86.00	2,950.73	167.91	2,381.80	2,384.29	0.00	0.00	0.00	
5,200.00	89.50	86.00	2,951.60	174.88	2,481.55	2,484.15	0.00	0.00	0.00	
5,300.00	89.50	86.00	2,952.47	181.86	2,581.30	2,584.01	0.00	0.00	0.00	
5,316.38	89.50	86.00	2,952.62	183.00	2,597.64	2,600.36	0.00	0.00	0.00	
Start DLS 3.00 TFO 90.05										
5,400.00	89.50	88.51	2,953.35	187.01	2,681.16	2,683.93	3.00	0.00	3.00	
5,500.00	89.50	91.51	2,954.22	186.99	2,781.14	2,783.90	3.00	0.00	3.00	
5,558.08	89.50	93.25	2,954.73	184.58	2,839.17	2,841.88	3.00	0.00	3.00	
Start 1856.39 hold at 5558.08 MD										
5,600.00	89.50	93.25	2,955.10	182.20	2,881.02	2,883.68	0.00	0.00	0.00	
5,700.00	89.50	93.25	2,955.98	176.53	2,980.85	2,983.41	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 @ 3368.00usft
Project:	Eddy County, New Mexico (NAD 27 NME)	MD Reference:	GL @ 3368.00usft
Site:	Patton 5 Fee	North Reference:	Grid
Well:	#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Re-Entry		
Design:	Plan #4 07-10-13		

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)	
5,800.00	89.50	93.25	2,956.85	170.86	3,080.69	3,083.13	0.00	0.00	0.00	
5,900.00	89.50	93.25	2,957.73	165.19	3,180.52	3,182.86	0.00	0.00	0.00	
6,000.00	89.50	93.25	2,958.61	159.52	3,280.36	3,282.59	0.00	0.00	0.00	
6,100.00	89.50	93.25	2,959.48	153.85	3,380.19	3,382.31	0.00	0.00	0.00	
6,200.00	89.50	93.25	2,960.36	148.18	3,480.03	3,482.04	0.00	0.00	0.00	
6,300.00	89.50	93.25	2,961.23	142.50	3,579.87	3,581.76	0.00	0.00	0.00	
6,400.00	89.50	93.25	2,962.11	136.83	3,679.70	3,681.49	0.00	0.00	0.00	
6,500.00	89.50	93.25	2,962.99	131.16	3,779.54	3,781.21	0.00	0.00	0.00	
6,600.00	89.50	93.25	2,963.86	125.49	3,879.37	3,880.94	0.00	0.00	0.00	
6,693.03	89.50	93.25	2,964.68	120.21	3,972.25	3,973.71	0.00	0.00	0.00	
TL, 2930' TVD @ 0 VZ, 89.5° Inc										
6,700.00	89.50	93.25	2,964.74	119.82	3,979.21	3,980.66	0.00	0.00	0.00	
6,800.00	89.50	93.25	2,965.62	114.15	4,079.04	4,080.39	0.00	0.00	0.00	
6,900.00	89.50	93.25	2,966.49	108.48	4,178.88	4,180.11	0.00	0.00	0.00	
7,000.00	89.50	93.25	2,967.37	102.81	4,278.71	4,279.84	0.00	0.00	0.00	
7,100.00	89.50	93.25	2,968.24	97.13	4,378.55	4,379.56	0.00	0.00	0.00	
7,200.00	89.50	93.25	2,969.12	91.46	4,478.38	4,479.29	0.00	0.00	0.00	
7,300.00	89.50	93.25	2,970.00	85.79	4,578.22	4,579.01	0.00	0.00	0.00	
7,400.00	89.50	93.25	2,970.87	80.12	4,678.05	4,678.74	0.00	0.00	0.00	
7,414.47	89.50	93.25	2,971.00	79.30	4,692.50	4,693.17	0.00	0.00	0.00	
TD at 7414.47 - PBHL-Patton 5 #5H										

Design Targets										
Target Name	hit/miss target	Dip Angle (°)	Dip Dir (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PP-Patton 5 #5H		0.00	0.00	2,915.37	26.03	379.00	614,918.23	476,321.20	32° 41' 25.747540 N	104° 24' 37.080754 W
- plan misses target center by 7.46usft at 3090.56usft MD (2915.34 TVD, 18.62 N, 379.91 E)										
- Point										
PBHL-Patton 5 #5H		0.00	360.00	2,971.00	79.30	4,692.50	614,971.50	480,634.70	32° 41' 26.302849 N	104° 23' 46.606136 W
- plan hits target center										
- Point										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,693.03	2,964.68	TL, 2930' TVD @ 0 VZ, 89.5° Inc		0.50	89.03	



Database:	GCR.DB	Local Co-ordinate Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	GL @ 3368.00usft
Project:	Eddy County New Mexico (NAD 27 NME)	MD Reference:	GL @ 3368.00usft
Site:	Patton 5 Fee	North Reference:	Grid
Well:	#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Re-Entry		
Design:	Plan #4 07-10-13		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,000.00	1,999.79	-26.91	1.29	Start Drop -0.50
2,084.00	2,083.79	-27.18	1.44	Start 329.75 hold at 2084.00 MD
2,413.75	2,413.54	-27.18	1.44	KOP Start Build 11.00
3,227.39	2,934.39	34.85	514.03	LP Start Turn 3.00
3,324.05	2,935.23	44.03	610.24	Start 1992.33 hold at 3324.05 MD
5,316.38	2,952.62	183.00	2,597.64	Start DLS 3.00 TFO 90.05
5,558.08	2,954.73	184.58	2,839.17	Start 1856.39 hold at 5558.08 MD
7,414.47	2,971.00	79.30	4,692.50	TD at 7414.47



Project: Eddy County, New Mexico (NAD 27 NME)
Site: Patton 5 Fee
Well: #4H
Wellbore: Re-Entry
Design: Plan #4 07-10-13



PHOENIX
TECHNOLOGY SERVICES



Azimuths to Grid North
True North: 0.04°
Magnetic North: 7.80°
Magnetic Field
Strength: 48597.1snT
Dip Angle: 60.42°
Date: 07/10/2013
Model: IGRF2010_14

WELL DETAILS

-N/S	-E/W	Northing	Ground Level	3368.00	Latitude	Longitude
0.00	0.00	614892.20	Easting	475942.20	32° 41' 25.487234 N	104° 24' 41.515447 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	-N/S	-E/W	Dleg	TFace	VSecl	Target	Annotation
1	2000.00	0.42	150.74	1999.79	-26.91	1.28	0.00	0.00	0.84		Start Drop -0.50
2	2084.00	0.00	0.00	2083.79	-27.18	1.44	0.50	180.00	0.98		Start 329.75 hold at 2084.00 MD
3	2413.75	0.00	0.00	2413.54	-27.18	1.44	0.00	0.00	0.98		KOP Start Build 11.00
4	3227.39	89.50	83.10	2934.39	34.85	514.03	11.00	83.10	514.54		LP Start Turn 3.00
5	3324.05	89.50	86.00	2935.23	44.03	610.24	3.00	90.01	610.90		Start 1992.33 hold at 3324.05 MD
6	5316.38	89.50	86.00	2952.62	183.00	2587.64	0.00	0.00	2600.36		Start DLS 3.00 TFO 90.05
7	5558.08	89.50	83.25	2954.73	184.58	2839.17	3.00	90.05	2841.88		Start 1856.39 hold at 5558.08 MD
8	7414.47	89.50	93.25	2971.00	79.30	4692.50	0.00	0.00	4693.17	PBHL-Patton 5 #5H	TD at 7414.47

DESIGN TARGET DETAILS

Name	TVD	-N/S	-E/W	Northing	Easting	Latitude	Longitude	Shape
PP-Patton 5 #5H	2928.82	26.26	443.00	614918.46	476385.20	32° 41' 25.750247 N	104° 24' 36.331852 W	Point
PBHL-Patton 5 #5H	2971.00	79.30	4692.50	614971.50	480634.70	32° 41' 26.302849 N	104° 23' 46.605136 W	Point

PROJECT DETAILS: Eddy County, New Mexico (NAD 27 NME)

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

System Datum: Mean Sea Level

SITE DETAILS: Patton 5 Fee

Site Centre Northing: 613610.70
Easting: 475920.20

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

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
2964.68	6693.03	TL 2930' TVD @ 0 VZ 89.5° Inc	0.50	69.03

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 #4H, Grid North

Latitude: 32° 41' 25.487234 N

Longitude: 104° 24' 41.515447 W

Grid East: 475942.20

Grid North: 614892.20

Scale Factor: 1.000

Geomagnetic Model: IGRF2010_14

Sample Date: 10-Jul-13

Magnetic Declination: 7.75°

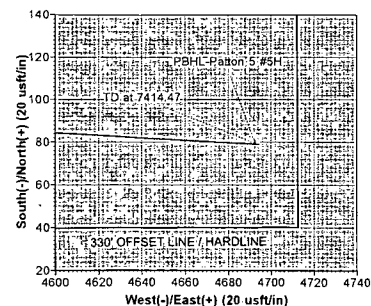
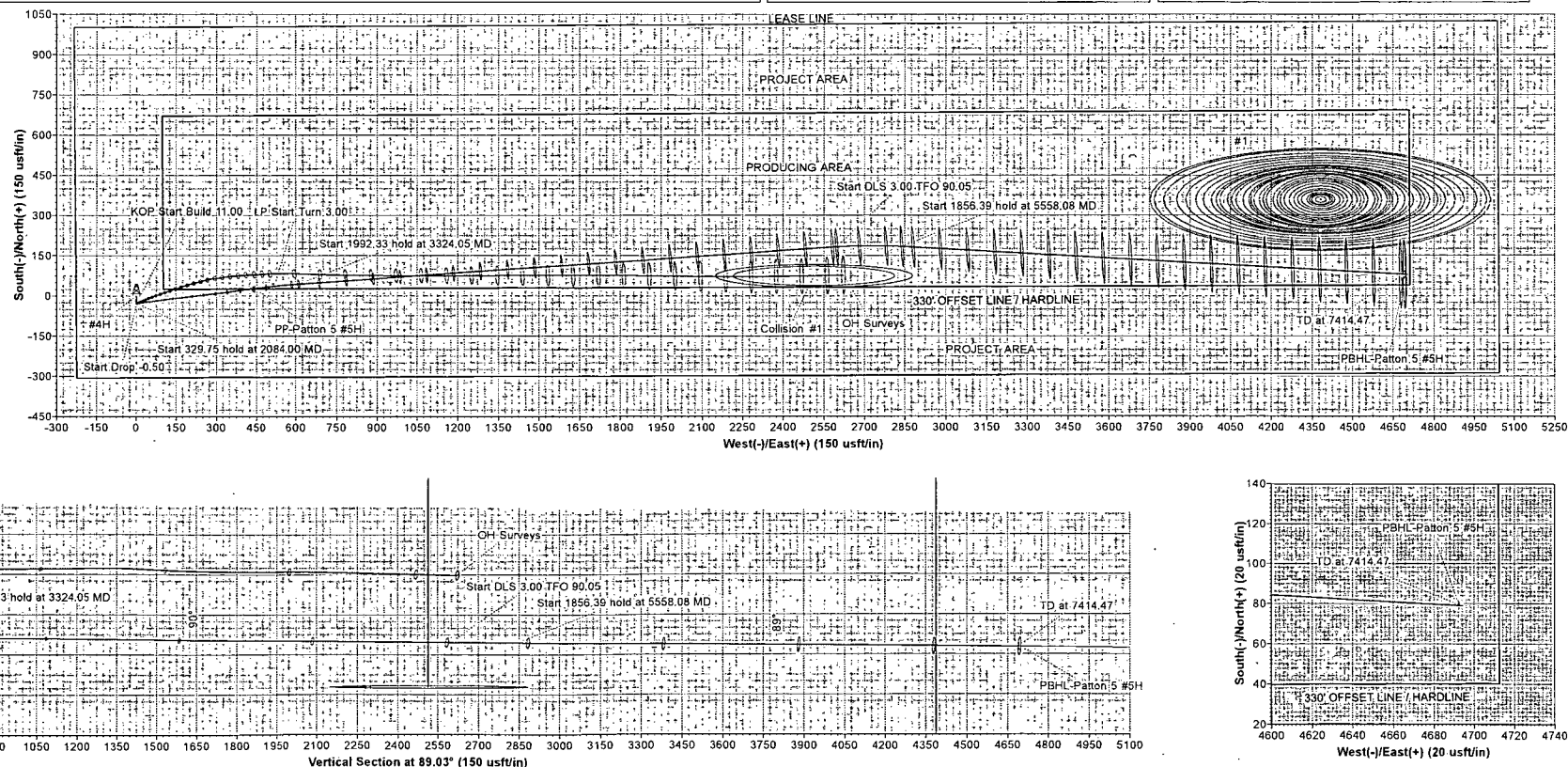
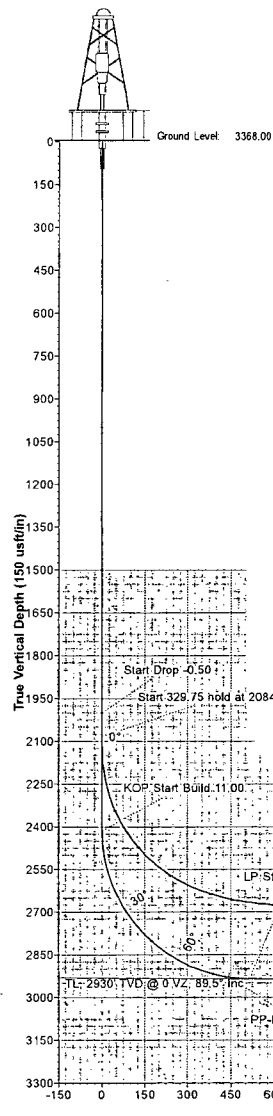
Dip Angle from Horizontal: 60.42°

Magnetic Field Strength: 48597

To convert a Magnetic Direction to a Grid Direction, Add 7.80°
To convert a Magnetic Direction to a True Direction, Add 7.75° East
To convert a True Direction to a Grid Direction, Add 0.04°

LEGEND

- #4H, OH, OH V0
- Collision #1, OH, Inc Surveys V0
- #1, OH, Inc Surveys V0
- Plan #4 07-10-13



Created By: Julio Peña Date: 17:05, July 10 2013