



CONCHO

NM OIL CONSERVATION
ARTESIA DISTRICT

MAY 01 2017

RECEIVED

COG Operating LLC

Eddy County, NM (NAD-27 2015) Pinto 36 State #27H

API #: 30-015-43399

SHL: 990' FSL, 150' FWL, Sec 36, T18S, R25E, Unit M

PP: 970' FSL, 330' FWL, Sec 36, T18S, R25E, Unit M

BHL: 975' FSL, 227' FEL, Sec 36, T18S, R25E, Unit P

Design: BHL: 978' FSL, 220' FEL, Sec 36, T18S, R25E, Unit P

Standard Survey Report

20 February, 2017





TDS
Survey Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Pinto 36 State #27H
Well: SHL: 990' FSL, 150' FWL, Sec 36, T18S, R25E, Unit M
Wellbore: BHL: 978' FSL, 220' FEL, Sec 36, T18S, R25E, Unit P
Design: BHL: 978' FSL, 220' FEL, Sec 36, T18S, R25E, Unit P

Local Co-ordinate Reference: Well SHL: 990' FSL, 150' FWL, Sec 36, T18S, R25E, Unit M
TVD Reference: KB @ 3523.00usft (Silver Oak 3)
MD Reference: KB @ 3523.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

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	Pinto 36 State #27H				
Site Position:		Northing:	618,319.60 usft	Latitude:	32° 41' 59.309 N
From:	Map	Easting:	465,356.10 usft	Longitude:	104° 26' 45.432 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-0.06 °

Well	SHL: 990' FSL, 150' FWL, Sec 36, T18S, R25E, Unit M				
Well Position	+N/-S	0.00 usft	Northing:	618,319.60 usft	Latitude: 32° 41' 59.309 N
	+E/-W	0.00 usft	Easting:	465,356.10 usft	Longitude: 104° 26' 45.432 W
Position Uncertainty	0.00 usft		Wellhead Elevation:	0.00 usft	Ground Level: 3,505.00 usft

Wellbore	BHL: 978' FSL, 220' FEL, Sec 36, T18S, R25E, Unit P				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/26/2017	7.43	60.36	48,165

Design	BHL: 978' FSL, 220' FEL, Sec 36, T18S, R25E, Unit P				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	91.38	

Survey Program	Date 2/20/2017				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
119.00	8,343.00	TDS MWD #1 (BHL: 978' FSL, 220' FEL, S	MWD	MWD - Standard	

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
119.00	0.50	271.10	119.00	0.01	-0.52	-0.52	0.42	0.42	0.00
First TDS MWD Survey									
153.00	0.80	261.60	153.00	-0.02	-0.90	-0.90	0.93	0.88	-27.94
243.00	2.00	238.70	242.97	-0.93	-2.87	-2.84	1.45	1.33	-25.44
331.00	2.50	239.50	330.90	-2.70	-5.83	-5.76	0.57	0.57	0.91
418.00	3.00	235.10	417.80	-4.97	-9.33	-9.21	0.62	0.57	-5.06



TDS
Survey Report

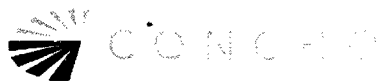


Company: COG Operating LLC
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Well: SHL: 990' FSL, 150' FWL, Sec 36, T18S, R25E, Unit M
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
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Survey

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)
505.00	3.00	239.50	504.68	-7.43	-13.16	-12.98	0.26	0.00	5.06
595.00	3.10	252.00	594.55	-9.37	-17.51	-17.28	0.75	0.11	13.89
686.00	2.90	258.00	685.43	-10.61	-22.10	-21.84	0.41	-0.22	6.59
774.00	2.90	253.90	773.32	-11.69	-26.41	-26.13	0.24	0.00	-4.66
835.00	3.00	255.80	834.24	-12.51	-29.44	-29.13	0.23	0.16	3.11
898.00	3.00	256.30	897.15	-13.31	-32.64	-32.31	0.04	0.00	0.79
993.00	3.30	258.20	992.01	-14.45	-37.74	-37.38	0.33	0.32	2.00
1,087.00	3.30	257.60	1,085.85	-15.59	-43.03	-42.64	0.04	0.00	-0.64
1,142.00	3.20	258.70	1,140.76	-16.23	-46.08	-45.67	0.21	-0.18	2.00
1,217.00	3.20	260.20	1,215.65	-17.00	-50.19	-49.77	0.11	0.00	2.00
1,312.00	3.10	260.00	1,310.50	-17.89	-55.34	-54.89	0.11	-0.11	-0.21
1,406.00	2.90	258.50	1,404.37	-18.81	-60.17	-59.70	0.23	-0.21	-1.60
1,501.00	2.70	262.90	1,499.26	-19.56	-64.74	-64.25	0.31	-0.21	4.63
1,595.00	2.70	259.30	1,593.16	-20.25	-69.12	-68.61	0.18	0.00	-3.83
1,690.00	2.80	259.90	1,688.05	-21.07	-73.60	-73.07	0.11	0.11	0.63
1,784.00	2.70	262.40	1,781.94	-21.77	-78.06	-77.51	0.17	-0.11	2.66
1,879.00	2.90	263.10	1,876.82	-22.35	-82.66	-82.10	0.21	0.21	0.74
1,973.00	2.70	262.70	1,970.71	-22.92	-87.22	-86.64	0.21	-0.21	-0.43
2,067.00	2.80	260.30	2,064.60	-23.59	-91.67	-91.08	0.16	0.11	-2.55
2,162.00	2.80	262.30	2,159.49	-24.29	-96.26	-95.65	0.10	0.00	2.11
2,256.00	2.90	265.40	2,253.37	-24.79	-100.91	-100.28	0.20	0.11	3.30
2,351.00	2.80	263.00	2,348.26	-25.26	-105.61	-104.97	0.16	-0.11	-2.53
2,446.00	2.80	262.40	2,443.14	-25.85	-110.21	-109.55	0.03	0.00	-0.63
2,540.00	2.70	262.70	2,537.03	-26.44	-114.68	-114.01	0.11	-0.11	0.32
2,634.00	2.80	264.70	2,630.93	-26.93	-119.16	-118.48	0.15	0.11	2.13
2,729.00	2.60	264.50	2,725.82	-27.35	-123.62	-122.92	0.21	-0.21	-0.21
2,823.00	1.00	164.20	2,819.79	-28.34	-125.52	-124.80	3.14	-1.70	-106.70
2,855.00	1.00	151.60	2,851.78	-28.86	-125.31	-124.58	0.69	0.00	-39.38
2,886.00	1.20	114.00	2,882.78	-29.23	-124.88	-124.14	2.37	0.65	-121.29
2,917.00	4.50	88.30	2,913.73	-29.32	-123.37	-122.63	11.15	10.65	-82.90
2,949.00	7.60	82.90	2,945.55	-29.03	-120.01	-119.28	9.84	9.69	-16.88
2,980.00	11.00	82.50	2,976.14	-28.39	-115.05	-114.33	10.97	10.97	-1.29
3,012.00	14.60	80.10	3,007.34	-27.29	-108.04	-107.36	11.37	11.25	-7.50
3,043.00	18.70	81.40	3,037.03	-25.88	-99.28	-98.63	13.28	13.23	4.19
3,069.00	21.30	81.80	3,061.46	-24.58	-90.48	-89.86	10.01	10.00	1.54
3,101.00	24.00	84.60	3,090.99	-23.14	-78.25	-77.67	9.08	8.44	8.75
3,132.00	26.30	89.30	3,119.06	-22.46	-65.10	-64.54	9.82	7.42	15.16
3,163.00	29.50	89.60	3,146.45	-22.33	-50.60	-50.05	10.33	10.32	0.97
3,195.00	32.20	90.30	3,173.92	-22.31	-34.19	-33.64	8.51	8.44	2.19
3,226.00	34.70	91.60	3,199.78	-22.60	-17.11	-16.56	8.39	8.06	4.19
3,256.00	37.00	89.30	3,224.10	-22.73	0.46	1.01	8.88	7.67	-7.67



TDS
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Minimum Curvature

Database:

EDM 5000.1 Single User Db

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)
3,287.00	40.10	89.60	3,248.34	-22.55	19.77	20.31	10.02	10.00	0.97
3,319.00	44.30	91.20	3,272.04	-22.71	41.26	41.80	13.55	13.13	5.00
3,350.00	48.60	91.30	3,293.40	-23.20	63.72	64.26	13.87	13.87	0.32
3,382.00	50.70	91.20	3,314.11	-23.73	88.10	88.65	6.57	6.56	-0.31
3,413.00	50.90	90.50	3,333.71	-24.09	112.12	112.67	1.87	0.65	-2.26
3,445.00	50.60	90.10	3,353.95	-24.22	136.90	137.44	1.35	-0.94	-1.25
3,476.00	50.30	89.70	3,373.69	-24.18	160.80	161.34	1.39	-0.97	-1.29
3,500.45	49.84	89.62	3,389.38	-24.07	179.55	180.08	1.89	-1.88	-0.31
As-Drilled PP									
3,508.00	49.70	89.60	3,394.26	-24.03	185.32	185.84	1.89	-1.87	-0.31
3,539.00	49.30	89.10	3,414.39	-23.76	208.89	209.40	1.78	-1.29	-1.61
3,571.00	50.40	90.50	3,435.03	-23.68	233.34	233.85	4.80	3.44	4.38
3,602.00	52.90	92.80	3,454.26	-24.39	257.64	258.15	9.94	8.06	7.42
3,633.00	55.90	93.70	3,472.31	-25.82	282.80	283.34	9.96	9.68	2.90
3,665.00	59.00	93.20	3,489.52	-27.44	309.72	310.30	9.78	9.69	-1.56
3,696.00	62.70	92.50	3,504.62	-28.78	336.76	337.36	12.10	11.94	-2.26
3,728.00	66.80	91.80	3,518.27	-29.87	365.68	366.29	12.96	12.81	-2.19
3,759.00	70.90	92.40	3,529.45	-30.93	394.56	395.19	13.35	13.23	1.94
3,791.00	75.50	93.10	3,538.70	-32.40	425.15	425.81	14.53	14.38	2.19
3,822.00	79.90	92.50	3,545.30	-33.88	455.40	456.08	14.32	14.19	-1.94
3,854.00	84.00	91.70	3,549.78	-35.04	487.05	487.76	13.05	12.81	-2.50
3,885.00	87.20	91.00	3,552.16	-35.76	517.95	518.66	10.57	10.32	-2.26
3,927.00	89.40	92.30	3,553.40	-36.97	559.91	560.64	6.08	5.24	3.10
4,022.00	89.70	92.20	3,554.15	-40.70	654.83	655.62	0.33	0.32	-0.11
4,116.00	89.80	92.50	3,554.56	-44.56	748.75	749.61	0.34	0.11	0.32
4,210.00	89.80	92.50	3,554.89	-48.66	842.66	843.59	0.00	0.00	0.00
4,305.00	88.70	91.70	3,556.13	-52.14	937.59	938.57	1.43	-1.16	-0.84
4,399.00	89.00	91.60	3,558.02	-54.84	1,031.53	1,032.55	0.34	0.32	-0.11
4,493.00	89.30	91.40	3,559.41	-57.30	1,125.49	1,126.54	0.38	0.32	-0.21
4,588.00	89.20	91.70	3,560.65	-59.87	1,220.45	1,221.53	0.33	-0.11	0.32
4,682.00	90.00	90.30	3,561.31	-61.51	1,314.43	1,315.53	1.72	0.85	-1.49
4,776.00	90.00	90.30	3,561.31	-62.01	1,408.42	1,409.51	0.00	0.00	0.00
4,871.00	89.80	90.20	3,561.48	-62.42	1,503.42	1,504.49	0.24	-0.21	-0.11
4,966.00	89.90	90.30	3,561.72	-62.84	1,598.42	1,599.47	0.15	0.11	0.11
5,060.00	90.10	90.50	3,561.72	-63.49	1,692.42	1,693.46	0.30	0.21	0.21
5,154.00	90.10	90.70	3,561.56	-64.48	1,786.41	1,787.45	0.21	0.00	0.21
5,249.00	90.10	90.50	3,561.40	-65.47	1,881.41	1,882.44	0.21	0.00	-0.21
5,343.00	90.20	90.60	3,561.15	-66.37	1,975.40	1,976.43	0.15	0.11	0.11
5,438.00	90.20	90.50	3,560.82	-67.28	2,070.40	2,071.42	0.11	0.00	-0.11
5,532.00	90.30	90.60	3,560.41	-68.19	2,164.39	2,165.41	0.15	0.11	0.11
5,626.00	90.30	90.40	3,559.92	-69.01	2,258.39	2,259.40	0.21	0.00	-0.21



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5,721.00	90.20	90.30	3,559.50	-69.59	2,353.39	2,354.38	0.15	-0.11	-0.11
5,815.00	90.10	90.20	3,559.25	-70.00	2,447.39	2,448.36	0.15	-0.11	-0.11
5,909.00	90.10	90.30	3,559.09	-70.41	2,541.38	2,542.34	0.11	0.00	0.11
6,004.00	90.00	90.30	3,559.01	-70.91	2,636.38	2,637.33	0.11	-0.11	0.00
6,098.00	90.20	90.10	3,558.84	-71.23	2,730.38	2,731.31	0.30	0.21	-0.21
6,192.00	89.50	91.70	3,559.09	-72.71	2,824.37	2,825.30	1.86	-0.74	1.70
6,287.00	89.60	91.80	3,559.84	-75.61	2,919.32	2,920.29	0.15	0.11	0.11
6,381.00	89.60	91.70	3,560.49	-78.48	3,013.27	3,014.29	0.11	0.00	-0.11
6,476.00	89.80	91.40	3,560.99	-81.05	3,108.24	3,109.29	0.38	0.21	-0.32
6,571.00	90.10	91.70	3,561.07	-83.62	3,203.20	3,204.29	0.45	0.32	0.32
6,665.00	89.90	91.60	3,561.07	-86.33	3,297.16	3,298.29	0.24	-0.21	-0.11
6,760.00	89.80	91.40	3,561.32	-88.81	3,392.13	3,393.28	0.24	-0.11	-0.21
6,855.00	88.40	92.10	3,562.81	-91.72	3,487.07	3,488.27	1.65	-1.47	0.74
6,949.00	88.30	92.20	3,565.52	-95.24	3,580.97	3,582.22	0.15	-0.11	0.11
7,044.00	87.70	92.30	3,568.84	-98.97	3,675.83	3,677.15	0.64	-0.63	0.11
7,138.00	88.60	91.10	3,571.87	-101.75	3,769.74	3,771.10	1.60	0.96	-1.28
7,233.00	88.00	91.00	3,574.69	-103.49	3,864.68	3,866.05	0.64	-0.63	-0.11
7,327.00	88.00	91.40	3,577.97	-105.46	3,958.60	3,960.00	0.43	0.00	0.43
7,422.00	88.00	91.40	3,581.28	-107.78	4,053.52	4,054.94	0.00	0.00	0.00
7,516.00	87.70	91.60	3,584.81	-110.24	4,147.42	4,148.87	0.38	-0.32	0.21
7,610.00	89.10	91.10	3,587.44	-112.45	4,241.35	4,242.83	1.58	1.49	-0.53
7,705.00	89.10	91.10	3,588.93	-114.28	4,336.33	4,337.82	0.00	0.00	0.00
7,799.00	89.10	91.00	3,590.40	-116.00	4,430.30	4,431.81	0.11	0.00	-0.11
7,893.00	89.40	91.00	3,591.63	-117.64	4,524.28	4,525.80	0.32	0.32	0.00
7,988.00	89.80	90.70	3,592.30	-119.05	4,619.26	4,620.79	0.53	0.42	-0.32
8,083.00	90.20	90.40	3,592.30	-119.96	4,714.26	4,715.78	0.53	0.42	-0.32
8,177.00	88.20	90.80	3,593.61	-120.95	4,808.24	4,809.76	2.17	-2.13	0.43
8,271.00	88.40	90.80	3,596.40	-122.26	4,902.19	4,903.71	0.21	0.21	0.00
Last TDS MWD Survey									
8,343.00	88.40	90.80	3,598.41	-123.26	4,974.15	4,975.68	0.00	0.00	0.00
Projection to Bit/TD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
119.00	119.00	0.01	-0.52	First TDS MWD Survey
3,500.45	3,389.38	-24.07	179.55	As-Drilled PP
8,271.00	3,596.40	-122.26	4,902.19	Last TDS MWD Survey
8,343.00	3,598.41	-123.26	4,974.15	Projection to Bit/TD



TDS
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 990' FSL, 150' FWL, Sec 36, T18S, R25E, Unit M
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3523.00usft (Silver Oak 3)
Site:	Pinto 36 State #27H	MD Reference:	KB @ 3523.00usft (Silver Oak 3)
Well:	SHL: 990' FSL, 150' FWL, Sec 36, T18S, R25E, Unit M	North Reference:	Grid
Wellbore:	BHL: 978' FSL, 220' FEL, Sec 36, T18S, R25E, Unit P	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 978' FSL, 220' FEL, Sec 36, T18S, R25E, Unit P	Database:	EDM 5000.1 Single User Db

Checked By: _____	Approved By: _____	Date: _____
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