

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0780
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

NM OIL CONSERVATION
ARTESIA DISTRICT

DEC 19 2016

RECEIVED

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015- 43999		² Pool Code 97565	³ Pool Name N Seven Rivers; Glorieta-Yeso
⁴ Property Code 315130	⁵ Property Name BONE YARD 11 FEE		⁶ Well Number 16H
⁷ GRID NO. 229137	⁸ Operator Name COG OPERATING, LLC		⁹ Elevation 3387'

¹⁰ Surface Location

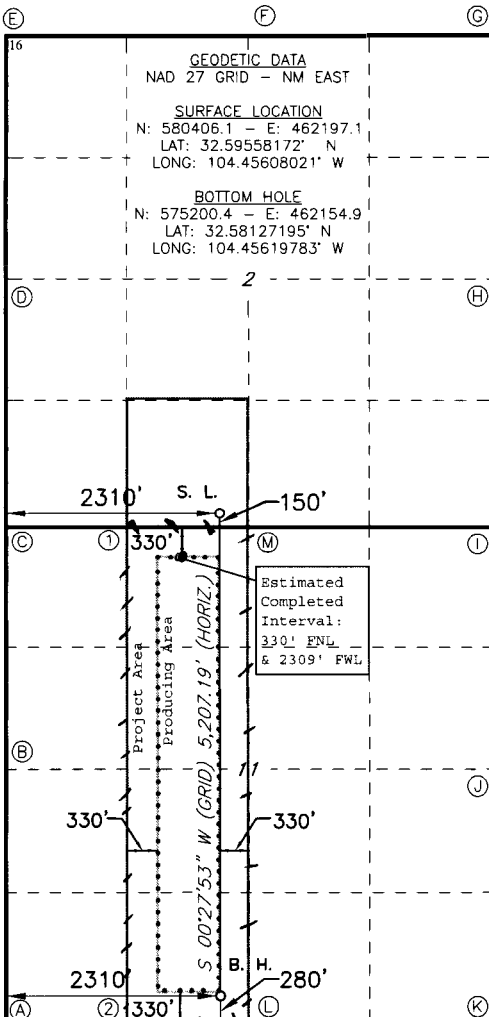
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet From the	East/West line	County
N	2	20S	25E		150	SOUTH	2310	WEST	EDDY

¹¹ 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
N	11	20S	25E		280	SOUTH	2310	WEST	EDDY

¹² Dedicated Acres 160	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.



CORNER DATA NAD 27 GRID - NM EAST

A: FOUND BRASS CAP "1947"
N: 574906.7 - E: 459843.2
B: FOUND BRASS CAP "1947"
N: 577592.0 - E: 459864.9
C: FOUND BRASS CAP "1947"
N: 580276.9 - E: 459887.3
D: FOUND BRASS CAP "1947"
N: 582882.5 - E: 459896.7
E: FOUND BRASS CAP "1947"
N: 585504.1 - E: 459906.0
F: FOUND BRASS CAP "1947"
N: 585511.7 - E: 462548.4
G: FOUND BRASS CAP "1947"
N: 585520.8 - E: 465190.9
H: FOUND BRASS CAP "1947"
N: 582874.9 - E: 465184.7
I: FOUND BRASS CAP "1947"
N: 580229.1 - E: 465177.8
J: FOUND BRASS CAP "1947"
N: 577584.2 - E: 465171.8
K: CALCULATED CORNER
N: 574939.6 - E: 465164.4
L: FOUND BRASS CAP "1947"
N: 574922.5 - E: 462503.3
M: FOUND BRASS CAP "1947"
N: 580253.1 - E: 462532.6
1: CALCULATED POINT
N: 580265.0 - E: 461209.9
2: CALCULATED POINT
N: 574914.6 - E: 461173.3

¹⁷ OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling

order heretofore entered by the division.

Robyn M. Russell 12/16/16
Signature Date

Robyn M. Russell

Printed Name

Russell@concho.com

E-mail Address

¹⁸ SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

10-6-2016

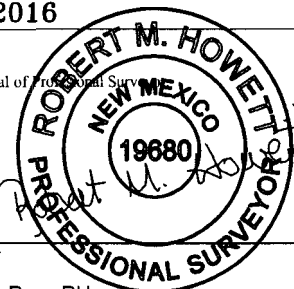
Date of Survey

Signature and Seal of Professional Surveyor

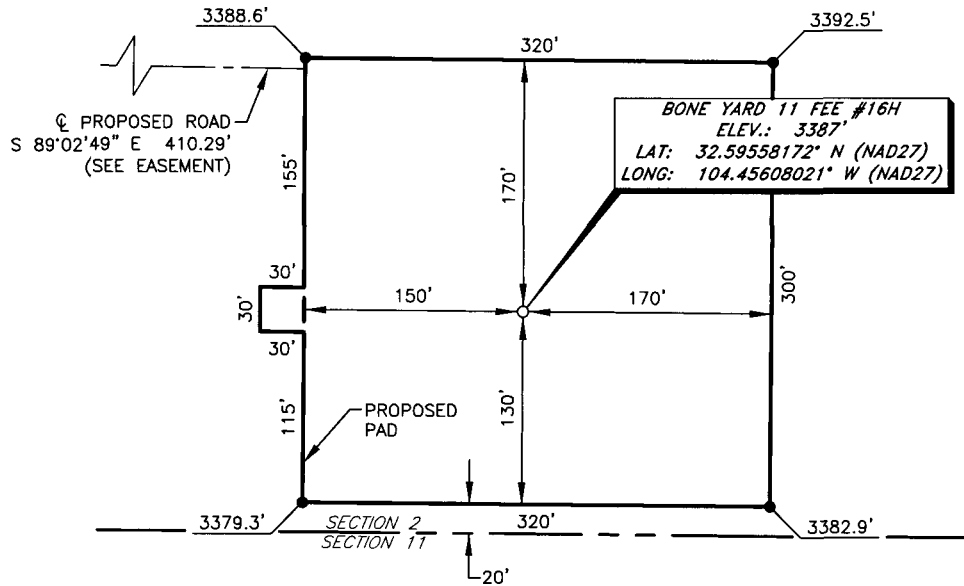
19680

Certificate Number

11-28-16 Rev BH

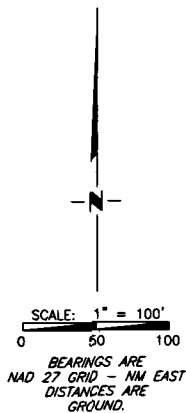


COG OPERATING, LLC
BONE YARD 11 FEE #16H
(150' FSL & 2310' FWL)
SECTION 2, T20S, R25E
N. M. P. M., EDDY CO., NEW MEXICO



DIRECTIONS TO LOCATION

From the intersection of U.S. HWY. 285 and CR-23 (Rock Daisy Rd.);
Go West on CR-23 approx. 3.0 miles to a lease road on the left;
Turn left and go South approx. 1.5 miles to a lease road on the left;
Turn left and go East approx. 0.3 miles to a "Y";
Stay right at "Y" and go South approx. 0.4 miles to North edge of the
existing Bone Yard 11 Fee #12H Pad;
Go East to the Northeast corner of existing pad to a proposed road;
Go East on proposed road approx. 0.1 miles to location on the right.



Firm No.: TX 10193838 NM 4655451

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NO.	REVISION	DATE
JOB NO.:	LS1601028R	
DWG. NO.:	1028RPAD	

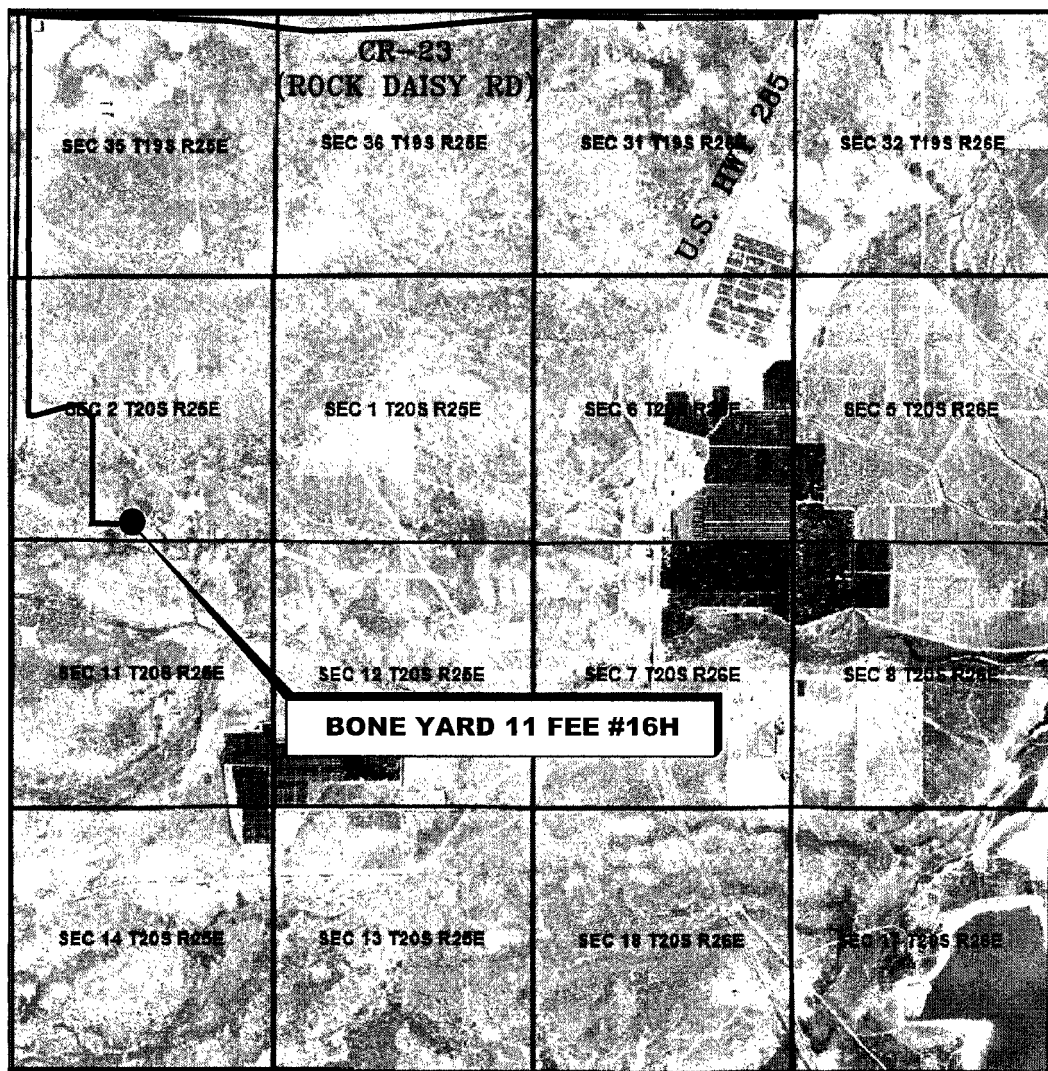
RRC

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

SCALE: 1" = 100'
DATE: 10-6-2016
SURVEYED BY: BK/JF
DRAWN BY: CMJ
APPROVED BY: RMH
SHEET: 1 OF 1

VICINITY MAP

NOT TO SCALE



*SECTION 2, TWP. 20 SOUTH, RGE. 25 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO*

OPERATOR: COG Operating, LLC
LEASE: Bone Yard 11 Fee
WELL NO.: 16H

LOCATION: 150' FSL & 2310' FWL
ELEVATION: 3387'

Firm No.: TX 10193838 NM 4655451

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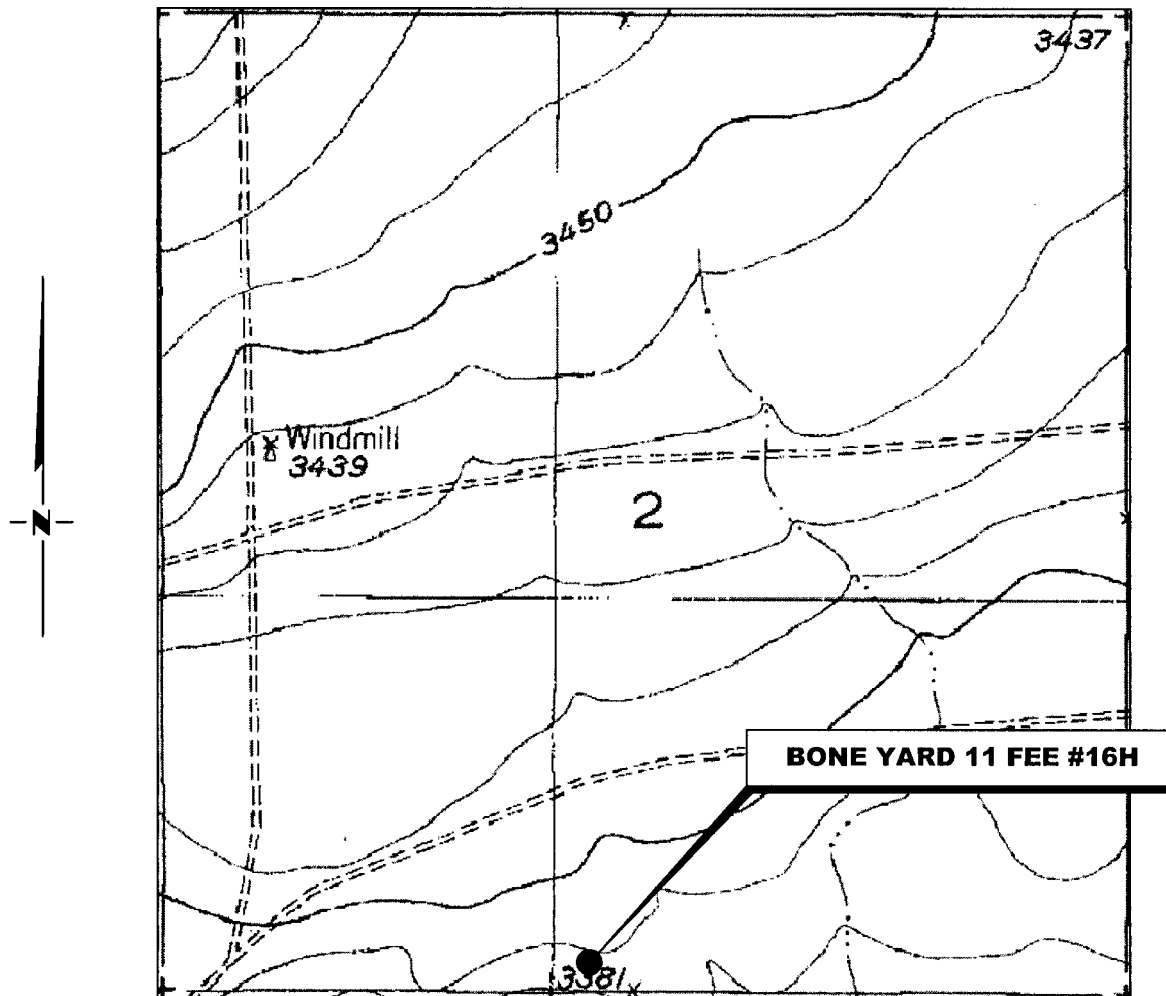
NO.	REVISION	DATE
JOB NO.: LS1601028R		
DWG. NO.: 1601028RVM		

RRC

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

SCALE: N. T. S.
DATE: 10-6-2016
SURVEYED BY: BK/JF
DRAWN BY: CMJ
APPROVED BY: RMH
SHEET: 1 OF 1

LOCATION VERIFICATION MAP



*SECTION 2, TWP. 20 SOUTH, RGE. 25 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO*

OPERATOR: COG Operating, LLC
 LEASE: Bone Yard 11 Fee
 WELL NO.: 16H
 ELEVATION: 3387'

LOCATION: 150' FSL & 2310' FWL
 CONTOUR INTERVAL: 10'
 USGS TOPO. SOURCE MAP:
Seven Rivers, NM (P. E. 1954)

Firm No.: TX 10193838 NM 4655451

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NO.	REVISION	DATE
JOB NO.: LS1601028R		
DWG. NO.: 1028RLVM		

RRC

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

SCALE: 1" = 1000'
 DATE: 10-6-2016
 SURVEYED BY: BK/JF
 DRAWN BY: CMJ
 APPROVED BY: RMH
 SHEET: 1 OF 1



COG Operating LLC

Eddy County, NM (NAD-27 2015)

Bone Yard 11 Fee #16H

SHL: 150' FSL, 2310' FWL, Sec 2, T20S, R25E, Unit N

PP: 330' FNL, 2309' FWL, Sec 11, T20S, R25E, Unit C

BHL: 280' FSL, 2310' FWL, Sec 11, T20S, R25E, Unit N

Plan: Design #1

Standard Planning Report

12 December, 2016





TDS
Planning Report



Database: EDM 5000.1 Single User Db
Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Bone Yard 11 Fee #16H
Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S, R25E, Unit N
Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S, R25E, Unit N
Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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	Bone Yard 11 Fee #16H		
Site Position:		Northing:	580,406.10 usft
From:	Map	Easting:	462,197.10 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in
		Latitude:	32° 35' 44.094 N
		Longitude:	104° 27' 21.889 W
		Grid Convergence:	-0.07 °

Well	SHL: 150' FSL, 2310' FWL, Sec 2, T20S, R25E, Unit N		
Well Position	+N/-S	0.00 usft	Northing: 580,406.10 usft
	+E/-W	0.00 usft	Easting: 462,197.10 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 35' 44.094 N
		Longitude:	104° 27' 21.889 W
		Ground Level:	3,387.00 usft

Wellbore	BHL: 280' FSL, 2310' FWL, Sec 11, T20S, R25E, Unit N		
Magnetics	Model Name	Sample Date	Declination
	IGRF2015	12/11/2016	(°)
			7.44
			Dip Angle (°)
			60.27
			Field Strength (nT)
			48,116

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
			(°)
			180.46

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	
2,529.21	0.00	0.00	2,529.21	0.00	0.00	0.00	0.00	0.00	0.00	
3,338.30	89.00	180.46	3,050.00	-511.76	-4.15	11.00	11.00	-22.19	180.46	
8,033.11	89.00	180.46	3,131.94	-5,205.70	-42.20	0.00	0.00	0.00	0.00	PBHL-D1 (BY11F#16)



TDS
Planning Report



Database: EDM 5000.1 Single User Db
Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Bone Yard 11 Fee #16H
Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S,
R25E, Unit N
Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S,
R25E, Unit N
Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,529.21	0.00	0.00	2,529.21	0.00	0.00	0.00	0.00	0.00	0.00
Start DLS 11.00 TFO 180.46									
2,550.00	2.29	180.46	2,549.99	-0.41	0.00	0.41	11.00	11.00	0.00
2,600.00	7.79	180.46	2,599.78	-4.80	-0.04	4.80	11.00	11.00	0.00
2,650.00	13.29	180.46	2,648.92	-13.94	-0.11	13.94	11.00	11.00	0.00
2,700.00	18.79	180.46	2,696.96	-27.75	-0.22	27.75	11.00	11.00	0.00
2,750.00	24.29	180.46	2,743.45	-46.10	-0.37	46.10	11.00	11.00	0.00
2,800.00	29.79	180.46	2,787.97	-68.82	-0.56	68.82	11.00	11.00	0.00
2,850.00	35.29	180.46	2,830.10	-95.70	-0.78	95.70	11.00	11.00	0.00
2,900.00	40.79	180.46	2,869.47	-126.49	-1.03	126.50	11.00	11.00	0.00
2,950.00	46.29	180.46	2,905.70	-160.92	-1.30	160.92	11.00	11.00	0.00
3,000.00	51.79	180.46	2,938.47	-198.66	-1.61	198.67	11.00	11.00	0.00
3,050.00	57.29	180.46	2,967.46	-239.37	-1.94	239.38	11.00	11.00	0.00
3,100.00	62.79	180.46	2,992.43	-282.67	-2.29	282.68	11.00	11.00	0.00
3,150.00	68.29	180.46	3,013.12	-328.16	-2.66	328.17	11.00	11.00	0.00
3,200.00	73.79	180.46	3,029.37	-375.43	-3.04	375.44	11.00	11.00	0.00
3,250.00	79.29	180.46	3,041.00	-424.03	-3.44	424.05	11.00	11.00	0.00
3,300.00	84.79	180.46	3,047.93	-473.53	-3.84	473.54	11.00	11.00	0.00
3,338.30	89.00	180.46	3,050.00	-511.76	-4.15	511.78	11.00	11.00	0.00
Start 4694.81 hold at 3338.30 MD									
3,400.00	89.00	180.46	3,051.08	-573.45	-4.65	573.47	0.00	0.00	0.00
3,500.00	89.00	180.46	3,052.82	-673.43	-5.46	673.45	0.00	0.00	0.00
3,600.00	89.00	180.46	3,054.57	-773.41	-6.27	773.44	0.00	0.00	0.00
3,700.00	89.00	180.46	3,056.31	-873.40	-7.08	873.42	0.00	0.00	0.00
3,800.00	89.00	180.46	3,058.06	-973.38	-7.89	973.41	0.00	0.00	0.00
3,900.00	89.00	180.46	3,059.80	-1,073.36	-8.70	1,073.39	0.00	0.00	0.00



TDS
Planning Report



Database: EDM 5000.1 Single User Db
Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Bone Yard 11 Fee #16H
Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S,
R25E, Unit N
Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S,
R25E, Unit N
Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
4,000.00	89.00	180.46	3,061.55	-1,173.34	-9.51	1,173.38	0.00	0.00	0.00
4,100.00	89.00	180.46	3,063.29	-1,273.32	-10.32	1,273.36	0.00	0.00	0.00
4,200.00	89.00	180.46	3,065.04	-1,373.30	-11.13	1,373.35	0.00	0.00	0.00
4,300.00	89.00	180.46	3,066.79	-1,473.28	-11.94	1,473.33	0.00	0.00	0.00
4,400.00	89.00	180.46	3,068.53	-1,573.27	-12.75	1,573.32	0.00	0.00	0.00
4,500.00	89.00	180.46	3,070.28	-1,673.25	-13.56	1,673.30	0.00	0.00	0.00
4,600.00	89.00	180.46	3,072.02	-1,773.23	-14.37	1,773.29	0.00	0.00	0.00
4,700.00	89.00	180.46	3,073.77	-1,873.21	-15.19	1,873.27	0.00	0.00	0.00
4,800.00	89.00	180.46	3,075.51	-1,973.19	-16.00	1,973.26	0.00	0.00	0.00
4,900.00	89.00	180.46	3,077.26	-2,073.17	-16.81	2,073.24	0.00	0.00	0.00
5,000.00	89.00	180.46	3,079.00	-2,173.15	-17.62	2,173.23	0.00	0.00	0.00
5,100.00	89.00	180.46	3,080.75	-2,273.14	-18.43	2,273.21	0.00	0.00	0.00
5,200.00	89.00	180.46	3,082.49	-2,373.12	-19.24	2,373.20	0.00	0.00	0.00
5,300.00	89.00	180.46	3,084.24	-2,473.10	-20.05	2,473.18	0.00	0.00	0.00
5,400.00	89.00	180.46	3,085.98	-2,573.08	-20.86	2,573.17	0.00	0.00	0.00
5,500.00	89.00	180.46	3,087.73	-2,673.06	-21.67	2,673.15	0.00	0.00	0.00
5,600.00	89.00	180.46	3,089.47	-2,773.04	-22.48	2,773.13	0.00	0.00	0.00
5,700.00	89.00	180.46	3,091.22	-2,873.03	-23.29	2,873.12	0.00	0.00	0.00
5,800.00	89.00	180.46	3,092.96	-2,973.01	-24.10	2,973.10	0.00	0.00	0.00
5,900.00	89.00	180.46	3,094.71	-3,072.99	-24.91	3,073.09	0.00	0.00	0.00
6,000.00	89.00	180.46	3,096.45	-3,172.97	-25.72	3,173.07	0.00	0.00	0.00
6,100.00	89.00	180.46	3,098.20	-3,272.95	-26.53	3,273.06	0.00	0.00	0.00
6,200.00	89.00	180.46	3,099.94	-3,372.93	-27.34	3,373.04	0.00	0.00	0.00
6,300.00	89.00	180.46	3,101.69	-3,472.91	-28.15	3,473.03	0.00	0.00	0.00
6,400.00	89.00	180.46	3,103.43	-3,572.90	-28.96	3,573.01	0.00	0.00	0.00
6,500.00	89.00	180.46	3,105.18	-3,672.88	-29.77	3,673.00	0.00	0.00	0.00
6,600.00	89.00	180.46	3,106.92	-3,772.86	-30.58	3,772.98	0.00	0.00	0.00
6,700.00	89.00	180.46	3,108.67	-3,872.84	-31.40	3,872.97	0.00	0.00	0.00
6,800.00	89.00	180.46	3,110.42	-3,972.82	-32.21	3,972.95	0.00	0.00	0.00
6,900.00	89.00	180.46	3,112.16	-4,072.80	-33.02	4,072.94	0.00	0.00	0.00
7,000.00	89.00	180.46	3,113.91	-4,172.78	-33.83	4,172.92	0.00	0.00	0.00
7,100.00	89.00	180.46	3,115.65	-4,272.77	-34.64	4,272.91	0.00	0.00	0.00
7,200.00	89.00	180.46	3,117.40	-4,372.75	-35.45	4,372.89	0.00	0.00	0.00
7,300.00	89.00	180.46	3,119.14	-4,472.73	-36.26	4,472.88	0.00	0.00	0.00
7,400.00	89.00	180.46	3,120.89	-4,572.71	-37.07	4,572.86	0.00	0.00	0.00
7,500.00	89.00	180.46	3,122.63	-4,672.69	-37.88	4,672.85	0.00	0.00	0.00
7,600.00	89.00	180.46	3,124.38	-4,772.67	-38.69	4,772.83	0.00	0.00	0.00
7,700.00	89.00	180.46	3,126.12	-4,872.66	-39.50	4,872.82	0.00	0.00	0.00
7,800.00	89.00	180.46	3,127.87	-4,972.64	-40.31	4,972.80	0.00	0.00	0.00
7,900.00	89.00	180.46	3,129.61	-5,072.62	-41.12	5,072.78	0.00	0.00	0.00
8,000.00	89.00	180.46	3,131.36	-5,172.60	-41.93	5,172.77	0.00	0.00	0.00
8,033.11	89.00	180.46	3,131.94	-5,205.70	-42.20	5,205.87	0.00	0.00	0.00

TD at 8033.11



TDS
Planning Report



Database: EDM 5000.1 Single User Db
Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Bone Yard 11 Fee #16H
Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S,
R25E, Unit N
Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S,
R25E, Unit N
Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
KOP-D1 (BY11F#16H/L' - plan hits target center - Point	0.00	360.00	2,529.21	0.00	0.00	580,406.10	462,197.10	32° 35' 44.094 N	104° 27' 21.889 W
PP-D1 (BY11F#16H/L1) - plan hits target center - Point	0.00	360.00	3,048.47	-479.96	-3.89	579,926.15	462,193.21	32° 35' 39.345 N	104° 27' 21.928 W
EOC-D1 (BY11F#16H/L' - plan hits target center - Point	0.00	360.00	3,050.00	-511.76	-4.15	579,894.34	462,192.95	32° 35' 39.030 N	104° 27' 21.931 W
PBHL-D1 (BY11F#16H/L - plan hits target center - Point	0.00	360.00	3,131.94	-5,205.70	-42.20	575,200.40	462,154.90	32° 34' 52.579 N	104° 27' 22.312 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,529.21	2,529.21	0.00	0.00	Start DLS 11.00 TFO 180.46
3,338.30	3,050.00	-511.76	-4.15	Start 4694.81 hold at 3338.30 MD
8,033.11	3,131.94	-5,205.70	-42.20	TD at 8033.11



COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Bone Yard 11 Fee #16H

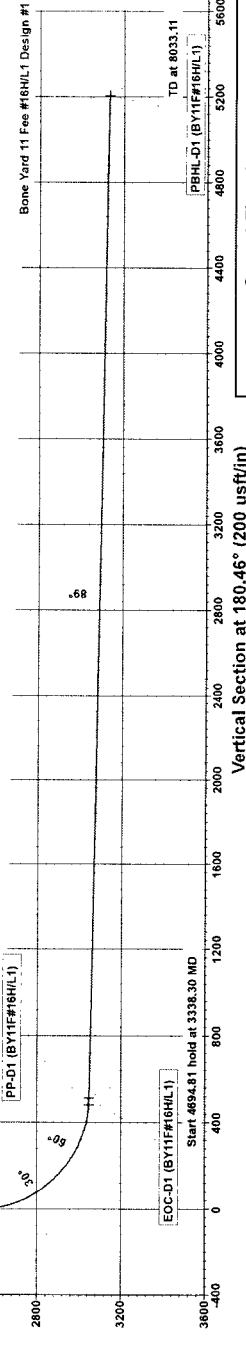
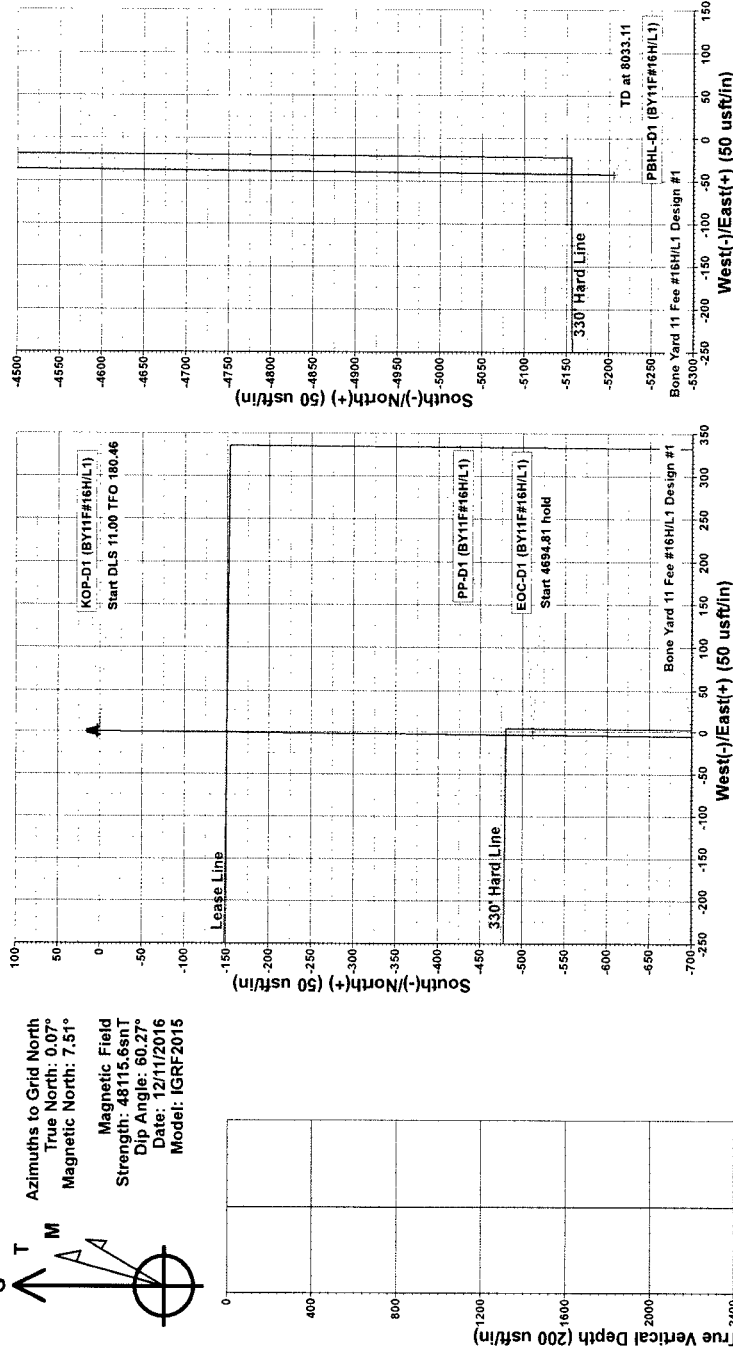
Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S, R25E, Unit N
Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S, R25E, Unit N

Plan: Design #1 (SHL: 150' FSL, 2310' FWL, Sec 2, T20S, R25E, Unit N; BHL: 280' FSL, 2310' FWL, Sec 11, T20S, R25E, Unit N)

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2529.21	0.00	0.00	2529.21	0.00	0.00	0.00	0.00	0.00	0.00
3	3338.30	89.00	180.46	3050.00	-511.76	-4.15	11.00	180.46	511.78	
4	8033.11	89.00	180.46	3131.94	-5205.70	-42.20	0.00	0.00	5205.87	PBHL-D1 (BY11F#16H/L1)

Azimuths to Grid North
True North: 0.07°
Magnetic North: 7.51°
Magnetic Field
Strength: 48115.6nT
Dip Angle: 60.27°
Date: 12/11/2016
Model: IGRF2015



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

Ground Elevation: 3387.00
RKB Elevation: KB @ 3405.00usft (Silver Oak 3)
Rig Name: Silver Oak 3

Northing	Easting	Latitude	Longitude
580408.10	462197.10	32° 35' 44.094 N	104° 27' 21.889 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



COG Operating LLC

Eddy County, NM (NAD-27 2015)

Bone Yard 11 Fee #16H

SHL: 150' FSL, 2310' FWL, Sec 2, T20S, R25E, Unit N

PP: 330' FNL, 2309' FWL, Sec 11, T20S, R25E, Unit C

BHL: 280' FSL, 2310' FWL, Sec 11, T20S, R25E, Unit N

Design #1

Anticollision Report

12 December, 2016





TDS
Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Bone Yard 11 Fee #16H
Site Error: 0.00 usft
Reference Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S, R25E, Unit N
Well Error: 0.00 usft
Reference Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S, R25E, Unit N
Reference Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

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

Survey Tool Program	Date	12/12/2016
From (usft)	To (usft)	Survey (Wellbore)
0.00	8,033.11	Design #1 (BHL: 280' FSL, 2310' FWL, Se
		Tool Name
		MWD
		Description
		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						
Bone Yard 11 Fee #12H						
SHL: 170' FSL, 1460' FWL, Sec 2, T20S, R25E, Unit N -	4,066.16	3,757.72	588.10	542.87	13.004	CC
SHL: 170' FSL, 1460' FWL, Sec 2, T20S, R25E, Unit N -	7,000.00	6,676.42	659.23	518.51	4.685	ES
SHL: 170' FSL, 1460' FWL, Sec 2, T20S, R25E, Unit N -	8,000.00	7,645.00	691.58	520.65	4.046	SF
Eddy County Offset Wells						
Grave Digger State Com #6H - OH - OH	2,758.56	7,440.00	457.49	384.71	6.287	CC, ES, SF
Grave Digger State Com #2H						
Grave Digger State Com #2H - OH - OH	2,589.47	7,060.00	379.93	305.82	5.127	CC, ES, SF
Grave Digger State Com #8H						
SHL: 170' FSL, 1610' FWL, Sec 2, T20S, R25E, Unit N -	2,652.96	2,675.00	694.95	683.66	61.543	CC, ES
SHL: 170' FSL, 1610' FWL, Sec 2, T20S, R25E, Unit N -	2,750.00	2,725.36	699.39	687.89	60.831	SF

Offset Design													Offset Site Error: 0.00 usft	
Survey Program: 120-MWD													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
							+N-S (usft)	+E-W (usft)						
0.00	0.00	11.55	11.55	0.00	0.01	-88.13	27.70	-849.60	850.05					
100.00	100.00	116.53	116.53	0.09	0.11	-88.14	27.58	-849.22	849.69	849.48	0.21	4,138.094		
200.00	200.00	231.29	231.26	0.32	0.37	-88.24	26.10	-847.52	848.16	847.47	0.69	1,228.255		
300.00	300.00	338.50	338.35	0.54	0.62	-88.50	22.06	-844.56	845.29	844.13	1.16	726.542		
400.00	400.00	439.75	439.24	0.77	0.88	-89.03	14.23	-841.36	841.95	840.31	1.64	513.565		
500.00	500.00	539.37	538.32	0.99	1.15	-89.70	4.33	-838.28	838.73	836.60	2.13	393.399		
600.00	600.00	640.34	638.63	1.22	1.44	-90.45	-6.61	-834.82	835.30	832.66	2.64	316.039		
700.00	700.00	730.63	728.29	1.44	1.70	-91.17	-16.96	-832.11	832.46	829.34	3.12	267.013		
800.00	800.00	812.00	809.15	1.67	1.90	-91.79	-25.90	-830.98	831.39	827.84	3.55	234.395		
806.36	806.36	820.25	817.36	1.68	1.93	-91.85	-26.77	-830.95	831.39	827.80	3.58	231.981		
900.00	900.00	907.00	903.57	1.89	2.16	-92.51	-36.41	-830.94	831.77	827.74	4.03	206.307		
1,000.00	1,000.00	1,004.60	1,000.61	2.12	2.41	-93.22	-46.81	-831.47	832.85	828.33	4.52	184.406		
1,100.00	1,100.00	1,120.15	1,115.64	2.34	2.70	-93.98	-57.79	-831.09	833.11	828.08	5.03	165.644		
1,200.00	1,200.00	1,224.43	1,219.49	2.56	2.95	-94.62	-67.06	-829.41	832.16	826.64	5.51	150.953		

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



TDS
Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Bone Yard 11 Fee #16H
Site Error: 0.00 usft
Reference Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S, R25E, Unit N
Well Error: 0.00 usft
Reference Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S, R25E, Unit N
Reference Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design												Offset Site Error:		0.00 usft
Survey Program: 120-MWD												Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis			Distance					Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor	
1,300.00	1,300.00	1,328.49	1,323.14	2.79	3.21	-95.25	-76.04	-827.61	831.18	825.19	5.99	138.701		
1,400.00	1,400.00	1,455.50	1,449.49	3.01	3.55	-96.07	-87.45	-821.72	827.25	820.70	6.55	126.330		
1,500.00	1,500.00	1,554.68	1,548.09	3.24	3.82	-96.75	-96.63	-816.21	822.75	815.71	7.04	116.860		
1,600.00	1,600.00	1,643.83	1,636.74	3.46	4.06	-97.36	-104.79	-811.44	818.59	811.08	7.50	109.084		
1,700.00	1,700.00	1,731.16	1,723.67	3.69	4.29	-97.93	-112.66	-808.62	816.53	808.57	7.96	102.574		
1,800.00	1,800.00	1,827.00	1,819.10	3.91	4.53	-98.55	-121.16	-806.02	815.12	806.69	8.43	96.653		
1,900.00	1,900.00	1,920.80	1,912.58	4.14	4.77	-99.08	-128.61	-804.42	814.64	805.75	8.89	91.590		
2,000.00	2,000.00	2,021.87	2,013.34	4.36	5.02	-99.65	-136.50	-802.97	814.49	805.12	9.37	86.920		
2,100.00	2,100.00	2,123.64	2,114.81	4.59	5.27	-100.19	-144.03	-801.18	814.03	804.19	9.85	82.661		
2,200.00	2,200.00	2,224.72	2,215.58	4.81	5.52	-100.74	-151.67	-799.28	813.56	803.24	10.32	78.802		
2,300.00	2,300.00	2,325.16	2,315.73	5.04	5.77	-101.29	-159.14	-797.21	812.95	802.15	10.80	75.277		
2,400.00	2,400.00	2,428.60	2,418.48	5.26	6.06	-102.10	-170.24	-794.35	812.42	801.10	11.32	71.761		
2,500.00	2,500.00	2,523.39	2,510.29	5.49	6.47	-103.73	-192.71	-788.47	811.68	799.73	11.95	67.915		
2,529.21	2,529.21	2,609.96	2,589.57	5.55	6.99	-106.17	-225.33	-777.33	810.83	798.32	12.52	64.778		
2,547.36	2,547.35	2,626.03	2,603.63	5.59	7.10	72.96	-232.52	-774.35	809.68	797.01	12.67	63.898		
2,550.00	2,549.99	2,628.36	2,605.65	5.59	7.12	72.90	-233.59	-773.91	809.50	796.81	12.69	63.771		
2,600.00	2,599.78	2,662.12	2,634.42	5.68	7.38	72.19	-250.03	-767.46	806.00	792.95	13.05	61.765		
2,650.00	2,648.92	2,700.00	2,665.32	5.78	7.70	71.43	-270.67	-760.16	802.25	788.79	13.46	59.591		
2,700.00	2,696.96	2,741.04	2,696.82	5.88	8.10	70.67	-295.54	-751.68	797.82	783.87	13.95	57.180		
2,750.00	2,743.45	2,778.73	2,723.67	5.99	8.51	70.08	-320.60	-743.27	792.59	778.13	14.46	54.826		
2,800.00	2,787.97	2,812.94	2,746.34	6.10	8.91	69.70	-345.00	-735.46	786.84	771.88	14.97	52.573		
2,850.00	2,830.10	2,849.60	2,769.03	6.28	9.37	69.38	-372.52	-726.99	780.52	764.96	15.56	50.159		
2,900.00	2,869.47	2,890.00	2,791.73	6.51	9.91	69.09	-404.49	-717.30	773.44	757.16	16.28	47.522		
2,950.00	2,905.70	2,921.00	2,807.32	6.80	10.35	69.14	-430.16	-709.65	765.64	748.71	16.93	45.227		
3,000.00	2,938.47	2,957.09	2,823.51	7.16	10.89	69.19	-461.12	-700.64	757.23	739.49	17.73	42.697		
3,050.00	2,967.46	2,994.78	2,838.55	7.60	11.47	69.38	-494.35	-691.14	748.05	729.41	18.65	40.119		
3,100.00	2,992.43	3,037.99	2,853.37	8.10	12.17	69.65	-533.35	-679.93	737.94	718.21	19.73	37.399		
3,150.00	3,013.12	3,079.00	2,864.79	8.67	12.86	70.14	-571.11	-668.74	726.69	705.83	20.86	34.835		
3,200.00	3,029.37	3,114.34	2,872.20	9.29	13.48	70.87	-604.22	-658.89	714.68	692.70	21.97	32.529		
3,250.00	3,041.00	3,153.98	2,878.38	9.97	14.18	71.73	-641.70	-647.57	701.73	678.51	23.22	30.222		
3,300.00	3,047.93	3,183.60	2,881.84	10.68	14.70	72.93	-669.92	-639.29	688.28	663.92	24.36	28.257		
3,338.30	3,050.00	3,204.00	2,883.93	11.25	15.05	74.00	-689.55	-634.13	678.12	652.89	25.23	26.879		
3,400.00	3,051.08	3,238.46	2,887.06	12.19	15.63	74.02	-722.98	-626.38	662.97	636.29	26.68	24.845		
3,500.00	3,052.82	3,299.16	2,891.15	13.77	16.66	73.99	-782.47	-615.07	642.91	613.75	29.16	22.050		
3,600.00	3,054.57	3,389.29	2,895.81	15.42	18.16	73.88	-871.28	-600.45	625.66	593.51	32.15	19.460		
3,700.00	3,056.31	3,468.47	2,898.03	17.10	19.51	73.65	-949.65	-589.49	611.28	576.27	35.01	17.460		
3,800.00	3,058.06	3,547.27	2,898.44	18.80	20.88	73.31	-1,027.96	-580.72	600.19	562.33	37.86	15.851		
3,900.00	3,059.80	3,625.54	2,897.51	20.53	22.23	72.90	-1,105.97	-574.46	592.60	551.94	40.66	14.575		
4,000.00	3,061.55	3,707.00	2,896.17	22.28	23.60	72.53	-1,187.35	-571.05	588.75	545.28	43.47	13.545		
4,066.16	3,062.70	3,757.72	2,895.32	23.44	24.43	72.34	-1,238.06	-570.44	588.10	542.87	45.23	13.004 CC		
4,100.00	3,063.29	3,785.81	2,894.81	24.04	24.89	72.24	-1,266.14	-570.49	588.26	542.10	46.17	12.742		
4,200.00	3,065.04	3,885.24	2,892.91	25.80	26.49	71.91	-1,365.54	-571.47	589.55	540.21	49.35	11.947		
4,300.00	3,066.79	3,972.03	2,891.73	27.58	27.86	71.69	-1,452.30	-573.15	591.62	539.44	52.18	11.337		
4,400.00	3,068.53	4,069.86	2,891.42	29.36	29.39	71.60	-1,550.06	-577.13	595.35	540.02	55.34	10.758		
4,500.00	3,070.28	4,173.79	2,891.23	31.15	31.03	71.51	-1,653.91	-581.01	598.73	540.06	58.67	10.205		
4,600.00	3,072.02	4,276.33	2,891.14	32.94	32.67	71.42	-1,756.40	-584.23	601.53	539.54	61.99	9.703		
4,700.00	3,073.77	4,379.38	2,891.24	34.74	34.36	71.32	-1,859.41	-586.99	603.82	538.47	65.35	9.239		
4,800.00	3,075.51	4,478.55	2,891.31	36.54	36.03	71.22	-1,958.56	-589.51	606.00	537.35	68.65	8.828		
4,900.00	3,077.26	4,580.25	2,891.41	38.35	37.75	71.12	-2,060.22	-591.94	608.02	536.00	72.02	8.443		
5,000.00	3,079.00	4,679.05	2,891.21	40.15	39.43	71.00	-2,159.00	-594.18	610.04	534.74	75.30	8.101		
5,100.00	3,080.75	4,778.95	2,890.69	41.96	41.15	70.84	-2,258.87	-596.54	612.25	533.62	78.62	7.787		

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



TDS
Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Bone Yard 11 Fee #16H
Site Error: 0.00 usft
Reference Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S, R25E, Unit N
Well Error: 0.00 usft
Reference Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S, R25E, Unit N
Reference Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Bone Yard 11 Fee #12H - SHL: 170' FSL, 1460' FWL, Sec 2, T20S, R25E, Unit N - BHL: 350' FSL, 1680														Offset Site Error:	0.00 usft
Survey Program: 120-MWD														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
5,200.00	3,082.49	4,880.18	2,889.55	43.77	42.89	70.62	-2,360.07	-598.45	614.21	532.27	81.94	7.496			
5,300.00	3,084.24	4,978.51	2,887.86	45.58	44.59	70.35	-2,458.37	-600.18	616.26	531.10	85.16	7.237			
5,400.00	3,085.98	5,078.93	2,885.65	47.39	46.34	70.04	-2,558.76	-602.02	618.55	530.15	88.41	6.997			
5,500.00	3,087.73	5,172.54	2,883.69	49.21	47.92	69.76	-2,652.33	-603.76	620.89	529.47	91.42	6.792			
5,600.00	3,089.47	5,265.39	2,882.46	51.03	49.46	69.60	-2,745.10	-607.46	624.91	530.47	94.44	6.617			
5,700.00	3,091.22	5,363.27	2,880.90	52.84	51.09	69.43	-2,842.87	-611.65	629.33	531.73	97.60	6.448			
5,800.00	3,092.96	5,461.65	2,881.01	54.66	52.72	69.44	-2,941.11	-616.93	634.17	533.31	100.86	6.288			
5,900.00	3,094.71	5,567.83	2,881.43	56.48	54.49	69.47	-3,047.14	-622.43	638.75	534.37	104.38	6.120			
6,000.00	3,096.45	5,681.63	2,883.88	58.30	56.39	69.62	-3,160.82	-627.03	641.64	533.46	108.18	5.931			
6,100.00	3,098.20	5,783.91	2,885.32	60.12	58.14	69.64	-3,263.06	-629.37	643.14	531.53	111.61	5.762			
6,200.00	3,099.94	5,883.83	2,886.54	61.94	59.89	69.63	-3,362.96	-631.46	644.52	529.53	115.00	5.605			
6,300.00	3,101.69	5,983.10	2,887.75	63.76	61.60	69.63	-3,462.19	-633.64	646.00	527.66	118.34	5.459			
6,400.00	3,103.43	6,084.87	2,889.08	65.58	63.32	69.63	-3,563.93	-635.72	647.31	525.58	121.73	5.318			
6,500.00	3,105.18	6,182.22	2,889.05	67.40	65.01	69.52	-3,661.26	-637.36	648.75	523.80	124.95	5.192			
6,600.00	3,106.92	6,279.67	2,888.00	69.23	66.73	69.32	-3,758.70	-639.02	650.58	522.44	128.14	5.077			
6,700.00	3,108.67	6,377.72	2,886.55	71.05	68.45	69.09	-3,856.71	-640.97	652.83	521.52	131.31	4.972			
6,800.00	3,110.42	6,479.10	2,884.98	72.87	70.18	68.86	-3,958.06	-642.95	655.08	520.56	134.52	4.870			
6,900.00	3,112.16	6,579.99	2,883.70	74.70	71.87	68.64	-4,058.93	-644.76	657.09	519.41	137.68	4.773			
7,000.00	3,113.91	6,676.42	2,882.47	76.52	73.49	68.44	-4,155.33	-646.61	659.23	518.51	140.72	4.685 ES			
7,100.00	3,115.65	6,772.13	2,879.97	78.34	75.12	68.15	-4,250.99	-648.81	662.22	518.54	143.68	4.609			
7,200.00	3,117.40	6,872.94	2,878.65	80.17	76.81	67.97	-4,351.74	-651.83	665.39	518.54	146.85	4.531			
7,300.00	3,119.14	6,969.54	2,877.74	81.99	78.43	67.84	-4,448.29	-654.81	668.51	518.59	149.93	4.459			
7,400.00	3,120.89	7,064.19	2,875.69	83.82	80.07	67.63	-4,542.86	-658.22	672.57	519.67	152.91	4.399			
7,500.00	3,122.63	7,164.87	2,873.21	85.65	81.81	67.40	-4,643.43	-662.09	676.99	520.94	156.05	4.338			
7,600.00	3,124.38	7,266.54	2,872.04	87.47	83.50	67.27	-4,745.01	-666.16	681.05	521.79	159.26	4.276			
7,700.00	3,126.12	7,376.31	2,870.90	89.30	85.34	67.13	-4,854.71	-669.91	684.55	521.85	162.70	4.208			
7,800.00	3,127.87	7,478.95	2,869.41	91.12	87.11	66.91	-4,957.32	-671.84	686.78	520.91	165.87	4.140			
7,900.00	3,129.61	7,581.29	2,867.64	92.95	88.90	66.66	-5,059.63	-673.39	688.80	519.78	169.01	4.075			
8,000.00	3,131.36	7,645.00	2,866.42	94.78	90.01	66.50	-5,123.33	-674.16	691.58	520.65	170.93	4.046 SF			
8,033.11	3,131.94	7,645.00	2,866.42	95.38	90.01	66.50	-5,123.33	-674.16	694.71	524.21	170.50	4.075			



TDS
Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Bone Yard 11 Fee #16H
Site Error: 0.00 usft
Reference Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S,
R25E, Unit N
Well Error: 0.00 usft
Reference Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S,
R25E, Unit N
Reference Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Eddy County Offset Wells - Grave Digger State Com #6H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 100-VES-ISCWSA-GYRO-3, 2370-MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	7.440.00	2.933.84	0.00	82.15	61.74	196.99	366.49	2.898.85				
100.00	100.00	7.440.00	2.933.84	0.09	82.15	61.74	196.99	366.49	2.799.93	2.761.94	37.99	73.709	
200.00	200.00	7.440.00	2.933.84	0.32	82.15	61.74	196.99	366.49	2.701.08	2.663.02	38.06	70.971	
300.00	300.00	7.440.00	2.933.84	0.54	82.15	61.74	196.99	366.49	2.602.32	2.564.17	38.14	68.223	
400.00	400.00	7.440.00	2.933.84	0.77	82.15	61.74	196.99	366.49	2.503.65	2.465.41	38.24	65.466	
500.00	500.00	7.440.00	2.933.84	0.99	82.15	61.74	196.99	366.49	2.405.10	2.366.74	38.36	62.699	
600.00	600.00	7.440.00	2.933.84	1.22	82.15	61.74	196.99	366.49	2.306.68	2.268.18	38.49	59.923	
700.00	700.00	7.440.00	2.933.84	1.44	82.15	61.74	196.99	366.49	2.208.39	2.169.74	38.65	57.138	
800.00	800.00	7.440.00	2.933.84	1.67	82.15	61.74	196.99	366.49	2.110.26	2.071.43	38.83	54.344	
900.00	900.00	7.440.00	2.933.84	1.89	82.15	61.74	196.99	366.49	2.012.32	1.973.28	39.04	51.541	
1,000.00	1,000.00	7.440.00	2.933.84	2.12	82.15	61.74	196.99	366.49	1.914.60	1.875.31	39.29	48.729	
1,100.00	1,100.00	7.440.00	2.933.84	2.34	82.15	61.74	196.99	366.49	1.817.12	1.777.54	39.58	45.909	
1,200.00	1,200.00	7.440.00	2.933.84	2.56	82.15	61.74	196.99	366.49	1.719.93	1.680.00	39.92	43.082	
1,300.00	1,300.00	7.440.00	2.933.84	2.79	82.15	61.74	196.99	366.49	1.623.08	1.582.75	40.33	40.248	
1,400.00	1,400.00	7.440.00	2.933.84	3.01	82.15	61.74	196.99	366.49	1.526.63	1.485.82	40.81	37.409	
1,500.00	1,500.00	7.440.00	2.933.84	3.24	82.15	61.74	196.99	366.49	1.430.68	1.389.29	41.39	34.568	
1,600.00	1,600.00	7.440.00	2.933.84	3.46	82.15	61.74	196.99	366.49	1.335.32	1.293.23	42.09	31.729	
1,700.00	1,700.00	7.440.00	2.933.84	3.69	82.15	61.74	196.99	366.49	1.240.69	1.197.75	42.84	28.897	
1,800.00	1,800.00	7.440.00	2.933.84	3.91	82.15	61.74	196.99	366.49	1.146.97	1.102.99	43.98	26.080	
1,900.00	1,900.00	7.440.00	2.933.84	4.14	82.15	61.74	196.99	366.49	1.054.41	1.009.14	45.27	23.293	
2,000.00	2,000.00	7.440.00	2.933.84	4.36	82.15	61.74	196.99	366.49	963.33	916.45	46.88	20.551	
2,100.00	2,100.00	7.440.00	2.933.84	4.59	82.15	61.74	196.99	366.49	874.21	825.31	48.89	17.880	
2,200.00	2,200.00	7.440.00	2.933.84	4.81	82.15	61.74	196.99	366.49	787.70	736.26	51.44	15.314	
2,300.00	2,300.00	7.440.00	2.933.84	5.04	82.15	61.74	196.99	366.49	704.77	650.13	54.64	12.898	
2,400.00	2,400.00	7.440.00	2.933.84	5.26	82.15	61.74	196.99	366.49	626.84	568.21	58.63	10.691	
2,500.00	2,500.00	7.440.00	2.933.84	5.49	82.15	61.74	196.99	366.49	556.03	492.57	63.46	8.762	
2,529.21	2,529.21	7.440.00	2.933.84	5.55	82.15	61.74	196.99	366.49	537.09	472.09	65.01	8.262	
2,550.00	2,549.99	7.440.00	2.933.84	5.59	82.15	-120.27	196.99	366.49	524.36	458.25	66.11	7.932	
2,600.00	2,599.78	7.440.00	2.933.84	5.68	82.15	-123.26	196.99	366.49	497.45	428.82	68.63	7.249	
2,650.00	2,648.92	7.440.00	2.933.84	5.78	82.15	-125.34	196.99	366.49	476.72	405.96	70.76	6.737	
2,700.00	2,696.96	7.440.00	2.933.84	5.88	82.15	-126.59	196.99	366.49	463.18	390.96	72.22	6.413	
2,750.00	2,743.45	7.440.00	2.933.84	5.99	82.15	-127.09	196.99	366.49	457.61	384.83	72.78	6.288	
2,758.56	2,751.22	7.440.00	2.933.84	6.01	82.15	-127.10	196.99	366.49	457.49	384.71	72.77	6.287 CC, ES, SF	
2,800.00	2,787.97	7.440.00	2.933.84	6.10	82.15	-126.85	196.99	366.49	460.35	388.04	72.31	6.367	
2,850.00	2,830.10	7.440.00	2.933.84	6.28	82.15	-125.86	196.99	366.49	471.23	400.37	70.86	6.650	
2,900.00	2,869.47	7.440.00	2.933.84	6.51	82.15	-124.07	196.99	366.49	489.60	420.96	68.64	7.133	
2,950.00	2,905.70	7.440.00	2.933.84	6.80	82.15	-121.40	196.99	366.49	514.52	448.60	65.92	7.805	
3,000.00	2,938.47	7.440.00	2.933.84	7.16	82.15	-117.74	196.99	366.49	544.87	481.90	62.97	8.652	
3,050.00	2,967.46	7.440.00	2.933.84	7.60	82.15	-112.94	196.99	366.49	579.55	519.56	59.99	9.660	
3,100.00	2,992.43	7.440.00	2.933.84	8.10	82.15	-106.89	196.99	366.49	617.53	560.42	57.11	10.813	
3,150.00	3,013.12	7.440.00	2.933.84	8.67	82.15	-99.54	196.99	366.49	657.93	603.52	54.41	12.093	
3,200.00	3,029.37	7.440.00	2.933.84	9.29	82.15	-91.02	196.99	366.49	699.99	648.08	51.91	13.484	
3,250.00	3,041.00	7.440.00	2.933.84	9.97	82.15	-81.71	196.99	366.49	743.07	693.44	49.63	14.972	
3,300.00	3,047.93	7.440.00	2.933.84	10.68	82.15	-72.20	196.99	366.49	786.65	739.09	47.56	16.540	
3,338.30	3,050.00	7.440.00	2.933.84	11.25	82.15	-65.19	196.99	366.49	820.08	773.97	46.11	17.787	
3,400.00	3,051.08	7.440.00	2.933.84	12.19	82.15	-65.19	196.99	366.49	874.38	830.40	43.98	19.880	
3,500.00	3,052.82	7.440.00	2.933.84	13.77	82.15	-65.19	196.99	366.49	964.28	923.28	41.00	23.520	
3,600.00	3,054.57	7.440.00	2.933.84	15.42	82.15	-65.19	196.99	366.49	1,056.00	1,017.52	38.48	27.444	
3,700.00	3,056.31	7.440.00	2.933.84	17.10	82.15	-65.19	196.99	366.49	1,149.10	1,112.76	36.34	31.625	
3,800.00	3,058.06	7.440.00	2.933.84	18.80	82.15	-65.19	196.99	366.49	1,243.27	1,208.77	34.50	36.038	
3,900.00	3,059.80	7.440.00	2.933.84	20.53	82.15	-65.19	196.99	366.49	1,338.29	1,305.38	32.91	40.664	

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



TDS
Anticollision Report



Company: COG Operating LLC
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Reference Site: Bone Yard 11 Fee #16H
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Reference Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S,
R25E, Unit N
Well Error: 0.00 usft
Reference Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S,
R25E, Unit N
Reference Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Eddy County Offset Wells - Grave Digger State Corn #6H - OH - OH														Offset Site Error:	0.00 usft
Survey Program: 100-VES-ISCWSA-GYRO-3, 2370-MWD														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (")	Distance		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)										
4,000.00	3,061.55	7,440.00	2,933.84	22.28	82.15	-65.19	196.99	366.49	1,433.99	1,402.46	31.53	45.481			
4,100.00	3,063.29	7,440.00	2,933.84	24.04	82.15	-65.19	196.99	366.49	1,530.23	1,499.92	30.32	50.472			
4,200.00	3,065.04	7,440.00	2,933.84	25.80	82.15	-65.19	196.99	366.49	1,626.93	1,597.68	29.25	55.620			
4,300.00	3,066.79	7,440.00	2,933.84	27.58	82.15	-65.19	196.99	366.49	1,724.01	1,695.71	28.30	60.910			
4,400.00	3,068.53	7,440.00	2,933.84	29.36	82.15	-65.19	196.99	366.49	1,821.40	1,793.94	27.46	66.329			
4,500.00	3,070.28	7,440.00	2,933.84	31.15	82.15	-65.19	196.99	366.49	1,919.06	1,892.36	26.70	71.863			
4,600.00	3,072.02	7,440.00	2,933.84	32.94	82.15	-65.19	196.99	366.49	2,016.95	1,990.93	26.02	77.503			
4,700.00	3,073.77	7,440.00	2,933.84	34.74	82.15	-65.19	196.99	366.49	2,115.04	2,089.63	25.41	83.237			
4,800.00	3,075.51	7,440.00	2,933.84	36.54	82.15	-65.19	196.99	366.49	2,213.30	2,188.45	24.85	89.056			
4,900.00	3,077.26	7,440.00	2,933.84	38.35	82.15	-65.19	196.99	366.49	2,311.71	2,287.36	24.35	94.951			
5,000.00	3,079.00	7,440.00	2,933.84	40.15	82.15	-65.19	196.99	366.49	2,410.25	2,386.36	23.88	100.913			
5,100.00	3,080.75	7,440.00	2,933.84	41.96	82.15	-65.19	196.99	366.49	2,508.90	2,485.44	23.46	106.936			
5,200.00	3,082.49	7,440.00	2,933.84	43.77	82.15	-65.19	196.99	366.49	2,607.66	2,584.59	23.07	113.014			
5,300.00	3,084.24	7,440.00	2,933.84	45.58	82.15	-65.19	196.99	366.49	2,706.51	2,683.79	22.72	119.138			
5,400.00	3,085.98	7,440.00	2,933.84	47.39	82.15	-65.19	196.99	366.49	2,805.44	2,783.05	22.39	125.305			
5,500.00	3,087.73	7,440.00	2,933.84	49.21	82.15	-65.19	196.99	366.49	2,904.44	2,882.36	22.09	131.508			
5,600.00	3,089.47	7,440.00	2,933.84	51.03	82.15	-65.19	196.99	366.49	3,003.51	2,981.71	21.81	137.743			
5,700.00	3,091.22	7,440.00	2,933.84	52.84	82.15	-65.19	196.99	366.49	3,102.64	3,081.09	21.55	144.005			
5,800.00	3,092.96	7,440.00	2,933.84	54.66	82.15	-65.19	196.99	366.49	3,201.82	3,180.52	21.30	150.290			
5,900.00	3,094.71	7,440.00	2,933.84	56.48	82.15	-65.19	196.99	366.49	3,301.06	3,279.98	21.08	156.594			
6,000.00	3,096.45	7,440.00	2,933.84	58.30	82.15	-65.19	196.99	366.49	3,400.33	3,379.46	20.87	162.914			
6,100.00	3,098.20	7,440.00	2,933.84	60.12	82.15	-65.19	196.99	366.49	3,499.65	3,478.97	20.68	169.247			
6,200.00	3,099.94	7,440.00	2,933.84	61.94	82.15	-65.19	196.99	366.49	3,599.01	3,578.51	20.50	175.589			
6,300.00	3,101.69	7,440.00	2,933.84	63.76	82.15	-65.19	196.99	366.49	3,698.40	3,678.07	20.33	181.938			
6,400.00	3,103.43	7,440.00	2,933.84	65.58	82.15	-65.19	196.99	366.49	3,797.82	3,777.65	20.17	188.290			
6,500.00	3,105.18	7,440.00	2,933.84	67.40	82.15	-65.19	196.99	366.49	3,897.28	3,877.25	20.02	194.645			
6,600.00	3,106.92	7,440.00	2,933.84	69.23	82.15	-65.19	196.99	366.49	3,996.76	3,976.87	19.88	200.998			
6,700.00	3,108.67	7,440.00	2,933.84	71.05	82.15	-65.19	196.99	366.49	4,096.26	4,076.50	19.76	207.349			
6,800.00	3,110.42	7,440.00	2,933.84	72.87	82.15	-65.19	196.99	366.49	4,195.79	4,176.15	19.63	213.696			
6,900.00	3,112.16	7,440.00	2,933.84	74.70	82.15	-65.19	196.99	366.49	4,295.34	4,275.82	19.52	220.036			
7,000.00	3,113.91	7,440.00	2,933.84	76.52	82.15	-65.19	196.99	366.49	4,394.91	4,375.50	19.41	226.367			
7,100.00	3,115.65	7,440.00	2,933.84	78.34	82.15	-65.19	196.99	366.49	4,494.50	4,475.19	19.32	232.690			
7,200.00	3,117.40	7,440.00	2,933.84	80.17	82.15	-65.19	196.99	366.49	4,594.11	4,574.89	19.22	239.000			
7,300.00	3,119.14	7,440.00	2,933.84	81.99	82.15	-65.19	196.99	366.49	4,693.73	4,674.60	19.13	245.299			
7,400.00	3,120.89	7,440.00	2,933.84	83.82	82.15	-65.19	196.99	366.49	4,793.37	4,774.32	19.05	251.583			
7,500.00	3,122.63	7,440.00	2,933.84	85.65	82.15	-65.19	196.99	366.49	4,893.03	4,874.05	18.98	257.853			
7,600.00	3,124.38	7,440.00	2,933.84	87.47	82.15	-65.19	196.99	366.49	4,992.70	4,973.79	18.90	264.107			
7,700.00	3,126.12	7,440.00	2,933.84	89.30	82.15	-65.19	196.99	366.49	5,092.38	5,073.54	18.84	270.343			
7,800.00	3,127.87	7,440.00	2,933.84	91.12	82.15	-65.19	196.99	366.49	5,192.07	5,173.30	18.77	276.561			
7,900.00	3,129.61	7,440.00	2,933.84	92.95	82.15	-65.19	196.99	366.49	5,291.78	5,273.06	18.71	282.761			
8,000.00	3,131.36	7,440.00	2,933.84	94.78	82.15	-65.19	196.99	366.49	5,391.49	5,372.83	18.66	288.940			
8,033.11	3,131.94	7,440.00	2,933.84	95.38	82.15	-65.19	196.99	366.49	5,424.51	5,405.87	18.64	290.981			



TDS
Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Bone Yard 11 Fee #16H
Site Error: 0.00 usft
Reference Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S, R25E, Unit N
Well Error: 0.00 usft
Reference Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S, R25E, Unit N
Reference Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Grave Digger State Com #2H - Grave Digger State Com #2H - OH - OH														Offset Site Error:	0.00 usft
Survey Program: 100-ISCWSA-GYRO-3, 2129-MWD														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance								Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
0.00	0.00	7,060.00	2,677.87	0.00	79.93	-59.24	193.07	-324.38	2,639.01						
100.00	100.00	7,060.00	2,677.87	0.09	79.93	-59.24	193.07	-324.38	2,540.08	2,503.02	37.06	68.545			
200.00	200.00	7,060.00	2,677.87	0.32	79.93	-59.24	193.07	-324.38	2,441.23	2,404.10	37.13	65.744			
300.00	300.00	7,060.00	2,677.87	0.54	79.93	-59.24	193.07	-324.38	2,342.49	2,305.26	37.22	62.934			
400.00	400.00	7,060.00	2,677.87	0.77	79.93	-59.24	193.07	-324.38	2,243.85	2,206.52	37.33	60.115			
500.00	500.00	7,060.00	2,677.87	0.99	79.93	-59.24	193.07	-324.38	2,145.34	2,107.89	37.45	57.286			
600.00	600.00	7,060.00	2,677.87	1.22	79.93	-59.24	193.07	-324.38	2,046.98	2,009.38	37.60	54.448			
700.00	700.00	7,060.00	2,677.87	1.44	79.93	-59.24	193.07	-324.38	1,948.78	1,911.01	37.77	51.600			
800.00	800.00	7,060.00	2,677.87	1.67	79.93	-59.24	193.07	-324.38	1,850.77	1,812.81	37.97	48.744			
900.00	900.00	7,060.00	2,677.87	1.89	79.93	-59.24	193.07	-324.38	1,753.00	1,714.79	38.21	45.879			
1,000.00	1,000.00	7,060.00	2,677.87	2.12	79.93	-59.24	193.07	-324.38	1,655.48	1,616.99	38.50	43.005			
1,100.00	1,100.00	7,060.00	2,677.87	2.34	79.93	-59.24	193.07	-324.38	1,558.28	1,519.45	38.84	40.124			
1,200.00	1,200.00	7,060.00	2,677.87	2.56	79.93	-59.24	193.07	-324.38	1,461.46	1,422.21	39.25	37.236			
1,300.00	1,300.00	7,060.00	2,677.87	2.79	79.93	-59.24	193.07	-324.38	1,365.10	1,325.35	39.75	34.344			
1,400.00	1,400.00	7,060.00	2,677.87	3.01	79.93	-59.24	193.07	-324.38	1,269.30	1,228.94	40.36	31.450			
1,500.00	1,500.00	7,060.00	2,677.87	3.24	79.93	-59.24	193.07	-324.38	1,174.20	1,133.09	41.11	28.561			
1,600.00	1,600.00	7,060.00	2,677.87	3.46	79.93	-59.24	193.07	-324.38	1,079.99	1,037.94	42.05	25.682			
1,700.00	1,700.00	7,060.00	2,677.87	3.69	79.93	-59.24	193.07	-324.38	986.92	943.68	43.24	22.827			
1,800.00	1,800.00	7,060.00	2,677.87	3.91	79.93	-59.24	193.07	-324.38	895.34	850.60	44.74	20.012			
1,900.00	1,900.00	7,060.00	2,677.87	4.14	79.93	-59.24	193.07	-324.38	805.76	759.09	46.67	17.264			
2,000.00	2,000.00	7,060.00	2,677.87	4.36	79.93	-59.24	193.07	-324.38	718.95	669.78	49.17	14.622			
2,100.00	2,100.00	7,060.00	2,677.87	4.59	79.93	-59.24	193.07	-324.38	636.01	583.62	52.39	12.139			
2,200.00	2,200.00	7,060.00	2,677.87	4.81	79.93	-59.24	193.07	-324.38	558.69	502.19	56.50	9.888			
2,300.00	2,300.00	7,060.00	2,677.87	5.04	79.93	-59.24	193.07	-324.38	489.65	428.11	61.54	7.957			
2,400.00	2,400.00	7,060.00	2,677.87	5.26	79.93	-59.24	193.07	-324.38	432.88	365.75	67.13	6.448			
2,500.00	2,500.00	7,060.00	2,677.87	5.49	79.93	-59.24	193.07	-324.38	393.72	321.61	72.11	5.460			
2,529.21	2,529.21	7,060.00	2,677.87	5.55	79.93	-59.24	193.07	-324.38	386.43	313.26	73.17	5.281			
2,550.00	2,549.99	7,060.00	2,677.87	5.59	79.93	120.65	193.07	-324.38	382.73	309.01	73.72	5.192			
2,589.47	2,589.33	7,060.00	2,677.87	5.66	79.93	120.92	193.07	-324.38	379.93	305.82	74.11	5.127	CC, ES, SF		
2,600.00	2,599.78	7,060.00	2,677.87	5.68	79.93	120.90	193.07	-324.38	380.13	306.07	74.06	5.133			
2,650.00	2,648.92	7,060.00	2,677.87	5.78	79.93	120.29	193.07	-324.38	386.49	313.49	73.00	5.294			
2,700.00	2,696.96	7,060.00	2,677.87	5.88	79.93	118.80	193.07	-324.38	401.35	330.59	70.76	5.672			
2,750.00	2,743.45	7,060.00	2,677.87	5.99	79.93	116.36	193.07	-324.38	423.67	355.94	67.73	6.255			
2,800.00	2,787.97	7,060.00	2,677.87	6.10	79.93	112.88	193.07	-324.38	452.17	387.84	64.33	7.029			
2,850.00	2,830.10	7,060.00	2,677.87	6.28	79.93	108.25	193.07	-324.38	485.52	424.63	60.89	7.973			
2,900.00	2,869.47	7,060.00	2,677.87	6.51	79.93	102.40	193.07	-324.38	522.53	464.92	57.61	9.070			
2,950.00	2,905.70	7,060.00	2,677.87	6.80	79.93	95.33	193.07	-324.38	562.16	507.57	54.59	10.297			
3,000.00	2,938.47	7,060.00	2,677.87	7.16	79.93	87.20	193.07	-324.38	603.57	551.72	51.86	11.639			
3,050.00	2,967.46	7,060.00	2,677.87	7.60	79.93	78.40	193.07	-324.38	646.08	596.68	49.40	13.078			
3,100.00	2,992.43	7,060.00	2,677.87	8.10	79.93	69.47	193.07	-324.38	689.13	641.93	47.20	14.600			
3,150.00	3,013.12	7,060.00	2,677.87	8.67	79.93	60.97	193.07	-324.38	732.25	687.03	45.22	16.193			
3,200.00	3,029.37	7,060.00	2,677.87	9.29	79.93	53.31	193.07	-324.38	775.08	731.66	43.43	17.848			
3,250.00	3,041.00	7,060.00	2,677.87	9.97	79.93	46.67	193.07	-324.38	817.30	775.50	41.80	19.554			
3,300.00	3,047.93	7,060.00	2,677.87	10.68	79.93	41.08	193.07	-324.38	858.63	818.33	40.31	21.303			
3,338.30	3,050.00	7,060.00	2,677.87	11.25	79.93	37.43	193.07	-324.38	889.55	850.31	39.24	22.668			
3,400.00	3,051.08	7,060.00	2,677.87	12.19	79.93	37.43	193.07	-324.38	939.52	901.85	37.67	24.939			
3,500.00	3,052.82	7,060.00	2,677.87	13.77	79.93	37.43	193.07	-324.38	1,023.22	987.83	35.40	28.907			
3,600.00	3,054.57	7,060.00	2,677.87	15.42	79.93	37.43	193.07	-324.38	1,109.63	1,076.22	33.41	33.215			
3,700.00	3,056.31	7,060.00	2,677.87	17.10	79.93	37.43	193.07	-324.38	1,198.15	1,166.49	31.67	37.836			
3,800.00	3,058.06	7,060.00	2,677.87	18.80	79.93	37.43	193.07	-324.38	1,288.36	1,258.21	30.14	42.744			
3,900.00	3,059.80	7,060.00	2,677.87	20.53	79.93	37.43	193.07	-324.38	1,379.91	1,351.11	28.80	47.915			

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



TDS
Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Bone Yard 11 Fee #16H
Site Error: 0.00 usft
Reference Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S,
R25E, Unit N
Well Error: 0.00 usft
Reference Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S,
R25E, Unit N
Reference Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Grave Digger State Com #2H - Grave Digger State Com #2H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 100-ISCWSA-GYRO-3, 2129-MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Tooface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
4,000.00	3,061.55	7,060.00	2,677.87	22.28	79.93	37.43	193.07	-324.38	1,472.56	1,444.95	27.61	53.326	
4,100.00	3,063.29	7,060.00	2,677.87	24.04	79.93	37.43	193.07	-324.38	1,566.12	1,539.56	26.56	58.956	
4,200.00	3,065.04	7,060.00	2,677.87	25.80	79.93	37.43	193.07	-324.38	1,660.43	1,634.80	25.63	64.785	
4,300.00	3,066.79	7,060.00	2,677.87	27.58	79.93	37.43	193.07	-324.38	1,755.37	1,730.57	24.80	70.794	
4,400.00	3,068.53	7,060.00	2,677.87	29.36	79.93	37.43	193.07	-324.38	1,850.84	1,826.79	24.05	76.968	
4,500.00	3,070.28	7,060.00	2,677.87	31.15	79.93	37.43	193.07	-324.38	1,946.77	1,923.39	23.37	83.288	
4,600.00	3,072.02	7,060.00	2,677.87	32.94	79.93	37.43	193.07	-324.38	2,043.08	2,020.32	22.77	89.742	
4,700.00	3,073.77	7,060.00	2,677.87	34.74	79.93	37.43	193.07	-324.38	2,139.74	2,117.52	22.22	96.315	
4,800.00	3,075.51	7,060.00	2,677.87	36.54	79.93	37.43	193.07	-324.38	2,236.69	2,214.97	21.72	102.993	
4,900.00	3,077.26	7,060.00	2,677.87	38.35	79.93	37.43	193.07	-324.38	2,333.90	2,312.63	21.26	109.767	
5,000.00	3,079.00	7,060.00	2,677.87	40.15	79.93	37.43	193.07	-324.38	2,431.33	2,410.48	20.85	116.623	
5,100.00	3,080.75	7,060.00	2,677.87	41.96	79.93	37.43	193.07	-324.38	2,528.96	2,508.49	20.47	123.553	
5,200.00	3,082.49	7,060.00	2,677.87	43.77	79.93	37.43	193.07	-324.38	2,626.77	2,606.65	20.12	130.547	
5,300.00	3,084.24	7,060.00	2,677.87	45.58	79.93	37.43	193.07	-324.38	2,724.74	2,704.94	19.80	137.595	
5,400.00	3,085.98	7,060.00	2,677.87	47.39	79.93	37.43	193.07	-324.38	2,822.86	2,803.35	19.51	144.691	
5,500.00	3,087.73	7,060.00	2,677.87	49.21	79.93	37.43	193.07	-324.38	2,921.10	2,901.86	19.24	151.825	
5,600.00	3,089.47	7,060.00	2,677.87	51.03	79.93	37.43	193.07	-324.38	3,019.46	3,000.46	18.99	158.992	
5,700.00	3,091.22	7,060.00	2,677.87	52.84	79.93	37.43	193.07	-324.38	3,117.92	3,099.15	18.76	166.185	
5,800.00	3,092.96	7,060.00	2,677.87	54.66	79.93	37.43	193.07	-324.38	3,216.47	3,197.92	18.55	173.398	
5,900.00	3,094.71	7,060.00	2,677.87	56.48	79.93	37.43	193.07	-324.38	3,315.11	3,296.76	18.35	180.625	
6,000.00	3,096.45	7,060.00	2,677.87	58.30	79.93	37.43	193.07	-324.38	3,413.84	3,395.66	18.17	187.862	
6,100.00	3,098.20	7,060.00	2,677.87	60.12	79.93	37.43	193.07	-324.38	3,512.63	3,494.63	18.00	195.104	
6,200.00	3,099.94	7,060.00	2,677.87	61.94	79.93	37.43	193.07	-324.38	3,611.49	3,593.64	17.85	202.347	
6,300.00	3,101.69	7,060.00	2,677.87	63.76	79.93	37.43	193.07	-324.38	3,710.41	3,692.71	17.70	209.586	
6,400.00	3,103.43	7,060.00	2,677.87	65.58	79.93	37.43	193.07	-324.38	3,809.39	3,791.82	17.57	216.818	
6,500.00	3,105.18	7,060.00	2,677.87	67.40	79.93	37.43	193.07	-324.38	3,908.42	3,890.97	17.45	224.040	
6,600.00	3,106.92	7,060.00	2,677.87	69.23	79.93	37.43	193.07	-324.38	4,007.50	3,990.17	17.33	231.249	
6,700.00	3,108.67	7,060.00	2,677.87	71.05	79.93	37.43	193.07	-324.38	4,106.62	4,089.40	17.22	238.442	
6,800.00	3,110.42	7,060.00	2,677.87	72.87	79.93	37.43	193.07	-324.38	4,205.78	4,188.66	17.12	245.616	
6,900.00	3,112.16	7,060.00	2,677.87	74.70	79.93	37.43	193.07	-324.38	4,304.99	4,287.95	17.03	252.769	
7,000.00	3,113.91	7,060.00	2,677.87	76.52	79.93	37.43	193.07	-324.38	4,404.22	4,387.28	16.95	259.900	
7,100.00	3,115.65	7,060.00	2,677.87	78.34	79.93	37.43	193.07	-324.38	4,503.50	4,486.63	16.87	267.005	
7,200.00	3,117.40	7,060.00	2,677.87	80.17	79.93	37.43	193.07	-324.38	4,602.80	4,586.01	16.79	274.083	
7,300.00	3,119.14	7,060.00	2,677.87	81.99	79.93	37.43	193.07	-324.38	4,702.13	4,685.41	16.73	281.133	
7,400.00	3,120.89	7,060.00	2,677.87	83.82	79.93	37.43	193.07	-324.38	4,801.50	4,784.83	16.66	288.153	
7,500.00	3,122.63	7,060.00	2,677.87	85.65	79.93	37.43	193.07	-324.38	4,900.88	4,884.28	16.61	295.142	
7,600.00	3,124.38	7,060.00	2,677.87	87.47	79.93	37.43	193.07	-324.38	5,000.29	4,983.74	16.55	302.098	
7,700.00	3,126.12	7,060.00	2,677.87	89.30	79.93	37.43	193.07	-324.38	5,099.73	5,083.23	16.50	309.021	
7,800.00	3,127.87	7,060.00	2,677.87	91.12	79.93	37.43	193.07	-324.38	5,199.18	5,182.73	16.46	315.909	
7,900.00	3,129.61	7,060.00	2,677.87	92.95	79.93	37.43	193.07	-324.38	5,298.66	5,282.24	16.42	322.762	
8,000.00	3,131.36	7,060.00	2,677.87	94.78	79.93	37.43	193.07	-324.38	5,398.16	5,381.78	16.38	329.578	
8,033.11	3,131.94	7,060.00	2,677.87	95.38	79.93	37.43	193.07	-324.38	5,431.10	5,414.73	16.37	331.827	



TDS
Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Bone Yard 11 Fee #16H
Site Error: 0.00 usft
Reference Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S, R25E, Unit N
Well Error: 0.00 usft
Reference Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S, R25E, Unit N
Reference Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design													Grave Digger State Com #8H - SHL: 170' FSL, 1610' FWL, Sec 2, T20S, R25E, Unit N - BHL: 350' FNL		Offset Site Error:		0.00 usft
Survey Program: 120-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 Wellbore Centre +N/-S (usft)	+E/-W (usft)				Between Centres (usft)	Between Ellipses (usft)				
0.00	0.00	0.00	0.00	0.00	0.00	-87.83	26.50	-699.30	699.80								
100.00	100.00	94.48	94.48	0.09	0.10	-87.89	25.83	-699.70	700.20	700.01	0.19	3,754.039					
200.00	200.00	190.85	190.80	0.32	0.29	-88.09	23.36	-700.94	701.39	700.79	0.60	1,168.180					
300.00	300.00	289.71	289.53	0.54	0.52	-88.49	18.54	-702.35	702.67	701.60	1.06	661.022					
400.00	400.00	386.42	385.92	0.77	0.78	-89.11	10.89	-704.22	704.45	702.91	1.54	457.279					
500.00	500.00	493.03	492.13	0.99	1.04	-89.84	1.92	-706.16	706.21	704.19	2.02	348.962					
600.00	600.00	596.47	595.35	1.22	1.26	-90.39	-4.83	-707.00	707.04	704.57	2.47	286.319					
700.00	700.00	696.12	694.77	1.44	1.50	-90.93	-11.51	-707.60	707.71	704.78	2.93	241.286					
800.00	800.00	798.49	796.87	1.67	1.75	-91.53	-18.87	-708.30	708.56	705.15	3.41	207.698					
900.00	900.00	906.39	904.39	1.89	2.03	-92.25	-27.87	-707.88	708.44	704.52	3.92	180.870					
975.78	975.78	978.10	975.78	2.06	2.23	-92.81	-34.66	-707.35	708.20	703.92	4.28	165.325					
1,000.00	1,000.00	1,002.00	999.56	2.12	2.30	-93.00	-37.08	-707.25	708.23	703.82	4.40	160.829					
1,100.00	1,100.00	1,106.96	1,103.95	2.34	2.58	-93.88	-47.88	-706.37	708.00	703.09	4.91	144.236					
1,200.00	1,200.00	1,208.64	1,205.15	2.56	2.83	-94.69	-57.77	-704.94	707.33	701.94	5.38	131.374					
1,300.00	1,300.00	1,315.00	1,311.06	2.79	3.09	-95.47	-67.25	-702.93	706.22	700.35	5.87	120.333					
1,400.00	1,400.00	1,413.90	1,409.62	3.01	3.32	-96.12	-75.12	-700.67	704.75	698.42	6.33	111.324					
1,500.00	1,500.00	1,512.57	1,507.96	3.24	3.56	-96.76	-82.83	-698.52	703.46	696.66	6.80	103.503					
1,587.30	1,587.30	1,592.12	1,587.30	3.44	3.75	-97.23	-88.52	-697.37	702.97	695.78	7.18	97.856					
1,600.00	1,600.00	1,604.10	1,599.25	3.46	3.78	-97.30	-89.29	-697.28	702.98	695.74	7.24	97.091					
1,700.00	1,700.00	1,704.76	1,699.72	3.69	4.01	-97.81	-95.54	-696.51	703.03	695.34	7.69	91.386					
1,800.00	1,800.00	1,803.84	1,798.61	3.91	4.24	-98.30	-101.55	-695.80	703.17	695.03	8.14	86.339					
1,900.00	1,900.00	1,904.66	1,899.25	4.14	4.47	-98.80	-107.65	-695.02	703.31	694.71	8.60	81.749					
2,000.00	2,000.00	2,004.82	1,999.21	4.36	4.71	-99.30	-113.72	-694.19	703.44	694.37	9.06	77.603					
2,100.00	2,100.00	2,105.16	2,099.36	4.59	4.95	-99.81	-119.89	-693.21	703.50	693.98	9.53	73.850					
2,200.00	2,200.00	2,204.09	2,198.11	4.81	5.17	-100.30	-125.87	-692.34	703.69	693.71	9.98	70.530					
2,300.00	2,300.00	2,307.18	2,301.05	5.04	5.40	-100.74	-131.21	-691.57	703.91	693.48	10.43	67.510					
2,400.00	2,400.00	2,424.74	2,418.18	5.26	5.56	-100.19	-124.22	-690.88	702.20	691.39	10.81	64.972					
2,500.00	2,500.00	2,534.67	2,523.85	5.49	5.55	-97.78	-94.66	-692.75	699.59	688.56	11.03	63.419					
2,529.21	2,529.21	2,569.16	2,555.61	5.55	5.54	-96.68	-81.21	-693.29	698.53	687.45	11.08	63.027					
2,550.00	2,549.99	2,590.61	2,574.90	5.59	5.53	83.74	-71.86	-693.60	697.71	686.59	11.12	62.761					
2,600.00	2,599.78	2,636.08	2,614.61	5.68	5.52	86.04	-49.73	-694.28	695.86	684.66	11.19	62.169					
2,650.00	2,648.92	2,673.03	2,645.50	5.78	5.53	88.24	-29.49	-694.89	694.95	683.67	11.29	61.578					
2,652.96	2,651.80	2,675.00	2,647.11	5.79	5.54	88.36	-28.35	-694.92	694.95	683.66	11.29	61.543 CC, ES					
2,700.00	2,696.96	2,702.74	2,669.36	5.88	5.59	90.07	-11.78	-695.39	695.90	684.51	11.39	61.108					
2,750.00	2,743.45	2,725.36	2,686.91	5.99	5.63	91.31	2.48	-695.78	699.39	687.89	11.50	60.831 SF					
2,800.00	2,787.97	2,739.42	2,697.55	6.10	5.65	91.65	11.66	-696.03	705.93	694.33	11.60	60.840					
2,850.00	2,830.10	2,748.26	2,704.14	6.28	5.67	91.24	17.54	-696.24	715.79	704.08	11.71	61.115					
2,900.00	2,869.47	2,753.50	2,708.02	6.51	5.68	90.16	21.07	-696.38	728.94	717.11	11.83	61.595					
2,950.00	2,905.70	2,755.53	2,709.51	6.80	5.68	88.44	22.44	-696.44	745.20	733.22	11.98	62.212					
3,000.00	2,938.47	2,754.70	2,708.90	7.16	5.68	86.10	21.88	-696.41	764.26	752.11	12.15	62.905					
3,050.00	2,967.46	2,751.34	2,706.43	7.60	5.67	83.23	19.61	-696.32	785.73	773.38	12.35	63.624					
3,100.00	2,992.43	2,745.76	2,702.29	8.10	5.66	79.90	15.87	-696.18	809.19	796.61	12.58	64.328					
3,150.00	3,013.12	2,731.00	2,691.20	8.67	5.64	75.69	6.13	-695.87	834.23	821.43	12.79	65.213					
3,200.00	3,029.37	2,731.00	2,691.20	9.29	5.64	72.47	6.13	-695.87	860.21	847.08	13.13	65.534					
3,250.00	3,041.00	2,716.80	2,680.33	9.97	5.61	68.27	-3.00	-695.63	886.84	873.43	13.41	66.127					
3,300.00	3,047.93	2,700.00	2,667.19	10.68	5.58	64.08	-13.47	-695.34	913.67	899.97	13.70	66.672					
3,338.30	3,050.00	2,700.00	2,667.19	11.25	5.58	61.71	-13.47	-695.34	934.13	920.12	14.01	66.688					
3,400.00	3,051.08	2,668.00	2,641.37	12.19	5.53	60.04	-32.36	-694.80	967.96	953.62	14.34	67.483					
3,500.00	3,052.82	2,652.39	2,628.41	13.77	5.52	59.22	-41.04	-694.54	1,027.08	1,012.06	15.02	68.393					
3,600.00	3,054.57	2,637.00	2,615.39	15.42	5.52	58.42	-49.26	-694.30	1,091.18	1,075.57	15.61	69.923					
3,700.00	3,056.31	2,606.00	2,588.54	17.10	5.53	56.80	-64.72	-693.83	1,159.48	1,143.42	16.05	72.222					

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



TDS
Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Bone Yard 11 Fee #16H
Site Error: 0.00 usft
Reference Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S, R25E, Unit N
Well Error: 0.00 usft
Reference Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S, R25E, Unit N
Reference Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design														Grave Digger State Com #8H - SHL: 170' FSL, 1610' FWL, Sec 2, T20S, R25E, Unit N - BHL: 350' FNL		Offset Site Error:		0.00 usR	
Survey Program: 120-MWD																Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Tooface (')	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor							
3,800.00	3,058.06	2,595.37	2,579.14	18.80	5.53	56.25	-69.69	-693.67	1,231.38	1,214.87	16.51	74.586							
3,900.00	3,059.80	2,574.00	2,559.99	20.53	5.54	55.14	-79.17	-693.36	1,306.52	1,289.66	16.86	77.487							
4,000.00	3,061.55	2,574.00	2,559.99	22.28	5.54	55.14	-79.17	-693.36	1,384.35	1,367.13	17.23	80.367							
4,100.00	3,063.29	2,554.76	2,542.45	24.04	5.55	54.16	-87.07	-693.08	1,464.45	1,446.97	17.48	83.773							
4,200.00	3,065.04	2,543.00	2,531.60	25.80	5.55	53.56	-91.59	-692.89	1,546.65	1,528.94	17.72	87.292							
4,300.00	3,066.79	2,543.00	2,531.60	27.58	5.55	53.56	-91.59	-692.89	1,630.70	1,612.75	17.95	90.841							
4,400.00	3,068.53	2,524.18	2,514.04	29.36	5.56	52.61	-98.36	-692.56	1,716.09	1,697.98	18.11	94.780							
4,500.00	3,070.28	2,511.00	2,501.62	31.15	5.56	51.95	-102.76	-692.31	1,802.92	1,784.67	18.25	98.783							
4,600.00	3,072.02	2,511.00	2,501.62	32.94	5.56	51.95	-102.76	-692.31	1,890.88	1,872.48	18.41	102.726							
4,700.00	3,073.77	2,511.00	2,501.62	34.74	5.56	51.95	-102.76	-692.31	1,979.99	1,961.45	18.54	106.778							
4,800.00	3,075.51	2,493.89	2,485.35	36.54	5.57	51.10	-108.04	-691.96	2,069.78	2,051.16	18.63	111.116							
4,900.00	3,077.26	2,480.00	2,472.03	38.35	5.57	50.42	-111.98	-691.67	2,160.56	2,141.86	18.71	115.501							
5,000.00	3,079.00	2,480.00	2,472.03	40.15	5.57	50.42	-111.98	-691.67	2,251.94	2,233.13	18.80	119.766							
5,100.00	3,080.75	2,480.00	2,472.03	41.96	5.57	50.42	-111.98	-691.67	2,344.01	2,325.13	18.89	124.093							
5,200.00	3,082.49	2,480.00	2,472.03	43.77	5.57	50.42	-111.98	-691.67	2,436.72	2,417.75	18.97	128.474							
5,300.00	3,084.24	2,480.00	2,472.03	45.58	5.57	50.42	-111.98	-691.67	2,529.98	2,510.94	19.04	132.903							
5,400.00	3,085.98	2,464.27	2,456.83	47.39	5.57	49.66	-116.03	-691.36	2,623.46	2,604.38	19.07	137.546							
5,500.00	3,087.73	2,448.00	2,441.00	49.21	5.57	48.89	-119.75	-691.10	2,717.68	2,698.58	19.11	142.248							
5,600.00	3,089.47	2,448.00	2,441.00	51.03	5.57	48.89	-119.75	-691.10	2,812.04	2,792.88	19.16	146.769							
5,700.00	3,091.22	2,448.00	2,441.00	52.84	5.57	48.89	-119.75	-691.10	2,906.76	2,887.56	19.21	151.319							
5,800.00	3,092.96	2,448.00	2,441.00	54.66	5.57	48.89	-119.75	-691.10	3,001.84	2,982.58	19.26	155.894							
5,900.00	3,094.71	2,448.00	2,441.00	56.48	5.57	48.89	-119.75	-691.10	3,097.22	3,077.92	19.30	160.492							
6,000.00	3,096.45	2,448.00	2,441.00	58.30	5.57	48.89	-119.75	-691.10	3,192.88	3,173.55	19.34	165.109							
6,100.00	3,098.20	2,448.00	2,441.00	60.12	5.57	48.89	-119.75	-691.10	3,288.81	3,269.43	19.38	169.744							
6,200.00	3,099.94	2,448.00	2,441.00	61.94	5.57	48.89	-119.75	-691.10	3,384.96	3,365.55	19.41	174.393							
6,300.00	3,101.69	2,448.00	2,441.00	63.76	5.57	48.89	-119.75	-691.10	3,481.34	3,461.90	19.44	179.054							
6,400.00	3,103.43	2,448.00	2,441.00	65.58	5.57	48.89	-119.75	-691.10	3,577.91	3,558.44	19.47	183.727							
6,500.00	3,105.18	2,433.37	2,426.67	67.40	5.56	48.21	-122.68	-690.94	3,674.43	3,654.94	19.49	188.559							
6,600.00	3,106.92	2,431.39	2,424.72	69.23	5.56	48.12	-123.04	-690.92	3,771.28	3,751.77	19.51	193.267							
6,700.00	3,108.67	2,417.00	2,410.54	71.05	5.55	47.47	-125.47	-690.86	3,868.47	3,848.94	19.53	198.121							
6,800.00	3,110.42	2,417.00	2,410.54	72.87	5.55	47.47	-125.47	-690.86	3,965.57	3,946.02	19.55	202.816							
6,900.00	3,112.16	2,417.00	2,410.54	74.70	5.55	47.47	-125.47	-690.86	4,062.81	4,043.24	19.58	207.516							
7,000.00	3,113.91	2,417.00	2,410.54	76.52	5.55	47.47	-125.47	-690.86	4,160.19	4,140.59	19.60	212.220							
7,100.00	3,115.65	2,417.00	2,410.54	78.34	5.55	47.47	-125.47	-690.86	4,257.68	4,238.06	19.63	216.926							
7,200.00	3,117.40	2,417.00	2,410.54	80.17	5.55	47.47	-125.47	-690.86	4,355.29	4,335.64	19.65	221.634							
7,300.00	3,119.14	2,417.00	2,410.54	81.99	5.55	47.47	-125.47	-690.86	4,453.01	4,433.33	19.67	226.342							
7,400.00	3,120.89	2,417.00	2,410.54	83.82	5.55	47.47	-125.47	-690.86	4,550.82	4,531.13	19.70	231.050							
7,500.00	3,122.63	2,417.00	2,410.54	85.65	5.55	47.47	-125.47	-690.86	4,648.73	4,629.01	19.72	235.758							
7,600.00	3,124.38	2,417.00	2,410.54	87.47	5.55	47.47	-125.47	-690.86	4,746.72	4,726.98	19.74	240.464							
7,700.00	3,126.12	2,417.00	2,410.54	89.30	5.55	47.47	-125.47	-690.86	4,844.80	4,825.04	19.76	245.167							
7,800.00	3,127.87	2,417.00	2,410.54	91.12	5.55	47.47	-125.47	-690.86	4,942.95	4,923.17	19.78	249.868							
7,900.00	3,129.61	2,417.00	2,410.54	92.95	5.55	47.47	-125.47	-690.86	5,041.18	5,021.38	19.80	254.565							
8,000.00	3,131.36	2,417.00	2,410.54	94.78	5.55	47.47	-125.47	-690.86	5,139.47	5,119.65	19.82	259.259							
8,033.11	3,131.94	2,417.00	2,410.54	95.38	5.55	47.47	-125.47	-690.86	5,172.03	5,152.20	19.83	260.812							



TDS
Anticollision Report



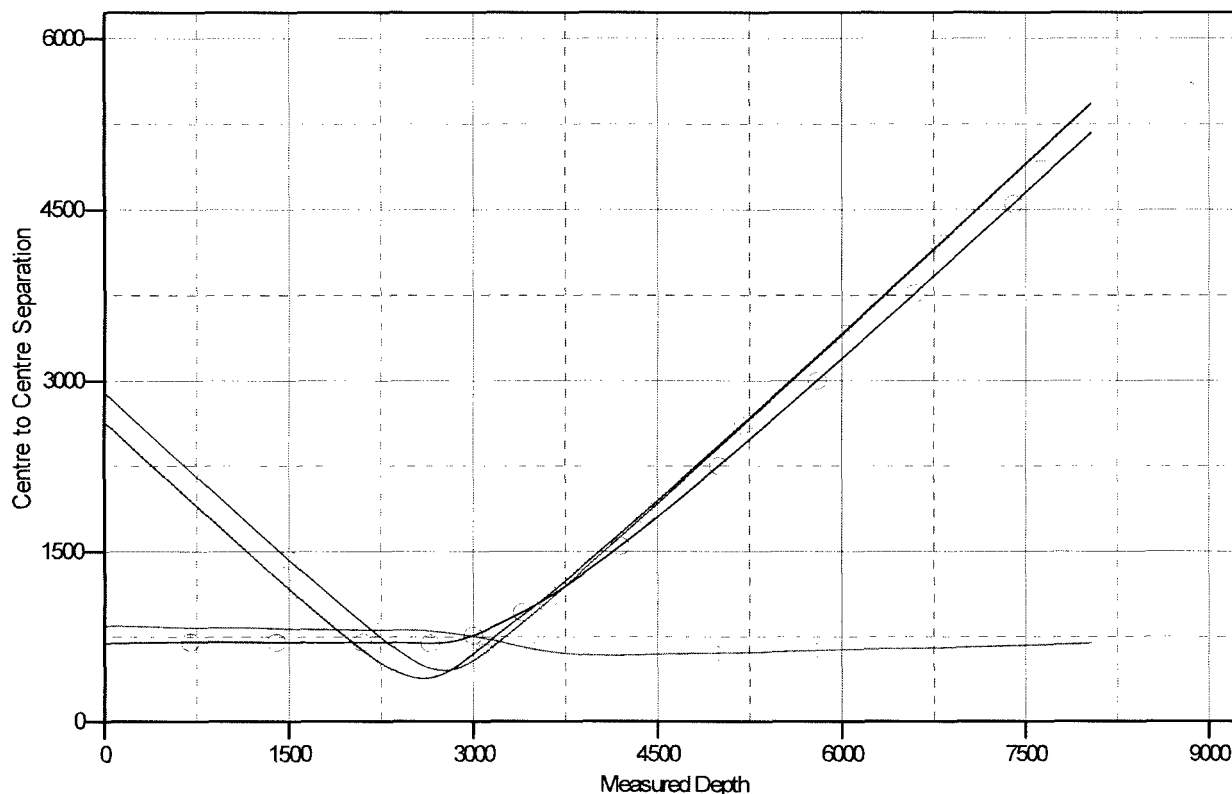
Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Bone Yard 11 Fee #16H
Site Error: 0.00 usft
Reference Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S, R25E, Unit N
Well Error: 0.00 usft
Reference Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S, R25E, Unit N
Reference Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 3405.00usft (Silver Oak 3)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Bone Yard 11 Fee #16H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: -0.07°

Ladder Plot



LEGEND

Grave Digger State Com #2H, OH, OHV0

SHL: 170' FSL, 1610' FWL, Sec2, T20S, R25E, Unit N, BHL: 350' FNL, 1550' FWL, Sec2, T20S, R25E, Lot3, BHL: 350' FNL, 1550' FWL, Sec2, T20S, R25E, Lot3 V0



TDS
Anticollision Report



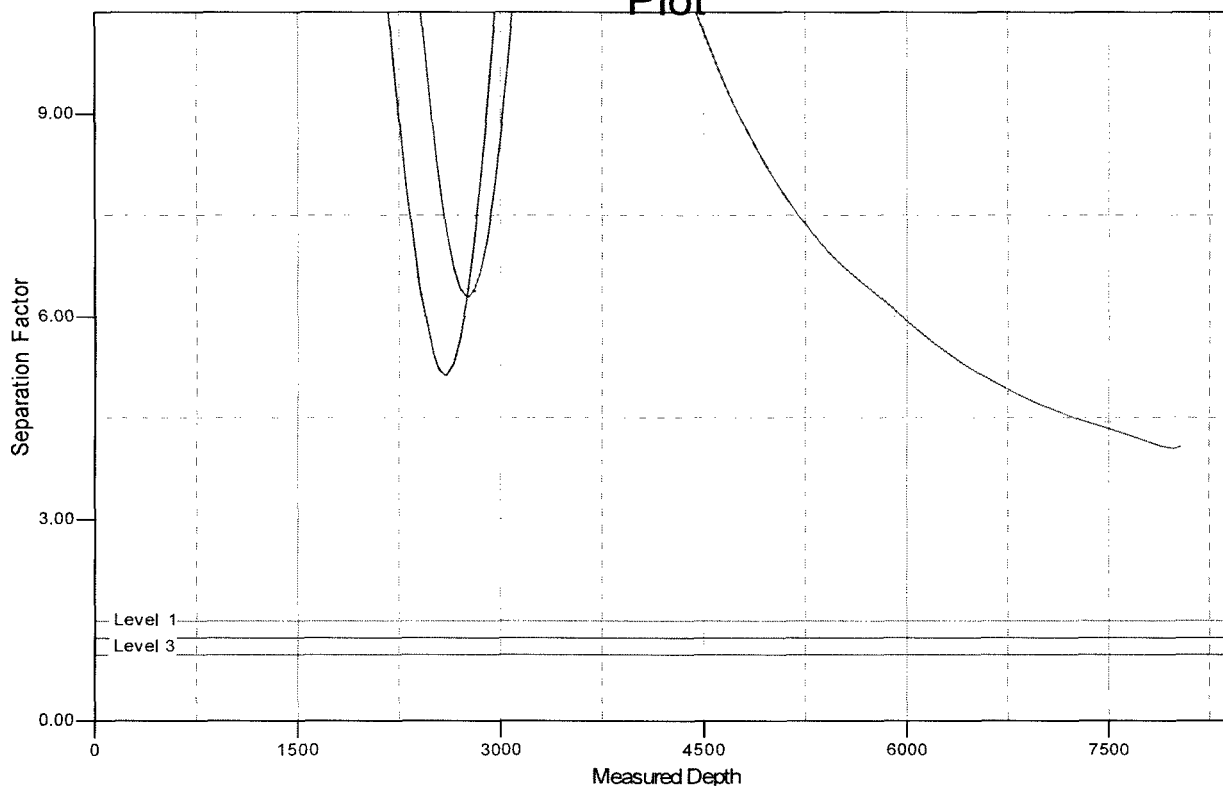
Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Bone Yard 11 Fee #16H
Site Error: 0.00 usft
Reference Well: SHL: 150' FSL, 2310' FWL, Sec 2, T20S, R25E, Unit N
Well Error: 0.00 usft
Reference Wellbore: BHL: 280' FSL, 2310' FWL, Sec 11, T20S, R25E, Unit N
Reference Design: Design #1

Local Co-ordinate Reference: Site Bone Yard 11 Fee #16H
TVD Reference: KB @ 3405.00usft (Silver Oak 3)
MD Reference: KB @ 3405.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 3405.00usft (Silver Oak 3)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Bone Yard 11 Fee #16H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: -0.07°

Separation Factor Plot



LEGEND

Grave Digger State Com #2H, OH, OH V0

SHL: 170' FSL, 1610' FWL, Sec 2, T20S, R25E, Unit N, BHL: 350' FNL, 1550' FWL, Sec 2, T20S, R25E, Lot 3, BHL: 350' FNL, 1550' FWL, Sec 2, T20S, R25E, Lot 3 V0