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COG Operating LLC

Eddy County, NM (NAN27 NME)

Skelly Unit #623

Skelly Unit #623

32D0110073

OH

Design: Actual

Standard Survey Report

02 February, 2010



Scientific Drilling

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Scientific Drilling
Survey Report



Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Skelly Unit #623
Well: Skelly Unit #623
Wellbore: OH
Design: Actual

Local Co-ordinate Reference: Site Skelly Unit #623
TVD Reference: Ground Elev @ 3925.00ft (Silver Oak #1)
MD Reference: Ground Elev @ 3925.00ft (Silver Oak #1)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project: Eddy County, NM (NAN27 NME)

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site: Skelly Unit #623

Site Position: Northing: 669,972.50 ft Latitude: 32° 50' 27.142 N
From: Map Easting: 651,093.40 ft Longitude: 103° 50' 28.994 W
Position Uncertainty: 0.00 ft Slot Radius: 0" Grid Convergence: 0.27°

Well: Skelly Unit #623

Well Position: +N/-S 0.00 ft Northing: 669,972.50 ft Latitude: 32° 50' 27.142 N
+E/-W 0.00 ft Easting: 651,093.40 ft Longitude: 103° 50' 28.994 W
Position Uncertainty: 0.00 ft Wellhead Elevation: ft Ground Level: 3,925.00 ft

Wellbore: OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2010/02/01	7.91	60.76	49,122

Design: Actual

Audit Notes:

Version: 1.0 Phase: ACTUAL Tie On Depth: 0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	268.40

Survey Program: Date: 2010/02/02

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	1,820.00	Gyro Survey (OH)	Keeper	Standard Wireline Keeper ver 1.0.2
1,875.00	5,275.00	MWD Survey (OH)	MWD	MWD - Standard

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.59	260.13	100.00	-0.09	-0.51	0.51	0.59	0.59	0.00
200.00	0.48	251.65	199.99	-0.31	-1.41	1.42	0.14	-0.11	-8.48
300.00	0.65	192.75	299.99	-0.99	-1.93	1.96	0.57	0.17	-58.90
400.00	0.72	173.94	399.98	-2.17	-1.99	2.05	0.23	0.07	-18.81
500.00	0.68	168.85	499.98	-3.38	-1.81	1.91	0.07	-0.04	-5.09
600.00	0.57	171.69	599.97	-4.45	-1.63	1.75	0.11	-0.11	2.84
700.00	0.58	181.77	699.96	-5.45	-1.57	1.72	0.10	0.01	10.08
800.00	0.69	189.14	799.96	-6.55	-1.68	1.86	0.14	0.11	7.37
900.00	0.83	203.33	899.95	-7.81	-2.06	2.28	0.23	0.14	14.19



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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,000.00	0.75	207.82	999.94	-9.05	-2.66	2.91	0.10	-0.08	4.49
1,100.00	0.56	197.11	1,099.93	-10.10	-3.10	3.39	0.23	-0.19	-10.71
1,200.00	0.58	195.78	1,199.93	-11.05	-3.39	3.69	0.02	0.02	-1.33
1,300.00	0.11	153.23	1,299.93	-11.63	-3.48	3.80	0.50	-0.47	-42.55
1,400.00	0.27	13.56	1,399.93	-11.48	-3.38	3.70	0.36	0.16	-139.67
1,500.00	0.36	47.19	1,499.92	-11.04	-3.10	3.40	0.20	0.09	33.63
1,600.00	0.49	54.98	1,599.92	-10.58	-2.52	2.81	0.14	0.13	7.79
1,700.00	0.62	57.88	1,699.92	-10.05	-1.71	1.99	0.13	0.13	2.90
1,800.00	0.59	82.47	1,799.91	-9.69	-0.74	1.01	0.26	-0.03	24.59
1,820.00	0.59	74.39	1,819.91	-9.65	-0.54	0.81	0.42	0.00	-40.40
Gyro Tie-in									
1,875.00	0.60	95.01	1,874.91	-9.60	0.02	0.25	0.39	0.02	37.49
1,938.00	0.32	293.14	1,937.91	-9.56	0.19	0.08	1.44	-0.44	-256.94
2,000.00	0.95	289.30	1,999.90	-9.32	-0.46	0.72	1.02	1.02	-6.19
2,063.00	1.59	286.10	2,062.89	-8.91	-1.79	2.04	1.02	1.02	-5.08
2,125.00	2.59	277.35	2,124.85	-8.49	-4.00	4.24	1.69	1.61	-14.11
2,188.00	3.30	268.56	2,187.76	-8.35	-7.23	7.46	1.33	1.13	-13.95
2,251.00	4.37	264.18	2,250.62	-8.64	-11.43	11.67	1.76	1.70	-6.95
2,313.00	5.78	270.38	2,312.38	-8.86	-16.90	17.14	2.44	2.27	10.00
2,376.00	6.93	271.87	2,374.99	-8.72	-23.87	24.11	1.84	1.83	2.37
2,439.00	7.71	270.81	2,437.47	-8.53	-31.90	32.12	1.26	1.24	-1.68
2,502.00	8.92	272.54	2,499.81	-8.26	-41.00	41.22	1.96	1.92	2.75
2,572.00	9.72	270.65	2,568.89	-7.95	-52.33	52.53	1.22	1.14	-2.70
2,635.00	10.30	268.05	2,630.93	-8.08	-63.28	63.48	1.17	0.92	-4.13
2,728.00	10.69	261.61	2,722.37	-9.62	-80.12	80.36	1.33	0.42	-6.92
2,822.00	10.43	260.32	2,814.78	-12.33	-97.14	97.44	0.37	-0.28	-1.37
2,884.00	10.07	264.94	2,875.79	-13.75	-108.07	108.41	1.45	-0.58	7.45
2,947.00	10.25	270.05	2,937.81	-14.23	-119.16	119.51	1.46	0.29	8.11
3,009.00	10.36	272.89	2,998.81	-13.94	-130.24	130.58	0.84	0.18	4.58
3,072.00	10.62	275.20	3,060.75	-13.13	-141.68	141.99	0.78	0.41	3.67
3,135.00	10.67	275.89	3,122.67	-12.01	-153.27	153.54	0.22	0.08	1.10
3,198.00	11.48	272.69	3,184.50	-11.11	-165.33	165.58	1.61	1.29	-5.08
3,229.00	11.23	271.88	3,214.89	-10.87	-171.43	171.66	0.96	-0.81	-2.61
3,292.00	10.62	271.89	3,276.75	-10.48	-183.36	183.58	0.97	-0.97	0.02
3,354.00	10.88	271.14	3,337.66	-10.17	-194.92	195.13	0.48	0.42	-1.21
3,417.00	11.53	267.29	3,399.46	-10.35	-207.16	207.36	1.57	1.03	-6.11
3,479.00	11.58	266.59	3,460.20	-11.01	-219.56	219.78	0.24	0.08	-1.13
3,542.00	11.40	266.98	3,521.94	-11.72	-232.09	232.32	0.31	-0.29	0.62
3,636.00	11.08	268.19	3,614.14	-12.49	-250.39	250.64	0.42	-0.34	1.29
3,731.00	10.89	269.11	3,707.40	-12.92	-268.49	268.74	0.27	-0.20	0.97
3,825.00	10.41	269.83	3,799.78	-13.08	-285.86	286.11	0.53	-0.51	0.77
3,918.00	10.12	270.59	3,891.29	-13.02	-302.43	302.68	0.34	-0.31	0.82
4,012.00	10.16	271.57	3,983.82	-12.71	-318.98	319.21	0.19	0.04	1.04



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Design: Actual

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Site Skelly Unit #623
Ground Elev @ 3925.00ft (Silver Oak #1)
Ground Elev @ 3925.00ft (Silver Oak #1)
Grid
Minimum Curvature
EDM 5000.1 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,106.00	10.24	268.63	4,076.34	-12.69	-335.62	335.84	0.56	0.09	-3.13
4,200.00	9.99	269.48	4,168.88	-12.96	-352.12	352.35	0.31	-0.27	0.90
4,293.00	10.70	268.82	4,260.36	-13.21	-368.82	369.05	0.77	0.76	-0.71
4,388.00	10.77	269.31	4,353.70	-13.50	-386.51	386.74	0.12	0.07	0.52
4,481.00	10.92	269.41	4,445.04	-13.69	-404.01	404.24	0.16	0.16	0.11
4,607.00	10.07	269.70	4,568.93	-13.87	-426.96	427.18	0.68	-0.67	0.23
4,669.00	9.08	271.15	4,630.07	-13.80	-437.27	437.49	1.64	-1.60	2.34
4,731.00	8.69	269.65	4,691.32	-13.74	-446.85	447.06	0.73	-0.63	-2.42
4,794.00	7.86	269.43	4,753.67	-13.81	-455.91	456.12	1.32	-1.32	-0.35
4,856.00	6.93	266.51	4,815.15	-14.08	-463.89	464.10	1.62	-1.50	-4.71
4,919.00	5.47	266.22	4,877.78	-14.51	-470.68	470.90	2.32	-2.32	-0.46
4,981.00	4.26	271.35	4,939.55	-14.65	-475.93	476.15	2.07	-1.95	8.27
5,044.00	3.18	278.80	5,002.42	-14.32	-480.00	480.21	1.87	-1.71	11.83
5,107.00	2.36	276.41	5,065.35	-13.91	-483.01	483.21	1.31	-1.30	-3.79
5,169.00	1.52	281.34	5,127.31	-13.61	-485.09	485.28	1.38	-1.35	7.95
5,232.00	0.73	290.84	5,190.30	-13.30	-486.28	486.46	1.28	-1.25	15.08
MWD Survey									
5,275.00	0.73	290.84	5,233.30	-13.11	-486.79	486.97	0.00	0.00	0.00
Projection to Bit									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
1,820.00	1,819.91	-9.65	-0.54	Gyro Tie-in
5,232.00	5,190.30	-13.30	-486.28	MWD Survey
5,275.00	5,233.30	-13.11	-486.79	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____