



Company: COG
 Well: Stealth Federal Com 4H
 Location: Lea Co., NM
 Rig: Patriot 2

Job Number: 60391
 Grid Corr.: -0.30
 Lat: 32.65
 Long: -103.78

Date: 10-03-16
 Calculation Method: Minimum Curvature
 Proposed Azimuth:
 RKB - MSL in feet: 20
 Tie Into: Surface

Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)	Distance (ft)	Angle (deg)			
Enter Tie-In Survey on Line 10													
FIELD COPY, NON-DEFINITIVE													
TIE IN	0			0	0	0	0	0					
Gyro	100.00	0.21	37.47	100	100.00	0.15	0.15 N	0.11 E	0.18	37.47	0.21	0.21	37.47
	200.00	0.39	129.46	100	200.00	0.07	0.07 N	0.49 E	0.49	81.27	0.45	0.18	91.99
	300.00	0.23	253.66	100	300.00	-0.20	0.20 S	0.56 E	0.59	109.62	0.55	-0.16	124.20
	400.00	0.40	243.58	100	400.00	-0.41	0.41 S	0.05 E	0.41	172.95	0.18	0.17	-10.08
	500.00	0.29	283.95	100	499.99	-0.50	0.50 S	0.51 W	0.72	225.19	0.26	-0.11	40.37
	600.00	0.72	126.98	100	599.99	-0.82	0.82 S	0.25 W	0.86	197.01	0.99	0.43	-156.97
	700.00	0.52	151.58	100	699.99	-1.60	1.60 S	0.47 E	1.66	163.72	0.33	-0.20	24.60
	800.00	0.32	192.61	100	799.98	-2.27	2.27 S	0.62 E	2.35	164.68	0.35	-0.20	41.03
	900.00	0.96	207.23	100	899.98	-3.29	3.29 S	0.18 E	3.29	176.91	0.66	0.64	14.62
	1000.00	1.31	213.80	100	999.96	-4.98	4.98 S	0.84 W	5.05	189.59	0.37	0.35	6.57
	1100.00	1.27	204.00	100	1099.93	-6.94	6.94 S	1.93 W	7.21	195.52	0.22	-0.04	-9.80
	1200.00	1.25	203.84	100	1199.91	-8.95	8.95 S	2.82 W	9.39	197.48	0.02	-0.02	-0.16
	1300.00	1.23	230.26	100	1299.89	-10.64	10.64 S	4.09 W	11.40	201.01	0.57	-0.02	26.42
	1400.00	1.42	217.31	100	1399.86	-12.31	12.31 S	5.66 W	13.55	204.70	0.35	0.19	-12.95
	1500.00	1.36	222.59	100	1499.83	-14.17	14.17 S	7.22 W	15.90	206.99	0.14	-0.06	5.28
	1600.00	1.01	202.09	100	1599.81	-15.86	15.86 S	8.35 W	17.92	207.77	0.54	-0.35	-20.50
	1700.00	0.85	124.12	100	1699.80	-17.09	17.09 S	8.07 W	18.90	205.27	1.18	-0.16	-77.97
	1800.00	1.10	120.15	100	1799.78	-17.99	17.99 S	6.62 W	19.17	200.22	0.26	0.25	-3.97
	1900.00	1.53	115.79	100	1899.76	-19.05	19.05 S	4.59 W	19.60	193.55	0.44	0.43	-4.36
	2000.00	1.58	102.42	100	1999.72	-19.93	19.93 S	2.04 W	20.04	185.86	0.37	0.05	-13.37
	2100.00	1.59	84.73	100	2099.68	-20.10	20.10 S	0.68 E	20.11	178.05	0.49	0.01	-17.69
	2200.00	1.46	78.30	100	2199.65	-19.71	19.71 S	3.31 E	19.99	170.46	0.21	-0.13	-6.43
	2300.00	1.34	76.62	100	2299.62	-19.19	19.19 S	5.70 E	20.01	163.46	0.13	-0.12	-1.68
	2400.00	1.05	102.49	100	2399.60	-19.11	19.11 S	7.73 E	20.62	157.98	0.61	-0.29	25.87
	2500.00	1.08	104.89	100	2499.58	-19.55	19.55 S	9.54 E	21.75	154.00	0.05	0.03	2.40
	2600.00	0.82	117.73	100	2599.57	-20.13	20.13 S	11.08 E	22.98	151.17	0.33	-0.26	12.84
	2700.00	0.37	202.42	100	2699.56	-20.76	20.76 S	11.59 E	23.78	150.83	0.87	-0.45	84.69



Company: COG
 Well: Stealth Federal Com 4H
 Location: Lea Co., NM
 Rig: Patriot 2

Job Number: 60391
 Grid Corr.: -0.30
 Lat: 32.65
 Long: -103.78

Calculation Method: Minimum Curvature
 Proposed Azimuth:
 RKB - MSL in feet: 20
 Tie Into: Surface

Survey Tool Type	Survey Depth (ft)	Inclina- tion (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)	Distance (ft)	Angle (deg)			
	2800.00	0.64	152.07	100	2799.56	-21.55	21.55 S	11.73 E	24.54	151.45	0.49	0.27	-50.35
	2900.00	0.37	249.68	100	2899.56	-22.16	22.16 S	11.69 E	25.05	152.19	0.78	-0.27	97.61
	3000.00	0.27	261.42	100	2999.55	-22.30	22.30 S	11.15 E	24.94	153.44	0.12	-0.10	11.74
	3100.00	0.85	300.61	100	3099.55	-21.96	21.96 S	10.28 E	24.25	154.92	0.66	0.58	39.19
	3200.00	0.60	286.62	100	3199.54	-21.43	21.43 S	9.14 E	23.30	156.91	0.30	-0.25	-13.99
	3300.00	0.80	229.72	100	3299.53	-21.74	21.74 S	8.11 E	23.20	159.55	0.69	0.20	-56.90
	3400.00	0.93	239.27	100	3399.52	-22.60	22.60 S	6.88 E	23.62	163.08	0.19	0.13	9.55
	3500.00	1.01	233.01	100	3499.51	-23.55	23.55 S	5.47 E	24.17	166.91	0.13	0.08	-6.26
	3600.00	0.73	135.04	100	3599.50	-24.53	24.53 S	5.22 E	25.08	167.99	1.33	-0.28	-97.97
	3700.00	1.26	109.67	100	3699.49	-25.35	25.35 S	6.71 E	26.22	165.18	0.68	0.53	-25.37
	3800.00	1.01	105.41	100	3799.47	-25.95	25.95 S	8.59 E	27.34	161.69	0.26	-0.25	-4.26
	3900.00	0.87	93.15	100	3899.45	-26.23	26.23 S	10.20 E	28.14	158.75	0.24	-0.14	-12.26
	4000.00	0.79	61.30	100	3999.44	-25.94	25.94 S	11.56 E	28.40	155.98	0.46	-0.08	-31.85
	4100.00	1.25	106.07	100	4099.43	-25.91	25.91 S	13.21 E	29.09	152.98	0.89	0.46	44.77
	4200.00	1.35	108.19	100	4199.40	-26.58	26.58 S	15.38 E	30.71	149.94	0.11	0.10	2.12
	4300.00	1.44	120.96	100	4299.37	-27.59	27.59 S	17.58 E	32.72	147.50	0.32	0.09	12.77
	4400.00	1.68	110.67	100	4399.34	-28.76	28.76 S	20.03 E	35.04	145.15	0.37	0.24	-10.29
	4500.00	1.77	104.72	100	4499.29	-29.67	29.67 S	22.89 E	37.47	142.35	0.20	0.09	-5.95



COG Operating L L C

Lea County, NM (NAD27 NME)

Sec. 17, T 19S. , R 32 E

Stealth Fed Com #4H

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

11 October, 2016





Integrity Directional Services, LLC
Survey Report - Geographic



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Stealth Fed Com #4H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=20' @ 3612.00ft (Patriot 2)
Site:	Sec. 17, T 19S. , R 32 E	MD Reference:	KB=20' @ 3612.00ft (Patriot 2)
Well:	Stealth Fed Com #4H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Multi User Db

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. 17, T 19S. , R 32 E		
Site Position:		Northing:	602,059.7932 usft
From:	Map	Easting:	669,581.1001 usft
Position Uncertainty:	5.00 ft	Slot Radius:	13-3/16 "
		Latitude:	32.654°N
		Longitude:	103.782°W
		Grid Convergence:	0.30 °

Well	Stealth Fed Com #4H		
Well Position	+N/-S	0.00 ft	Northing: 602,059.8000 usft
	+E/-W	0.00 ft	Easting: 669,581.1000 usft
Position Uncertainty	5.00 ft	Wellhead Elevation:	0.00 ft
		Latitude:	32.654°N
		Longitude:	103.782°W
		Ground Level:	3,592.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	3/9/2016	7.22	60.44	48,301

Design	Wellbore #1			
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	6.68

Survey Program	Date 10/11/2016			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	4,500.00	Phoenix Gyros (Wellbore #1)	Keeper	Standard Wireline Keeper ver 1.0.2
4,618.00	14,335.00	IDS MWD Survey (Wellbore #1)	MWD	MWD - Standard

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	602,059.8000	669,581.1000	32.654°N	103.782°W
100.00	0.21	37.47	100.00	0.15	0.11	602,059.9455	669,581.2115	32.654°N	103.782°W
200.00	0.39	129.46	200.00	0.07	0.49	602,059.8746	669,581.5857	32.654°N	103.782°W
300.00	0.23	253.66	300.00	-0.20	0.56	602,059.6018	669,581.6559	32.654°N	103.782°W
400.00	0.40	243.58	400.00	-0.41	0.05	602,059.3901	669,581.1507	32.654°N	103.782°W
500.00	0.29	283.95	499.99	-0.50	-0.51	602,059.2958	669,580.5925	32.654°N	103.782°W
600.00	0.72	126.98	599.99	-0.82	-0.25	602,058.9788	669,580.8488	32.654°N	103.782°W
700.00	0.52	151.58	699.99	-1.60	0.47	602,058.2018	669,581.5667	32.654°N	103.782°W
800.00	0.32	192.61	799.98	-2.27	0.62	602,057.5302	669,581.7217	32.654°N	103.782°W
900.00	0.96	207.23	899.98	-3.29	0.18	602,056.5128	669,581.2774	32.654°N	103.782°W
1,000.00	1.31	213.80	999.96	-4.98	-0.84	602,054.8180	669,580.2582	32.654°N	103.782°W



Integrity Directional Services, LLC
Survey Report - Geographic



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Stealth Fed Com #4H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=20' @ 3612.00ft (Patriot 2)
Site:	Sec. 17, T 19S. , R 32 E	MD Reference:	KB=20' @ 3612.00ft (Patriot 2)
Well:	Stealth Fed Com #4H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Multi User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
1,100.00	1.27	204.00	1,099.93	-6.94	-1.93	602,052.8557	669,579.1716	32.654°N	103.782°W	
1,200.00	1.25	203.84	1,199.91	-8.95	-2.82	602,050.8456	669,578.2800	32.654°N	103.782°W	
1,300.00	1.23	230.26	1,299.89	-10.64	-4.09	602,049.1618	669,577.0138	32.654°N	103.782°W	
1,400.00	1.42	217.31	1,399.86	-12.31	-5.66	602,047.4901	669,575.4374	32.654°N	103.782°W	
1,500.00	1.36	222.59	1,499.83	-14.17	-7.22	602,045.6309	669,573.8833	32.654°N	103.782°W	
1,600.00	1.01	202.09	1,599.81	-15.86	-8.35	602,043.9406	669,572.7488	32.654°N	103.782°W	
1,700.00	0.85	124.12	1,699.80	-17.09	-8.07	602,042.7079	669,573.0314	32.654°N	103.782°W	
1,800.00	1.10	120.15	1,799.78	-17.99	-6.62	602,041.8097	669,574.4755	32.654°N	103.782°W	
1,900.00	1.53	115.79	1,899.76	-19.05	-4.59	602,040.7467	669,576.5075	32.654°N	103.782°W	
2,000.00	1.58	102.42	1,999.72	-19.93	-2.04	602,039.8694	669,579.0559	32.654°N	103.782°W	
2,100.00	1.59	84.73	2,099.68	-20.10	0.68	602,039.7003	669,581.7838	32.654°N	103.782°W	
2,200.00	1.46	78.30	2,199.65	-19.71	3.31	602,040.0861	669,584.4128	32.654°N	103.782°W	
2,300.00	1.34	76.62	2,299.62	-19.19	5.70	602,040.6150	669,586.7978	32.654°N	103.782°W	
2,400.00	1.05	102.49	2,399.60	-19.11	7.73	602,040.6874	669,588.8299	32.654°N	103.782°W	
2,500.00	1.08	104.89	2,499.58	-19.55	9.54	602,040.2471	669,590.6352	32.654°N	103.782°W	
2,600.00	0.82	117.73	2,599.57	-20.13	11.08	602,039.6720	669,592.1794	32.654°N	103.782°W	
2,700.00	0.37	202.42	2,699.56	-20.76	11.59	602,039.0405	669,592.6896	32.654°N	103.782°W	
2,800.00	0.64	152.07	2,799.56	-21.55	11.73	602,038.2486	669,592.8281	32.654°N	103.782°W	
2,900.00	0.37	249.68	2,899.56	-22.16	11.69	602,037.6430	669,592.7869	32.654°N	103.782°W	
3,000.00	0.27	261.42	2,999.55	-22.30	11.15	602,037.4958	669,592.2511	32.654°N	103.782°W	
3,100.00	0.85	300.61	3,099.55	-21.96	10.28	602,037.8383	669,591.3797	32.654°N	103.782°W	
3,200.00	0.60	286.62	3,199.54	-21.43	9.14	602,038.3657	669,590.2396	32.654°N	103.782°W	
3,300.00	0.80	229.72	3,299.54	-21.74	8.11	602,038.0642	669,589.2053	32.654°N	103.782°W	
3,400.00	0.93	239.27	3,399.52	-22.60	6.88	602,037.1981	669,587.9752	32.654°N	103.782°W	
3,500.00	1.01	233.01	3,499.51	-23.55	5.47	602,036.2531	669,586.5736	32.654°N	103.782°W	
3,600.00	0.73	135.04	3,599.50	-24.53	5.22	602,035.2721	669,586.3198	32.654°N	103.782°W	
3,700.00	1.26	109.67	3,699.49	-25.35	6.71	602,034.4512	669,587.8052	32.654°N	103.782°W	
3,800.00	1.01	105.41	3,799.47	-25.95	8.59	602,033.8469	669,589.6902	32.654°N	103.782°W	
3,900.00	0.87	93.15	3,899.45	-26.23	10.20	602,033.5710	669,591.2979	32.654°N	103.782°W	
4,000.00	0.79	61.30	3,999.44	-25.94	11.56	602,033.8604	669,592.6606	32.654°N	103.782°W	
4,100.00	1.25	106.07	4,099.43	-25.91	13.21	602,033.8895	669,594.3135	32.654°N	103.782°W	
4,200.00	1.35	108.19	4,199.40	-26.58	15.38	602,033.2198	669,596.4807	32.654°N	103.782°W	
4,300.00	1.44	120.96	4,299.37	-27.59	17.58	602,032.2057	669,598.6773	32.654°N	103.782°W	
4,400.00	1.68	110.67	4,399.34	-28.76	20.03	602,031.0419	669,601.1263	32.654°N	103.782°W	
4,500.00	1.77	104.72	4,499.29	-29.67	22.89	602,030.1320	669,603.9915	32.654°N	103.782°W	
4,618.00	1.70	114.20	4,617.24	-30.85	26.25	602,028.9515	669,607.3505	32.654°N	103.782°W	
First IDS MWD Survey										
4,713.00	2.70	105.00	4,712.17	-32.01	29.70	602,027.7947	669,610.7973	32.654°N	103.782°W	
4,807.00	3.70	115.90	4,806.02	-33.90	34.56	602,025.8968	669,615.6644	32.654°N	103.782°W	
4,902.00	6.50	117.80	4,900.64	-37.75	42.08	602,022.0493	669,623.1798	32.654°N	103.782°W	
4,996.00	6.30	117.60	4,994.05	-42.62	51.36	602,017.1784	669,632.4568	32.654°N	103.782°W	
5,091.00	6.40	118.00	5,088.47	-47.52	60.65	602,012.2778	669,641.7511	32.654°N	103.782°W	
5,185.00	6.90	116.40	5,181.83	-52.49	70.33	602,007.3075	669,651.4345	32.654°N	103.782°W	
5,280.00	7.80	109.90	5,276.05	-57.22	81.51	602,002.5758	669,662.6078	32.654°N	103.782°W	
5,374.00	8.30	110.00	5,369.13	-61.72	93.88	601,998.0841	669,674.9812	32.654°N	103.782°W	
5,469.00	9.00	114.60	5,463.05	-67.15	107.08	601,992.6456	669,688.1811	32.654°N	103.782°W	
5,563.00	8.40	114.00	5,555.97	-73.01	120.04	601,986.7922	669,701.1386	32.654°N	103.782°W	
5,657.00	8.90	116.50	5,648.90	-79.05	132.82	601,980.7551	669,713.9184	32.654°N	103.782°W	
5,751.00	8.00	117.50	5,741.87	-85.31	145.13	601,974.4901	669,726.2281	32.654°N	103.782°W	
5,846.00	7.40	117.10	5,836.02	-91.15	156.44	601,968.6507	669,737.5381	32.654°N	103.782°W	
5,941.00	7.20	116.90	5,930.25	-96.63	167.19	601,963.1703	669,748.2934	32.654°N	103.782°W	
6,035.00	6.70	117.90	6,023.56	-101.86	177.29	601,957.9392	669,758.3929	32.654°N	103.782°W	
6,129.00	6.80	116.90	6,116.91	-106.94	187.10	601,952.8555	669,768.2019	32.654°N	103.782°W	
6,224.00	6.40	116.40	6,211.28	-111.84	196.86	601,947.9567	669,777.9601	32.654°N	103.782°W	
6,319.00	7.20	111.90	6,305.61	-116.42	207.13	601,943.3818	669,788.2266	32.654°N	103.782°W	



Integrity Directional Services, LLC
Survey Report - Geographic



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Stealth Fed Com #4H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=20' @ 3612.00ft (Patriot 2)
Site:	Sec. 17, T 19S. , R 32 E	MD Reference:	KB=20' @ 3612.00ft (Patriot 2)
Well:	Stealth Fed Com #4H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Multi User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,413.00	6.90	115.40	6,398.90	-121.04	217.69	601,938.7627	669,798.7929	32.654°N	103.782°W
6,508.00	6.70	116.40	6,493.23	-125.95	227.81	601,933.8509	669,808.9117	32.654°N	103.782°W
6,602.00	7.60	110.10	6,586.50	-130.52	238.56	601,929.2763	669,819.6612	32.654°N	103.782°W
6,697.00	7.20	113.40	6,680.71	-135.05	249.92	601,924.7530	669,831.0245	32.654°N	103.782°W
6,791.00	7.00	113.10	6,773.99	-139.63	260.60	601,920.1663	669,841.6993	32.654°N	103.781°W
6,886.00	8.40	112.70	6,868.13	-144.58	272.33	601,915.2171	669,853.4259	32.654°N	103.781°W
6,980.00	8.00	113.40	6,961.17	-149.83	284.66	601,909.9697	669,865.7632	32.654°N	103.781°W
7,075.00	7.30	113.30	7,055.32	-154.84	296.27	601,904.9569	669,877.3737	32.654°N	103.781°W
7,169.00	8.00	116.10	7,148.48	-160.08	307.63	601,899.7169	669,888.7329	32.654°N	103.781°W
7,264.00	7.00	119.00	7,242.67	-165.80	318.63	601,894.0020	669,899.7328	32.653°N	103.781°W
7,358.00	8.30	116.40	7,335.83	-171.59	329.72	601,888.2081	669,910.8202	32.653°N	103.781°W
7,452.00	7.40	116.00	7,428.95	-177.26	341.24	601,882.5376	669,922.3383	32.653°N	103.781°W
7,547.00	6.70	115.60	7,523.23	-182.34	351.74	601,877.4611	669,932.8349	32.653°N	103.781°W
7,641.00	7.80	115.70	7,616.48	-187.47	362.43	601,872.3255	669,943.5281	32.653°N	103.781°W
7,735.00	6.60	119.30	7,709.74	-192.88	372.89	601,866.9154	669,953.9871	32.653°N	103.781°W
7,830.00	7.80	112.40	7,803.99	-198.01	383.61	601,861.7868	669,964.7088	32.653°N	103.781°W
7,924.00	6.90	115.40	7,897.21	-202.87	394.61	601,856.9340	669,975.7070	32.653°N	103.781°W
8,019.00	8.10	107.50	7,991.40	-207.33	406.15	601,852.4735	669,987.2456	32.653°N	103.781°W
8,113.00	7.20	110.50	8,084.56	-211.38	417.98	601,848.4190	669,999.0794	32.653°N	103.781°W
8,207.00	8.10	116.00	8,177.73	-216.35	429.45	601,843.4529	670,010.5495	32.653°N	103.781°W
8,302.00	7.70	116.60	8,271.83	-222.13	441.16	601,837.6692	670,022.2557	32.653°N	103.781°W
8,396.00	10.10	114.20	8,364.69	-228.33	454.31	601,831.4699	670,035.4064	32.653°N	103.781°W
8,491.00	9.40	114.30	8,458.31	-234.94	468.98	601,824.8627	670,050.0750	32.653°N	103.781°W
8,585.00	8.70	114.70	8,551.14	-241.07	482.43	601,818.7330	670,063.5302	32.653°N	103.781°W
8,679.00	8.40	117.00	8,644.10	-247.16	495.01	601,812.6452	670,076.1067	32.653°N	103.781°W
8,794.00	7.30	118.50	8,758.02	-254.46	508.91	601,805.3454	670,090.0122	32.653°N	103.781°W
8,830.00	6.90	117.60	8,793.74	-256.55	512.84	601,803.2522	670,093.9385	32.653°N	103.781°W
8,862.00	5.70	94.90	8,825.56	-257.57	516.13	601,802.2257	670,097.2259	32.653°N	103.781°W
8,893.00	6.80	60.10	8,856.38	-256.79	519.25	601,803.0093	670,100.3519	32.653°N	103.781°W
8,925.00	9.00	37.70	8,888.08	-253.87	522.43	601,805.9351	670,103.5260	32.653°N	103.781°W
8,956.00	11.90	25.90	8,918.57	-249.07	525.31	601,810.7303	670,106.4058	32.653°N	103.781°W
8,988.00	15.00	19.00	8,949.69	-242.18	528.10	601,817.6158	670,109.1960	32.653°N	103.781°W
9,019.00	18.00	14.70	8,979.41	-233.76	530.62	601,826.0442	670,111.7182	32.653°N	103.781°W
9,051.00	21.60	12.10	9,009.51	-223.21	533.11	601,836.5894	670,114.2083	32.653°N	103.781°W
9,082.00	25.30	11.60	9,037.95	-211.14	535.64	601,848.6615	670,116.7372	32.653°N	103.781°W
9,114.00	29.20	11.90	9,066.39	-196.80	538.62	601,863.0031	670,119.7229	32.653°N	103.781°W
9,145.00	32.70	13.20	9,092.97	-181.24	542.10	601,878.5599	670,123.1954	32.653°N	103.781°W
9,177.00	36.10	14.10	9,119.37	-163.68	546.37	601,896.1237	670,127.4671	32.653°N	103.781°W
9,208.00	38.90	14.00	9,143.97	-145.37	550.95	601,914.4290	670,132.0476	32.654°N	103.781°W
9,240.00	42.00	13.20	9,168.31	-125.19	555.83	601,934.6062	670,136.9242	32.654°N	103.781°W
9,271.00	45.30	12.90	9,190.74	-104.35	560.65	601,955.4488	670,141.7535	32.654°N	103.781°W
9,302.00	48.40	11.80	9,211.94	-82.26	565.49	601,977.5397	670,146.5847	32.654°N	103.781°W
9,334.00	51.60	10.20	9,232.51	-58.20	570.15	602,001.5997	670,151.2533	32.654°N	103.780°W
9,365.00	55.20	10.00	9,250.99	-33.70	574.52	602,026.0974	670,155.6160	32.654°N	103.780°W
9,397.00	58.50	8.70	9,268.49	-7.27	578.86	602,052.5295	670,159.9623	32.654°N	103.780°W
9,421.95	61.48	7.48	9,280.96	14.12	581.90	602,073.9166	670,162.9997	32.654°N	103.780°W
South 330° Crossing Point 9421.95'MD / 9280.96'TVD									
9,428.00	62.20	7.20	9,283.82	19.41	582.58	602,079.2067	670,163.6812	32.654°N	103.780°W
9,460.00	66.20	7.20	9,297.74	47.98	586.19	602,107.7838	670,167.2914	32.654°N	103.780°W
9,491.00	70.90	6.80	9,309.08	76.61	589.71	602,136.4136	670,170.8050	32.654°N	103.780°W
9,522.00	75.90	7.40	9,317.93	106.08	593.38	602,165.8840	670,174.4778	32.654°N	103.780°W
9,554.00	79.40	6.00	9,324.77	137.12	597.02	602,196.9246	670,178.1217	32.654°N	103.780°W
9,585.00	80.90	3.50	9,330.08	167.56	599.55	602,227.3594	670,180.6491	32.654°N	103.780°W
9,616.00	82.90	1.90	9,334.45	198.21	600.99	602,258.0134	670,182.0936	32.654°N	103.780°W
9,648.00	85.60	0.70	9,337.65	230.04	601.72	602,289.8406	670,182.8151	32.655°N	103.780°W



Integrity Directional Services, LLC
Survey Report - Geographic



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Stealth Fed Com #4H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=20' @ 3612.00ft (Patriot 2)
Site:	Sec. 17, T 19S. , R 32 E	MD Reference:	KB=20' @ 3612.00ft (Patriot 2)
Well:	Stealth Fed Com #4H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,684.00	88.40	359.80	9,339.54	265.99	601.87	602,325.7869	670,182.9716	32.655°N	103.780°W
9,747.00	88.90	359.50	9,341.02	328.97	601.49	602,388.7679	670,182.5868	32.655°N	103.780°W
9,841.00	89.10	359.80	9,342.66	422.95	600.91	602,482.7515	670,182.0127	32.655°N	103.780°W
9,936.00	88.70	358.70	9,344.48	517.93	599.67	602,577.7240	670,180.7695	32.655°N	103.780°W
10,030.00	89.40	358.30	9,346.04	611.88	597.21	602,671.6779	670,178.3092	32.656°N	103.780°W
10,125.00	88.80	358.70	9,347.53	706.83	594.72	602,766.6328	670,175.8227	32.656°N	103.780°W
10,219.00	88.60	358.60	9,349.67	800.78	592.51	602,860.5823	670,173.6087	32.656°N	103.780°W
10,313.00	88.00	358.20	9,352.46	894.71	589.89	602,954.5035	670,170.9853	32.656°N	103.780°W
10,408.00	88.40	358.00	9,355.44	989.61	586.74	603,049.4040	670,167.8371	32.657°N	103.780°W
10,502.00	88.60	358.90	9,357.90	1,083.54	584.20	603,143.3362	670,165.2954	32.657°N	103.780°W
10,597.00	89.30	359.80	9,359.64	1,178.51	583.12	603,238.3124	670,164.2179	32.657°N	103.780°W
10,691.00	90.60	0.40	9,359.72	1,272.51	583.28	603,332.3096	670,164.3820	32.657°N	103.780°W
10,785.00	91.30	0.80	9,358.16	1,366.49	584.27	603,426.2905	670,165.3662	32.658°N	103.780°W
10,880.00	91.00	0.90	9,356.26	1,461.46	585.68	603,521.2606	670,166.7752	32.658°N	103.780°W
10,974.00	90.20	1.20	9,355.27	1,555.44	587.40	603,615.2386	670,168.4976	32.658°N	103.780°W
11,069.00	91.70	0.90	9,353.70	1,650.41	589.14	603,710.2065	670,170.2383	32.658°N	103.780°W
11,163.00	92.90	1.10	9,349.93	1,744.32	590.78	603,804.1145	670,171.8774	32.659°N	103.780°W
11,258.00	91.40	0.90	9,346.36	1,839.23	592.44	603,899.0302	670,173.5340	32.659°N	103.780°W
11,352.00	91.30	359.80	9,344.15	1,933.20	593.01	603,993.0008	670,174.1081	32.659°N	103.780°W
11,447.00	89.60	358.10	9,343.40	2,028.18	591.27	604,087.9747	670,172.3672	32.660°N	103.780°W
11,541.00	89.50	357.50	9,344.14	2,122.11	587.66	604,181.9019	670,168.7589	32.660°N	103.780°W
11,635.00	89.40	358.70	9,345.04	2,216.05	584.54	604,275.8440	670,165.6425	32.660°N	103.780°W
11,730.00	90.20	358.90	9,345.37	2,311.03	582.55	604,370.8216	670,163.6530	32.660°N	103.780°W
11,824.00	88.30	359.80	9,346.60	2,405.01	581.49	604,464.8020	670,162.5866	32.661°N	103.780°W
11,919.00	88.10	359.60	9,349.59	2,499.96	580.99	604,559.7535	670,162.0895	32.661°N	103.780°W
12,013.00	88.10	359.40	9,352.71	2,593.90	580.17	604,653.6981	670,161.2696	32.661°N	103.780°W
12,108.00	88.40	359.40	9,355.61	2,688.85	579.18	604,748.6482	670,160.2753	32.661°N	103.780°W
12,202.00	89.10	359.40	9,357.66	2,782.83	578.19	604,842.6200	670,159.2912	32.662°N	103.780°W
12,297.00	89.50	359.70	9,358.82	2,877.82	577.45	604,937.6094	670,158.5451	32.662°N	103.780°W
12,391.00	89.80	0.20	9,359.39	2,971.81	577.36	605,031.6071	670,158.4631	32.662°N	103.780°W
12,486.00	90.60	359.50	9,359.06	3,066.81	577.12	605,126.6046	670,158.2144	32.662°N	103.780°W
12,580.00	90.10	359.70	9,358.49	3,160.81	576.46	605,220.6000	670,157.5582	32.663°N	103.780°W
12,675.00	89.60	0.20	9,358.73	3,255.81	576.38	605,315.5989	670,157.4753	32.663°N	103.780°W
12,769.00	89.00	359.50	9,359.88	3,349.80	576.13	605,409.5903	670,157.2293	32.663°N	103.780°W
12,864.00	88.40	0.00	9,362.04	3,444.77	575.72	605,504.5641	670,156.8148	32.663°N	103.780°W
12,958.00	88.50	359.60	9,364.58	3,538.74	575.39	605,598.5287	670,156.4868	32.664°N	103.780°W
13,052.00	88.70	359.30	9,366.88	3,632.70	574.49	605,692.4960	670,155.5847	32.664°N	103.780°W
13,147.00	88.20	359.60	9,369.45	3,727.66	573.57	605,787.4562	670,154.6731	32.664°N	103.780°W
13,241.00	88.70	359.70	9,371.99	3,821.63	573.00	605,881.4196	670,154.0992	32.664°N	103.780°W
13,335.00	89.70	359.40	9,373.30	3,915.61	572.26	605,975.4061	670,153.3609	32.665°N	103.780°W
13,430.00	90.40	358.50	9,373.22	4,010.60	570.52	606,070.3883	670,151.6201	32.665°N	103.780°W
13,524.00	90.30	359.30	9,372.65	4,104.58	568.72	606,164.3683	670,149.8156	32.665°N	103.780°W
13,619.00	90.20	358.70	9,372.23	4,199.56	567.06	606,259.3523	670,148.1576	32.665°N	103.780°W
13,713.00	89.60	359.20	9,372.39	4,293.54	565.34	606,353.3354	670,146.4351	32.666°N	103.780°W
13,808.00	89.50	359.90	9,373.14	4,388.54	564.59	606,448.3288	670,145.6890	32.666°N	103.780°W
13,902.00	88.90	0.50	9,374.45	4,482.53	564.92	606,542.3180	670,146.0171	32.666°N	103.780°W
13,997.00	88.80	1.80	9,376.36	4,577.49	566.82	606,637.2775	670,147.9233	32.667°N	103.780°W
14,055.75	88.80	2.11	9,377.59	4,636.19	568.83	606,695.9802	670,149.9283	32.667°N	103.780°W
North 330° Crossing Point 14055.75'MD / 9377.59'TVD									
14,091.00	88.80	2.30	9,378.33	4,671.41	570.19	606,731.1962	670,151.2850	32.667°N	103.780°W
14,186.00	87.70	2.40	9,381.23	4,766.28	574.08	606,826.0704	670,155.1785	32.667°N	103.780°W
14,279.00	86.50	2.90	9,385.93	4,859.06	578.37	606,918.8498	670,159.4725	32.667°N	103.780°W
Final IDS MWD Survey									
14,335.00	86.50	2.90	9,389.35	4,914.88	581.20	606,974.6737	670,162.3004	32.667°N	103.780°W
Projection to TD									



Integrity Directional Services, LLC
Survey Report - Geographic



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Stealth Fed Com #4H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=20' @ 3612.00ft (Patriot 2)
Site:	Sec. 17, T 19S. , R 32 E	MD Reference:	KB=20' @ 3612.00ft (Patriot 2)
Well:	Stealth Fed Com #4H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Multi User Db

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,618.00	4,617.24	-30.85	26.25	First IDS MWD Survey
9,421.95	9,280.96	14.12	581.90	South 330' Crossing Point 9421.95'MD / 9280.96'TVD
14,055.75	9,377.59	4,636.19	568.83	North 330' Crossing Point 14055.75'MD / 9377.59'TVD
14,279.00	9,385.93	4,859.06	578.37	Final IDS MWD Survey
14,335.00	9,389.35	4,914.88	581.20	Projection to TD

Checked By: _____ Approved By: _____ Date: _____