

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0770

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

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

MAR 04 2016
RECEIVED

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- 43660	Pool Code 50270	Pool Name Penasco Draw; SA-Yeso (assoc)
Property Code 38872	Property Name CLYDESDALE 1 FEE	Well Number 7H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3391'

Surface Location

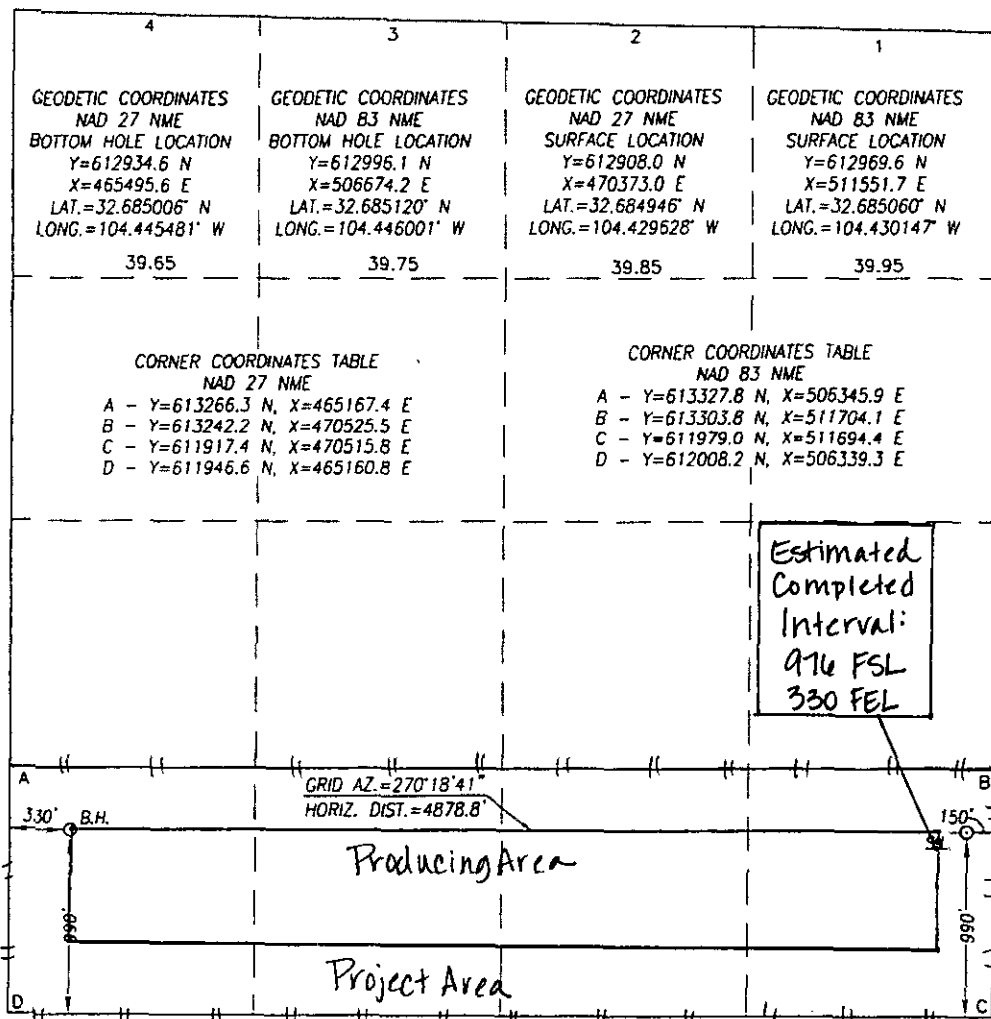
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	1	19-S	25-E		990	SOUTH	150	EAST	EDDY

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
M	1	19-S	25-E		990	SOUTH	330	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

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.

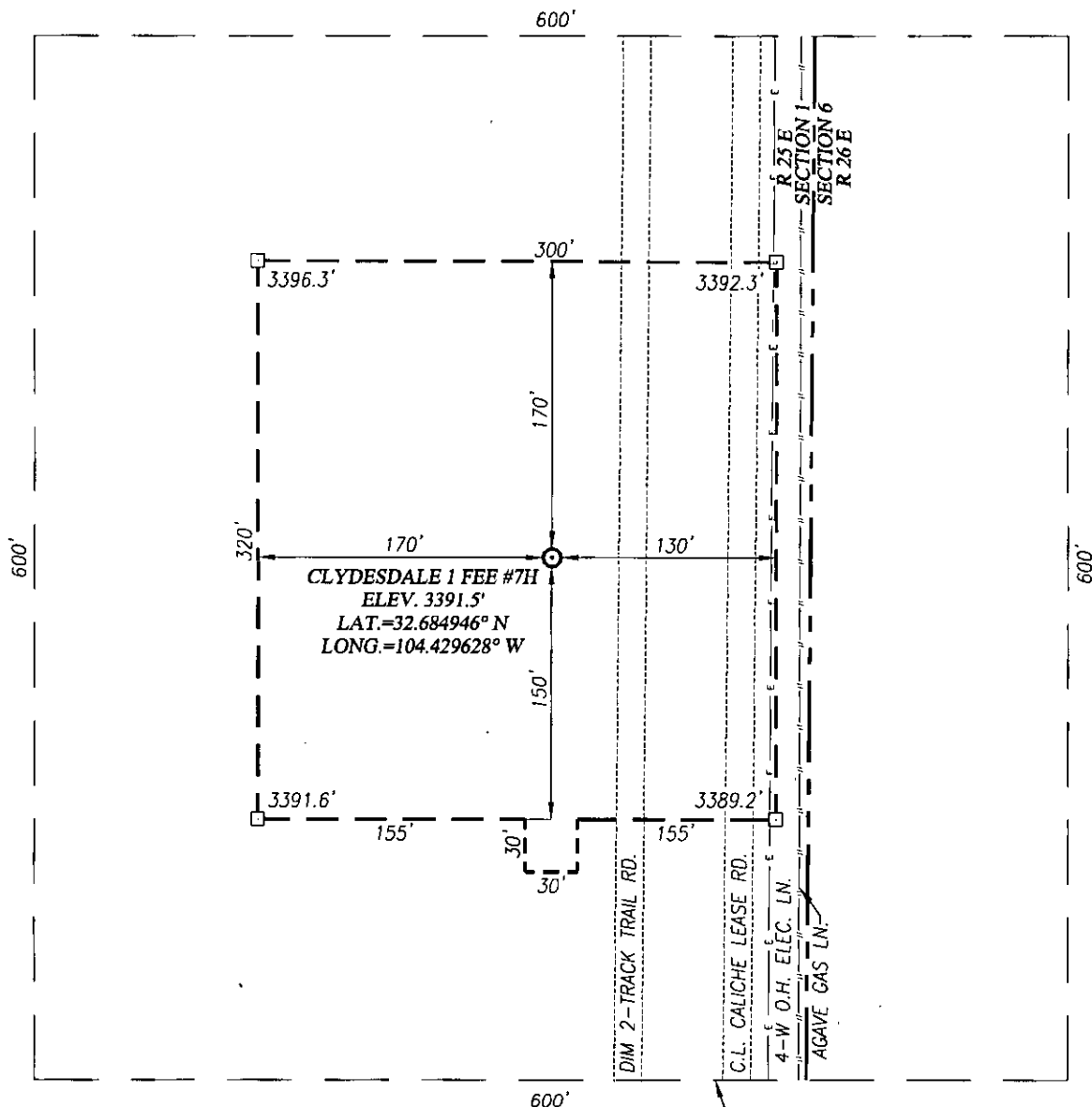
[Signature]
Signature
3-2-16
Date
Kelly J. Holly
Printed Name
kholly@concho.com
E-mail Address

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.

JANUARY 14, 2016
Date of Survey
Signature & Seal of Professional Surveyor:
[Signature]
NEW MEXICO
REGISTERED SURVEYOR
3239
Certificate Number
Gary G. Eidson 12641
Ronald J. Eidson 3239
ACK
SWSC W.O. 16.11.0020

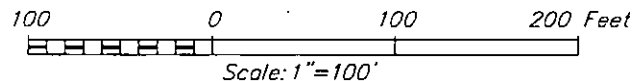
WELL SITE PLAN



NOTE:
SEE "TOPOGRAPHICAL AND ACCESS
ROAD MAP" FOR PROPOSED ROAD
LOCATION.

DIRECTIONS TO CLYDESDALE 1 FEE #7H:

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



COG OPERATING, LLC

CLYDESDALE 1 FEE #7H WELL
LOCATED 990 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

Survey Date: 1/14/16

CAD Date: 1/23/16

Drawn By: ACK

W.O. No.: 16110020

Rev: .

Rel. W.O.:

Sheet 1 of 1



PROVIDING SURVEYING SERVICES
SINCE 1946

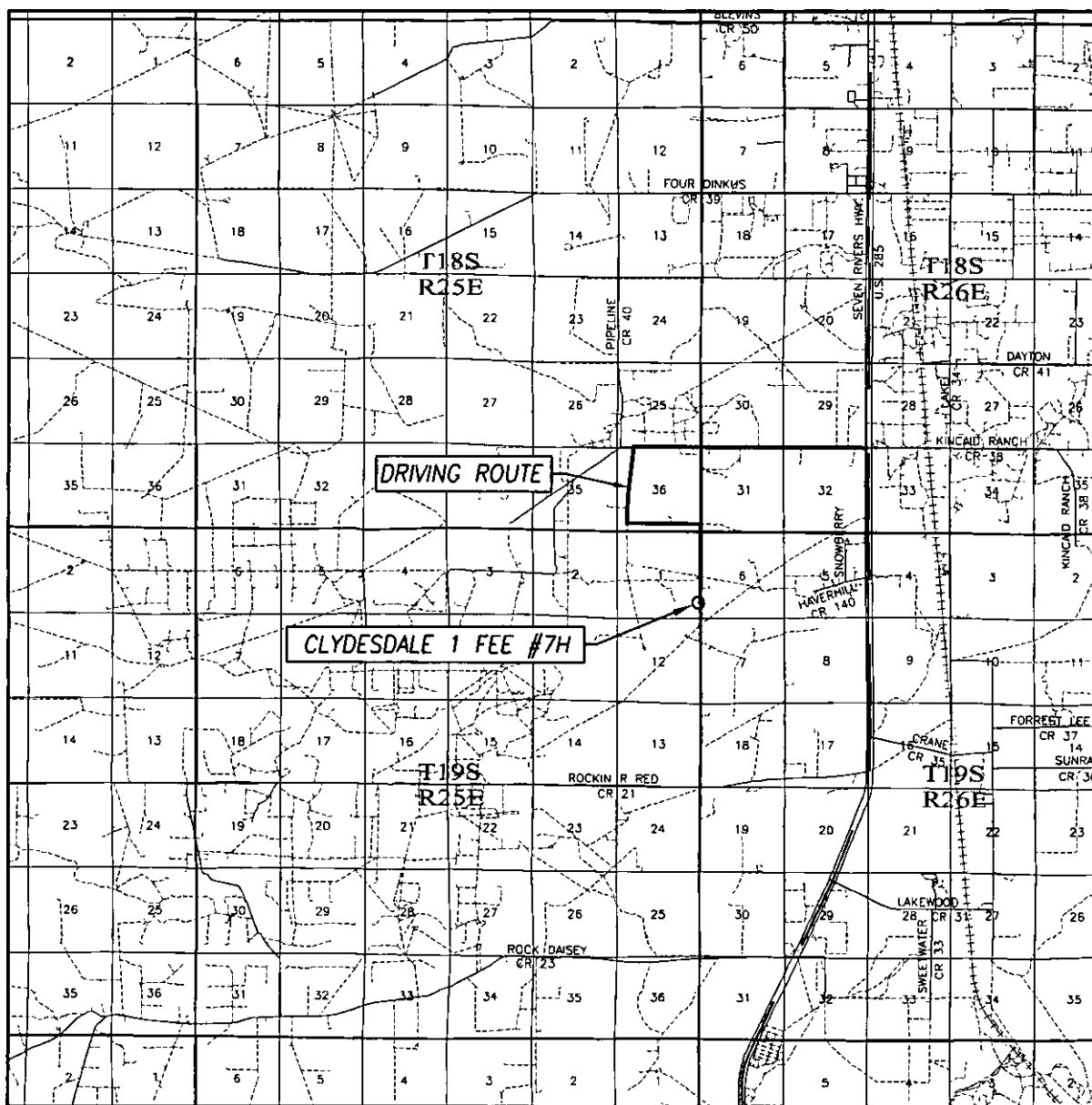
JOHN WEST SURVEYING COMPANY

412 N. DAL PASO HOBBS, N.M. 88240

(575) 393-3117 www.jwsc.biz

TBPLS# 10021000

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 990' FSL & 150' FEL

ELEVATION 3391'

OPERATOR COG OPERATING, LLC

LEASE CLYDESDALE 1 FEE

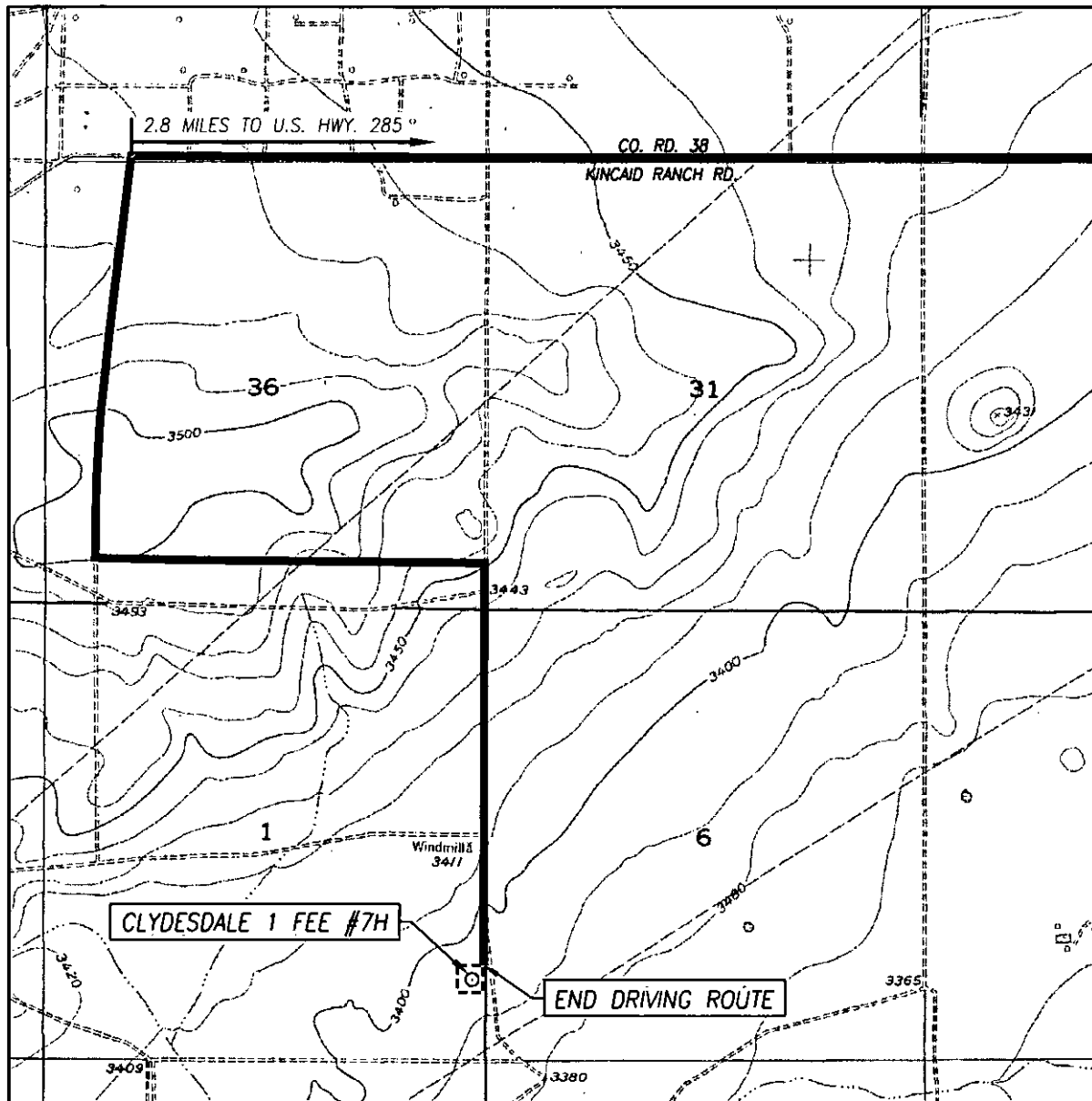


PROVIDING SURVEYING SERVICES
SINCE 1946

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" = 2000'

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 990' FSL & 150' FEL

ELEVATION 3391'

OPERATOR COG OPERATING, LLC

LEASE CLYDESDALE 1 FEE

U.S.G.S. TOPOGRAPHIC MAP

DAYTON, N.M.

DIRECTIONS TO CLYDESDALE 1 FEE #7H:

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



PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
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(575) 393-3117 www.jwsc.biz
TBPLS# 10021000



COG Operating LLC

Eddy County, NM (NAD-27 2015)

Clydesdale 1 Fee #7H

SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P

PP: 976' FSL, 330' FEL, Sec 1, T19S, R25E, Unit P

BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M

Plan: Design #1

Target Centerline is 2,925' KBTVD @ 2' Up (92° Inclination)

Standard Planning Report

11 February, 2016





TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P
Company:	COG Operating LLC	TVD Reference:	KB @ 3409.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	MD Reference:	KB @ 3409.00usft (Silver Oak 3)
Site:	Clydesdale 1 Fee #7H	North Reference:	Grid
Well:	SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M		
Design:	Design #1		

Project	Eddy County, NM (NAD-27 2015)		
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 #7H		
Site Position:	Map	From:	Position Uncertainty:
Northing:	612,908.00 usft	Easting:	0.00 usft
Latitude:	32° 41' 5.807 N	Slot Radius:	13.20 in
Longitude:	104° 25' 46.663 W	Grid Convergence:	-0.05 °

Well	SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Ground Level:	3,391.00 usft

Wellbore	BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M		
Magnetics	Model Name	Sample Date	Declination
	IGRF2015	2/9/2016	7.53
			Dip Angle
			60.36
			Field Strength
			48,258

Design	Design #1		
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
			270.31

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	
2,385.69	0.00	0.00	2,385.69	0.00	0.00	0.00	0.00	0.00	0.00	
3,222.05	92.00	265.45	2,906.24	-42.76	-537.35	11.00	11.00	0.00	265.45	
3,408.11	92.00	271.04	2,899.75	-48.46	-723.13	3.00	0.00	3.00	89.91	
7,565.59	92.00	271.04	2,754.67	26.60	-4,877.40	0.00	0.00	0.00	0.00	PBHL (C1F #7H/L1)



TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P
Company:	COG Operating LLC	TVD Reference:	KB @ 3409.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	MD Reference:	KB @ 3409.00usft (Silver Oak 3)
Site:	Clydesdale 1 Fee #7H	North Reference:	Grid
Well:	SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,385.69	0.00	0.00	2,385.69	0.00	0.00	0.00	0.00	0.00	0.00
KOP - Start Build 11.00									
2,400.00	1.57	265.45	2,400.00	-0.02	-0.20	0.20	11.00	11.00	0.00
2,450.00	7.07	265.45	2,449.84	-0.31	-3.95	3.95	11.00	11.00	0.00
2,500.00	12.57	265.45	2,499.08	-0.99	-12.45	12.45	11.00	11.00	0.00
2,550.00	18.07	265.45	2,547.29	-2.04	-25.62	25.61	11.00	11.00	0.00
2,600.00	23.57	265.45	2,594.00	-3.45	-43.33	43.31	11.00	11.00	0.00
2,650.00	29.07	265.45	2,638.80	-5.21	-65.43	65.40	11.00	11.00	0.00
2,700.00	34.57	265.45	2,681.27	-7.30	-91.70	91.66	11.00	11.00	0.00
2,750.00	40.07	265.45	2,721.02	-9.70	-121.91	121.85	11.00	11.00	0.00
2,800.00	45.57	265.45	2,757.67	-12.40	-155.78	155.71	11.00	11.00	0.00
2,850.00	51.07	265.45	2,790.91	-15.36	-192.99	192.90	11.00	11.00	0.00
2,900.00	56.57	265.45	2,820.41	-18.56	-233.21	233.10	11.00	11.00	0.00
2,950.00	62.07	265.45	2,845.91	-21.97	-276.06	275.94	11.00	11.00	0.00
3,000.00	67.57	265.45	2,867.17	-25.56	-321.15	321.01	11.00	11.00	0.00
3,050.00	73.07	265.45	2,884.00	-29.29	-368.06	367.90	11.00	11.00	0.00
3,100.00	78.57	265.45	2,896.24	-33.13	-416.37	416.18	11.00	11.00	0.00
3,150.00	84.07	265.45	2,903.78	-37.05	-465.62	465.41	11.00	11.00	0.00
3,200.00	89.57	265.45	2,906.55	-41.01	-515.37	515.14	11.00	11.00	0.00
3,222.05	92.00	265.45	2,906.24	-42.76	-537.35	537.11	11.00	11.00	0.00
EOC/TURN - Start DLS 3.00 TFO 89.91									
3,300.00	92.00	267.79	2,903.52	-47.35	-615.11	614.84	3.00	0.00	3.00
3,408.11	92.00	271.04	2,899.75	-48.46	-723.13	722.86	3.00	0.00	3.00
END TURN - Start 4157.48 hold at 3408.11 MD									
3,500.00	92.00	271.04	2,896.54	-46.80	-814.95	814.68	0.00	0.00	0.00
3,600.00	92.00	271.04	2,893.05	-45.00	-914.87	914.61	0.00	0.00	0.00
3,700.00	92.00	271.04	2,889.56	-43.19	-1,014.80	1,014.55	0.00	0.00	0.00



TDS
Planning Report



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Company:	COG Operating LLC	TVD Reference:	KB @ 3409.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	MD Reference:	KB @ 3409.00usft (Silver Oak 3)
Site:	Clydesdale 1 Fee #7H	North Reference:	Grid
Well:	SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M		
Design:	Design #1		

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)
3,800.00	92.00	271.04	2,886.07	-41.39	-1,114.72	1,114.48	0.00	0.00	0.00
3,900.00	92.00	271.04	2,882.58	-39.58	-1,214.64	1,214.41	0.00	0.00	0.00
4,000.00	92.00	271.04	2,879.09	-37.78	-1,314.56	1,314.34	0.00	0.00	0.00
4,100.00	92.00	271.04	2,875.60	-35.97	-1,414.49	1,414.27	0.00	0.00	0.00
4,200.00	92.00	271.04	2,872.11	-34.17	-1,514.41	1,514.20	0.00	0.00	0.00
4,300.00	92.00	271.04	2,868.62	-32.36	-1,614.33	1,614.13	0.00	0.00	0.00
4,400.00	92.00	271.04	2,865.13	-30.55	-1,714.26	1,714.06	0.00	0.00	0.00
4,500.00	92.00	271.04	2,861.64	-28.75	-1,814.18	1,814.00	0.00	0.00	0.00
4,600.00	92.00	271.04	2,858.15	-26.94	-1,914.10	1,913.93	0.00	0.00	0.00
4,700.00	92.00	271.04	2,854.66	-25.14	-2,014.02	2,013.86	0.00	0.00	0.00
4,800.00	92.00	271.04	2,851.18	-23.33	-2,113.95	2,113.79	0.00	0.00	0.00
4,900.00	92.00	271.04	2,847.69	-21.53	-2,213.87	2,213.72	0.00	0.00	0.00
5,000.00	92.00	271.04	2,844.20	-19.72	-2,313.79	2,313.65	0.00	0.00	0.00
5,100.00	92.00	271.04	2,840.71	-17.92	-2,413.72	2,413.58	0.00	0.00	0.00
5,200.00	92.00	271.04	2,837.22	-16.11	-2,513.64	2,513.51	0.00	0.00	0.00
5,300.00	92.00	271.04	2,833.73	-14.30	-2,613.56	2,613.44	0.00	0.00	0.00
5,400.00	92.00	271.04	2,830.24	-12.50	-2,713.48	2,713.38	0.00	0.00	0.00
5,500.00	92.00	271.04	2,826.75	-10.69	-2,813.41	2,813.31	0.00	0.00	0.00
5,600.00	92.00	271.04	2,823.26	-8.89	-2,913.33	2,913.24	0.00	0.00	0.00
5,700.00	92.00	271.04	2,819.77	-7.08	-3,013.25	3,013.17	0.00	0.00	0.00
5,800.00	92.00	271.04	2,816.28	-5.28	-3,113.18	3,113.10	0.00	0.00	0.00
5,900.00	92.00	271.04	2,812.79	-3.47	-3,213.10	3,213.03	0.00	0.00	0.00
6,000.00	92.00	271.04	2,809.30	-1.67	-3,313.02	3,312.96	0.00	0.00	0.00
6,100.00	92.00	271.04	2,805.81	0.14	-3,412.94	3,412.89	0.00	0.00	0.00
6,200.00	92.00	271.04	2,802.32	1.94	-3,512.87	3,512.82	0.00	0.00	0.00
6,300.00	92.00	271.04	2,798.83	3.75	-3,612.79	3,612.76	0.00	0.00	0.00
6,400.00	92.00	271.04	2,795.34	5.56	-3,712.71	3,712.69	0.00	0.00	0.00
6,500.00	92.00	271.04	2,791.85	7.36	-3,812.63	3,812.62	0.00	0.00	0.00
6,600.00	92.00	271.04	2,788.36	9.17	-3,912.56	3,912.55	0.00	0.00	0.00
6,700.00	92.00	271.04	2,784.87	10.97	-4,012.48	4,012.48	0.00	0.00	0.00
6,800.00	92.00	271.04	2,781.39	12.78	-4,112.40	4,112.41	0.00	0.00	0.00
6,900.00	92.00	271.04	2,777.90	14.58	-4,212.33	4,212.34	0.00	0.00	0.00
7,000.00	92.00	271.04	2,774.41	16.39	-4,312.25	4,312.27	0.00	0.00	0.00
7,100.00	92.00	271.04	2,770.92	18.19	-4,412.17	4,412.20	0.00	0.00	0.00
7,200.00	92.00	271.04	2,767.43	20.00	-4,512.09	4,512.14	0.00	0.00	0.00
7,300.00	92.00	271.04	2,763.94	21.80	-4,612.02	4,612.07	0.00	0.00	0.00
7,400.00	92.00	271.04	2,760.45	23.61	-4,711.94	4,712.00	0.00	0.00	0.00
7,500.00	92.00	271.04	2,756.96	25.42	-4,811.86	4,811.93	0.00	0.00	0.00
7,565.59	92.00	271.04	2,754.67	26.60	-4,877.40	4,877.47	0.00	0.00	0.00
TD at 7565.59									

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P
Company:	COG Operating LLC	TVD Reference:	KB @ 3409.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD-27 2015)	MD Reference:	KB @ 3409.00usft (Silver Oak 3)
Site:	Clydesdale 1 Fee #7H	North Reference:	Grid
Well:	SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M		
Design:	Design #1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
21.11' Radius @ 2745.4'	0.00	360.00	0.00	26.60	-4,877.40	612,934.60	465,495.60	32° 41' 6.023 N	104° 26' 43.733 W
- plan misses target center by 2754.67usft at 7565.59usft MD (2754.67 TVD, 26.60 N, -4877.40 E)									
- Circle (radius 21.11)									
95.73' Radius @ 2802.4	0.00	360.00	0.00	-311.90	-3,229.60	612,596.10	467,143.40	32° 41' 2.690 N	104° 26' 24.449 W
- plan misses target center by 2827.60usft at 6009.07usft MD (2808.98 TVD, -1.50 N, -3322.09 E)									
- Circle (radius 95.73)									
KOP (C1F #7H/L1 Desig	0.00	0.00	2,385.69	0.00	0.00	612,908.00	470,373.00	32° 41' 5.807 N	104° 25' 46.663 W
- plan hits target center									
- Point									
PBHL (C1F #7H/L1)	0.00	360.00	2,754.67	26.60	-4,877.40	612,934.60	465,495.60	32° 41' 6.023 N	104° 26' 43.733 W
- plan hits target center									
- Point									
END OF TURN (C1F #7	0.00	360.00	2,899.75	-48.46	-723.13	612,859.54	469,649.87	32° 41' 5.321 N	104° 25' 55.124 W
- plan hits target center									
- Point									
EOC (C1F #7H/L1 Desig	0.00	360.00	2,906.24	-42.76	-537.35	612,865.24	469,835.65	32° 41' 5.379 N	104° 25' 52.950 W
- plan hits target center									
- Point									

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
2,385.69	2,385.69	0.00	0.00	KOP - Start Build 11.00
3,222.05	2,906.24	-42.76	-537.35	EOC/TURN - Start DLS 3.00 TFO 89.91
3,408.11	2,899.75	-48.46	-723.13	END TURN - Start 4157.48 hold at 3408.11 MD
7,565.59	2,754.67	26.60	-4,877.40	TD at 7565.59



Project: COG Operating LLC
Eddy County, NM (NAD-27 2015)

Site: Clydesdale 1 Fee #7H

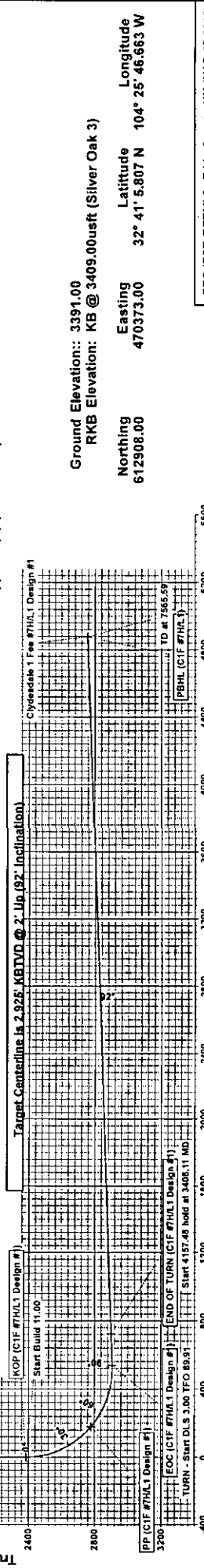
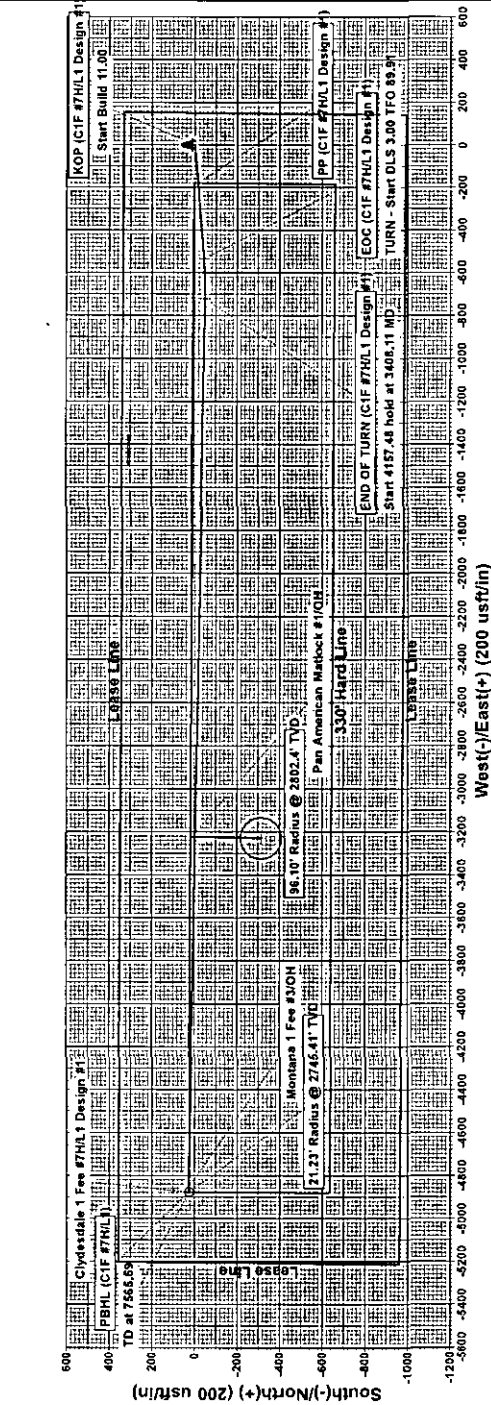
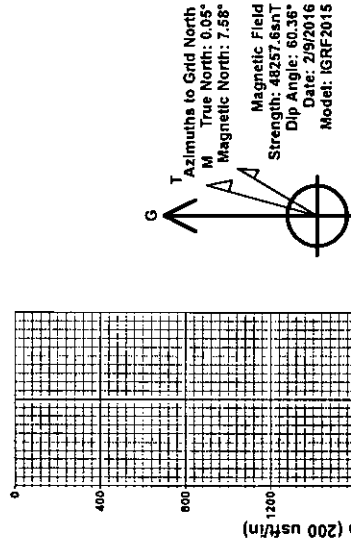
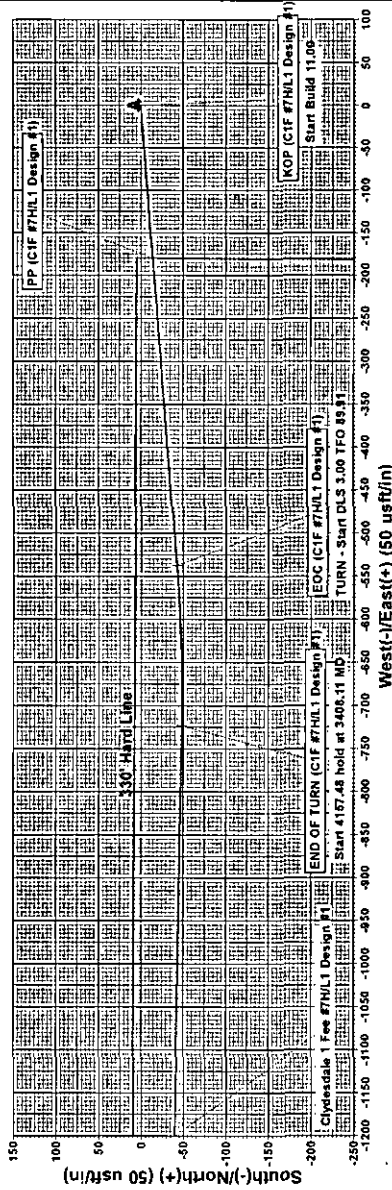
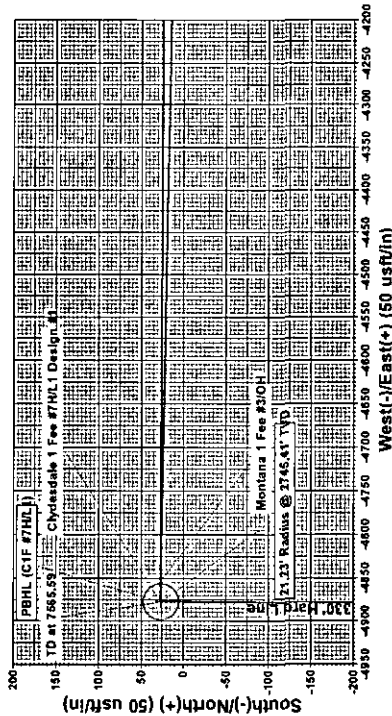
Well: SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P

Wellbore: BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M

Plan: Design #1 (SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit PBHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M)

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2385.69	0.00	0.00	2385.69	0.00	0.00	0.00	0.00	0.00	0.00
3	3222.05	92.00	265.45	2906.24	-42.76	-537.35	11.00	265.45	537.11	0.00
4	3408.11	92.00	271.04	2899.75	-48.46	-723.13	3.00	89.91	722.86	0.00
5	7565.59	92.00	271.04	2754.67	26.60	-4877.40	0.00	0.00	4877.47	PBHL (C1F #7H/L1)



Ground Elevation: 3391.00
RKB Elevation: KB @ 3409.00usft (Silver Oak 3)

Northings
612908.00

Eastings
470373.00

Latitude
32° 41' 5.807" N

Longitude
104° 25' 46.663" W

PROJECT DETAILS: Eddy County, NM (NAD-27 2015)
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
Local North: Grid



Terra Directional Services LLC
3705 South County Road 1210, Midland, TX 79706
Phone: 432-618-1210



COG Operating LLC

Eddy County, NM (NAD-27 2015)

Clydesdale 1 Fee #7H

SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P

PP: 976' FSL, 330' FEL, Sec 1, T19S, R25E, Unit P

BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M

Design #1

Anticollision Report

11 February, 2016





TDS
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3409.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee #7H	MD Reference:	KB @ 3409.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference	Design #1		
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:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date 2/11/2016		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	7,565.53	Design #1 (BHL: 990' FSL, 330' FWL, Sec	MWD	MWD - Standard

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						
Anadarko Anderson #1						
Anadarko Anderson #1 - OH - OH	4,527.28	2,878.89	979.63	874.32	9.302	CC
Anadarko Anderson #1 - OH - OH	4,600.00	2,876.35	982.32	874.19	9.084	ES
Anadarko Anderson #1 - OH - OH	5,200.00	2,855.42	1,188.14	1,029.83	7.505	SF
Montana 1 Fee #3						
Montana 1 Fee #3 - OH - OH	7,544.35	2,766.50	0.00	-217.98	0.000	Level 1, CC, ES, SF
Pan American Matlock #1						
Pan American Matlock #1 - OH - OH	5,910.67	2,803.51	212.71	52.46	1.327	Level 3, CC
Pan American Matlock #1 - OH - OH	6,100.00	2,796.91	284.69	1.67	1.006	Level 2, ES, SF

Anadarko Anderson #1 - Anadarko Anderson #1 - OH - OH												Offset Site Error:	0.00 usft
Survey Program:		263-INC										Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	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	5.06	5.06	0.00	0.10	-61.25	1,000.40	-1,823.30	2,079.72				
100.00	100.00	108.38	108.38	0.09	2.07	-61.25	1,000.21	-1,823.30	2,079.63	2,077.58	2.04	1,017.040	
200.00	200.00	211.69	211.69	0.32	4.05	-61.27	999.66	-1,823.31	2,079.38	2,075.25	4.13	503.381	
300.00	300.00	313.33	313.33	0.54	6.66	-61.29	998.81	-1,823.33	2,079.00	2,072.21	6.78	306.500	
400.00	400.00	417.22	417.21	0.77	11.42	-61.31	997.70	-1,823.35	2,078.50	2,067.15	11.35	183.136	
500.00	500.00	521.20	521.18	0.99	16.23	-61.35	996.16	-1,823.38	2,077.81	2,061.85	15.96	130.177	
600.00	600.00	627.73	627.68	1.22	23.91	-61.40	994.02	-1,823.42	2,076.88	2,053.84	23.04	90.140	
700.00	700.00	733.92	733.83	1.44	32.05	-61.47	991.12	-1,823.47	2,075.62	2,045.08	30.54	67.972	
800.00	800.00	828.38	828.27	1.67	39.79	-61.54	988.57	-1,823.51	2,074.37	2,036.70	37.67	55.069	
900.00	900.00	924.14	924.00	1.89	46.61	-61.59	986.44	-1,823.55	2,073.35	2,029.33	44.02	47.098	
1,000.00	1,000.00	1,021.67	1,021.51	2.12	53.00	-61.63	984.66	-1,823.59	2,072.51	2,022.51	50.00	41.446	
1,100.00	1,100.00	1,121.65	1,121.48	2.34	58.91	-61.68	982.92	-1,823.62	2,071.71	2,016.23	55.48	37.341	
1,200.00	1,200.00	1,221.64	1,221.45	2.56	64.66	-61.72	981.17	-1,823.65	2,070.91	2,009.89	61.02	33.941	
1,300.00	1,300.00	1,321.62	1,321.42	2.79	70.52	-61.76	979.43	-1,823.68	2,070.11	2,003.56	66.55	31.104	
1,400.00	1,400.00	1,425.99	1,425.77	3.01	77.25	-61.81	977.49	-1,823.72	2,069.27	1,996.41	72.85	28.403	
1,500.00	1,500.00	1,527.89	1,527.64	3.24	84.86	-61.87	974.97	-1,823.76	2,068.14	1,988.20	78.94	25.870	

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



TDS
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3409.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee #7H	MD Reference:	KB @ 3409.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design														Offset Site Error:	0.00 usft
Anadarko Anderson #1 - Anadarko Anderson #1 - OH - OH														Offset Well Error:	0.00 usft
Survey Program: 263-INC															
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	Offset		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
1,600.00	1,600.00	1,624.87	1,624.59	3.46	91.79	-61.93	972.79	-1,823.80	2,067.12	1,980.68	86.43	23.916			
1,700.00	1,700.00	1,722.28	1,721.98	3.69	97.50	-61.97	970.89	-1,823.84	2,066.23	1,974.37	91.86	22.493			
1,800.00	1,800.00	1,819.70	1,819.39	3.91	103.21	-62.01	969.25	-1,823.87	2,065.46	1,968.17	97.29	21.231			
1,900.00	1,900.00	1,918.79	1,918.47	4.14	109.11	-62.05	967.84	-1,823.89	2,064.82	1,961.94	102.87	20.072			
2,000.00	2,000.00	2,029.51	2,029.17	4.36	116.26	-62.10	965.59	-1,823.93	2,063.90	1,954.31	109.59	18.833			
2,100.00	2,100.00	2,126.49	2,126.11	4.59	123.15	-62.16	963.22	-1,823.98	2,062.79	1,946.73	116.07	17.772			
2,200.00	2,200.00	2,223.29	2,222.89	4.81	130.04	-62.21	961.17	-1,824.01	2,061.84	1,939.30	122.54	16.826			
2,300.00	2,300.00	2,321.48	2,321.07	5.04	136.46	-62.26	959.41	-1,824.04	2,061.03	1,932.42	128.61	16.025			
2,385.69	2,385.69	2,407.15	2,406.73	5.23	141.45	-62.29	957.91	-1,824.07	2,060.36	1,927.00	133.36	15.450			
2,400.00	2,400.00	2,421.46	2,421.03	5.26	142.28	32.27	957.66	-1,824.08	2,060.08	1,925.93	134.15	15.357			
2,450.00	2,449.84	2,470.64	2,470.21	5.36	144.92	32.51	956.82	-1,824.09	2,056.51	1,919.90	136.61	15.054			
2,500.00	2,499.08	2,519.01	2,518.57	5.47	147.42	33.08	956.03	-1,824.11	2,048.95	1,910.06	138.89	14.753			
2,550.00	2,547.29	2,566.35	2,565.91	5.59	149.88	33.97	955.31	-1,824.12	2,037.47	1,896.43	141.04	14.446			
2,600.00	2,594.00	2,612.24	2,611.79	5.72	152.25	35.23	954.65	-1,824.13	2,022.21	1,879.16	143.06	14.136			
2,650.00	2,638.80	2,656.29	2,655.84	5.90	154.52	36.89	954.05	-1,824.14	2,003.35	1,858.45	144.89	13.826			
2,700.00	2,681.27	2,698.79	2,698.33	6.13	156.45	39.00	953.50	-1,824.15	1,981.08	1,834.72	146.36	13.536			
2,750.00	2,721.02	2,738.57	2,738.11	6.45	158.26	41.62	952.98	-1,824.16	1,955.65	1,808.02	147.63	13.247			
2,800.00	2,757.87	2,775.27	2,774.81	6.86	159.92	44.80	952.50	-1,824.17	1,927.36	1,778.65	148.71	12.960			
2,850.00	2,790.91	2,808.55	2,808.08	7.39	161.43	48.61	952.06	-1,824.18	1,896.53	1,748.95	149.58	12.679			
2,900.00	2,820.41	2,838.10	2,837.63	8.04	162.77	53.10	951.67	-1,824.18	1,863.52	1,713.28	150.24	12.403			
2,950.00	2,845.91	2,863.65	2,863.18	8.81	163.93	58.28	951.34	-1,824.19	1,828.71	1,678.03	150.68	12.136			
3,000.00	2,867.17	2,884.97	2,884.49	9.70	164.91	64.10	951.06	-1,824.20	1,792.51	1,641.61	150.90	11.879			
3,050.00	2,884.00	2,901.86	2,901.38	10.68	165.68	70.45	950.84	-1,824.20	1,755.32	1,604.42	150.90	11.633			
3,100.00	2,896.24	2,914.16	2,913.68	11.76	166.24	77.10	950.68	-1,824.20	1,717.57	1,566.91	150.65	11.401			
3,150.00	2,903.78	2,921.76	2,921.28	12.89	166.59	83.77	950.58	-1,824.20	1,679.68	1,529.51	150.17	11.185			
3,200.00	2,906.55	2,924.59	2,924.11	14.07	166.72	90.19	950.54	-1,824.21	1,642.07	1,492.62	149.45	10.988			
3,222.05	2,906.24	2,924.32	2,923.84	14.60	166.71	92.87	950.55	-1,824.21	1,625.67	1,476.62	149.05	10.907			
3,300.00	2,903.52	2,921.67	2,921.20	16.51	166.59	92.94	950.58	-1,824.20	1,587.79	1,420.23	147.56	10.625			
3,408.11	2,899.75	2,917.94	2,917.46	19.25	166.42	93.03	950.63	-1,824.20	1,486.84	1,341.49	145.35	10.229			
3,500.00	2,896.54	2,914.73	2,914.25	21.63	166.27	92.84	950.67	-1,824.20	1,419.05	1,275.81	143.25	9.906			
3,600.00	2,893.05	2,911.24	2,910.77	24.25	166.11	92.64	950.72	-1,824.20	1,348.51	1,207.94	140.57	9.593			
3,700.00	2,889.56	2,907.75	2,907.28	26.89	165.95	92.44	950.76	-1,824.20	1,281.89	1,144.47	137.42	9.329			
3,800.00	2,886.07	2,904.26	2,903.79	29.56	165.79	92.23	950.81	-1,824.20	1,219.83	1,085.12	133.71	9.123			
3,900.00	2,882.58	2,900.77	2,900.30	32.24	165.63	92.03	950.85	-1,824.20	1,163.05	1,033.66	129.39	8.988			
4,000.00	2,879.09	2,897.29	2,896.81	34.94	165.47	91.83	950.90	-1,824.20	1,112.37	987.89	124.48	8.936			
4,100.00	2,875.60	2,893.80	2,893.32	37.64	165.31	91.62	950.94	-1,824.20	1,068.66	949.56	119.10	8.973			
4,200.00	2,872.11	2,890.31	2,889.83	40.35	165.15	91.42	950.99	-1,824.20	1,032.79	919.21	113.58	9.093			
4,300.00	2,868.62	2,886.82	2,886.34	43.07	164.99	91.21	951.04	-1,824.20	1,005.82	897.03	108.59	9.260			
4,400.00	2,865.13	2,883.33	2,882.86	45.79	164.83	91.01	951.08	-1,824.20	987.86	882.64	105.22	9.389			
4,500.00	2,861.64	2,879.84	2,879.37	48.51	164.67	90.81	951.13	-1,824.19	980.01	875.23	104.78	9.353			
4,527.28	2,860.89	2,878.89	2,878.41	49.26	164.63	90.75	951.14	-1,824.19	979.63	874.32	105.31	9.302 CC			
4,600.00	2,858.15	2,876.35	2,875.88	51.24	164.51	90.60	951.17	-1,824.19	982.32	874.19	108.14	9.084 ES			
4,700.00	2,854.66	2,872.86	2,872.39	53.98	164.35	90.40	951.22	-1,824.19	994.72	879.82	114.90	8.657			
4,800.00	2,851.18	2,869.37	2,868.90	56.71	164.19	90.19	951.26	-1,824.19	1,016.84	893.10	123.74	8.218			
4,900.00	2,847.69	2,865.88	2,865.41	59.45	164.03	89.99	951.31	-1,824.19	1,048.06	914.80	133.26	7.865			
5,000.00	2,844.20	2,862.39	2,861.92	62.18	163.88	89.79	951.36	-1,824.19	1,087.60	945.11	142.49	7.633			
5,100.00	2,840.71	2,858.91	2,858.43	64.92	163.72	89.58	951.40	-1,824.19	1,134.58	983.67	150.91	7.518			
5,200.00	2,837.22	2,855.42	2,854.95	67.67	163.56	89.38	951.45	-1,824.19	1,188.14	1,029.83	158.31	7.505 SF			
5,300.00	2,833.73	2,851.93	2,851.46	70.41	163.40	89.17	951.49	-1,824.19	1,247.41	1,082.77	164.64	7.577			

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



TDS
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3409.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee #7H	MD Reference:	KB @ 3409.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Anadarko Anderson #1 - Anadarko Anderson #1 - OH - OH													Offset Well Error:	0.00 usft
Survey Program: 263-INC														
Reference		Offset		Semi Major Axis			Distance		Minimum		Separation		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	+N-S (usft)	+E-W (usft)	Separation (usft)	Factor		
5,400.00	2,830.24	2,848.44	2,847.97	73.15	163.24	88.97	951.54	-1,824.19	1,311.63	1,141.66	169.98	7.717		
5,500.00	2,826.75	2,844.95	2,844.48	75.90	163.08	88.77	951.58	-1,824.19	1,380.11	1,205.69	174.42	7.913		
5,600.00	2,823.26	2,841.46	2,840.99	78.64	162.93	88.56	951.63	-1,824.19	1,452.24	1,274.15	178.09	8.155		
5,700.00	2,819.77	2,837.97	2,837.50	81.39	162.77	88.36	951.68	-1,824.18	1,527.50	1,346.39	181.11	8.434		
5,800.00	2,816.28	2,834.48	2,834.01	84.14	162.61	88.16	951.72	-1,824.18	1,605.46	1,421.88	183.58	8.745		
5,900.00	2,812.79	2,830.99	2,830.52	86.88	162.45	87.95	951.77	-1,824.18	1,685.74	1,500.14	185.60	9.083		
6,000.00	2,809.30	2,827.50	2,827.03	89.63	162.29	87.75	951.81	-1,824.18	1,768.03	1,580.78	187.25	9.442		
6,100.00	2,805.81	2,824.01	2,823.55	92.38	162.13	87.55	951.86	-1,824.18	1,852.05	1,663.47	188.58	9.821		
6,200.00	2,802.32	2,820.53	2,820.06	95.13	161.98	87.34	951.90	-1,824.18	1,937.59	1,747.93	189.66	10.216		
6,300.00	2,798.83	2,817.04	2,816.57	97.88	161.82	87.14	951.95	-1,824.18	2,024.44	1,833.92	190.53	10.626		
6,400.00	2,795.34	2,813.55	2,813.08	100.63	161.66	86.94	952.00	-1,824.18	2,112.46	1,921.24	191.22	11.047		
6,500.00	2,791.85	2,810.06	2,809.59	103.38	161.50	86.73	952.04	-1,824.18	2,201.49	2,009.72	191.77	11.480		
6,600.00	2,788.36	2,806.57	2,806.10	106.13	161.34	86.53	952.09	-1,824.18	2,291.42	2,099.23	192.19	11.923		
6,700.00	2,784.87	2,803.08	2,802.61	108.88	161.18	86.33	952.13	-1,824.18	2,382.15	2,189.63	192.52	12.374		
6,800.00	2,781.39	2,799.59	2,799.12	111.64	161.03	86.13	952.18	-1,824.18	2,473.59	2,280.83	192.76	12.832		
6,900.00	2,777.90	2,796.10	2,795.64	114.39	160.87	85.92	952.22	-1,824.17	2,565.66	2,372.73	192.93	13.298		
7,000.00	2,774.41	2,792.61	2,792.15	117.14	160.71	85.72	952.27	-1,824.17	2,658.30	2,465.26	193.04	13.771		
7,100.00	2,770.92	2,789.12	2,788.66	119.89	160.55	85.52	952.31	-1,824.17	2,751.45	2,558.35	193.11	14.248		
7,200.00	2,767.43	2,785.63	2,785.17	122.65	160.39	85.32	952.36	-1,824.17	2,845.06	2,651.94	193.13	14.732		
7,300.00	2,763.94	2,782.15	2,781.68	125.40	160.23	85.11	952.41	-1,824.17	2,939.09	2,745.98	193.11	15.220		
7,400.00	2,760.45	2,778.66	2,778.19	128.15	160.08	84.91	952.45	-1,824.17	3,033.50	2,840.43	193.07	15.712		
7,500.00	2,756.96	2,775.17	2,774.70	130.91	159.92	84.71	952.50	-1,824.17	3,128.25	2,935.26	193.00	16.209		
7,565.59	2,754.67	2,772.88	2,772.41	132.71	159.81	84.58	952.53	-1,824.17	3,190.57	2,997.63	192.94	16.537		



TDS
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3409.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee #7H	MD Reference:	KB @ 3409.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design														Offset Site Error:	0.00 usft
Montana 1 Fee #3 - Montana 1 Fee #3 - OH - OH														Offset Well Error:	0.00 usft
Survey Program: 176-INC															
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)					
0.00	0.00	16.63	16.63	0.00	0.39	-89.69	26.60	-4,877.39	4,877.47						
100.00	100.00	167.81	167.80	0.09	3.92	-89.69	26.58	-4,876.42	4,876.83	4,874.49	2.33	2,091.119			
200.00	200.00	267.17	267.16	0.32	7.58	-89.69	26.56	-4,875.24	4,875.64	4,871.24	4.40	1,107.480			
300.00	300.00	363.57	363.55	0.54	11.24	-89.69	26.54	-4,874.17	4,874.52	4,868.06	6.47	753.791			
400.00	400.00	459.96	459.94	0.77	14.90	-89.69	26.52	-4,873.17	4,873.48	4,864.95	8.53	571.239			
500.00	500.00	556.36	556.34	0.99	18.57	-89.69	26.51	-4,872.23	4,872.52	4,861.92	10.60	459.829			
600.00	600.00	651.29	651.26	1.22	21.85	-89.69	26.49	-4,871.39	4,871.63	4,858.93	12.70	383.585			
700.00	700.00	740.86	740.83	1.44	24.31	-89.69	26.48	-4,870.74	4,870.91	4,855.96	14.95	325.909			
800.00	800.00	830.43	830.39	1.67	26.66	-89.69	26.47	-4,870.29	4,870.40	4,853.21	17.19	283.310			
900.00	900.00	924.00	923.97	1.89	29.13	-89.69	26.47	-4,870.02	4,870.11	4,850.58	19.53	249.408			
1,000.00	1,000.00	1,025.69	1,025.66	2.12	31.46	-89.69	26.46	-4,869.78	4,869.87	4,848.14	21.73	224.091			
1,100.00	1,100.00	1,132.14	1,132.10	2.34	33.91	-89.69	26.45	-4,869.39	4,869.51	4,845.48	24.03	202.651			
1,200.00	1,200.00	1,238.58	1,238.55	2.56	36.36	-89.69	26.44	-4,868.86	4,869.01	4,842.68	26.33	184.948			
1,300.00	1,300.00	1,345.00	1,344.96	2.79	38.80	-89.69	26.43	-4,868.19	4,868.38	4,839.75	28.62	170.085			
1,400.00	1,400.00	1,443.26	1,443.22	3.01	41.51	-89.69	26.42	-4,867.52	4,867.70	4,836.90	30.79	158.078			
1,500.00	1,500.00	1,541.49	1,541.45	3.24	44.21	-89.69	26.41	-4,866.89	4,867.05	4,834.09	32.96	147.656			
1,600.00	1,600.00	1,639.72	1,639.68	3.46	46.91	-89.69	26.40	-4,866.29	4,866.44	4,831.31	35.13	138.521			
1,700.00	1,700.00	1,737.96	1,737.91	3.69	49.61	-89.69	26.39	-4,865.73	4,865.87	4,828.57	37.30	130.449			
1,800.00	1,800.00	1,837.58	1,837.53	3.91	52.44	-89.69	26.38	-4,865.19	4,865.34	4,825.84	39.50	123.172			
1,900.00	1,900.00	1,943.29	1,943.24	4.14	55.78	-89.69	26.37	-4,864.55	4,864.73	4,822.90	41.83	116.294			
2,000.00	2,000.00	2,049.01	2,048.96	4.36	59.13	-89.69	26.35	-4,863.79	4,864.01	4,819.85	44.16	110.139			
2,100.00	2,100.00	2,154.72	2,154.66	4.59	62.48	-89.69	26.34	-4,862.90	4,863.17	4,816.68	46.49	104.599			
2,200.00	2,200.00	2,260.43	2,260.37	4.81	65.82	-89.69	26.32	-4,861.89	4,862.21	4,813.39	48.82	99.586			
2,300.00	2,300.00	2,363.31	2,363.24	5.04	69.77	-89.69	26.30	-4,860.81	4,861.16	4,809.96	51.20	94.941			
2,385.69	2,385.69	2,450.57	2,450.50	5.23	73.34	-89.69	26.28	-4,859.86	4,860.23	4,806.97	53.25	91.265			
2,400.00	2,400.00	2,465.14	2,465.06	5.26	73.94	4.86	26.28	-4,859.70	4,859.87	4,806.28	53.59	90.678			
2,450.00	2,449.84	2,515.84	2,515.77	5.36	76.01	4.91	26.27	-4,859.13	4,855.56	4,800.78	54.78	88.643			
2,500.00	2,499.08	2,565.89	2,565.81	5.47	78.06	5.00	26.26	-4,858.56	4,846.50	4,790.55	55.95	86.615			
2,550.00	2,547.29	2,614.82	2,614.74	5.59	80.06	5.16	26.25	-4,857.99	4,832.78	4,775.67	57.11	84.617			
2,600.00	2,594.00	2,662.17	2,662.09	5.72	82.00	5.38	26.24	-4,857.43	4,814.53	4,756.29	58.24	82.663			
2,650.00	2,638.80	2,707.51	2,707.42	5.90	83.86	5.67	26.23	-4,856.89	4,791.91	4,732.58	59.33	80.764			
2,700.00	2,681.27	2,750.42	2,750.33	6.13	85.61	6.06	26.22	-4,856.37	4,765.14	4,704.77	60.37	78.931			
2,750.00	2,721.02	2,787.75	2,787.66	6.45	87.00	6.57	26.21	-4,855.92	4,734.48	4,673.23	61.25	77.300			
2,800.00	2,757.67	2,821.46	2,821.36	6.86	88.21	7.24	26.20	-4,855.54	4,700.21	4,638.18	62.04	75.763			
2,850.00	2,790.91	2,851.98	2,851.88	7.39	89.30	8.13	26.20	-4,855.20	4,662.66	4,599.90	62.76	74.292			
2,900.00	2,820.41	2,879.04	2,878.94	8.04	90.27	9.36	26.19	-4,854.92	4,622.17	4,558.76	63.41	72.895			
2,950.00	2,845.91	2,902.37	2,902.27	8.81	91.11	11.10	26.19	-4,854.68	4,579.10	4,515.13	63.97	71.578			
3,000.00	2,867.17	2,921.77	2,921.67	9.70	91.81	13.74	26.18	-4,854.49	4,533.85	4,469.40	64.45	70.348			
3,050.00	2,884.00	2,937.05	2,936.94	10.68	92.36	16.07	26.18	-4,854.35	4,486.82	4,421.99	64.83	69.209			
3,100.00	2,896.24	2,948.05	2,947.94	11.76	92.75	26.20	26.18	-4,854.25	4,438.46	4,373.35	65.11	68.166			
3,150.00	2,903.78	2,954.67	2,954.56	12.89	92.99	44.97	26.18	-4,854.19	4,389.20	4,323.90	65.29	67.222			
3,200.00	2,906.55	2,956.84	2,956.73	14.07	93.07	90.99	26.18	-4,854.17	4,339.49	4,274.12	65.37	66.382			
3,222.05	2,906.24	2,956.37	2,956.26	14.60	93.05	114.68	26.18	-4,854.17	4,317.55	4,252.17	65.37	66.043			
3,300.00	2,903.52	2,953.16	2,953.06	16.51	92.94	128.19	26.18	-4,854.20	4,239.90	4,174.56	65.34	64.889			
3,408.11	2,899.75	2,948.70	2,948.60	19.25	92.78	-180.00	26.18	-4,854.24	4,131.95	4,066.68	65.27	63.307			
3,500.00	2,896.54	2,944.90	2,944.80	21.63	92.64	-180.00	26.18	-4,854.27	4,040.15	3,974.97	65.19	61.976			
3,600.00	2,893.05	2,940.75	2,940.55	24.25	92.49	-180.00	26.18	-4,854.31	3,940.25	3,875.15	65.10	60.523			
3,700.00	2,889.56	2,936.59	2,936.49	26.89	92.34	-180.00	26.18	-4,854.35	3,840.35	3,775.33	65.02	59.067			
3,800.00	2,886.07	2,932.42	2,932.32	29.56	92.19	-180.00	26.18	-4,854.39	3,740.45	3,675.52	64.93	57.606			

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



TDS
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3409.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee #7H	MD Reference:	KB @ 3409.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design Montana 1 Fee #3 - Montana 1 Fee #3 - OH - OH														Offset Site Error:	0.00 usft
Survey Program: 176-INC														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
3,900.00	2,882.58	2,928.24	2,928.13	32.24	92.04	-180.00	26.18	-4,854.43	3,640.55	3,575.70	64.85	56.141			
4,000.00	2,879.09	2,924.04	2,923.93	34.94	91.89	-180.00	26.18	-4,854.47	3,540.65	3,475.88	64.76	54.672			
4,100.00	2,875.60	2,919.83	2,919.72	37.64	91.74	-180.00	26.18	-4,854.51	3,440.74	3,376.07	64.68	53.198			
4,200.00	2,872.11	2,915.60	2,915.50	40.35	91.59	-180.00	26.19	-4,854.55	3,340.84	3,276.25	64.59	51.721			
4,300.00	2,868.62	2,911.36	2,911.26	43.07	91.44	-180.00	26.19	-4,854.59	3,240.94	3,176.43	64.51	50.239			
4,400.00	2,865.13	2,907.11	2,907.01	45.79	91.28	-180.00	26.19	-4,854.63	3,141.04	3,076.62	64.43	48.753			
4,500.00	2,861.64	2,902.85	2,902.75	48.51	91.13	-180.00	26.19	-4,854.68	3,041.14	2,976.80	64.34	47.263			
4,600.00	2,858.15	2,898.58	2,898.47	51.24	90.98	-180.00	26.19	-4,854.72	2,941.24	2,876.98	64.26	45.769			
4,700.00	2,854.66	2,894.29	2,894.19	53.98	90.82	-180.00	26.19	-4,854.76	2,841.34	2,777.16	64.18	44.271			
4,800.00	2,851.18	2,889.98	2,889.88	56.71	90.67	-180.00	26.19	-4,854.81	2,741.45	2,677.35	64.10	42.769			
4,900.00	2,847.69	2,885.67	2,885.57	59.45	90.51	-180.00	26.19	-4,854.85	2,641.55	2,577.53	64.02	41.262			
5,000.00	2,844.20	2,881.34	2,881.24	62.18	90.36	-180.00	26.19	-4,854.89	2,541.65	2,477.71	63.94	39.752			
5,100.00	2,840.71	2,877.00	2,876.90	64.92	90.20	-180.00	26.19	-4,854.94	2,441.75	2,377.89	63.86	38.237			
5,200.00	2,837.22	2,872.64	2,872.54	67.67	90.04	-180.00	26.19	-4,854.98	2,341.85	2,278.07	63.78	36.719			
5,300.00	2,833.73	2,868.27	2,868.17	70.41	89.89	-180.00	26.19	-4,855.03	2,241.96	2,178.26	63.70	35.196			
5,400.00	2,830.24	2,863.89	2,863.79	73.15	89.73	-180.00	26.19	-4,855.07	2,142.06	2,078.44	63.62	33.670			
5,500.00	2,826.75	2,859.49	2,859.39	75.90	89.57	-180.00	26.20	-4,855.12	2,042.16	1,978.62	63.54	32.139			
5,600.00	2,823.26	2,855.08	2,854.98	78.64	89.41	-180.00	26.20	-4,855.17	1,942.27	1,878.80	63.46	30.605			
5,700.00	2,819.77	2,850.66	2,850.56	81.39	89.26	-180.00	26.20	-4,855.22	1,842.37	1,778.98	63.39	29.066			
5,800.00	2,816.28	2,846.22	2,846.12	84.14	89.10	-180.00	26.20	-4,855.26	1,742.47	1,679.17	63.31	27.524			
5,900.00	2,812.79	2,841.77	2,841.67	86.88	88.94	-180.00	26.20	-4,855.31	1,642.58	1,579.35	63.23	25.978			
6,000.00	2,809.30	2,837.30	2,837.20	89.63	88.78	-180.00	26.20	-4,855.36	1,542.68	1,479.53	63.15	24.427			
6,100.00	2,805.81	2,832.82	2,832.72	92.38	88.62	-180.00	26.20	-4,855.41	1,442.79	1,379.71	63.08	22.873			
6,200.00	2,802.32	2,828.33	2,828.23	95.13	88.45	-180.00	26.20	-4,855.46	1,342.89	1,279.89	63.00	21.315			
6,300.00	2,798.83	2,823.82	2,823.72	97.88	88.29	-180.00	26.20	-4,855.51	1,243.00	1,180.07	62.93	19.754			
6,400.00	2,795.34	2,819.30	2,819.20	100.63	88.13	-180.00	26.20	-4,855.56	1,143.11	1,080.26	62.85	18.188			
6,500.00	2,791.85	2,814.76	2,814.66	103.38	87.97	-180.00	26.20	-4,855.61	1,043.21	980.44	62.78	16.618			
6,600.00	2,788.36	2,810.21	2,810.11	106.13	87.80	-180.00	26.21	-4,855.66	943.32	880.62	62.70	15.045			
6,700.00	2,784.87	2,805.64	2,805.55	108.88	87.64	-180.00	26.21	-4,855.71	843.43	780.80	62.63	13.468			
6,800.00	2,781.39	2,801.06	2,800.97	111.64	87.47	-180.00	26.21	-4,855.77	743.54	680.98	62.55	11.887			
6,900.00	2,777.90	2,796.47	2,796.37	114.39	87.31	-180.00	26.21	-4,855.82	643.64	581.16	62.48	10.302			
7,000.00	2,774.41	2,791.85	2,791.76	117.14	87.14	-180.00	26.21	-4,855.87	543.75	481.35	62.41	8.713			
7,100.00	2,770.92	2,787.23	2,787.14	119.89	86.99	-179.99	26.21	-4,855.93	443.86	381.53	62.33	7.121			
7,200.00	2,767.43	2,782.59	2,782.50	122.65	86.81	-179.99	26.21	-4,855.98	343.97	281.71	62.26	5.525			
7,300.00	2,763.94	2,777.94	2,777.85	125.40	86.64	-179.99	26.21	-4,856.04	244.08	181.89	62.19	3.925			
7,400.00	2,760.45	2,773.27	2,773.18	128.15	86.48	-179.98	26.21	-4,856.09	144.19	82.07	62.11	2.321			
7,500.00	2,756.96	2,768.59	2,768.49	130.91	86.31	-179.95	26.21	-4,856.15	44.30	-17.74	62.04	0.714 Level 1			
7,544.35	2,755.41	2,766.50	2,766.41	132.13	86.23	-89.80	26.21	-4,856.18	0.00	-217.98	217.98	0.000 Level 1, CC, ES, SF			
7,565.59	2,754.67	2,765.51	2,765.41	132.71	86.20	-0.10	26.21	-4,856.19	21.22	-40.78	62.00	0.342 Level 1			

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



TDS
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3409.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee #7H	MD Reference:	KB @ 3409.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design														Pan American Matlock #1 - Pan American Matlock #1 - OH - OH		Offset Site Error: 0.00 usft	
Survey Program: 100-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)							
0.00	0.00	0.00	0.00	0.00	0.00	-95.52	-311.90	-3,229.60	3,244.68								
100.00	100.00	94.15	94.13	0.09	5.31	-95.49	-310.35	-3,229.57	3,244.47	3,239.10	5.37	604.035					
200.00	200.00	194.84	194.76	0.32	16.34	-95.43	-306.85	-3,229.51	3,244.08	3,227.52	16.56	195.906					
300.00	300.00	294.78	294.64	0.54	27.62	-95.37	-303.36	-3,229.45	3,243.69	3,215.69	27.99	115.871					
400.00	400.00	394.72	394.52	0.77	38.89	-95.31	-299.87	-3,229.38	3,243.30	3,203.87	39.43	82.253					
500.00	500.00	494.66	494.40	0.99	50.16	-95.24	-296.38	-3,229.32	3,242.91	3,192.04	50.87	63.748					
600.00	600.00	594.59	594.27	1.22	61.44	-95.18	-292.90	-3,229.26	3,242.53	3,180.22	62.31	52.037					
700.00	700.00	694.53	694.15	1.44	72.71	-95.12	-289.41	-3,229.19	3,242.16	3,168.40	73.76	43.957					
800.00	800.00	794.47	794.03	1.67	83.99	-95.06	-285.92	-3,229.13	3,241.78	3,156.58	85.20	38.047					
900.00	900.00	894.41	893.91	1.89	95.26	-95.00	-282.44	-3,229.07	3,241.42	3,144.76	96.65	33.537					
1,000.00	1,000.00	994.35	993.79	2.12	106.54	-94.94	-278.95	-3,229.00	3,241.05	3,132.95	108.10	29.981					
1,100.00	1,100.00	1,094.29	1,093.66	2.34	117.81	-94.88	-275.46	-3,228.94	3,240.69	3,121.13	119.56	27.106					
1,200.00	1,200.00	1,194.23	1,193.54	2.56	129.09	-94.81	-271.97	-3,228.88	3,240.33	3,109.32	131.01	24.733					
1,300.00	1,300.00	1,294.17	1,293.42	2.79	140.36	-94.75	-268.49	-3,228.81	3,239.98	3,097.50	142.47	22.741					
1,400.00	1,400.00	1,394.11	1,393.30	3.01	151.64	-94.69	-265.00	-3,228.75	3,239.62	3,085.69	153.93	21.046					
1,500.00	1,500.00	1,494.05	1,493.18	3.24	162.91	-94.63	-261.51	-3,228.69	3,239.28	3,073.88	165.39	19.585					
1,600.00	1,600.00	1,593.99	1,593.06	3.46	174.18	-94.57	-258.02	-3,228.62	3,238.93	3,062.08	176.86	18.314					
1,700.00	1,700.00	1,693.92	1,692.93	3.69	185.46	-94.51	-254.54	-3,228.56	3,238.60	3,050.27	188.33	17.197					
1,800.00	1,800.00	1,793.86	1,792.81	3.91	196.73	-94.45	-251.05	-3,228.50	3,238.26	3,038.47	199.79	16.208					
1,900.00	1,900.00	1,893.80	1,892.69	4.14	208.01	-94.38	-247.56	-3,228.43	3,237.93	3,026.66	211.26	15.326					
2,000.00	2,000.00	1,993.74	1,992.57	4.36	219.28	-94.32	-244.08	-3,228.37	3,237.60	3,014.86	222.74	14.536					
2,100.00	2,100.00	2,093.68	2,092.45	4.59	230.56	-94.26	-240.59	-3,228.31	3,237.27	3,003.06	234.21	13.822					
2,200.00	2,200.00	2,193.62	2,192.32	4.81	241.83	-94.20	-237.10	-3,228.24	3,236.95	2,991.27	245.69	13.175					
2,300.00	2,300.00	2,293.56	2,292.20	5.04	253.11	-94.14	-233.61	-3,228.18	3,236.64	2,979.47	257.17	12.586					
2,385.69	2,385.69	2,379.20	2,377.79	5.23	262.77	-94.09	-230.63	-3,228.12	3,236.37	2,969.37	267.00	12.121					
2,400.00	2,400.00	2,393.50	2,392.08	5.26	264.38	0.47	-230.13	-3,228.12	3,236.13	2,967.48	268.64	12.046					
2,450.00	2,449.84	2,443.29	2,441.84	5.36	270.00	0.51	-228.39	-3,228.08	3,232.20	2,957.85	274.35	11.781					
2,500.00	2,499.08	2,492.48	2,491.00	5.47	275.55	0.55	-226.67	-3,228.05	3,223.52	2,943.52	280.01	11.512					
2,550.00	2,547.29	2,540.61	2,539.10	5.59	280.98	0.60	-224.99	-3,228.02	3,210.17	2,924.82	285.54	11.242					
2,600.00	2,594.00	2,587.24	2,585.70	5.72	286.24	0.66	-223.37	-3,227.99	3,192.26	2,901.34	290.92	10.973					
2,650.00	2,638.80	2,631.93	2,630.37	5.90	291.28	0.72	-221.81	-3,227.96	3,169.96	2,873.88	296.08	10.706					
2,700.00	2,681.27	2,674.28	2,672.70	6.13	296.06	0.81	-220.33	-3,227.94	3,143.48	2,842.50	300.98	10.444					
2,750.00	2,721.02	2,713.90	2,712.29	6.45	300.53	0.91	-218.95	-3,227.91	3,113.06	2,807.49	305.57	10.188					
2,800.00	2,757.67	2,750.42	2,748.79	6.86	304.65	1.04	-217.67	-3,227.89	3,079.98	2,769.17	309.81	9.938					
2,850.00	2,790.91	2,783.51	2,781.85	7.39	308.38	1.21	-216.52	-3,227.87	3,041.55	2,727.89	313.66	9.697					
2,900.00	2,820.41	2,812.86	2,811.18	8.04	311.69	1.44	-215.49	-3,227.85	3,001.12	2,684.05	317.08	9.485					
2,950.00	2,845.91	2,838.19	2,836.50	8.81	314.55	1.75	-214.61	-3,227.83	2,958.07	2,638.03	320.04	9.243					
3,000.00	2,867.17	2,859.29	2,857.69	9.70	316.93	2.22	-213.87	-3,227.82	2,912.78	2,590.27	322.50	9.032					
3,050.00	2,884.00	2,875.95	2,874.23	10.68	318.81	3.01	-213.29	-3,227.81	2,865.67	2,541.22	324.46	8.832					
3,100.00	2,896.24	2,888.01	2,886.30	11.76	320.17	4.56	-212.87	-3,227.80	2,817.18	2,491.31	325.87	8.645					
3,150.00	2,903.78	2,895.38	2,893.66	12.89	321.00	9.02	-212.61	-3,227.80	2,767.76	2,441.01	326.75	8.471					
3,200.00	2,906.55	2,897.98	2,896.25	14.07	321.29	74.22	-212.52	-3,227.80	2,717.85	2,390.79	327.06	8.310					
3,222.05	2,906.24	2,897.60	2,895.88	14.60	321.25	156.51	-212.54	-3,227.80	2,695.81	2,368.78	327.02	8.243					
3,300.00	2,903.52	2,894.67	2,892.95	16.51	320.92	-146.92	-212.64	-3,227.80	2,617.92	2,291.24	326.69	8.014					
3,408.11	2,899.75	2,890.79	2,889.07	19.25	320.48	-114.30	-212.77	-3,227.80	2,510.06	2,183.88	326.18	7.695					
3,500.00	2,896.54	2,887.59	2,885.87	21.63	320.12	-113.56	-212.89	-3,227.80	2,418.57	2,092.83	325.74	7.425					
3,600.00	2,893.05	2,884.10	2,882.38	24.25	319.73	-112.74	-213.01	-3,227.80	2,319.04	1,993.77	325.26	7.130					
3,700.00	2,889.56	2,880.61	2,878.90	26.89	319.33	-111.91	-213.13	-3,227.81	2,219.54	1,894.74	324.79	6.834					
3,800.00	2,886.07	2,877.12	2,875.41	29.56	318.94	-111.08	-213.25	-3,227.81	2,120.08	1,795.75	324.33	6.537					

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



TDS
Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E; Unit P
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3409.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee #7H	MD Reference:	KB @ 3409.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design														Offset Site Error:	0.00 usft
Survey Program: 100-INC														Offset Well Error:	0.00 usft
Reference															
		Offset		Semi Major Axis						Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
3,900.00	2,882.58	2,873.63	2,871.92	32.24	318.56	-110.24	-213.37	-3,227.81	2,020.67	1,696.78	323.89	6.239			
4,000.00	2,879.09	2,870.15	2,868.44	34.94	318.15	-109.39	-213.49	-3,227.81	1,921.32	1,597.86	323.45	5.940			
4,100.00	2,875.60	2,866.66	2,864.95	37.64	317.76	-108.53	-213.62	-3,227.82	1,822.02	1,498.98	323.04	5.640			
4,200.00	2,872.11	2,863.17	2,861.47	40.35	317.37	-107.66	-213.74	-3,227.82	1,722.81	1,400.16	322.65	5.340			
4,300.00	2,868.62	2,859.68	2,857.98	43.07	316.97	-106.79	-213.86	-3,227.82	1,623.68	1,301.39	322.29	5.038			
4,400.00	2,865.13	2,856.20	2,854.50	45.79	316.58	-105.90	-213.98	-3,227.82	1,524.66	1,202.70	321.96	4.736			
4,500.00	2,861.64	2,852.71	2,851.01	48.51	316.19	-105.02	-214.10	-3,227.82	1,425.76	1,104.09	321.67	4.432			
4,600.00	2,858.15	2,849.22	2,847.53	51.24	315.79	-104.12	-214.22	-3,227.83	1,327.03	1,005.60	321.42	4.129			
4,700.00	2,854.66	2,845.73	2,844.04	53.98	315.40	-103.22	-214.35	-3,227.83	1,228.49	907.27	321.21	3.825			
4,800.00	2,851.18	2,842.25	2,840.55	56.71	315.01	-102.32	-214.47	-3,227.83	1,130.19	809.15	321.04	3.520			
4,900.00	2,847.69	2,838.76	2,837.07	59.45	314.61	-101.40	-214.59	-3,227.83	1,032.21	711.31	320.89	3.217			
5,000.00	2,844.20	2,835.27	2,833.58	62.18	314.22	-100.49	-214.71	-3,227.84	934.64	613.90	320.74	2.914			
5,100.00	2,840.71	2,831.78	2,830.10	64.92	313.83	-99.57	-214.83	-3,227.84	837.63	517.11	320.52	2.613			
5,200.00	2,837.22	2,828.30	2,826.61	67.67	313.43	-98.64	-214.95	-3,227.84	741.40	421.28	320.12	2.316			
5,300.00	2,833.73	2,824.81	2,823.13	70.41	313.04	-97.72	-215.08	-3,227.84	646.30	327.02	319.29	2.024			
5,400.00	2,830.24	2,821.32	2,819.64	73.15	312.64	-96.78	-215.20	-3,227.84	552.91	235.43	317.48	1.742			
5,500.00	2,826.75	2,817.83	2,816.16	75.90	312.25	-95.85	-215.32	-3,227.85	462.26	148.80	313.46	1.475 Level 3			
5,600.00	2,823.26	2,814.34	2,812.67	78.64	311.86	-94.92	-215.44	-3,227.85	376.35	72.11	304.24	1.237 Level 2			
5,700.00	2,819.77	2,810.86	2,809.18	81.39	311.46	-93.98	-215.56	-3,227.85	299.29	16.98	282.33	1.060 Level 2			
5,800.00	2,816.28	2,807.37	2,805.70	84.14	311.07	-93.04	-215.68	-3,227.85	239.74	8.03	231.72	1.035 Level 2			
5,900.00	2,812.79	2,803.88	2,802.21	86.88	310.68	-92.10	-215.81	-3,227.86	212.98	51.59	161.39	1.320 Level 3			
5,910.67	2,812.42	2,803.51	2,801.84	87.18	310.64	-92.00	-215.82	-3,227.86	212.71	52.46	160.25	1.327 Level 3, CC			
6,000.00	2,809.30	2,800.39	2,798.73	89.83	310.28	-91.16	-215.93	-3,227.86	230.69	10.01	220.68	1.045 Level 2			
6,100.00	2,805.81	2,796.91	2,795.24	92.38	309.89	-90.22	-216.05	-3,227.86	284.69	1.67	283.02	1.006 Level 2, ES, SF			
6,200.00	2,802.32	2,793.42	2,791.76	95.13	309.50	-89.29	-216.17	-3,227.86	358.97	48.23	310.74	1.155 Level 2			
6,300.00	2,798.83	2,789.93	2,788.27	97.88	309.10	-88.35	-216.29	-3,227.86	443.44	121.41	322.03	1.377 Level 3			
6,400.00	2,795.34	2,786.44	2,784.79	100.63	308.71	-87.42	-216.42	-3,227.87	533.29	206.76	326.53	1.633			
6,500.00	2,791.85	2,782.96	2,781.30	103.38	308.32	-86.49	-216.54	-3,227.87	626.21	298.08	328.13	1.908			
6,600.00	2,788.36	2,779.47	2,777.82	106.13	307.92	-85.56	-216.66	-3,227.87	721.00	392.58	328.42	2.195			
6,700.00	2,784.87	2,775.98	2,774.33	108.88	307.53	-84.63	-216.78	-3,227.87	817.03	488.93	328.10	2.490			
6,800.00	2,781.39	2,772.49	2,770.84	111.64	307.14	-83.71	-216.90	-3,227.88	913.89	586.40	327.49	2.791			
6,900.00	2,777.90	2,769.00	2,767.36	114.39	306.74	-82.79	-217.02	-3,227.88	1,011.35	684.60	326.75	3.095			
7,000.00	2,774.41	2,765.52	2,763.87	117.14	306.35	-81.88	-217.15	-3,227.88	1,109.26	783.30	325.96	3.403			
7,100.00	2,770.92	2,762.03	2,760.39	119.89	305.96	-80.97	-217.27	-3,227.88	1,207.49	882.34	325.15	3.714			
7,200.00	2,767.43	2,758.54	2,756.90	122.65	305.56	-80.07	-217.39	-3,227.88	1,305.99	981.63	324.36	4.026			
7,300.00	2,763.94	2,755.05	2,753.42	125.40	305.17	-79.18	-217.51	-3,227.89	1,404.69	1,081.11	323.58	4.341			
7,400.00	2,760.45	2,751.57	2,749.93	128.15	304.78	-78.29	-217.63	-3,227.89	1,503.55	1,180.73	322.82	4.658			
7,500.00	2,756.96	2,748.08	2,746.45	130.91	304.38	-77.40	-217.75	-3,227.89	1,602.55	1,280.46	322.09	4.976			
7,585.59	2,754.67	2,745.79	2,744.16	132.71	304.12	-76.83	-217.83	-3,227.89	1,667.54	1,345.92	321.62	5.185			

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

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3409.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee #7H	MD Reference:	KB @ 3409.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 3409.00usft (Silver Oak 3)

Offset Depths are relative to Offset Datum

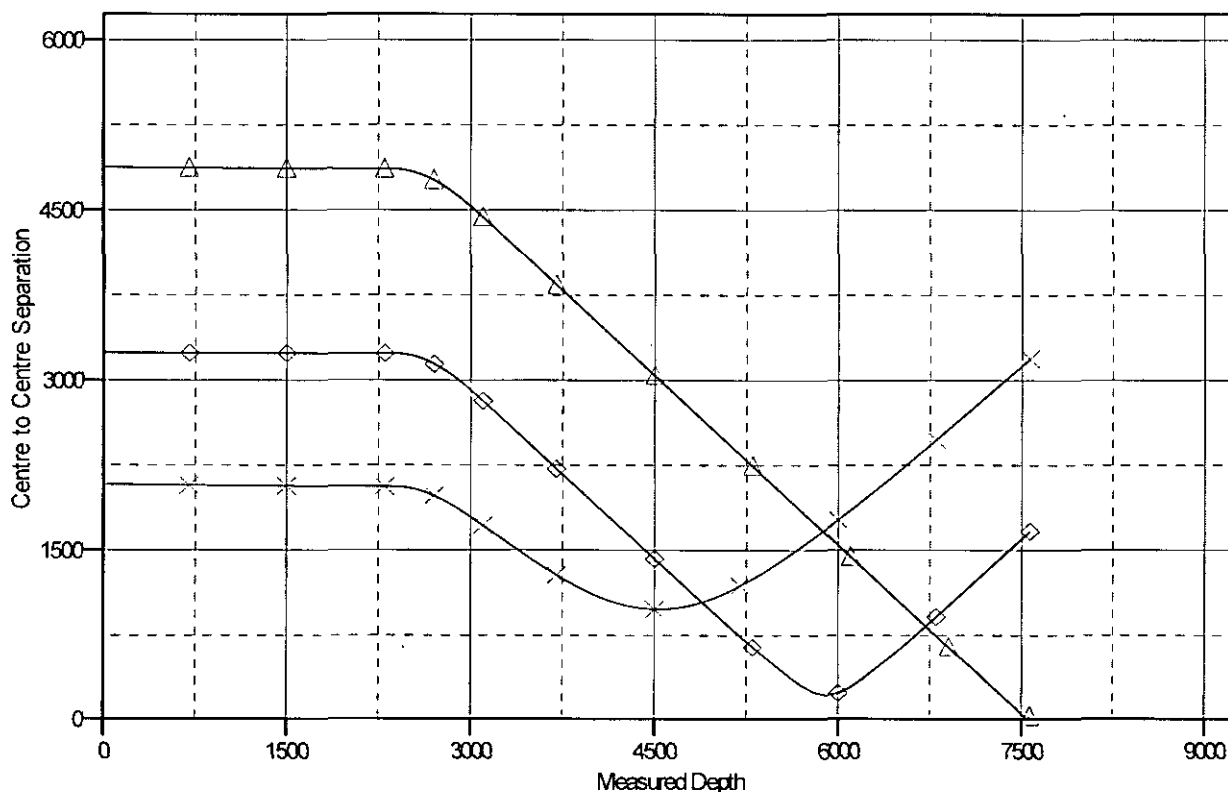
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P

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

Grid Convergence at Surface is: -0.05°

Ladder Plot



LEGEND

◆ Pan American Matlock #1, OH, OHV0 ✕ Anadarko Anderson #1, OH, OHV0 ▲ Montana 1 Fee #3, OH, OHV0

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3409.00usft (Silver Oak 3)
Reference Site:	Clydesdale 1 Fee #7H	MD Reference:	KB @ 3409.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	BHL: 990' FSL, 330' FWL, Sec 1, T19S, R25E, Unit M	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 3409.00usft (Silver Oak 3)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: SHL: 990' FSL, 150' FEL, Sec 1, T19S, R25E, Unit P
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: -0.05°

