

COG Operating L L C

Lea County, NM (NAD27 NME)

Sec. 35, T 24 S. , R 32 E

Eider Federal 204H

HOBBS OCD
FEB 28 2019
RECEIVED

Wellbore #1

Design: Wellbore #1

Standard Survey Report

03 July, 2018

Survey Report

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Eider Federal 204H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3551.70ft (Scandill Freedom)
Site:	Sec. 35, T 24 S, R 32 E	MD Reference:	KB=26' @ 3551.70ft (Scandill Freedom)
Well:	Eider Federal 204H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Project	Lea County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Sec. 35, T 24 S, R 32 E		
Site Position:		Northing:	425,243.29 usft
From:	Map	Easting:	711,320.50 usft
Position Uncertainty:	5.00 ft	Slot Radius:	13-3/16 "
		Latitude:	32.167268
		Longitude:	-103.650407
		Grid Convergence:	0.36 °

Well	Eider Federal 204H, ACTIVE		
Well Position	+N-S	0.00 ft	Northing: 425,254.00 usft
	+E-W	0.00 ft	Easting: 712,420.50 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	0.00 ft
		Latitude:	32.167278
		Longitude:	-103.646852
		Ground Level:	3,525.70 ft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
	HDGM	10/9/2017	6.83
		Dip Angle	59.87
		Field Strength	48,025
		(°)	
		(°)	
		(nT)	

Design	Wellbore #1		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N-S	+E-W
	(ft)	(ft)	(ft)
	0.00	0.00	0.00
		Direction	4.04
		(°)	

Survey Program	Date 7/3/2018		
From	To	Survey (Wellbore)	Tool Name
(ft)	(ft)		
100.00	8,767.00	Gyro Keeper Surveys (Wellbore #1)	Keeper
8,780.00	16,835.00	MWD Surveys (Wellbore #1)	MWD
			Description
			Standard Wireline Keeper ver 1.0.2
			MWD - Standard

Survey									
Measured	Inclination	Azimuth	Vertical	+N-S	+E-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(°)	Depth	(ft)	(ft)	Section	Rate	Rate	Rate
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(°/100usft)	(°/100usft)	(°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.14	153.01	100.00	-0.11	0.06	-0.10	0.14	0.14	0.00
125.00	0.08	168.37	125.00	-0.15	0.07	-0.15	0.27	-0.24	61.44
150.00	0.33	239.59	150.00	-0.21	0.01	-0.21	1.25	1.00	284.88
175.00	0.35	233.95	175.00	-0.29	-0.11	-0.30	0.16	0.08	-22.56
200.00	0.24	230.17	200.00	-0.37	-0.21	-0.38	0.45	-0.44	-15.12
225.00	0.20	226.44	225.00	-0.43	-0.28	-0.45	0.17	-0.16	-14.92
250.00	0.22	262.13	250.00	-0.47	-0.36	-0.49	0.52	0.08	142.76
275.00	0.25	268.21	275.00	-0.48	-0.46	-0.51	0.16	0.12	24.32
300.00	0.50	248.01	300.00	-0.52	-0.62	-0.56	1.12	1.00	-80.80

Survey Report

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Eider Federal 204H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3551.70ft (Scandrift Freedom)
Site:	Sec. 35, T24 S., R 32 E	MD Reference:	KB=26' @ 3551.70ft (Scandrift Freedom)
Well:	Eider Federal 204H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
325.00	0.40	248.05	325.00	-0.59	-0.80	-0.65	0.40	-0.40	0.16
350.00	0.40	229.06	350.00	-0.68	-0.95	-0.75	0.53	0.00	-75.96
375.00	0.25	222.01	375.00	-0.78	-1.05	-0.85	0.62	-0.60	-28.20
400.00	0.29	222.82	400.00	-0.87	-1.13	-0.94	0.16	0.16	3.24
425.00	0.08	244.68	425.00	-0.92	-1.19	-1.00	0.87	-0.84	87.44
450.00	0.22	286.06	450.00	-0.91	-1.25	-1.00	0.67	0.56	165.52
475.00	0.07	268.86	475.00	-0.90	-1.31	-0.99	0.62	-0.60	-68.80
500.00	0.10	47.74	500.00	-0.89	-1.31	-0.98	0.64	0.12	555.52
525.00	0.12	70.05	525.00	-0.86	-1.27	-0.95	0.19	0.08	89.24
550.00	0.20	72.52	550.00	-0.84	-1.21	-0.92	0.32	0.32	9.88
575.00	0.25	57.83	575.00	-0.80	-1.12	-0.88	0.30	0.20	-58.76
600.00	0.33	31.65	599.99	-0.71	-1.03	-0.78	0.61	0.32	-104.72
625.00	0.16	57.53	624.99	-0.63	-0.97	-0.69	0.79	-0.68	103.52
650.00	0.12	69.98	649.99	-0.60	-0.91	-0.66	0.20	-0.16	49.80
675.00	0.13	95.66	674.99	-0.59	-0.86	-0.65	0.23	0.04	102.72
700.00	0.14	112.89	699.99	-0.61	-0.80	-0.66	0.17	0.04	68.92
725.00	0.23	99.59	724.99	-0.63	-0.73	-0.68	0.40	0.36	-53.20
750.00	0.20	117.14	749.99	-0.66	-0.64	-0.70	0.29	-0.12	70.20
775.00	0.17	112.23	774.99	-0.69	-0.56	-0.73	0.14	-0.12	-19.64
800.00	0.29	95.06	799.99	-0.71	-0.47	-0.74	0.55	0.48	-68.68
825.00	0.43	79.26	824.99	-0.70	-0.31	-0.72	0.68	0.56	-63.20
850.00	0.28	70.82	849.99	-0.66	-0.16	-0.67	0.63	-0.60	-33.76
875.00	0.26	58.26	874.99	-0.61	-0.06	-0.61	0.25	-0.08	-50.24
900.00	0.06	165.93	899.99	-0.59	0.00	-0.59	1.14	-0.80	430.68
925.00	0.14	141.71	924.99	-0.63	0.02	-0.63	0.36	0.32	-96.88
950.00	0.22	185.01	949.99	-0.70	0.03	-0.70	0.61	0.32	173.20
975.00	0.20	176.32	974.99	-0.79	0.03	-0.79	0.15	-0.08	-34.76
1,000.00	0.23	116.41	999.99	-0.86	0.08	-0.85	0.87	0.12	-239.64
1,025.00	0.15	91.71	1,024.99	-0.88	0.16	-0.87	0.45	-0.32	-98.80
1,050.00	0.12	134.18	1,049.99	-0.90	0.21	-0.89	0.41	-0.12	169.88
1,075.00	0.16	161.84	1,074.99	-0.95	0.24	-0.93	0.31	0.16	110.64
1,100.00	0.27	164.15	1,099.99	-1.04	0.26	-1.02	0.44	0.44	9.24
1,125.00	0.19	125.91	1,124.99	-1.12	0.31	-1.10	0.67	-0.32	-152.96
1,150.00	0.11	185.30	1,149.99	-1.17	0.35	-1.15	0.66	-0.32	237.56
1,175.00	0.18	156.70	1,174.99	-1.23	0.36	-1.20	0.39	0.28	-114.40
1,200.00	0.09	130.23	1,199.99	-1.28	0.39	-1.25	0.43	-0.36	-105.88
1,225.00	0.62	35.09	1,224.99	-1.18	0.48	-1.15	2.54	2.12	-380.56
1,250.00	1.50	27.28	1,249.99	-0.78	0.71	-0.73	3.56	3.52	-31.24
1,275.00	1.41	17.73	1,274.98	-0.20	0.95	-0.13	1.03	-0.36	-38.20
1,300.00	1.60	22.77	1,299.97	0.42	1.18	0.50	0.93	0.76	20.16
1,325.00	1.33	24.19	1,324.96	1.00	1.44	1.10	1.09	-1.08	5.68
1,350.00	1.61	25.85	1,349.95	1.58	1.71	1.70	1.13	1.12	6.64
1,375.00	1.53	22.38	1,374.94	2.21	1.99	2.34	0.50	-0.32	-13.88

Survey Report

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Eider Federal 204H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3551.70ft (Scandril Freedom)
Site:	Sec. 35, T 24 S., R 32 E.	MD Reference:	KB=26' @ 3551.70ft (Scandril Freedom)
Well:	Eider Federal 204H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
1,400.00	1.66	21.73	1,399.93	2.85	2.25	3.00	0.53	0.52	-2.60	
1,425.00	1.38	19.18	1,424.93	3.47	2.48	3.64	1.15	-1.12	-10.20	
1,450.00	1.48	21.31	1,449.92	4.06	2.70	4.24	0.45	0.40	8.52	
1,475.00	1.61	22.34	1,474.91	4.68	2.95	4.88	0.53	0.52	4.12	
1,500.00	1.53	27.82	1,499.90	5.30	3.24	5.52	0.68	-0.32	21.92	
1,525.00	1.56	36.39	1,524.89	5.87	3.60	6.11	0.93	0.12	34.28	
1,550.00	1.54	39.99	1,549.88	6.41	4.01	6.67	0.40	-0.08	14.40	
1,575.00	1.59	43.17	1,574.87	6.92	4.47	7.21	0.40	0.20	12.72	
1,600.00	1.48	36.74	1,599.86	7.43	4.90	7.75	0.82	-0.44	-25.72	
1,625.00	1.60	35.60	1,624.85	7.97	5.29	8.32	0.50	0.48	-4.56	
1,650.00	1.44	34.86	1,649.84	8.51	5.68	8.89	0.64	-0.64	-2.96	
1,675.00	1.37	37.73	1,674.84	9.01	6.04	9.41	0.40	-0.28	11.48	
1,700.00	1.57	40.64	1,699.83	9.50	6.45	9.93	0.85	0.80	11.64	
1,725.00	1.48	39.72	1,724.82	10.01	6.87	10.47	0.37	-0.36	-3.68	
1,750.00	1.61	41.09	1,749.81	10.52	7.31	11.01	0.54	0.52	5.48	
1,775.00	1.72	41.90	1,774.80	11.07	7.79	11.59	0.45	0.44	3.24	
1,800.00	1.70	39.89	1,799.79	11.63	8.28	12.18	0.25	-0.08	-8.04	
1,825.00	1.72	40.04	1,824.78	12.20	8.76	12.79	0.08	0.08	0.60	
1,850.00	1.73	39.41	1,849.77	12.78	9.24	13.40	0.09	0.04	-2.52	
1,875.00	1.76	36.76	1,874.76	13.38	9.71	14.03	0.34	0.12	-10.60	
1,900.00	1.67	36.95	1,899.74	13.98	10.16	14.66	0.36	-0.36	0.76	
1,925.00	1.81	38.78	1,924.73	14.58	10.63	15.29	0.60	0.56	7.32	
1,950.00	1.65	42.09	1,949.72	15.15	11.11	15.90	0.75	-0.64	13.24	
1,975.00	1.83	40.20	1,974.71	15.72	11.61	16.50	0.76	0.72	-7.56	
2,000.00	1.81	43.86	1,999.70	16.31	12.14	17.13	0.47	-0.08	14.64	
2,025.00	1.80	43.85	2,024.68	16.88	12.69	17.73	0.04	-0.04	-0.04	
2,050.00	1.71	40.44	2,049.67	17.45	13.20	18.34	0.55	-0.36	-13.64	
2,075.00	1.87	41.99	2,074.66	18.04	13.72	18.96	0.67	0.64	6.20	
2,100.00	1.95	42.88	2,099.65	18.65	14.28	19.61	0.34	0.32	3.56	
2,125.00	1.92	43.65	2,124.63	19.27	14.86	20.26	0.16	-0.12	3.08	
2,150.00	1.90	43.16	2,149.62	19.87	15.43	20.91	0.10	-0.08	-1.96	
2,175.00	1.88	42.12	2,174.60	20.48	15.99	21.55	0.16	-0.08	-4.16	
2,200.00	1.88	41.48	2,199.59	21.09	16.54	22.20	0.08	0.00	-2.56	
2,225.00	1.77	43.77	2,224.58	21.67	17.08	22.82	0.53	-0.44	9.16	
2,250.00	1.88	48.83	2,249.57	22.22	17.65	23.41	0.78	0.44	20.24	
2,275.00	2.00	51.36	2,274.55	22.77	18.30	24.00	0.59	0.48	10.12	
2,300.00	2.09	53.12	2,299.54	23.31	19.01	24.59	0.44	0.36	7.04	
2,325.00	1.97	48.11	2,324.52	23.87	19.69	25.20	0.86	-0.48	-20.04	
2,350.00	1.96	46.94	2,349.51	24.45	20.32	25.82	0.17	-0.04	-4.68	
2,375.00	1.73	47.06	2,374.49	25.00	20.91	26.41	0.92	-0.92	0.48	
2,400.00	1.78	50.95	2,399.48	25.50	21.49	26.95	0.52	0.20	15.56	
2,425.00	2.00	54.54	2,424.47	26.00	22.15	27.49	1.00	0.88	14.36	
2,450.00	2.04	53.14	2,449.45	26.52	22.86	28.06	0.25	0.16	-5.60	

Survey Report

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Eider Federal 204H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3551.70ft (Scandriil Freedom)
Site:	Sec. 35, T 24 S., R 32 E	MD Reference:	KB=26' @ 3551.70ft (Scandriil Freedom)
Well:	Eider Federal 204H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,475.00	2.06	50.75	2,474.44	27.07	23.56	28.66	0.35	0.08	-9.56
2,500.00	2.00	51.42	2,499.42	27.63	24.25	29.27	0.26	-0.24	2.68
2,525.00	1.92	52.82	2,524.41	28.15	24.93	29.84	0.37	-0.32	5.60
2,550.00	2.05	54.99	2,549.39	28.66	25.63	30.39	0.60	0.52	8.68
2,575.00	2.10	55.33	2,574.37	29.18	26.37	30.96	0.21	0.20	1.36
2,600.00	2.08	51.53	2,599.36	29.72	27.10	31.56	0.56	-0.08	-15.20
2,625.00	2.12	54.25	2,624.34	30.27	27.83	32.16	0.43	0.16	10.88
2,650.00	1.96	56.17	2,649.32	30.78	28.56	32.72	0.70	-0.64	7.68
2,675.00	2.06	57.72	2,674.31	31.26	29.30	33.25	0.46	0.40	6.20
2,700.00	2.05	55.41	2,699.29	31.75	30.04	33.79	0.33	-0.04	-9.24
2,725.00	2.17	54.30	2,724.28	32.28	30.80	34.37	0.51	0.48	-4.44
2,750.00	1.89	54.73	2,749.26	32.80	31.52	34.94	1.12	-1.12	1.72
2,775.00	2.00	57.19	2,774.25	33.27	32.22	35.46	0.55	0.44	9.84
2,800.00	1.78	60.54	2,799.23	33.70	32.93	35.93	0.98	-0.88	13.40
2,825.00	1.29	67.63	2,824.22	34.00	33.52	36.27	2.10	-1.96	28.36
2,850.00	0.59	102.64	2,849.22	34.08	33.91	36.38	3.50	-2.80	140.04
2,875.00	0.36	137.07	2,874.22	33.99	34.09	36.31	1.43	-0.92	137.72
2,900.00	0.49	158.70	2,899.22	33.83	34.18	36.16	0.82	0.52	86.52
2,925.00	0.60	158.99	2,924.22	33.61	34.27	35.94	0.44	0.44	1.16
2,950.00	0.72	149.64	2,949.22	33.36	34.39	35.69	0.64	0.48	-37.40
2,975.00	0.70	140.78	2,974.21	33.10	34.57	35.45	0.45	-0.08	-35.44
3,000.00	0.64	163.99	2,999.21	32.85	34.70	35.21	1.10	-0.24	92.84
3,025.00	0.81	163.63	3,024.21	32.54	34.79	34.91	0.68	0.68	-1.44
3,050.00	0.81	157.87	3,049.21	32.21	34.91	34.59	0.33	0.00	-23.04
3,075.00	0.65	150.94	3,074.21	31.92	35.05	34.31	0.73	-0.64	-27.72
3,100.00	0.74	161.81	3,099.20	31.65	35.16	34.04	0.64	0.36	43.48
3,125.00	0.91	160.70	3,124.20	31.31	35.28	33.71	0.68	0.68	-4.44
3,150.00	1.06	156.80	3,149.20	30.91	35.44	33.32	0.66	0.60	-15.60
3,175.00	1.02	151.96	3,174.19	30.50	35.63	32.93	0.39	-0.16	-19.36
3,200.00	1.01	160.90	3,199.19	30.09	35.81	32.54	0.63	-0.04	35.76
3,225.00	0.96	161.28	3,224.19	29.69	35.95	32.14	0.20	-0.20	1.52
3,250.00	1.02	164.79	3,249.18	29.27	36.07	31.74	0.34	0.24	14.04
3,275.00	1.11	169.45	3,274.18	28.82	36.18	31.30	0.50	0.36	18.64
3,300.00	1.17	167.06	3,299.17	28.33	36.28	30.82	0.31	0.24	-9.56
3,325.00	1.16	164.80	3,324.17	27.84	36.40	30.33	0.19	-0.04	-9.04
3,350.00	1.15	169.40	3,349.16	27.35	36.51	29.85	0.37	-0.04	18.40
3,375.00	1.27	167.08	3,374.16	26.83	36.62	29.34	0.52	0.48	-9.28
3,400.00	1.32	166.00	3,399.15	26.28	36.75	28.81	0.22	0.20	-4.32
3,425.00	1.34	163.62	3,424.14	25.72	36.91	28.26	0.23	0.08	-9.52
3,450.00	1.30	162.19	3,449.14	25.17	37.08	27.72	0.21	-0.16	-5.72
3,475.00	1.55	159.78	3,474.13	24.59	37.28	27.15	1.03	1.00	-9.64
3,500.00	1.61	160.43	3,499.12	23.94	37.51	26.52	0.25	0.24	2.60
3,525.00	1.69	156.57	3,524.11	23.27	37.78	25.87	0.55	0.32	-15.44
3,550.00	1.69	151.39	3,549.10	22.61	38.10	25.23	0.61	0.00	-20.72

Survey Report

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Eider Federal 204H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3551.70ft (Scandrift Freedom)
Site:	Sec. 35, T 24 S., R 32 E	MD Reference:	KB=26' @ 3551.70ft (Scandrift Freedom)
Well:	Eider Federal 204H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,575.00	1.86	156.48	3,574.09	21.91	38.44	24.56	0.93	0.68	20.36
3,600.00	1.99	154.16	3,599.07	21.15	38.79	23.83	0.61	0.52	-9.28
3,625.00	2.13	152.49	3,624.06	20.35	39.19	23.05	0.61	0.56	-6.68
3,650.00	2.29	151.38	3,649.04	19.50	39.65	22.24	0.66	0.64	-4.44
3,675.00	2.25	147.86	3,674.02	18.64	40.15	21.42	0.58	-0.16	-14.08
3,700.00	2.29	148.42	3,699.00	17.80	40.67	20.62	0.18	0.16	2.24
3,725.00	2.31	150.21	3,723.98	16.94	41.18	19.79	0.30	0.08	7.16
3,750.00	2.31	150.65	3,748.96	16.06	41.68	18.96	0.07	0.00	1.76
3,775.00	2.33	146.25	3,773.94	15.20	42.21	18.13	0.72	0.08	-17.60
3,800.00	2.22	148.63	3,798.92	14.36	42.74	17.34	0.58	-0.44	9.52
3,825.00	2.43	154.10	3,823.90	13.47	43.23	16.48	1.22	0.84	21.88
3,850.00	2.34	152.68	3,848.88	12.54	43.69	15.59	0.43	-0.36	-5.68
3,875.00	2.33	150.54	3,873.86	11.65	44.18	14.73	0.35	-0.04	-8.56
3,900.00	2.29	156.51	3,898.83	10.75	44.63	13.86	0.98	-0.16	-23.88
3,925.00	2.37	156.91	3,923.81	9.81	45.03	12.96	0.33	0.32	1.60
3,950.00	2.50	156.93	3,948.79	8.84	45.44	12.01	0.52	0.52	0.08
3,975.00	2.45	151.52	3,973.77	7.86	45.91	11.08	0.96	-0.20	-21.64
4,000.00	2.34	151.89	3,998.75	6.94	46.41	10.19	0.44	-0.44	1.48
4,025.00	2.51	153.35	4,023.72	6.01	46.89	9.29	0.72	0.68	5.84
4,050.00	2.48	152.60	4,048.70	5.04	47.39	8.36	0.18	-0.12	-3.00
4,075.00	2.39	156.22	4,073.68	4.08	47.85	7.44	0.71	-0.36	14.48
4,100.00	2.76	149.89	4,098.65	3.08	48.36	6.48	1.86	1.48	-25.32
4,125.00	2.91	147.12	4,123.62	2.03	49.01	5.47	0.81	0.60	-11.08
4,150.00	3.14	146.08	4,148.59	0.93	49.73	4.42	0.95	0.92	-4.16
4,175.00	3.37	145.82	4,173.55	-0.25	50.53	3.31	0.92	0.92	-1.04
4,200.00	3.45	144.14	4,198.50	-1.47	51.38	2.15	0.51	0.32	-6.72
4,225.00	3.61	141.86	4,223.46	-2.70	52.31	0.99	0.85	0.64	-9.12
4,250.00	3.62	143.43	4,248.41	-3.95	53.26	-0.19	0.40	0.04	6.28
4,275.00	3.69	141.99	4,273.35	-5.22	54.23	-1.39	0.46	0.28	-5.76
4,300.00	3.66	142.46	4,298.30	-6.48	55.21	-2.58	0.17	-0.12	1.88
4,325.00	3.76	142.98	4,323.25	-7.77	56.19	-3.80	0.42	0.40	2.08
4,350.00	3.87	139.99	4,348.20	-9.07	57.23	-5.02	0.91	0.44	-11.96
4,375.00	4.12	140.44	4,373.13	-10.41	58.34	-6.28	1.01	1.00	1.80
4,400.00	4.42	138.52	4,398.07	-11.82	59.55	-7.60	1.33	1.20	-7.68
4,425.00	4.66	136.67	4,422.99	-13.28	60.89	-8.96	1.12	0.96	-7.40
4,450.00	5.04	137.24	4,447.90	-14.83	62.33	-10.40	1.53	1.52	2.28
4,475.00	5.48	137.17	4,472.79	-16.51	63.89	-11.97	1.76	1.76	-0.28
4,500.00	5.89	135.72	4,497.67	-18.30	65.59	-13.64	1.74	1.64	-5.80
4,525.00	5.83	135.02	4,522.54	-20.12	67.39	-15.33	0.37	-0.24	-2.80
4,550.00	5.91	135.18	4,547.41	-21.93	69.19	-17.01	0.33	0.32	0.64
4,575.00	6.14	134.89	4,572.27	-23.79	71.05	-18.73	0.93	0.92	-1.16
4,600.00	6.13	134.71	4,597.13	-25.67	72.94	-20.47	0.09	-0.04	-0.72
4,625.00	6.01	133.94	4,621.99	-27.52	74.83	-22.18	0.58	-0.48	-3.08

Survey Report

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Eider Federal 204H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3551.70ft (Scandriil Freedom)
Site:	Sec. 35, T 24 S. , R 32 E	MD Reference:	KB=26' @ 3551.70ft (Scandriil Freedom)
Well:	Eider Federal 204H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,650.00	6.06	134.09	4,646.85	-29.35	76.72	-23.87	0.21	0.20	0.60
4,675.00	6.28	133.45	4,671.70	-31.20	78.66	-25.59	0.92	0.88	-2.56
4,700.00	6.28	131.17	4,696.55	-33.04	80.69	-27.28	1.00	0.00	-9.12
4,725.00	6.29	131.62	4,721.40	-34.85	82.74	-28.94	0.20	0.04	1.80
4,750.00	6.34	130.51	4,746.25	-36.66	84.81	-30.60	0.53	0.20	-4.44
4,775.00	6.44	129.26	4,771.10	-38.44	86.95	-32.23	0.69	0.40	-5.00
4,800.00	6.73	128.57	4,795.93	-40.24	89.18	-33.87	1.20	1.16	-2.76
4,825.00	6.75	127.58	4,820.76	-42.05	91.49	-35.51	0.47	0.08	-3.96
4,850.00	6.72	127.47	4,845.58	-43.84	93.81	-37.13	0.13	-0.12	-0.44
4,875.00	6.80	128.65	4,870.41	-45.65	96.13	-38.77	0.64	0.32	4.72
4,900.00	6.86	128.56	4,895.23	-47.51	98.45	-40.46	0.24	0.24	-0.36
4,925.00	6.98	126.22	4,920.05	-49.34	100.85	-42.12	1.23	0.48	-9.36
4,950.00	6.93	128.00	4,944.87	-51.16	103.26	-43.77	0.89	-0.20	7.12
4,975.00	7.01	127.37	4,969.68	-53.02	105.66	-45.45	0.44	0.32	-2.52
5,000.00	6.83	128.07	4,994.50	-54.86	108.04	-47.12	0.80	-0.72	2.80
5,025.00	6.86	128.81	5,019.32	-56.71	110.38	-48.80	0.37	0.12	2.96
5,050.00	6.88	129.12	5,044.14	-58.59	112.70	-50.51	0.17	0.08	1.24
5,075.00	6.76	127.96	5,068.97	-60.44	115.02	-52.20	0.73	-0.48	-4.64
5,100.00	6.69	129.56	5,093.79	-62.28	117.31	-53.86	0.80	-0.28	6.40
5,125.00	6.76	129.97	5,118.62	-64.15	119.56	-55.57	0.34	0.28	1.64
5,150.00	6.71	130.04	5,143.45	-66.03	121.80	-57.29	0.20	-0.20	0.28
5,175.00	6.60	129.72	5,168.28	-67.89	124.03	-58.99	0.46	-0.44	-1.28
5,200.00	6.66	130.50	5,193.11	-69.75	126.23	-60.69	0.43	0.24	3.12
5,225.00	6.66	130.04	5,217.95	-71.62	128.45	-62.40	0.21	0.00	-1.84
5,250.00	6.58	129.44	5,242.78	-73.47	130.66	-64.09	0.42	-0.32	-2.40
5,275.00	6.59	131.20	5,267.61	-75.32	132.85	-65.78	0.81	0.04	7.04
5,300.00	6.69	130.47	5,292.45	-77.21	135.03	-67.51	0.52	0.40	-2.92
5,325.00	6.73	129.49	5,317.27	-79.09	137.27	-69.23	0.49	0.16	-3.92
5,350.00	6.80	129.30	5,342.10	-80.96	139.55	-70.93	0.29	0.28	-0.76
5,375.00	6.66	130.63	5,366.93	-82.84	141.79	-72.65	0.84	-0.56	5.32
5,400.00	6.69	130.64	5,391.76	-84.73	144.00	-74.38	0.12	0.12	0.04
5,425.00	6.82	130.92	5,416.59	-86.65	146.23	-76.14	0.54	0.52	1.12
5,450.00	6.82	131.17	5,441.41	-88.60	148.47	-77.93	0.12	0.00	1.00
5,475.00	6.89	131.14	5,466.23	-90.57	150.71	-79.73	0.28	0.28	-0.12
5,500.00	6.76	130.14	5,491.05	-92.50	152.97	-81.50	0.70	-0.52	-4.00
5,525.00	6.88	130.71	5,515.88	-94.43	155.23	-83.26	0.55	0.48	2.28
5,550.00	6.74	130.55	5,540.70	-96.36	157.48	-85.03	0.57	-0.56	-0.64
5,575.00	6.98	130.81	5,565.52	-98.30	159.74	-86.81	0.97	0.96	1.04
5,600.00	7.04	130.88	5,590.33	-100.30	162.05	-88.64	0.24	0.24	0.28
5,625.00	6.93	131.77	5,615.15	-102.31	164.33	-90.48	0.62	-0.44	3.56
5,650.00	6.66	130.16	5,639.97	-104.25	166.56	-92.26	1.32	-1.08	-6.44
5,675.00	6.74	130.24	5,664.80	-106.13	168.79	-93.98	0.32	0.32	0.32
5,700.00	6.51	129.45	5,689.63	-107.98	171.01	-95.67	0.99	-0.92	-3.16

Survey Report

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Eider Federal 204H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3551.70ft (Scandril Freedom)
Site:	Sec. 35, T 24 S , R 32 E	MD Reference:	KB=26' @ 3551.70ft (Scandril Freedom)
Well:	Eider Federal 204H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
5,725.00	6.65	129.99	5,714.47	-109.81	173.21	-97.34	0.61	0.56	2.16
5,750.00	6.55	130.97	5,739.30	-111.67	175.40	-99.05	0.60	-0.40	3.92
5,775.00	6.64	130.28	5,764.14	-113.54	177.57	-100.76	0.48	0.36	-2.76
5,800.00	6.69	129.62	5,788.97	-115.40	179.80	-102.46	0.37	0.20	-2.64
5,825.00	6.66	130.28	5,813.80	-117.27	182.03	-104.17	0.33	-0.12	2.64
5,850.00	6.83	129.53	5,838.63	-119.15	184.28	-105.89	0.77	0.68	-3.00
5,875.00	6.78	128.57	5,863.45	-121.02	186.58	-107.58	0.50	-0.20	-3.84
5,900.00	6.87	130.11	5,888.27	-122.90	188.88	-109.30	0.82	0.36	6.16
5,925.00	6.86	129.99	5,913.10	-124.83	191.16	-111.06	0.07	-0.04	-0.48
5,950.00	6.79	129.58	5,937.92	-126.73	193.45	-112.79	0.34	-0.28	-1.64
5,975.00	6.85	129.95	5,962.74	-128.63	195.73	-114.53	0.30	0.24	1.48
6,000.00	6.78	128.23	5,987.56	-130.50	198.03	-116.23	0.86	-0.28	-6.88
6,025.00	6.59	129.48	6,012.39	-132.32	200.30	-117.89	0.96	-0.76	5.00
6,050.00	6.84	129.24	6,037.22	-134.18	202.56	-119.58	1.01	1.00	-0.96
6,075.00	6.75	127.76	6,062.05	-136.02	204.87	-121.26	0.79	-0.36	-5.92
6,100.00	6.83	127.92	6,086.87	-137.83	207.21	-122.90	0.33	0.32	0.64
6,125.00	6.78	128.48	6,111.70	-139.66	209.53	-124.57	0.33	-0.20	2.24
6,150.00	6.61	127.99	6,136.53	-141.47	211.82	-126.20	0.72	-0.68	-1.96
6,175.00	6.55	129.05	6,161.36	-143.25	214.07	-127.83	0.54	-0.24	4.24
6,200.00	6.60	127.57	6,186.20	-145.02	216.31	-129.44	0.71	0.20	-5.92
6,225.00	6.59	127.44	6,211.03	-146.77	218.59	-131.02	0.07	-0.04	-0.52
6,250.00	6.77	127.65	6,235.86	-148.55	220.89	-132.63	0.73	0.72	0.84
6,275.00	6.75	127.82	6,260.69	-150.35	223.22	-134.26	0.11	-0.08	0.68
6,300.00	6.93	127.04	6,285.51	-152.16	225.59	-135.90	0.81	0.72	-3.12
6,325.00	6.89	125.53	6,310.33	-153.94	228.01	-137.50	0.74	-0.16	-6.04
6,350.00	6.69	123.28	6,335.15	-155.61	230.45	-139.00	1.33	-0.80	-9.00
6,375.00	6.87	117.92	6,359.98	-157.11	232.99	-140.31	2.63	0.72	-21.44
6,400.00	6.77	117.91	6,384.80	-158.50	235.61	-141.51	0.40	-0.40	-0.04
6,425.00	6.92	117.73	6,409.62	-159.89	238.25	-142.72	0.61	0.60	-0.72
6,450.00	6.75	118.34	6,434.45	-161.28	240.87	-143.93	0.74	-0.68	2.44
6,475.00	6.75	118.53	6,459.27	-162.68	243.46	-145.14	0.09	0.00	0.76
6,500.00	6.79	117.93	6,484.10	-164.08	246.05	-146.35	0.33	0.16	-2.40
6,525.00	6.64	117.26	6,508.93	-165.43	248.64	-147.52	0.68	-0.60	-2.68
6,550.00	6.91	117.10	6,533.75	-166.78	251.27	-148.68	1.08	1.08	-0.64
6,575.00	6.67	116.07	6,558.58	-168.10	253.91	-149.81	1.08	-0.96	-4.12
6,600.00	6.64	116.06	6,583.41	-169.37	256.51	-150.90	0.12	-0.12	-0.04
6,625.00	6.42	111.44	6,608.25	-170.52	259.11	-151.86	2.28	-0.88	-18.48
6,650.00	6.68	106.95	6,633.08	-171.46	261.80	-152.60	2.30	1.04	-17.96
6,675.00	6.82	104.98	6,657.91	-172.26	264.63	-153.21	1.08	0.56	-7.88
6,700.00	6.85	102.11	6,682.73	-172.96	267.52	-153.70	1.37	0.12	-11.48
6,725.00	7.39	97.73	6,707.54	-173.49	270.57	-154.01	3.06	2.16	-17.52
6,750.00	8.03	94.98	6,732.31	-173.86	273.90	-154.14	2.95	2.56	-11.00
6,775.00	7.95	94.61	6,757.07	-174.15	277.37	-154.19	0.38	-0.32	-1.48
6,800.00	7.87	94.59	6,781.83	-174.42	280.80	-154.22	0.32	-0.32	-0.08

Survey Report

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Eider Federal 204H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3551.70ft (Scandril Freedom)
Site:	Sec. 35, T 24 S. , R 32 E	MD Reference:	KB=26' @ 3551.70ft (Scandril Freedom)
Well:	Eider Federal 204H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,825.00	8.01	95.99	6,806.59	-174.74	284.23	-154.30	0.95	0.56	5.60
6,850.00	8.13	97.52	6,831.35	-175.15	287.72	-154.46	0.98	0.48	6.12
6,875.00	8.24	97.35	6,856.09	-175.62	291.25	-154.68	0.45	0.44	-0.68
6,900.00	8.23	96.57	6,880.83	-176.05	294.80	-154.86	0.45	-0.04	-3.12
6,925.00	8.36	96.74	6,905.57	-176.47	298.39	-155.02	0.53	0.52	0.68
6,950.00	8.52	95.40	6,930.30	-176.85	302.03	-155.15	1.01	0.64	-5.36
6,975.00	8.48	92.30	6,955.03	-177.10	305.72	-155.14	1.84	-0.16	-12.40
7,000.00	8.32	91.96	6,979.76	-177.24	309.37	-155.02	0.67	-0.64	-1.36
7,025.00	8.27	88.48	7,004.50	-177.25	312.97	-154.78	2.02	-0.20	-13.92
7,050.00	7.96	80.60	7,029.25	-176.92	316.48	-154.20	4.61	-1.24	-31.52
7,075.00	7.88	77.32	7,054.01	-176.26	319.86	-153.31	1.84	-0.32	-13.12
7,100.00	7.91	76.50	7,078.77	-175.49	323.20	-152.30	0.47	0.12	-3.28
7,125.00	7.82	77.17	7,103.54	-174.71	326.53	-151.29	0.51	-0.36	2.68
7,150.00	7.86	77.64	7,128.30	-173.96	329.86	-150.31	0.30	0.16	1.88
7,175.00	7.85	77.13	7,153.07	-173.22	333.20	-149.33	0.28	-0.04	-2.04
7,200.00	7.77	77.05	7,177.84	-172.46	336.51	-148.34	0.32	-0.32	-0.32
7,225.00	7.97	77.62	7,202.60	-171.71	339.85	-147.36	0.86	0.80	2.28
7,250.00	8.00	77.47	7,227.36	-170.96	343.24	-146.37	0.15	0.12	-0.60
7,275.00	8.01	78.23	7,252.11	-170.23	346.64	-145.40	0.43	0.04	3.04
7,300.00	8.04	78.32	7,276.87	-169.52	350.06	-144.45	0.13	0.12	0.36
7,325.00	8.14	78.49	7,301.62	-168.81	353.51	-143.50	0.41	0.40	0.68
7,350.00	8.16	80.38	7,326.37	-168.16	356.99	-142.61	1.07	0.08	7.56
7,375.00	8.39	80.20	7,351.11	-167.55	360.54	-141.76	0.93	0.92	-0.72
7,400.00	8.16	78.75	7,375.85	-166.90	364.07	-140.85	1.24	-0.92	-5.80
7,425.00	8.20	78.69	7,400.59	-166.20	367.56	-139.91	0.16	0.16	-0.24
7,450.00	8.37	78.97	7,425.33	-165.50	371.10	-138.97	0.70	0.68	1.12
7,475.00	8.07	79.38	7,450.08	-164.83	374.61	-138.05	1.22	-1.20	1.64
7,500.00	8.04	80.01	7,474.83	-164.20	378.05	-137.18	0.37	-0.12	2.52
7,525.00	7.95	80.24	7,499.59	-163.61	381.48	-136.35	0.38	-0.36	0.92
7,550.00	7.93	79.89	7,524.35	-163.01	384.88	-135.51	0.21	-0.08	-1.40
7,575.00	7.85	79.98	7,549.11	-162.41	388.26	-134.68	0.32	-0.32	0.36
7,600.00	7.88	80.52	7,573.87	-161.83	391.63	-133.86	0.32	0.12	2.16
7,625.00	7.74	81.08	7,598.64	-161.29	394.98	-133.08	0.64	-0.56	2.24
7,650.00	7.62	81.16	7,623.42	-160.77	398.29	-132.34	0.48	-0.48	0.32
7,675.00	7.56	80.91	7,648.20	-160.26	401.55	-131.59	0.27	-0.24	-1.00
7,700.00	7.29	81.79	7,672.99	-159.77	404.74	-130.88	1.17	-1.08	3.52
7,725.00	7.28	81.80	7,697.79	-159.32	407.88	-130.21	0.04	-0.04	0.04
7,750.00	7.27	81.55	7,722.59	-158.86	411.01	-129.53	0.13	-0.04	-1.00
7,775.00	7.13	82.65	7,747.39	-158.43	414.11	-128.88	0.79	-0.56	4.40
7,800.00	6.93	82.79	7,772.20	-158.04	417.15	-128.28	0.80	-0.80	0.56
7,825.00	6.94	82.37	7,797.02	-157.65	420.14	-127.68	0.21	0.04	-1.68
7,850.00	6.94	82.97	7,821.84	-157.27	423.14	-127.09	0.29	0.00	2.40
7,875.00	6.96	82.67	7,846.65	-156.89	426.14	-126.50	0.17	0.08	-1.20

Survey Report

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Eider Federal 204H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3551.70ft (Scandril Freedom)
Site:	Sec. 35, T 24 S., R 32 E	MD Reference:	KB=26' @ 3551.70ft (Scandril Freedom)
Well:	Eider Federal 204H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,900.00	6.86	83.65	7,871.47	-156.53	429.13	-125.93	0.62	-0.40	3.92
7,925.00	6.89	83.32	7,896.29	-156.19	432.10	-125.39	0.20	0.12	-1.32
7,950.00	6.76	83.63	7,921.11	-155.85	435.05	-124.84	0.54	-0.52	1.24
7,975.00	6.88	83.27	7,945.94	-155.52	438.00	-124.30	0.51	0.48	-1.44
8,000.00	6.66	83.36	7,970.76	-155.17	440.93	-123.75	0.88	-0.88	0.36
8,025.00	6.72	83.95	7,995.59	-154.85	443.82	-123.22	0.36	0.24	2.36
8,050.00	6.43	83.09	8,020.43	-154.53	446.67	-122.70	1.23	-1.16	-3.44
8,075.00	6.54	85.03	8,045.27	-154.24	449.48	-122.21	0.98	0.44	7.76
8,100.00	6.39	85.76	8,070.11	-154.01	452.28	-121.79	0.68	-0.60	2.92
8,125.00	6.58	86.54	8,094.95	-153.82	455.10	-121.40	0.84	0.76	3.12
8,150.00	6.23	84.82	8,119.79	-153.61	457.88	-121.00	1.60	-1.40	-6.88
8,175.00	6.15	84.82	8,144.65	-153.37	460.56	-120.56	0.32	-0.32	0.00
8,200.00	6.07	84.70	8,169.51	-153.13	463.21	-120.14	0.32	-0.32	-0.48
8,225.00	6.05	86.50	8,194.37	-152.92	465.84	-119.75	0.76	-0.08	7.20
8,250.00	5.80	86.30	8,219.23	-152.76	468.42	-119.41	1.00	-1.00	-0.80
8,275.00	5.81	86.98	8,244.10	-152.61	470.94	-119.08	0.28	0.04	2.72
8,300.00	5.58	87.13	8,268.98	-152.49	473.42	-118.78	0.92	-0.92	0.60
8,325.00	5.65	88.15	8,293.86	-152.39	475.87	-118.51	0.49	0.28	4.08
8,350.00	5.46	89.11	8,318.74	-152.33	478.28	-118.28	0.85	-0.76	3.84
8,375.00	5.53	89.04	8,343.63	-152.29	480.68	-118.07	0.28	0.28	-0.28
8,400.00	5.33	90.04	8,368.52	-152.27	483.04	-117.89	0.89	-0.80	4.00
8,425.00	5.32	89.85	8,393.41	-152.27	485.36	-117.72	0.08	-0.04	-0.76
8,450.00	5.17	90.32	8,418.30	-152.27	487.65	-117.56	0.62	-0.60	1.88
8,475.00	5.06	90.29	8,443.20	-152.28	489.88	-117.42	0.44	-0.44	-0.12
8,500.00	4.95	90.79	8,468.11	-152.30	492.06	-117.28	0.47	-0.44	2.00
8,525.00	4.72	90.54	8,493.02	-152.33	494.17	-117.16	0.92	-0.92	-1.00
8,550.00	4.76	92.95	8,517.93	-152.39	496.23	-117.08	0.81	0.16	9.64
8,575.00	4.60	90.16	8,542.85	-152.45	498.27	-116.99	1.11	-0.64	-11.16
8,600.00	4.43	91.52	8,567.77	-152.47	500.24	-116.88	0.80	-0.68	5.44
8,625.00	4.27	89.44	8,592.70	-152.49	502.13	-116.76	0.90	-0.64	-8.32
8,650.00	4.20	91.80	8,617.63	-152.51	503.98	-116.65	0.75	-0.28	9.44
8,675.00	4.12	90.24	8,642.57	-152.54	505.79	-116.56	0.55	-0.32	-6.24
8,700.00	3.89	92.28	8,667.51	-152.58	507.54	-116.47	1.08	-0.92	8.16
8,725.00	3.88	92.20	8,692.45	-152.65	509.23	-116.42	0.05	-0.04	-0.32
8,750.00	3.90	96.66	8,717.39	-152.78	510.92	-116.43	1.21	0.08	17.84
8,767.00	3.68	93.93	8,734.35	-152.88	512.04	-116.46	1.67	-1.29	-16.06
Tie In to Gyro Surveys @ 8767'MD									
8,780.00	3.49	95.99	8,747.33	-152.95	512.85	-116.47	1.77	-1.46	15.85
First MWD Survey @ 8780'MD									
8,812.00	3.60	94.71	8,779.27	-153.14	514.82	-116.51	0.42	0.34	-4.00
8,843.00	3.37	96.65	8,810.21	-153.32	516.69	-116.57	0.83	-0.74	6.26
8,875.00	3.27	93.45	8,842.16	-153.49	518.54	-116.60	0.66	-0.31	-10.00
8,937.00	4.58	64.75	8,904.01	-152.54	522.54	-115.37	3.74	2.11	-46.29
8,968.00	8.38	44.32	8,934.81	-150.39	525.24	-113.04	14.15	12.26	-65.90

Survey Report

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Eider Federal 204H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3551.70ft (Scandrill Freedom)
Site:	Sec. 35, T 24 S., R 32 E	MD Reference:	KB=26' @ 3551.70ft (Scandrill Freedom)
Well:	Eider Federal 204H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,015.00	13.96	31.34	8,980.91	-143.09	530.59	-105.38	12.95	11.87	-27.62
9,062.00	19.62	23.62	9,025.90	-131.01	536.70	-92.90	12.92	12.04	-16.43
9,109.00	25.07	14.79	9,069.36	-114.13	542.41	-75.66	13.59	11.60	-18.79
9,156.00	29.84	7.59	9,111.07	-92.90	546.50	-54.19	12.35	10.15	-15.32
9,203.00	35.68	7.19	9,150.58	-67.69	549.77	-28.81	12.43	12.43	-0.85
9,250.00	39.96	3.36	9,187.70	-39.00	552.37	-0.02	10.38	9.11	-8.15
9,297.00	43.84	1.38	9,222.68	-7.65	553.64	31.35	8.72	8.26	-4.21
9,343.00	49.76	359.37	9,254.16	25.86	553.84	64.79	13.26	12.87	-4.37
9,436.00	63.69	356.84	9,305.06	103.37	551.13	141.91	15.15	14.98	-2.72
9,460.16	67.15	356.99	9,315.11	125.30	549.95	163.71	14.35	14.34	0.61
FTP @ 9460'MD (330°FSL)									
9,483.00	70.43	357.12	9,323.37	146.57	548.86	184.84	14.35	14.34	0.58
9,530.00	72.82	356.81	9,338.18	191.10	546.49	229.10	5.12	5.09	-0.66
9,624.00	80.57	358.90	9,359.80	282.44	543.10	319.98	8.52	8.24	2.22
9,747.00	88.92	359.88	9,371.06	404.81	541.80	441.95	6.83	6.79	0.80
9,840.00	88.59	357.38	9,373.08	497.75	539.58	534.50	2.71	-0.35	-2.69
9,934.00	88.87	359.42	9,375.16	591.69	536.96	628.02	2.19	0.30	2.17
10,028.00	90.29	1.34	9,375.85	685.68	537.58	721.82	2.54	1.51	2.04
10,122.00	90.21	1.10	9,375.44	779.65	539.58	815.71	0.27	-0.09	-0.26
10,215.00	90.55	0.82	9,374.83	872.64	541.14	908.57	0.47	0.37	-0.30
10,308.00	90.85	1.10	9,373.69	965.62	542.70	1,001.43	0.44	0.32	0.30
10,403.00	91.02	0.75	9,372.14	1,060.59	544.23	1,096.28	0.41	0.18	-0.37
10,496.00	91.53	1.59	9,370.07	1,153.55	546.13	1,189.13	1.06	0.55	0.90
10,591.00	90.04	359.83	9,368.77	1,248.53	547.31	1,283.96	2.43	-1.57	-1.85
10,684.00	91.67	0.61	9,367.38	1,341.51	547.66	1,376.74	1.94	1.75	0.84
10,777.00	93.94	359.74	9,362.83	1,434.39	547.95	1,469.41	2.61	2.44	-0.94
10,871.00	90.24	357.05	9,359.40	1,528.27	545.32	1,562.87	4.87	-3.94	-2.86
10,964.00	90.80	357.83	9,358.56	1,621.17	541.16	1,655.25	1.03	0.60	0.84
11,058.00	88.73	358.99	9,358.94	1,715.13	538.55	1,748.79	2.52	-2.20	1.23
11,151.00	88.61	359.50	9,361.10	1,808.09	537.33	1,841.44	0.56	-0.13	0.55
11,245.00	88.56	359.79	9,363.42	1,902.06	536.75	1,935.13	0.31	-0.05	0.31
11,338.00	87.58	0.00	9,366.55	1,995.01	536.58	2,027.83	1.08	-1.05	0.23
11,432.00	89.34	1.58	9,369.08	2,088.96	537.87	2,121.64	2.52	1.87	1.68
11,525.00	91.05	1.57	9,368.76	2,181.92	540.43	2,214.55	1.84	1.84	-0.01
11,618.00	91.78	1.72	9,366.47	2,274.85	543.10	2,307.44	0.80	0.78	0.16
11,712.00	89.06	0.47	9,365.78	2,368.82	544.89	2,401.31	3.18	-2.89	-1.33
11,806.00	90.07	0.59	9,366.49	2,462.81	545.76	2,495.13	1.08	1.07	0.13
11,901.00	89.73	1.06	9,366.66	2,557.80	547.13	2,589.98	0.61	-0.36	0.49
11,994.00	89.71	359.97	9,367.11	2,650.80	547.97	2,682.80	1.17	-0.02	-1.17
12,089.00	92.26	0.22	9,365.48	2,745.78	548.12	2,777.55	2.70	2.68	0.26
12,183.00	92.00	358.24	9,361.99	2,839.70	546.86	2,871.15	2.12	-0.28	-2.11
12,276.00	89.23	357.23	9,360.99	2,932.61	543.19	2,963.57	3.17	-2.98	-1.09
12,369.00	88.98	357.44	9,362.44	3,025.50	538.86	3,055.93	0.35	-0.27	0.23

Survey Report

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Eider Federal 204H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3551.70ft (Scandril Freedom)
Site:	Sec. 35, T 24 S., R 32 E	MD Reference:	KB=26' @ 3551.70ft (Scandril Freedom)
Well:	Eider Federal 204H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,462.00	89.32	358.10	9,363.82	3,118.42	535.24	3,148.36	0.80	0.37	0.71
12,555.00	89.82	358.67	9,364.52	3,211.38	532.62	3,240.90	0.82	0.54	0.61
12,649.00	91.19	0.74	9,363.69	3,305.36	532.14	3,334.63	2.64	1.46	2.20
12,742.00	88.59	1.03	9,363.87	3,398.34	533.58	3,427.48	2.81	-2.80	0.31
12,836.00	89.96	0.63	9,365.06	3,492.32	534.94	3,521.32	1.52	1.46	-0.43
12,931.00	89.93	0.45	9,365.15	3,587.32	535.83	3,616.14	0.19	-0.03	-0.19
13,024.00	91.72	0.00	9,363.81	3,680.31	536.20	3,708.92	1.98	1.92	-0.48
13,117.00	91.91	0.39	9,360.86	3,773.26	536.51	3,801.67	0.47	0.20	0.42
13,211.00	91.80	0.11	9,357.82	3,867.21	536.92	3,895.41	0.32	-0.12	-0.30
13,304.00	90.85	0.29	9,355.67	3,960.18	537.25	3,988.18	1.04	-1.02	0.19
13,397.00	90.27	359.95	9,354.76	4,053.18	537.44	4,080.96	0.72	-0.62	-0.37
13,491.00	90.32	0.71	9,354.28	4,147.17	537.98	4,174.76	0.81	0.05	0.81
13,584.00	89.23	0.16	9,354.64	4,240.17	538.69	4,267.57	1.31	-1.17	-0.59
13,677.00	89.71	358.82	9,355.50	4,333.16	537.86	4,360.27	1.53	0.52	-1.44
13,771.00	89.48	359.06	9,356.17	4,427.14	536.12	4,453.90	0.35	-0.24	0.26
13,864.00	89.76	359.10	9,356.78	4,520.13	534.63	4,546.55	0.30	0.30	0.04
13,958.00	89.93	0.21	9,357.04	4,614.12	534.07	4,640.27	1.19	0.18	1.18
14,051.00	89.65	0.10	9,357.38	4,707.12	534.32	4,733.06	0.32	-0.30	-0.12
14,144.00	89.68	0.61	9,357.92	4,800.12	534.89	4,825.86	0.55	0.03	0.55
14,237.00	89.93	359.70	9,358.24	4,893.11	535.14	4,918.65	1.01	0.27	-0.98
14,331.00	88.36	359.15	9,359.64	4,987.10	534.20	5,012.33	1.77	-1.67	-0.59
14,426.00	89.59	359.15	9,361.34	5,082.07	532.79	5,106.97	1.29	1.29	0.00
14,520.00	90.49	359.63	9,361.28	5,176.06	531.79	5,200.66	1.09	0.96	0.51
14,614.00	90.68	359.77	9,360.32	5,270.06	531.30	5,294.38	0.25	0.20	0.15
14,708.00	90.32	0.20	9,359.50	5,364.05	531.27	5,388.14	0.60	-0.38	0.46
14,801.00	90.63	359.90	9,358.72	5,457.05	531.36	5,480.92	0.46	0.33	-0.32
14,895.00	91.61	358.99	9,356.89	5,551.02	530.45	5,574.59	1.42	1.04	-0.97
14,989.00	92.25	359.23	9,353.72	5,644.96	528.99	5,668.19	0.73	0.68	0.26
15,081.00	92.20	359.52	9,350.15	5,736.88	527.98	5,759.82	0.32	-0.05	0.32
15,175.00	91.86	0.27	9,346.82	5,830.82	527.81	5,853.51	0.88	-0.36	0.80
15,268.00	91.75	0.63	9,343.89	5,923.77	528.54	5,946.29	0.40	-0.12	0.39
15,362.00	89.01	359.61	9,343.27	6,017.76	528.74	6,040.05	3.11	-2.91	-1.09
15,455.00	88.64	359.23	9,345.17	6,110.74	527.80	6,132.73	0.57	-0.40	-0.41
15,549.00	87.72	359.34	9,348.16	6,204.68	526.62	6,226.36	0.99	-0.98	0.12
15,642.00	90.18	0.34	9,349.86	6,297.66	526.37	6,319.09	2.86	2.65	1.08
15,737.00	90.21	0.60	9,349.54	6,392.65	527.14	6,413.90	0.28	0.03	0.27
15,830.00	90.15	0.84	9,349.25	6,485.65	528.31	6,506.75	0.27	-0.06	0.26
15,923.00	89.82	0.52	9,349.27	6,578.64	529.42	6,599.59	0.49	-0.35	-0.34
16,018.00	89.96	0.77	9,349.46	6,673.63	530.49	6,694.42	0.30	0.15	0.26
16,111.00	89.87	1.15	9,349.59	6,766.62	532.04	6,787.29	0.42	-0.10	0.41
16,204.00	89.43	2.01	9,350.16	6,859.58	534.61	6,880.20	1.04	-0.47	0.92
16,298.00	90.71	2.94	9,350.05	6,953.49	538.67	6,974.16	1.68	1.36	0.99
16,392.00	90.01	359.14	9,349.46	7,047.46	540.37	7,068.01	4.11	-0.74	-4.04

Survey Report

Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Eider Federal 204H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=26' @ 3551.70ft (Scandrift Freedom)
Site:	Sec. 35, T 24 S., R 32 E	MD Reference:	KB=26' @ 3551.70ft (Scandrift Freedom)
Well:	Eider Federal 204H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,485.00	89.29	359.02	9,350.02	7,140.44	538.88	7,160.66	0.78	-0.77	-0.13
16,579.00	88.28	359.09	9,352.02	7,234.41	537.33	7,254.28	1.08	-1.07	0.07
16,673.00	86.07	358.91	9,356.65	7,328.27	535.69	7,347.80	2.36	-2.35	-0.19
16,730.09	88.11	358.98	9,359.55	7,385.28	534.64	7,404.59	3.58	3.57	0.13
LTP @ 16730'MD (330'FNL)									
16,767.00	89.43	359.03	9,360.34	7,422.17	534.00	7,441.35	3.58	3.57	0.13
Last MWD Survey @ 16767'MD									
16,835.00	89.43	359.03	9,361.02	7,490.16	532.85	7,509.09	0.00	0.00	0.00
PTB @ TD @ 16835'MD									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N-S (ft)	+E-W (ft)	
8,767.00	8,734.35	-152.88	512.04	Tie in to Gyro Surveys @ 8767'MD
8,780.00	8,747.33	-152.95	512.85	First MWD Survey @ 8780'MD
9,460.16	9,315.11	125.30	549.95	FTP @ 9460'MD (330'FSL)
16,730.09	9,359.55	7,385.28	534.64	LTP @ 16730'MD (330'FNL)
16,767.00	9,360.34	7,422.17	534.00	Last MWD Survey @ 16767'MD
16,835.00	9,361.02	7,490.16	532.85	PTB @ TD @ 16835'MD

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------