

NM OIL CONSERVATION

ARTESIA DISTRICT

Form C-102

Revised August 1, 2011

Submit one copy to appropriate District Office

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 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) 476-3462

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

RECEIVED

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-43396	Pool Code 50270	Pool Name Penasco Draw; SA-Yeso (assoc)
Property Code 38872	Property Name CLYDESDALE 1 FEE	Well Number 6H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3398'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	1	19-S	25-E		1650	SOUTH	150	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	1	19-S	25-E		1650	SOUTH	330	WEST	EDDY

Dedicated Acres 160	Joint or Infill	Consolidation Code	Order No.
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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

4 GEODETIC COORDINATES NAD 27 NME BOTTOM HOLE LOCATION Y=613594.7 N X=465498.9 E LAT.=32.686821° N LONG.=104.445473° W 39.65 AC.	3 GEODETIC COORDINATES NAD 83 NME BOTTOM HOLE LOCATION Y=613656.3 N X=506677.5 E LAT.=32.686934° N LONG.=104.445992° W 39.75 AC.	2 GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION Y=613567.7 N X=470377.8 E LAT.=32.686760° N LONG.=104.429615° W 39.85 AC.	1 GEODETIC COORDINATES NAD 83 NME SURFACE LOCATION Y=613629.3 N X=511556.5 E LAT.=32.686873° N LONG.=104.430133° W 39.95 AC.
CORNER COORDINATES TABLE NAD 83 NME A - Y=614647.2 N, X=506352.5 E B - Y=614628.7 N, X=511713.8 E C - Y=613303.8 N, X=511704.1 E D - Y=613327.8 N, X=506345.9 E		CORNER COORDINATES TABLE NAD 27 NME A - Y=614585.6 N, X=465174.0 E B - Y=614567.1 N, X=470535.1 E C - Y=613242.2 N, X=470525.5 E D - Y=613266.3 N, X=465167.4 E	
Project Area Producing Area GRID AZ.=270°18'59" HORIZ. DIST.=4880.3' 330' 1650' 150' Estimated Completed Interval: 1157 FSL 330 FEL			

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.

 **9-29-15**
Signature Date

Kelly J. Holly
Printed Name

kholly@concho.com
E-mail Address

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.

SEP 29 2015
Date of Survey

 **NEW MEXICO**
Signature Seal of Professional Surveyor

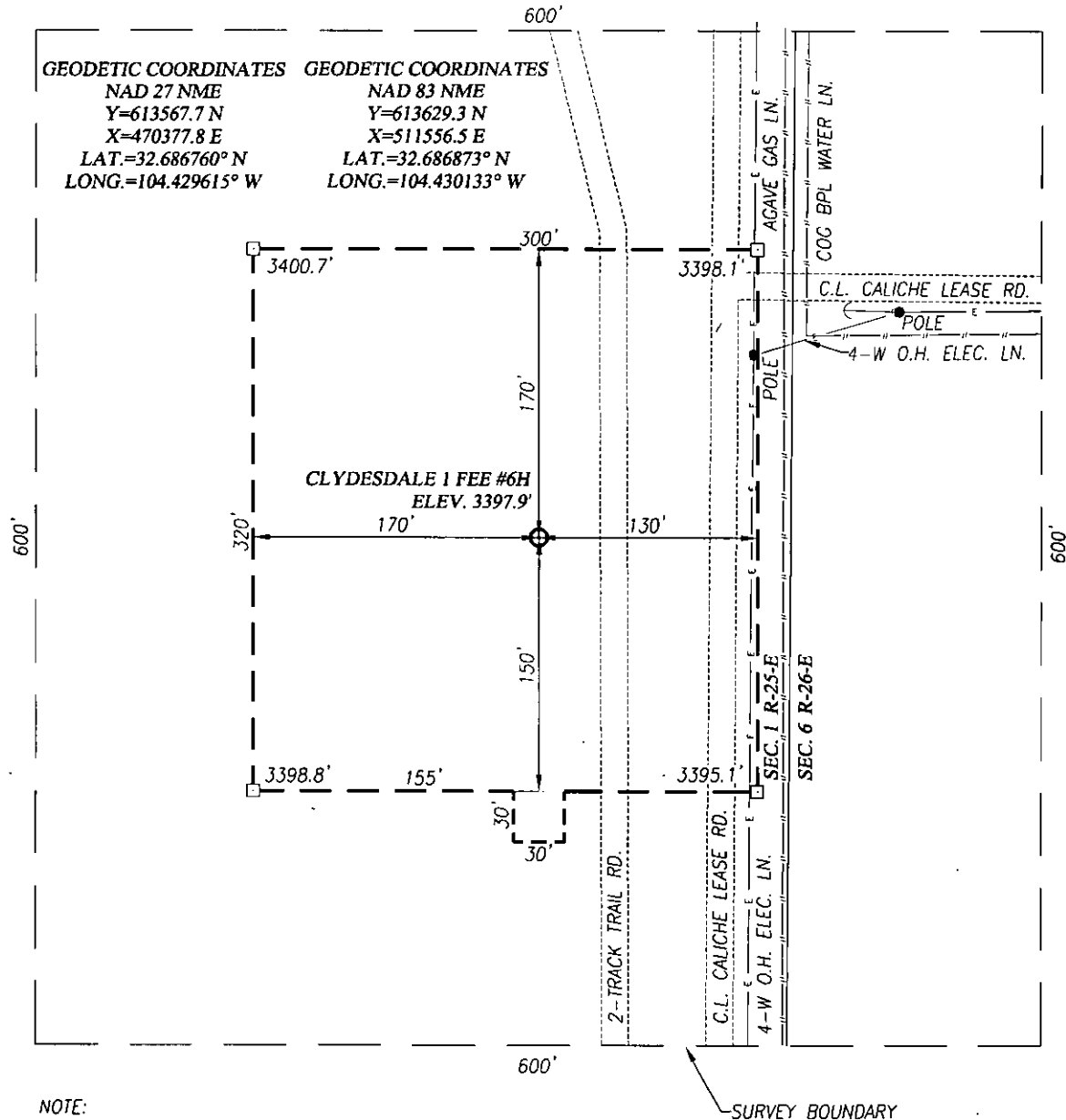
3239
Registered Professional Surveyor

Ronald J. Eidson 09/25/2015
Certificate Number

Gary G. Eidson 12641
Ronald J. Eidson 3239

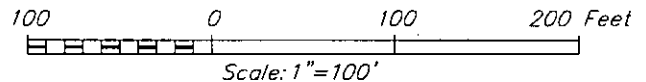
ACK JWSC W.O.: 15.11.0782

WELL SITE PLAN



DIRECTIONS TO CLYDESDALE 1 FEE #6H:

FROM THE INTERSECTION OF U.S. HWY. 285 (SEVEN RIVERS) AND CO. RD. #38 (KINCAID RANCH). GO WEST ON CO. RD. #38 APPROX. 2.8 MILES TO A CALICHE LEASE ROAD. TURN LEFT AND GO SOUTH ON LEASE ROAD APPROX. 0.9 MILES. TURN LEFT AND GO EAST APPROX. 0.9 MILES. TURN RIGHT AND GO SOUTH APPROX. 0.8 MILES TO NORTHEAST PAD CORNER OF THIS LOCATION.



COG OPERATING, LLC

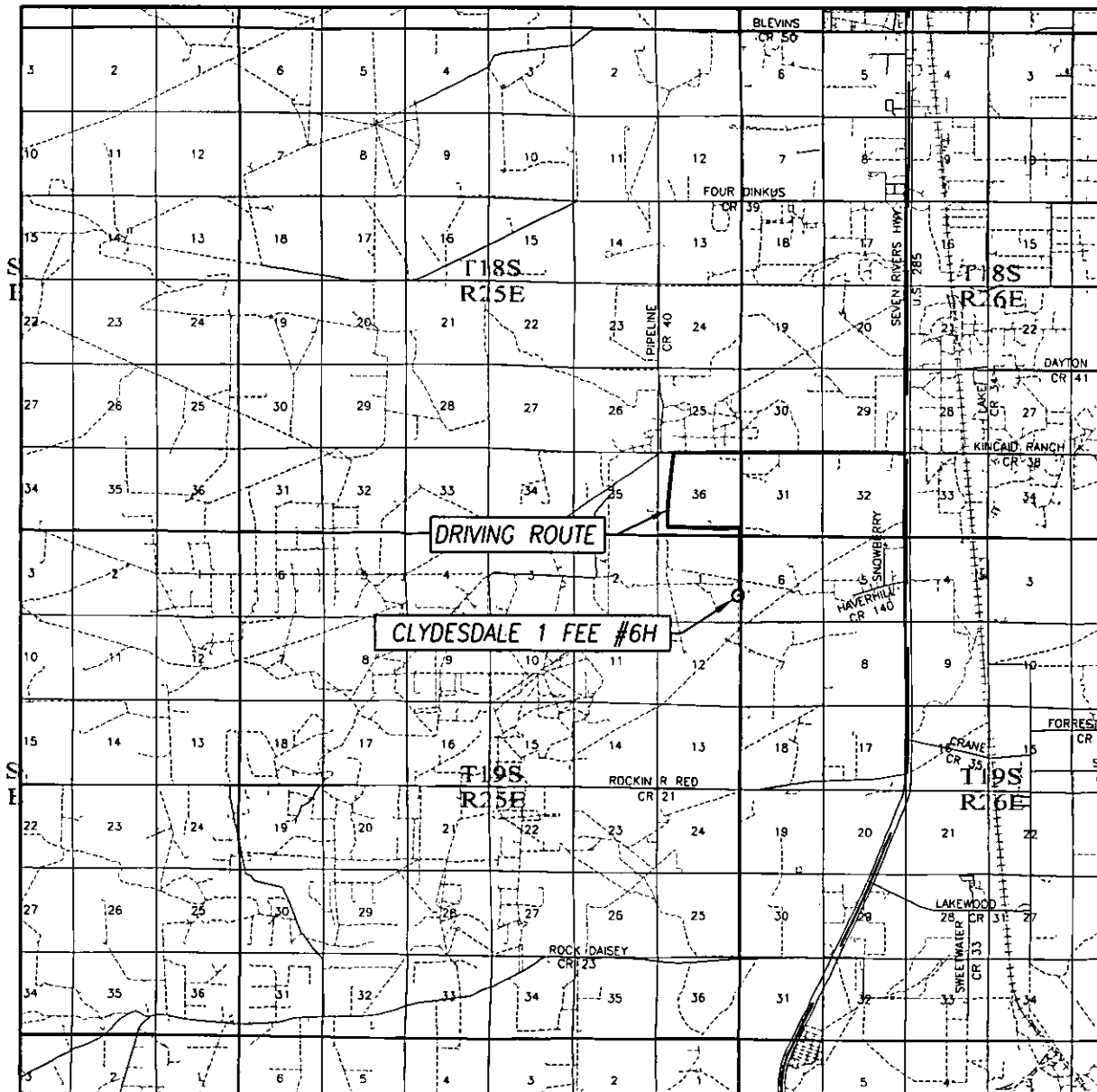
CLYDESDALE 1 FEE #6H WELL
 LOCATED 1650 FEET FROM THE SOUTH LINE
 AND 150 FEET FROM THE EAST LINE OF SECTION 1,
 TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,
 EDDY COUNTY, NEW MEXICO



PROVIDING SURVEYING SERVICES
 SINCE 1946
JOHN WEST SURVEYING COMPANY
 412 N. DAL PASO HOBBS, N.M. 88240
 (575) 393-3117 www.jwsc.biz
 TBPLS# 10021000

Survey Date: 8/12/15	CAD Date: 8/21/15	Drawn By: ACK
W.O. No.: 15110782	Rev: .	Rel. W.O.: Sheet 1 of 1

VICINITY MAP



SCALE: 1" = 2 MILES

DRIVING ROUTE: SEE TOPOGRAPHICAL AND ACCESS ROAD MAP

SEC. 1 TWP. 19-S RGE. 25-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 1650' FSL & 150' FEL

ELEVATION 3398'

OPERATOR COG OPERATING, LLC

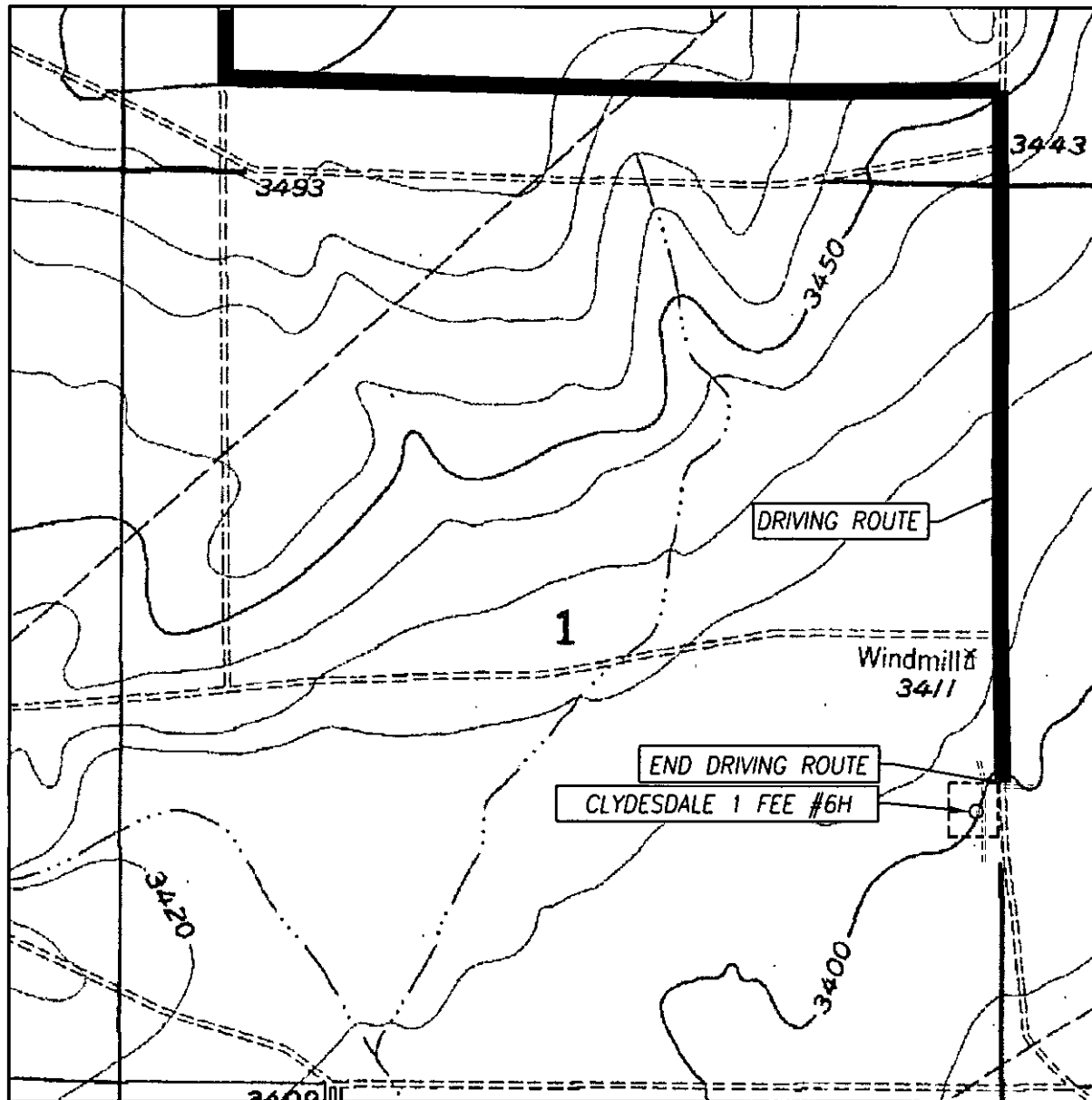
LEASE CLYDESDALE 1 FEE

PROVIDING SURVEYING SERVICES
SINCE 1946

JOHN WEST SURVEYING COMPANY

412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

TOPOGRAPHICAL AND ACCESS ROAD MAP



SCALE: 1" = 1000'

CONTOUR INTERVAL:
DAYTON, N.M. - 10'

SEC. 1 TWP. 19-S RGE. 25-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 1650' FSL. & 150' FEL

ELEVATION 3398'

OPERATOR COG OPERATING, LLC

LEASE CLYDESDALE 1 FEE

U.S.G.S. TOPOGRAPHIC MAP
DAYTON, N.M.

DIRECTIONS TO CLYDESDALE 1 FEE #6H:

FROM THE INTERSECTION OF U.S. HWY. 285 (SEVEN RIVERS) AND CO. RD. #38 (KINCAID RANCH). GO WEST ON CO. RD. #38 APPROX. 2.8 MILES TO A CALICHE LEASE ROAD. TURN LEFT AND GO SOUTH ON LEASE ROAD APPROX. 0.9 MILES. TURN LEFT AND GO EAST APPROX. 0.9 MILES. TURN RIGHT AND GO SOUTH APPROX. 0.8 MILES TO NORTHEAST PAD CORNER OF THIS LOCATION.



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TBPLS# 10021000



COG Operating LLC

Eddy County, NM (NAD27 NME)

Clydesdale 1 Fee

#6H

OH

Plan: Plan #1 09-11-15

Surface: 1650' FSL, 150' FEL, Sec 1, T19S, R25E, Unit I

PP: 1657' FSL, 330' FEL, Sec 1, T19S, R25E, Unit I

BHL: 1650' FSL, 330' FWL, Sec 1, T19S, R25E, Unit L

Standard Planning Report

11 September, 2015





Phoenix Technology Services LP
Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well #6H
Company:	COG Operating LLC	TVD Reference:	KB @ 3416.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3416.00usft (Silver Oak 3)
Site:	Clydesdale 1 Fee	North Reference:	Grid
Well:	#6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 09-11-15		

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	Clydesdale 1 Fee		
Site Position:		Northing:	616,840.10 usft
From:	Map	Easting:	470,401.70 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 41' 44.71785 N
		Longitude:	104° 25' 46.36893 W
		Grid Convergence:	-0.05 °

Well	#6H		
Well Position	+N/-S	-3,272.40 usft	Northing:
	+E/-W	-23.90 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 41' 12.33519 N
		Longitude:	104° 25' 46.61385 W
		Ground Level:	3,398.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	HDGM	9/10/2015	7.62
			Dip Angle
			(°)
			60.55
			Field Strength
			(nT)
			48,424

Design	Plan #1 09-11-15		
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
			(°)
			270.32

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,390.63	0.00	0.00	2,390.63	0.00	0.00	0.00	0.00	0.00	0.00	
3,226.99	92.00	272.80	2,911.18	26.33	-538.41	11.00	11.00	0.00	272.80	
3,320.99	92.00	269.98	2,907.90	28.61	-632.31	3.00	0.00	-3.00	-89.96	
7,570.17	92.00	269.98	2,759.63	27.00	-4,878.90	0.00	0.00	0.00	0.00	BHL (Clydesdale 1 #6)



Phoenix Technology Services LP
Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well #6H
Company:	COG Operating LLC	TVD Reference:	KB @ 3416.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3416.00usft (Silver Oak 3)
Site:	Clydesdale 1 Fee	North Reference:	Grid
Well:	#6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 09-11-15		

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
2,390.63	0.00	0.00	2,390.63	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Begin 11°/100' Build									
2,400.00	1.03	272.80	2,400.00	0.00	-0.08	0.08	11.00	11.00	0.00
2,500.00	12.03	272.80	2,499.20	0.56	-11.43	11.43	11.00	11.00	0.00
2,600.00	23.03	272.80	2,594.41	2.03	-41.47	41.48	11.00	11.00	0.00
2,700.00	34.03	272.80	2,682.13	4.36	-89.10	89.12	11.00	11.00	0.00
2,800.00	45.03	272.80	2,759.14	7.46	-152.57	152.61	11.00	11.00	0.00
2,837.48	49.15	272.80	2,784.65	8.80	-179.99	180.03	11.00	11.00	0.00
PP (Clydesdale 1 #6H)									
2,900.00	56.03	272.80	2,822.61	11.23	-229.56	229.62	11.00	11.00	0.00
3,000.00	67.03	272.80	2,870.20	15.52	-317.23	317.31	11.00	11.00	0.00
3,100.00	78.03	272.80	2,900.18	20.17	-412.36	412.46	11.00	11.00	0.00
3,200.00	89.03	272.80	2,911.43	25.01	-511.45	511.58	11.00	11.00	0.00
3,226.99	92.00	272.80	2,911.18	26.33	-538.41	538.54	11.00	11.00	0.00
LP, Begin 3°/100' Turn									
3,300.00	92.00	270.61	2,908.64	28.50	-611.33	611.48	3.00	0.00	-3.00
3,320.99	92.00	269.98	2,907.90	28.61	-632.31	632.46	3.00	0.00	-3.00
Begin 92° Inc Hold, 369.98° Azm									
3,400.00	92.00	269.98	2,905.15	28.58	-711.27	711.42	0.00	0.00	0.00
3,500.00	92.00	269.98	2,901.66	28.54	-811.21	811.35	0.00	0.00	0.00
3,600.00	92.00	269.98	2,898.17	28.50	-911.15	911.29	0.00	0.00	0.00
3,700.00	92.00	269.98	2,894.68	28.47	-1,011.09	1,011.23	0.00	0.00	0.00
3,800.00	92.00	269.98	2,891.19	28.43	-1,111.03	1,111.17	0.00	0.00	0.00
3,900.00	92.00	269.98	2,887.70	28.39	-1,210.96	1,211.10	0.00	0.00	0.00
4,000.00	92.00	269.98	2,884.21	28.35	-1,310.90	1,311.04	0.00	0.00	0.00
4,100.00	92.00	269.98	2,880.72	28.31	-1,410.84	1,410.98	0.00	0.00	0.00
4,200.00	92.00	269.98	2,877.23	28.28	-1,510.78	1,510.92	0.00	0.00	0.00
4,300.00	92.00	269.98	2,873.74	28.24	-1,610.72	1,610.85	0.00	0.00	0.00
4,400.00	92.00	269.98	2,870.25	28.20	-1,710.66	1,710.79	0.00	0.00	0.00
4,500.00	92.00	269.98	2,866.76	28.16	-1,810.60	1,810.73	0.00	0.00	0.00
4,600.00	92.00	269.98	2,863.27	28.13	-1,910.54	1,910.66	0.00	0.00	0.00
4,700.00	92.00	269.98	2,859.78	28.09	-2,010.48	2,010.60	0.00	0.00	0.00
4,800.00	92.00	269.98	2,856.29	28.05	-2,110.42	2,110.54	0.00	0.00	0.00
4,900.00	92.00	269.98	2,852.80	28.01	-2,210.36	2,210.48	0.00	0.00	0.00
5,000.00	92.00	269.98	2,849.31	27.97	-2,310.29	2,310.41	0.00	0.00	0.00
5,100.00	92.00	269.98	2,845.83	27.94	-2,410.23	2,410.35	0.00	0.00	0.00
5,200.00	92.00	269.98	2,842.34	27.90	-2,510.17	2,510.29	0.00	0.00	0.00
5,300.00	92.00	269.98	2,838.85	27.86	-2,610.11	2,610.23	0.00	0.00	0.00
5,400.00	92.00	269.98	2,835.36	27.82	-2,710.05	2,710.16	0.00	0.00	0.00
5,500.00	92.00	269.98	2,831.87	27.78	-2,809.99	2,810.10	0.00	0.00	0.00
5,600.00	92.00	269.98	2,828.38	27.75	-2,909.93	2,910.04	0.00	0.00	0.00
5,700.00	92.00	269.98	2,824.89	27.71	-3,009.87	3,009.98	0.00	0.00	0.00
5,800.00	92.00	269.98	2,821.40	27.67	-3,109.81	3,109.91	0.00	0.00	0.00
5,889.20	92.00	269.98	2,818.29	27.64	-3,198.95	3,199.06	0.00	0.00	0.00
TL, 2930' TVD @ 0 VZ, 92° Inc									
5,900.00	92.00	269.98	2,817.91	27.63	-3,209.75	3,209.85	0.00	0.00	0.00
6,000.00	92.00	269.98	2,814.42	27.59	-3,309.69	3,309.79	0.00	0.00	0.00
6,100.00	92.00	269.98	2,810.93	27.56	-3,409.62	3,409.73	0.00	0.00	0.00
6,200.00	92.00	269.98	2,807.44	27.52	-3,509.56	3,509.66	0.00	0.00	0.00
6,300.00	92.00	269.98	2,803.95	27.48	-3,609.50	3,609.60	0.00	0.00	0.00
6,400.00	92.00	269.98	2,800.46	27.44	-3,709.44	3,709.54	0.00	0.00	0.00
6,500.00	92.00	269.98	2,796.97	27.41	-3,809.38	3,809.47	0.00	0.00	0.00
6,600.00	92.00	269.98	2,793.48	27.37	-3,909.32	3,909.41	0.00	0.00	0.00



Phoenix Technology Services LP

Planning Report



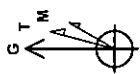
Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well #6H
Company:	COG Operating LLC	TVD Reference:	KB @ 3416.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3416.00usft (Silver Oak 3)
Site:	Clydesdale.1 Fee	North Reference:	Grid
Well:	#6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 09-11-15		

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)
6,700.00	92.00	269.98	2,789.99	27.33	-4,009.26	4,009.35	0.00	0.00	0.00
6,800.00	92.00	269.98	2,786.50	27.29	-4,109.20	4,109.29	0.00	0.00	0.00
6,900.00	92.00	269.98	2,783.02	27.25	-4,209.14	4,209.22	0.00	0.00	0.00
7,000.00	92.00	269.98	2,779.53	27.22	-4,309.08	4,309.16	0.00	0.00	0.00
7,100.00	92.00	269.98	2,776.04	27.18	-4,409.02	4,409.10	0.00	0.00	0.00
7,200.00	92.00	269.98	2,772.55	27.14	-4,508.95	4,509.04	0.00	0.00	0.00
7,300.00	92.00	269.98	2,769.06	27.10	-4,608.89	4,608.97	0.00	0.00	0.00
7,400.00	92.00	269.98	2,765.57	27.06	-4,708.83	4,708.91	0.00	0.00	0.00
7,500.00	92.00	269.98	2,762.08	27.03	-4,808.77	4,808.85	0.00	0.00	0.00
7,570.17	92.00	269.98	2,759.63	27.00	-4,878.90	4,878.97	0.00	0.00	0.00
TD at 7570.17' MD - BHL (Clydesdale 1 #6H)									

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 (Clydesdale 1 #6H)	0.00	360.00	2,759.63	27.00	-4,878.90	613,594.70	465,498.90	32° 41' 12.55495 N	104° 26' 43.70285 W
- plan hits target center									
- Point									
PP (Clydesdale 1 #6H)	0.00	360.00	2,784.66	8.80	-180.00	613,576.51	470,197.80	32° 41' 12.42068 N	104° 25' 48.72015 W
- plan hits target center									
- Point									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
5,889.20	2,818.29	TL, 2930' TVD @ 0 VZ, 92° Inc		-2.00	270.32	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
2,390.63	2,390.63	0.00	0.00	KOP, Begin 11°/100' Build	
3,226.99	2,911.18	26.33	-538.41	LP, Begin 3°/100' Turn	
3,320.99	2,907.90	28.61	-632.31	Begin 92° Inc Hold, 369.98° Azm	
7,570.17	2,759.63	27.00	-4,878.90	TD at 7570.17' MD	



**PHOENIX
TECHNOLOGY SERV**

Project: Eddy County, NM (NAD27 NME)
Site: Clydesdale 1 Fee
Well: #6H
Wellbore: OH
Design: Plan #1 09-11-15
Rig: Silver Oak 3

izimluths to Grid North
 True North: 0.05°
 Magnetic North: 7.87°
 Magnetic Field
 Strength: 48423.6 nT
 Dip Angle: 60.56°
 Date: 9/11/2015
 Model: HDGM

WELL DETAILS

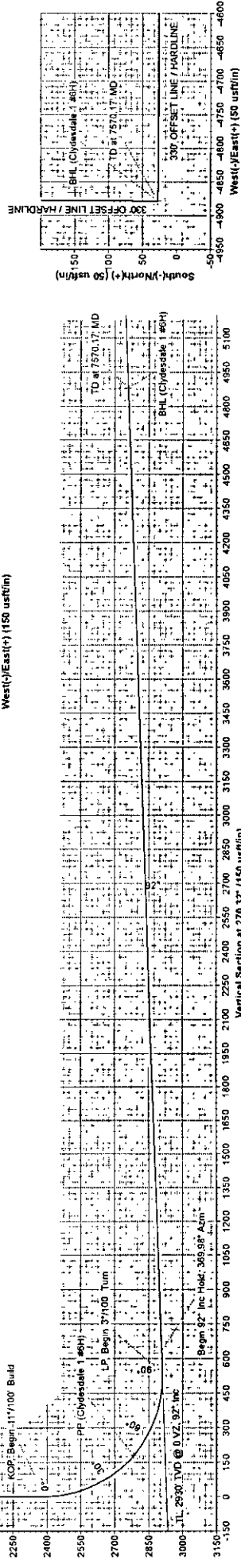
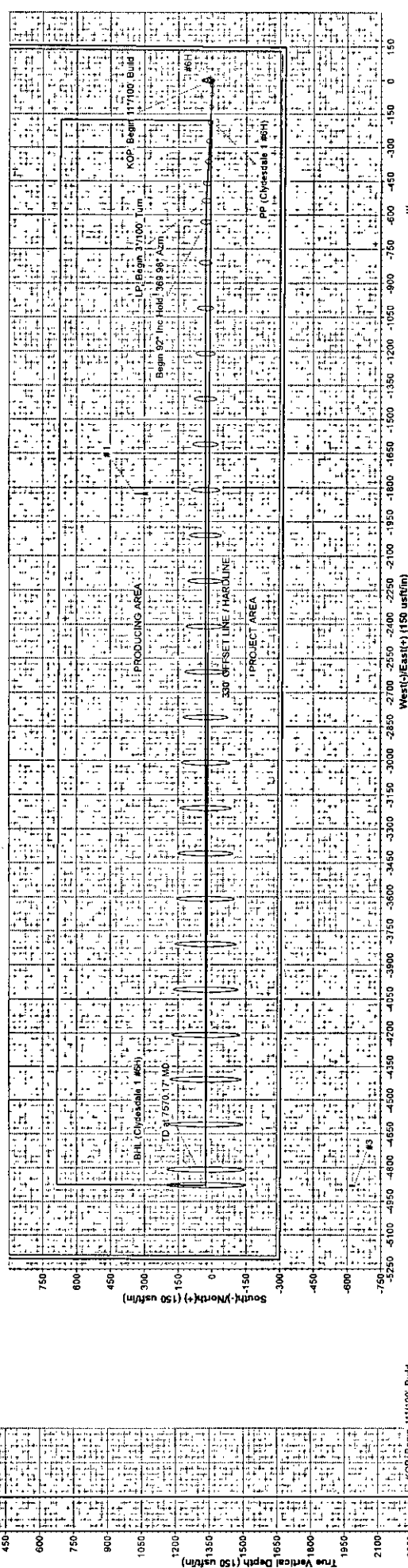
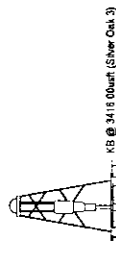
	±E/W	±N/S	Northings	Eastings	Ground Level	Latitude	Longitude
	0.00	0.00	619587.70	470377.80	3398.00	32° 41' 12.3519 N	104° 25' 46.61385 W

SECTION DETAIL \$

Case	MD	Inc	As	TMD	+MS	-EM	Obs	T-Obs	Target	Attribution
1	2,380	82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	K/P: Began 11/10/00 Build
2	2,380	82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	L/P: Began 3/10/00 Turn
4	3,200	90	0.00	272.80	26.33	-538.41	1,000	272.80	538.54	L/P: Began 11/10/00 Build
5	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
6	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
7	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
8	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
9	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
10	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
11	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
12	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
13	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
14	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
15	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
16	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
17	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
18	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
19	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
20	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
21	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
22	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
23	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
24	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
25	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
26	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
27	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
28	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
29	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
30	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
31	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
32	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
33	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
34	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L/P: Began 11/10/00 Build
35	3,200	90	0.00	265.88	26.61	-437.31	3,000	495	832.46	L

DESIGN TARGET DETAILS

Name	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude	Shape
BHC (Cytoside) (#64)	2795.83	27.00	-487.8	61354.70	46594.80	32° 41' 12.5495 N	104° 26' 43.7025 W	Pent
	- blue line target center							
PP (Cytoside) (#61)	2784.68	8.80	-140.00	61357.50	47018.70	32° 41' 12.5084 N	104° 25' 48.7205 W	Pent
	- blue line target center							



Created By: JAC Date: 9/10/2011



COG Operating LLC

Eddy County, NM (NAD27 NME)

Clydesdale 1 Fee

#6H

OH

Plan #1 09-11-15

Anticollision Report

11 September, 2015





Phoenix Technology Services LP
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #6H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3416.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee	MD Reference:	KB @ 3416.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	OH	Database:	Compass 5000 GCR
Reference Design:	Plan #1 09-11-15	Offset TVD Reference:	Offset Datum

Reference	Plan #1 09-11-15		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999,999,999.00	Error Surface:	Circular Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 9/10/2015	
From (usft)	To (usft)	Survey (Wellbore)
0.00	7,570.17	Plan #1 09-11-15 (OH)
		Tool Name
		PHX+MWD+HDGM
		Description
		PHX+MWD+HDGM

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							
Anderson							
#1 - OH - Inc Surveys	4,516.72	2,868.00	263.19	193.26	3.764	CC, ES, SF	
Montana 1 Fee							
#3 - OH - OH	7,570.17	2,771.40	638.68	458.40	3.543	CC, ES, SF	

Offset Design	Anderson - #1 - OH - Inc Surveys											Offset Site Error: 0.00 usft
Survey Program: 263-MWO												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
0.00	0.00	0.00	0.00	0.00	0.00	-79.45	340.45	-1,827.53	1,858.97			
100.00	100.00	99.02	99.02	0.15	0.11	-79.45	340.28	-1,827.53	1,858.94	1,858.68	0.26	7,185.540
200.00	200.00	200.16	200.16	0.51	0.23	-79.47	339.78	-1,827.53	1,858.85	1,858.12	0.73	2,542.540
300.00	300.00	300.86	300.86	0.86	0.38	-79.49	338.97	-1,827.53	1,858.70	1,857.46	1.25	1,491.951
400.00	400.00	402.02	402.01	1.22	0.61	-79.52	337.94	-1,827.53	1,858.52	1,856.68	1.83	1,014.091
500.00	500.00	503.37	503.35	1.58	0.84	-79.57	336.50	-1,827.53	1,858.28	1,855.84	2.42	767.242
600.00	600.00	605.37	605.33	1.94	1.07	-79.63	334.58	-1,827.53	1,857.92	1,854.91	3.01	616.530
700.00	700.00	707.64	707.56	2.30	1.31	-79.71	331.95	-1,827.53	1,857.46	1,853.85	3.61	515.033
800.00	800.00	806.40	806.29	2.66	1.51	-79.79	329.16	-1,827.53	1,856.96	1,852.79	4.17	445.722
900.00	900.00	904.88	904.74	3.01	1.69	-79.86	326.88	-1,827.53	1,856.55	1,851.84	4.70	394.606
1,000.00	1,000.00	1,003.73	1,003.57	3.37	1.88	-79.92	325.02	-1,827.53	1,856.22	1,850.97	5.25	353.556
1,100.00	1,100.00	1,103.71	1,103.54	3.73	2.09	-79.97	323.28	-1,827.53	1,855.91	1,850.09	5.82	319.054
1,200.00	1,200.00	1,203.70	1,203.51	4.09	2.31	-80.02	321.63	-1,827.53	1,855.61	1,849.21	6.40	289.985
1,300.00	1,300.00	1,303.68	1,303.48	4.45	2.53	-80.07	319.79	-1,827.53	1,855.31	1,848.32	6.98	265.764
1,400.00	1,400.00	1,404.51	1,404.29	4.81	2.76	-80.13	317.99	-1,827.53	1,855.00	1,847.43	7.57	245.173
1,500.00	1,500.00	1,505.01	1,505.76	5.17	2.98	-80.20	315.55	-1,827.53	1,854.59	1,846.44	8.15	227.623
1,600.00	1,600.00	1,604.91	1,604.64	5.52	3.19	-80.27	313.26	-1,827.53	1,854.20	1,845.49	8.71	212.864
1,700.00	1,700.00	1,704.02	1,703.73	5.88	3.38	-80.33	311.27	-1,827.53	1,853.86	1,844.59	9.26	200.125
1,800.00	1,800.00	1,803.15	1,802.84	6.24	3.58	-80.39	309.55	-1,827.53	1,853.57	1,843.75	9.82	188.825
1,900.00	1,900.00	1,902.28	1,901.96	6.60	3.77	-80.43	308.11	-1,827.53	1,853.32	1,842.96	10.37	178.734
2,000.00	2,000.00	2,005.44	2,005.11	6.96	3.99	-80.49	306.23	-1,827.53	1,853.02	1,842.08	10.95	169.302
2,100.00	2,100.00	2,105.42	2,105.05	7.32	4.20	-80.56	303.75	-1,827.53	1,852.81	1,841.10	11.52	160.886
2,200.00	2,200.00	2,204.34	2,203.95	7.67	4.41	-80.63	301.59	-1,827.53	1,852.26	1,840.17	12.08	153.293
2,300.00	2,300.00	2,303.54	2,303.13	8.03	4.62	-80.68	299.76	-1,827.53	1,851.96	1,839.31	12.65	146.384

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



Phoenix Technology Services LP
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #6H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3416.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee	MD Reference:	KB @ 3416.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	OH	Database:	Compass 5000 GCR
Reference Design:	Plan #1 09-11-15	Offset TVD Reference:	Offset Datum

Offset Design: Anderson - #1 - OH - Inc Surveys														Offset Site Error:	0.00 usft
Survey Program: 263-MWD														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wallbore Centre +N/-S (usft)	+E/-W (usft)				Between Centres (usft)	Between Ellipses (usft)		
2,400.00	2,400.00	2,403.52	2,403.10	8.39	4.83	6.46	298.02	-1,827.53	1,851.59	1,838.37	13.22	140.062			
2,500.00	2,499.20	2,502.30	2,501.86	8.74	5.04	6.60	296.34	-1,827.53	1,840.04	1,826.26	13.78	133.574			
2,600.00	2,594.41	2,596.92	2,596.47	9.10	5.24	7.08	294.90	-1,827.53	1,809.92	1,795.58	14.34	126.239			
2,700.00	2,682.13	2,684.27	2,683.82	9.56	5.42	8.02	293.73	-1,827.53	1,762.35	1,747.37	14.98	117.615			
2,800.00	2,759.14	2,761.24	2,760.77	10.29	5.58	9.69	292.72	-1,827.53	1,699.08	1,683.21	15.87	107.063			
2,900.00	2,822.61	2,824.65	2,824.18	11.49	5.71	12.72	291.89	-1,827.53	1,622.43	1,605.23	17.20	94.307			
3,000.00	2,870.20	2,872.19	2,871.71	13.32	5.81	18.85	291.27	-1,827.53	1,535.27	1,516.14	19.13	80.253			
3,100.00	2,900.18	2,902.10	2,901.62	15.75	5.88	34.54	290.88	-1,827.53	1,440.84	1,419.21	21.63	66.604			
3,200.00	2,911.43	2,913.28	2,912.80	18.63	5.90	84.61	290.73	-1,827.53	1,342.64	1,318.11	24.53	54.728			
3,300.00	2,908.64	2,910.44	2,909.97	21.73	5.90	100.45	290.77	-1,827.53	1,244.16	1,216.53	27.63	45.029			
3,400.00	2,905.15	2,906.95	2,906.48	24.97	5.89	99.17	290.81	-1,827.53	1,146.65	1,115.79	30.86	37.157			
3,500.00	2,901.66	2,903.47	2,902.99	28.31	5.88	98.42	290.86	-1,827.53	1,049.63	1,015.44	34.19	30.701			
3,600.00	2,898.17	2,899.98	2,899.50	31.71	5.87	97.67	290.90	-1,827.53	953.22	915.63	37.58	25.362			
3,700.00	2,894.68	2,896.49	2,896.01	35.16	5.87	96.93	290.95	-1,827.53	857.61	816.58	41.03	20.903			
3,800.00	2,891.19	2,893.00	2,892.53	38.65	5.86	96.17	290.99	-1,827.53	763.11	718.60	44.51	17.147			
3,900.00	2,887.70	2,889.51	2,889.04	42.16	5.85	95.42	291.04	-1,827.53	670.19	622.18	48.01	13.960			
4,000.00	2,884.21	2,886.02	2,885.55	45.69	5.84	94.67	291.09	-1,827.53	579.61	528.08	51.53	11.248			
4,100.00	2,880.72	2,882.53	2,882.06	49.23	5.84	93.91	291.13	-1,827.53	492.66	437.59	55.07	8.946			
4,200.00	2,877.23	2,879.05	2,878.57	52.79	5.83	93.15	291.18	-1,827.53	411.65	353.03	58.62	7.022			
4,300.00	2,873.74	2,875.56	2,875.08	56.36	5.82	92.39	291.22	-1,827.53	340.85	278.67	62.18	5.481			
4,400.00	2,870.25	2,872.07	2,871.59	59.94	5.81	91.64	291.27	-1,827.53	287.88	222.13	65.75	4.378			
4,500.00	2,866.76	2,868.58	2,868.11	63.52	5.81	90.88	291.31	-1,827.53	263.72	194.39	69.33	3.804			
4,516.72	2,866.18	2,868.00	2,867.52	64.12	5.81	90.75	291.32	-1,827.53	263.19	193.26	69.93	3.764	CC, ES, SF		
4,600.00	2,863.27	2,865.09	2,864.62	67.11	5.80	90.12	291.36	-1,827.53	276.03	203.12	72.91	3.786			
4,700.00	2,859.78	2,861.60	2,861.13	70.71	5.79	89.36	291.41	-1,827.53	320.65	244.15	76.50	4.192			
4,800.00	2,856.29	2,858.11	2,857.64	74.31	5.78	88.60	291.45	-1,827.53	366.55	306.46	80.09	4.826			
4,900.00	2,852.80	2,854.62	2,854.15	77.91	5.78	87.84	291.50	-1,827.53	464.75	381.06	83.68	5.554			
5,000.00	2,849.31	2,851.14	2,850.66	81.51	5.77	87.09	291.54	-1,827.53	550.04	462.76	87.28	6.302			
5,100.00	2,845.83	2,847.65	2,847.18	85.12	5.76	86.33	291.59	-1,827.53	639.58	548.70	90.88	7.037			
5,200.00	2,842.34	2,844.16	2,843.69	88.73	5.76	85.58	291.63	-1,827.53	731.83	637.34	94.49	7.745			
5,300.00	2,838.85	2,840.67	2,840.20	92.35	5.75	84.83	291.68	-1,827.53	825.86	727.77	98.09	8.419			
5,400.00	2,835.36	2,837.18	2,836.71	95.96	5.74	84.08	291.73	-1,827.53	921.14	819.44	101.70	9.057			
5,500.00	2,831.87	2,833.69	2,833.22	99.58	5.73	83.33	291.77	-1,827.53	1,017.31	912.00	105.31	9.860			
5,600.00	2,828.38	2,830.20	2,829.73	103.19	5.73	82.58	291.82	-1,827.53	1,114.15	1,005.23	108.92	10.229			
5,700.00	2,824.89	2,826.72	2,826.25	106.81	5.72	81.84	291.86	-1,827.53	1,211.49	1,098.96	112.53	10.766			
5,800.00	2,821.40	2,823.23	2,822.76	110.43	5.71	81.10	291.91	-1,827.53	1,309.22	1,193.08	116.15	11.272			
5,900.00	2,817.91	2,819.74	2,819.27	114.06	5.70	80.37	291.95	-1,827.53	1,407.27	1,287.51	119.76	11.751			
6,000.00	2,814.42	2,816.25	2,815.78	117.68	5.70	79.63	292.00	-1,827.53	1,505.56	1,382.18	123.37	12.203			
6,100.00	2,810.93	2,812.76	2,812.29	121.30	5.69	78.90	292.04	-1,827.53	1,604.05	1,477.06	126.99	12.631			
6,200.00	2,807.44	2,809.27	2,808.80	124.93	5.68	78.18	292.09	-1,827.53	1,702.72	1,572.11	130.61	13.037			
6,300.00	2,803.95	2,805.78	2,805.32	128.55	5.67	77.46	292.14	-1,827.53	1,801.52	1,667.30	134.23	13.422			
6,400.00	2,800.46	2,802.29	2,801.83	132.18	5.67	76.74	292.18	-1,827.53	1,900.45	1,762.60	137.84	13.787			
6,500.00	2,796.97	2,798.81	2,798.34	135.80	5.66	76.03	292.23	-1,827.53	1,999.47	1,858.01	141.46	14.134			
6,600.00	2,793.48	2,795.32	2,794.85	139.43	5.65	75.32	292.27	-1,827.53	2,098.58	1,953.50	145.08	14.465			
6,700.00	2,789.99	2,791.83	2,791.36	143.06	5.65	74.62	292.32	-1,827.53	2,197.77	2,049.06	148.70	14.780			
6,800.00	2,786.50	2,788.34	2,787.87	146.69	5.64	73.92	292.36	-1,827.53	2,297.02	2,144.69	152.32	15.080			
6,900.00	2,783.02	2,784.85	2,784.39	150.32	5.63	73.23	292.41	-1,827.53	2,396.33	2,240.38	155.95	15.366			
7,000.00	2,779.53	2,781.36	2,780.90	153.94	5.62	72.54	292.46	-1,827.53	2,495.68	2,336.12	159.57	15.640			
7,100.00	2,776.04	2,777.87	2,777.41	157.57	5.62	71.86	292.50	-1,827.53	2,595.09	2,431.90	163.19	15.902			
7,200.00	2,772.55	2,774.39	2,773.92	161.20	5.61	71.18	292.55	-1,827.53	2,694.53	2,527.72	166.81	16.153			
7,300.00	2,769.06	2,770.90	2,770.43	164.83	5.60	70.51	292.59	-1,827.53	2,794.01	2,623.57	170.43	16.393			
7,400.00	2,765.57	2,767.41	2,766.94	168.46	5.59	69.85	292.64	-1,827.53	2,893.52	2,719.46	174.06	16.624			

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



Phoenix Technology Services LP
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #6H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3416.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee	MD Reference:	KB @ 3416.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Compass 5000 GCR
Reference Design:	Plan #1 09-11-15	Offset TVD Reference:	Offset Datum

Offset Design Anderson - #1 - OH - Inc Surveys												Offset Site Error:	0.00 usft
Survey Program: 263-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
7,500.00	2,762.08	2,763.92	2,763.46	172.09	5.59	69.19	292.68	-1,827.53	2,993.06	2,815.38	177.68	16.845	
7,570.17	2,759.63	2,761.47	2,761.01	174.64	5.58	68.73	292.72	-1,827.53	3,062.92	2,882.70	180.22	16.985	



Phoenix Technology Services LP
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #6H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3416.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1-Fee	MD Reference:	KB @ 3416.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Compass 5000 GCR
Reference Design:	Plan #1 09-11-15	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Montana "1" Fee - #3 - OH - OH												Offset Well Error:	0.00 usft
Survey Program: 176-MWD													
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
0.00	0.00	4.18	4.18	0.00	0.00	-97.39	-632.91	-4,882.05	4,922.91				
100.00	100.00	108.78	108.78	0.15	0.12	-97.38	-632.50	-4,882.05	4,922.86	0.27	N/A		
200.00	200.00	211.55	211.54	0.51	0.27	-97.37	-631.41	-4,882.05	4,922.72	0.78	6,330.451		
300.00	300.00	311.06	311.05	0.86	0.48	-97.36	-630.26	-4,882.05	4,922.57	1.34	3,666.750		
400.00	400.00	410.58	410.56	1.22	0.68	-97.34	-629.18	-4,882.05	4,922.43	1.91	2,580.754		
500.00	500.00	510.09	510.07	1.58	0.89	-97.33	-628.18	-4,882.05	4,922.31	2.47	1,991.030		
600.00	600.00	609.61	609.58	1.94	1.10	-97.32	-627.26	-4,882.05	4,922.19	3.04	1,619.882		
700.00	700.00	708.36	708.32	2.30	1.31	-97.31	-626.46	-4,882.05	4,922.09	3.61	1,365.320		
800.00	800.00	806.88	806.85	2.66	1.52	-97.31	-625.90	-4,882.05	4,922.01	4.17	1,179.803		
900.00	900.00	905.40	905.37	3.01	1.72	-97.30	-625.57	-4,882.05	4,921.97	4.74	1,038.671		
1,000.00	1,000.00	1,005.76	1,005.73	3.37	1.93	-97.30	-625.35	-4,882.05	4,921.94	5.31	927.392		
1,100.00	1,100.00	1,106.54	1,106.51	3.73	2.14	-97.30	-625.01	-4,882.05	4,921.90	5.88	837.588		
1,200.00	1,200.00	1,207.33	1,207.29	4.09	2.36	-97.29	-624.54	-4,882.05	4,921.84	6.45	763.637		
1,300.00	1,300.00	1,308.11	1,308.07	4.45	2.57	-97.28	-623.94	-4,882.05	4,921.77	7.01	701.682		
1,400.00	1,400.00	1,408.25	1,408.21	4.81	2.78	-97.28	-623.26	-4,882.05	4,921.68	7.58	649.110		
1,500.00	1,500.00	1,508.01	1,507.97	5.17	2.98	-97.27	-622.61	-4,882.05	4,921.60	8.15	603.909		
1,600.00	1,600.00	1,607.78	1,607.74	5.52	3.19	-97.26	-621.99	-4,882.05	4,921.52	8.72	564.592		
1,700.00	1,700.00	1,707.55	1,707.51	5.88	3.40	-97.25	-621.41	-4,882.05	4,921.44	9.28	530.081		
1,800.00	1,800.00	1,807.32	1,807.28	6.24	3.61	-97.25	-620.86	-4,882.05	4,921.37	9.85	499.546		
1,900.00	1,900.00	1,907.92	1,907.87	6.60	3.82	-97.24	-620.29	-4,882.05	4,921.30	10.42	472.245		
2,000.00	2,000.00	2,008.61	2,008.56	6.96	4.03	-97.23	-619.61	-4,882.05	4,921.22	10.99	447.762		
2,100.00	2,100.00	2,109.30	2,109.24	7.32	4.24	-97.22	-618.81	-4,882.05	4,921.12	11.56	425.691		
2,200.00	2,200.00	2,209.99	2,209.93	7.67	4.46	-97.21	-617.90	-4,882.05	4,921.00	12.13	405.691		
2,300.00	2,300.00	2,310.57	2,310.51	8.03	4.67	-97.20	-616.88	-4,882.05	4,920.88	12.70	387.487		
2,400.00	2,400.00	2,410.80	2,410.73	8.39	4.88	-9.99	-615.80	-4,882.05	4,920.66	13.27	370.867		
2,500.00	2,499.20	2,510.22	2,510.15	8.74	5.09	-10.22	-614.70	-4,882.05	4,920.34	13.82	355.110		
2,600.00	2,594.41	2,605.66	2,605.58	9.10	5.29	-10.90	-613.60	-4,882.05	4,879.58	14.39	339.134		
2,700.00	2,682.13	2,693.60	2,693.52	9.56	5.47	-12.18	-612.57	-4,882.05	4,878.50	15.04	321.383		
2,800.00	2,759.14	2,770.68	2,770.59	10.29	5.63	-14.38	-611.63	-4,882.05	4,789.83	15.92	299.556		
2,900.00	2,822.61	2,833.56	2,833.46	11.49	5.77	-18.25	-610.91	-4,882.05	4,693.91	17.26	272.020		
3,000.00	2,870.20	2,880.72	2,880.62	13.32	5.87	-25.71	-610.41	-4,882.05	4,607.54	19.18	240.207		
3,100.00	2,900.18	2,910.44	2,910.34	15.75	5.93	-42.87	-610.11	-4,882.05	4,513.92	21.69	208.193		
3,200.00	2,911.43	2,921.62	2,921.52	18.63	5.95	-85.47	-610.00	-4,882.05	4,416.50	24.58	179.674		
3,300.00	2,908.64	2,918.89	2,918.79	21.73	5.95	-102.77	-610.03	-4,882.05	4,318.20	27.68	156.013		
3,400.00	2,905.15	2,915.44	2,915.34	24.97	5.94	-103.40	-610.06	-4,882.05	4,218.40	30.91	136.515		
3,500.00	2,901.66	2,911.99	2,911.88	28.31	5.93	-103.10	-610.09	-4,882.05	4,120.64	34.24	120.353		
3,600.00	2,898.17	2,908.53	2,908.43	31.71	5.92	-102.81	-610.13	-4,882.05	4,021.94	37.63	106.869		
3,700.00	2,894.68	2,905.08	2,904.98	35.16	5.92	-102.51	-610.16	-4,882.05	3,923.30	41.08	95.510		
3,800.00	2,891.19	2,901.62	2,901.52	38.65	5.91	-102.21	-610.20	-4,882.05	3,824.73	44.55	85.843		
3,900.00	2,887.70	2,898.17	2,898.07	42.16	5.90	-101.92	-610.23	-4,882.05	3,726.23	48.06	77.536		
4,000.00	2,884.21	2,894.72	2,894.62	45.69	5.89	-101.62	-610.26	-4,882.05	3,627.81	51.58	70.331		
4,100.00	2,880.72	2,891.26	2,891.16	49.23	5.89	-101.32	-610.30	-4,882.05	3,529.47	55.12	64.032		
4,200.00	2,877.23	2,887.81	2,887.71	52.79	5.88	-101.02	-610.33	-4,882.05	3,431.23	58.67	58.482		
4,300.00	2,873.74	2,884.35	2,884.25	56.36	5.87	-100.72	-610.37	-4,882.05	3,333.09	62.23	53.558		
4,400.00	2,870.25	2,880.90	2,880.80	59.94	5.87	-100.42	-610.40	-4,882.05	3,235.06	65.80	49.163		
4,500.00	2,866.76	2,877.45	2,877.35	63.52	5.86	-100.12	-610.44	-4,882.05	3,137.15	69.38	45.217		
4,600.00	2,863.27	2,873.99	2,873.89	67.11	5.85	-99.82	-610.48	-4,882.05	3,039.37	72.96	41.657		
4,700.00	2,859.78	2,870.54	2,870.44	70.71	5.84	-99.52	-610.51	-4,882.05	2,941.74	76.55	38.429		
4,800.00	2,856.29	2,867.08	2,866.98	74.31	5.84	-99.21	-610.55	-4,882.05	2,844.26	80.14	35.490		
4,900.00	2,852.80	2,863.63	2,863.53	77.91	5.83	-98.91	-610.58	-4,882.05	2,746.97	83.74	32.805		
5,000.00	2,849.31	2,860.18	2,860.08	81.51	5.82	-98.61	-610.62	-4,882.05	2,649.87	87.34	30.341		
5,100.00	2,845.83	2,856.72	2,856.62	85.12	5.81	-98.30	-610.66	-4,882.05	2,552.99	90.94	28.074		

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



Phoenix Technology Services LP
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #6H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3416.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee	MD Reference:	KB @ 3416.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	OH	Database:	Compass 5000 GCR
Reference Design:	Plan #1 09-11-15	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Montana "1" Fee - #3 - OH - OH													Offset Well Error:	0.00 usft
Survey Program: 175-MWD														
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		
5,200.00	2,842.34	2,853.27	2,853.17	88.73	5.81	-98.00	-610.69	-4,882.05	2,456.35	2,361.81	94.54	25.982		
5,300.00	2,838.85	2,849.81	2,849.71	92.35	5.80	-97.69	-610.73	-4,882.05	2,359.99	2,261.85	98.15	24.046		
5,400.00	2,835.36	2,846.36	2,846.26	95.96	5.79	-97.39	-610.77	-4,882.05	2,263.94	2,162.19	101.75	22.249		
5,500.00	2,831.87	2,842.90	2,842.81	99.58	5.79	-97.08	-610.81	-4,882.05	2,168.25	2,062.88	105.36	20.579		
5,600.00	2,828.38	2,839.45	2,839.35	103.19	5.78	-96.78	-610.84	-4,882.05	2,072.95	1,963.98	108.97	19.023		
5,700.00	2,824.89	2,836.00	2,835.90	106.81	5.77	-96.47	-610.88	-4,882.05	1,978.11	1,865.53	112.58	17.570		
5,800.00	2,821.40	2,832.54	2,832.44	110.43	5.76	-96.16	-610.92	-4,882.05	1,883.80	1,767.60	116.20	16.212		
5,900.00	2,817.91	2,829.09	2,828.99	114.06	5.76	-95.86	-610.96	-4,882.05	1,790.10	1,670.29	119.81	14.941		
6,000.00	2,814.42	2,825.63	2,825.54	117.68	5.75	-95.55	-611.00	-4,882.05	1,697.11	1,573.88	123.43	13.750		
6,100.00	2,810.93	2,822.18	2,822.08	121.30	5.74	-95.24	-611.03	-4,882.05	1,604.96	1,477.92	127.04	12.633		
6,200.00	2,807.44	2,818.73	2,818.63	124.93	5.73	-94.93	-611.07	-4,882.05	1,513.80	1,383.14	130.66	11.586		
6,300.00	2,803.95	2,815.27	2,815.18	128.55	5.73	-94.63	-611.11	-4,882.05	1,423.81	1,289.53	134.28	10.603		
6,400.00	2,800.46	2,811.82	2,811.72	132.18	5.72	-94.32	-611.15	-4,882.05	1,335.24	1,197.35	137.90	9.683		
6,500.00	2,796.97	2,808.36	2,808.27	135.80	5.71	-94.01	-611.19	-4,882.05	1,248.39	1,106.88	141.52	8.822		
6,600.00	2,793.48	2,804.91	2,804.81	139.43	5.71	-93.70	-611.23	-4,882.05	1,163.65	1,018.51	145.14	8.018		
6,700.00	2,789.99	2,801.46	2,801.36	143.06	5.70	-93.39	-611.27	-4,882.05	1,081.50	932.74	148.76	7.270		
6,800.00	2,786.50	2,798.00	2,797.91	146.69	5.69	-93.08	-611.31	-4,882.05	1,002.58	850.21	152.38	6.580		
6,900.00	2,783.02	2,794.55	2,794.45	150.32	5.68	-92.77	-611.35	-4,882.05	927.73	771.73	156.00	5.947		
7,000.00	2,779.53	2,791.09	2,791.00	153.94	5.68	-92.46	-611.39	-4,882.05	858.01	698.39	159.62	5.375		
7,100.00	2,776.04	2,787.64	2,787.54	157.57	5.67	-92.15	-611.43	-4,882.05	794.76	631.52	163.24	4.869		
7,200.00	2,772.55	2,784.19	2,784.09	161.20	5.66	-91.84	-611.47	-4,882.05	739.65	572.79	166.87	4.433		
7,300.00	2,769.06	2,780.73	2,780.64	164.83	5.66	-91.54	-611.51	-4,882.05	694.62	524.14	170.49	4.074		
7,400.00	2,765.57	2,777.28	2,777.18	168.46	5.65	-91.23	-611.55	-4,882.05	661.74	487.63	174.11	3.801		
7,500.00	2,762.08	2,773.82	2,773.73	172.09	5.64	-90.92	-611.60	-4,882.05	642.86	465.12	177.74	3.617		
7,570.17	2,759.63	2,771.40	2,771.31	174.64	5.64	-90.70	-611.62	-4,882.05	638.68	458.40	180.28	3.543 CC, ES, SF		



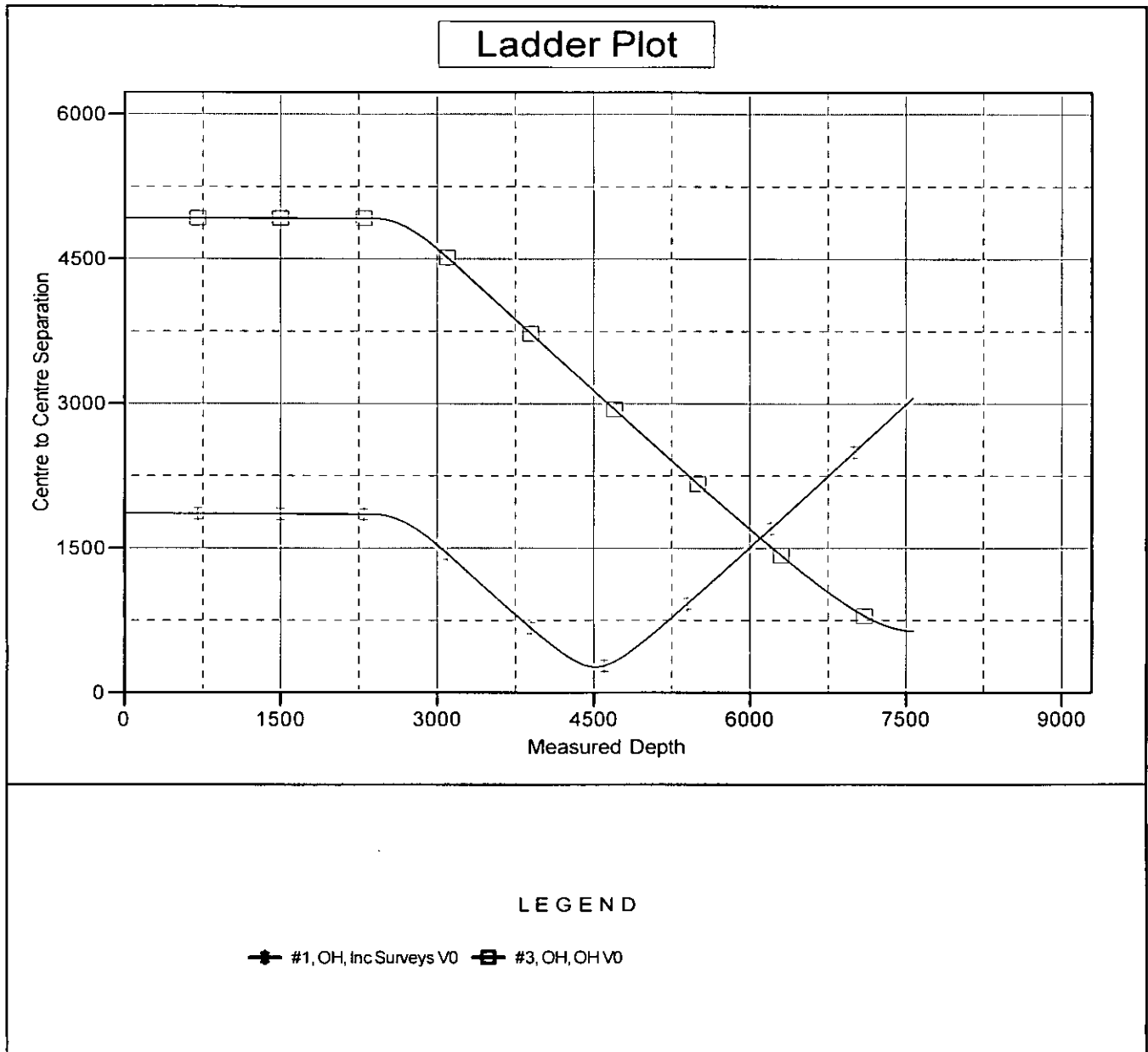
Phoenix Technology Services LP
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #6H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3416.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee	MD Reference:	KB @ 3416.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	OH	Database:	Compass 5000 GCR
Reference Design:	Plan #1 09-11-15	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 3416.00usft (Silver Oak 3)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #6H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: -0.05°





Phoenix Technology Services LP
Anticollision Report

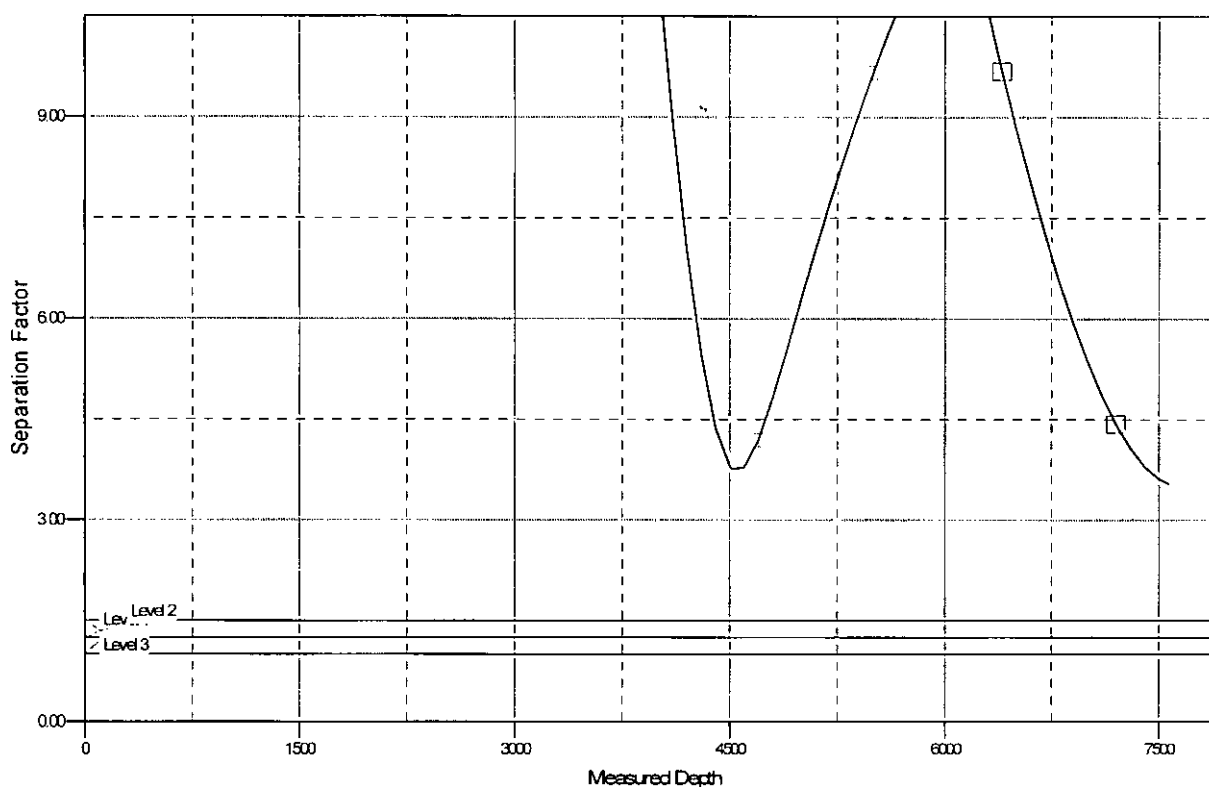


Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #6H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3416.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee	MD Reference:	KB @ 3416.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#6H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	OH	Database:	Compass 5000 GCR
Reference Design:	Plan #1 09-11-15	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 3416.00usft (Silver Oak 3)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #6H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: -0.05°

Separation Factor Plot



LEGEND

— #1, OH, Inc Surveys V0 — #3, OH, OH V0