



August 6, 2014

Concho Resources, Inc.
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

HOBBS OCD
APR 17 2015
RECEIVED

Attn: Kanicia Castillo

RE: Osprey 20 State Com No. 001H

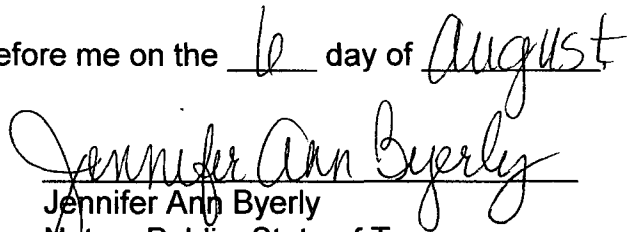
Please find enclosed a copy of the survey from 0.00' to 12,050.00' ran on the above referenced well.

Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 16 day of August A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas



APR 27 2015



Company: COG Operating, LLC (Concho)
Lease/Well: Osprey 20 State Com/No. 001H
Location: S20 T21S R34E
Rig Name: Precision 105
State/County: New Mexico/Lea
Latitude: 32.47, Longitude: -103.49
GRID North is 0.46 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB = 26.2 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 8/6/2014 / 13:23

VES Survey International

Midland, TX

432-563-5444

Surveyor: Andrew Askew

Osprey 20 State Com No. 001H / API 30-025-40968

HOBBSOCD

APR 17 2015

RECEIVED

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.59	168.27	100.00	-0.50	0.10	-0.50	0.52	168.27	0.59
200.00	0.60	154.41	199.99	-1.49	0.44	-1.49	1.55	163.59	0.14
300.00	0.64	155.86	299.99	-2.47	0.89	-2.47	2.63	160.12	0.04
400.00	0.32	160.96	399.98	-3.24	1.21	-3.24	3.46	159.50	0.33
500.00	0.22	171.40	499.98	-3.70	1.33	-3.70	3.93	160.18	0.11
600.00	0.23	190.41	599.98	-4.09	1.32	-4.09	4.30	162.05	0.08
700.00	0.03	198.05	699.98	-4.31	1.28	-4.31	4.50	163.48	0.20
800.00	0.16	198.87	799.98	-4.47	1.23	-4.47	4.64	164.67	0.13
900.00	0.14	80.22	899.98	-4.58	1.30	-4.58	4.76	164.19	0.25
1000.00	0.10	288.52	999.98	-4.53	1.33	-4.53	4.72	163.65	0.23
1100.00	0.13	277.45	1099.98	-4.49	1.14	-4.49	4.63	165.79	0.03
1200.00	0.11	28.53	1199.98	-4.39	1.07	-4.39	4.52	166.26	0.19
1300.00	0.16	350.56	1299.98	-4.17	1.10	-4.17	4.31	165.27	0.10
1400.00	0.21	311.62	1399.98	-3.90	0.93	-3.90	4.01	166.54	0.13
1500.00	0.03	231.67	1499.98	-3.80	0.77	-3.80	3.88	168.50	0.21
1600.00	0.09	343.32	1599.98	-3.74	0.73	-3.74	3.81	169.00	0.11
1700.00	0.12	12.79	1699.98	-3.56	0.73	-3.56	3.64	168.48	0.06
1800.00	0.15	346.20	1799.98	-3.34	0.72	-3.34	3.42	167.86	0.07

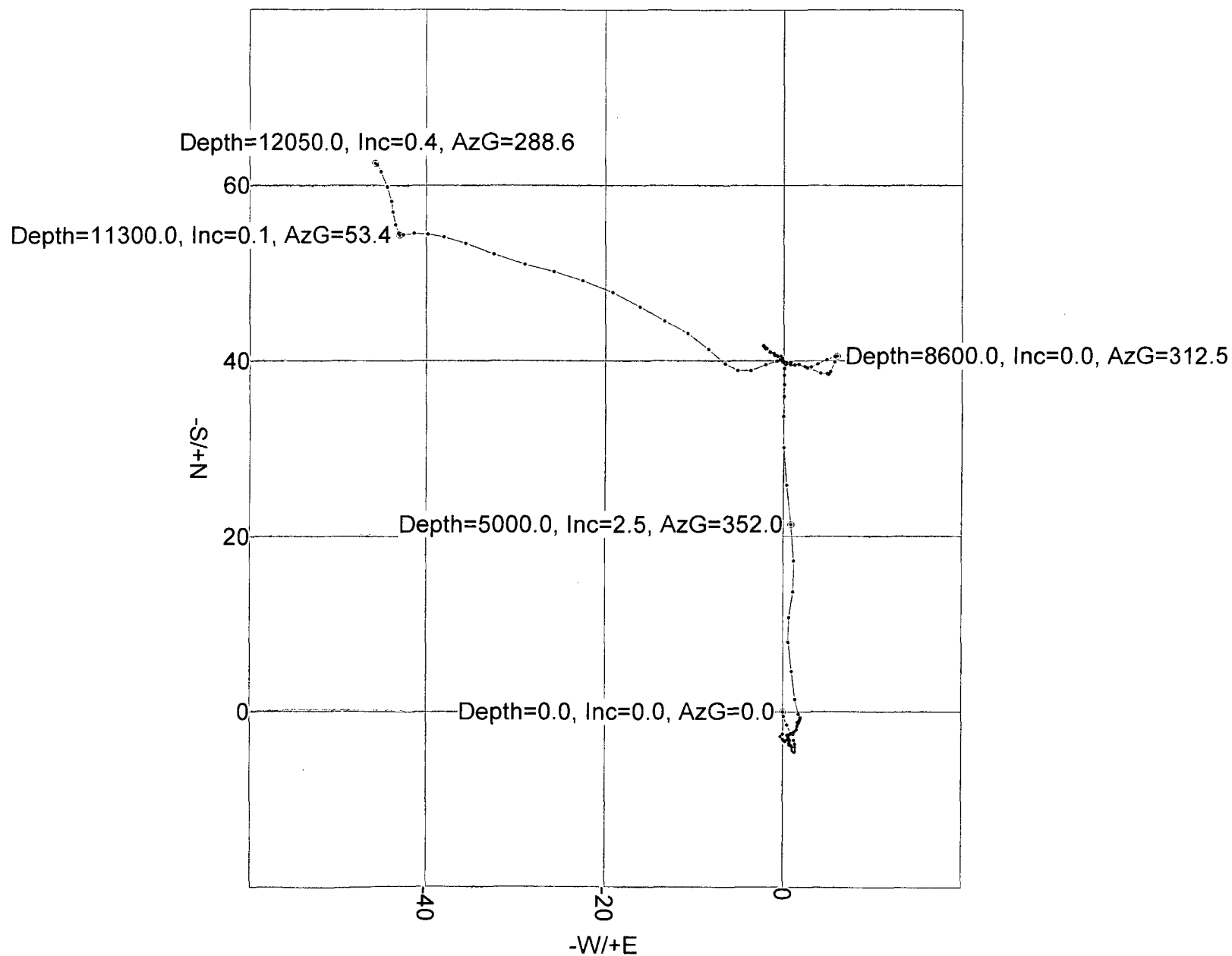
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.07	103.08	1899.98	-3.23	0.75	-3.23	3.31	166.99	0.19
2000.00	0.13	297.83	1999.98	-3.19	0.70	-3.19	3.27	167.58	0.20
2100.00	0.10	28.33	2099.98	-3.06	0.64	-3.06	3.12	168.18	0.17
2200.00	0.35	324.25	2199.98	-2.74	0.50	-2.74	2.78	169.57	0.32
2300.00	0.39	265.12	2299.98	-2.52	-0.01	-2.52	2.52	180.21	0.36
2400.00	0.32	164.03	2399.97	-2.81	-0.27	-2.81	2.82	185.48	0.54
2500.00	0.24	114.86	2499.97	-3.16	0.00	-3.16	3.16	180.05	0.24
2600.00	0.08	171.07	2599.97	-3.32	0.20	-3.32	3.33	176.58	0.21
2700.00	0.08	77.27	2699.97	-3.37	0.28	-3.37	3.38	175.33	0.11
2800.00	0.32	39.37	2799.97	-3.14	0.52	-3.14	3.18	170.59	0.26
2900.00	0.18	314.34	2899.97	-2.81	0.58	-2.81	2.87	168.25	0.36
3000.00	0.08	24.50	2999.97	-2.64	0.50	-2.64	2.68	169.27	0.17
3100.00	0.31	87.86	3099.97	-2.56	0.80	-2.56	2.68	162.65	0.28
3200.00	0.08	85.52	3199.97	-2.55	1.15	-2.55	2.79	155.77	0.23
3300.00	0.16	314.13	3299.97	-2.45	1.12	-2.45	2.69	155.35	0.22
3400.00	0.24	74.80	3399.97	-2.29	1.23	-2.29	2.60	151.80	0.35
3500.00	0.22	22.38	3499.97	-2.06	1.51	-2.06	2.56	143.79	0.21
3600.00	0.27	358.56	3599.97	-1.65	1.58	-1.65	2.28	136.34	0.11
3700.00	0.19	62.02	3699.97	-1.34	1.72	-1.34	2.18	127.93	0.25
3800.00	0.19	286.07	3799.97	-1.21	1.71	-1.21	2.09	125.44	0.36
3900.00	0.12	125.87	3899.97	-1.23	1.63	-1.23	2.04	127.05	0.31
4000.00	0.29	31.94	3999.97	-1.07	1.85	-1.07	2.13	120.20	0.32
4100.00	0.06	359.92	4099.97	-0.80	1.98	-0.80	2.14	112.09	0.24
4200.00	0.08	7.86	4199.97	-0.67	1.99	-0.67	2.10	108.73	0.02
4300.00	0.46	326.38	4299.97	-0.27	1.78	-0.27	1.80	98.56	0.40
4400.00	1.58	351.47	4399.95	1.43	1.35	1.43	1.96	43.45	1.18
4500.00	2.12	354.04	4499.90	4.63	0.95	4.63	4.72	11.66	0.55
4600.00	1.72	352.76	4599.84	7.95	0.57	7.95	7.97	4.13	0.41
4700.00	1.55	11.70	4699.80	10.76	0.66	10.76	10.78	3.51	0.56
4800.00	1.85	4.90	4799.76	13.69	1.07	13.69	13.74	4.47	0.36
4900.00	2.21	359.24	4899.69	17.23	1.18	17.23	17.27	3.93	0.42
5000.00	2.53	351.96	4999.61	21.35	0.85	21.35	21.37	2.28	0.44
5100.00	2.65	355.43	5099.50	25.84	0.36	25.84	25.85	0.79	0.20
5200.00	2.28	355.74	5199.41	30.14	0.02	30.14	30.14	0.05	0.37
5300.00	1.79	3.49	5299.35	33.68	-0.03	33.68	33.68	359.95	0.56
5400.00	0.80	359.56	5399.32	35.94	0.06	35.94	35.94	0.10	0.99
5500.00	0.74	2.81	5499.31	37.28	0.09	37.28	37.28	0.13	0.08
5600.00	0.53	350.56	5599.31	38.39	0.04	38.39	38.39	0.06	0.25
5700.00	0.34	20.34	5699.30	39.12	0.07	39.12	39.12	0.10	0.29

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	0.26	14.60	5799.30	39.62	0.23	39.62	39.62	0.33	0.08
5900.00	0.28	287.57	5899.30	39.91	0.06	39.91	39.91	0.08	0.37
6000.00	0.34	302.39	5999.30	40.14	-0.43	40.14	40.15	359.39	0.10
6100.00	0.33	341.35	6099.30	40.58	-0.77	40.58	40.58	358.91	0.22
6200.00	0.30	268.88	6199.30	40.84	-1.12	40.84	40.86	358.43	0.37
6300.00	0.33	317.28	6299.30	41.05	-1.57	41.05	41.08	357.80	0.26
6400.00	0.28	314.36	6399.29	41.44	-1.95	41.44	41.48	357.31	0.05
6500.00	0.08	256.08	6499.29	41.59	-2.20	41.59	41.65	356.98	0.25
6600.00	0.11	350.02	6599.29	41.67	-2.28	41.67	41.74	356.87	0.14
6700.00	0.03	288.06	6699.29	41.78	-2.32	41.78	41.84	356.82	0.10
6800.00	0.14	162.80	6799.29	41.67	-2.31	41.67	41.73	356.82	0.16
6900.00	0.27	131.91	6899.29	41.39	-2.10	41.39	41.44	357.10	0.17
7000.00	0.49	126.28	6999.29	40.97	-1.57	40.97	41.00	357.80	0.22
7100.00	0.22	115.11	7099.29	40.64	-1.06	40.64	40.65	358.51	0.28
7200.00	0.18	101.19	7199.29	40.53	-0.73	40.53	40.53	358.97	0.06
7300.00	0.28	80.95	7299.29	40.54	-0.33	40.54	40.54	359.53	0.13
7400.00	0.34	195.13	7399.29	40.29	-0.16	40.29	40.29	359.77	0.52
7500.00	0.23	134.65	7499.29	39.86	-0.10	39.86	39.86	359.86	0.30
7600.00	0.06	81.67	7599.29	39.73	0.10	39.73	39.73	0.15	0.20
7700.00	0.16	90.99	7699.29	39.74	0.30	39.74	39.74	0.44	0.10
7800.00	0.35	117.90	7799.28	39.59	0.72	39.59	39.60	1.04	0.22
7900.00	0.26	67.97	7899.28	39.53	1.20	39.53	39.55	1.74	0.27
8000.00	0.30	88.61	7999.28	39.63	1.68	39.63	39.66	2.43	0.11
8100.00	0.57	122.07	8099.28	39.37	2.37	39.37	39.44	3.44	0.36
8200.00	0.41	59.38	8199.28	39.29	3.09	39.29	39.41	4.50	0.53
8300.00	0.48	66.11	8299.27	39.64	3.79	39.64	39.82	5.45	0.09
8400.00	0.82	62.98	8399.27	40.14	4.81	40.14	40.42	6.83	0.34
8500.00	0.32	81.70	8499.26	40.50	5.72	40.50	40.90	8.04	0.53
8600.00	0.02	312.51	8599.26	40.55	5.98	40.55	40.99	8.39	0.33
8700.00	0.86	201.05	8699.26	39.87	5.70	39.87	40.27	8.13	0.87
8800.00	0.50	206.87	8799.25	38.78	5.23	38.78	39.13	7.68	0.37
8900.00	0.09	358.92	8899.25	38.47	5.03	38.47	38.80	7.45	0.58
9000.00	0.21	262.20	8999.25	38.53	4.85	38.53	38.83	7.18	0.24
9100.00	0.65	278.80	9099.25	38.59	4.11	38.59	38.81	6.08	0.46
9200.00	1.19	300.86	9199.23	39.21	2.65	39.21	39.30	3.87	0.63
9300.00	1.14	276.40	9299.21	39.85	0.78	39.85	39.86	1.12	0.50
9400.00	0.66	272.04	9399.20	39.98	-0.79	39.98	39.99	358.87	0.48
9500.00	0.93	237.37	9499.19	39.57	-2.05	39.57	39.62	357.04	0.54
9600.00	1.14	256.71	9599.17	38.90	-3.70	38.90	39.08	354.57	0.41

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
9700.00	0.64	295.77	9699.16	38.91	-5.17	38.91	39.26	352.44	0.76
9800.00	1.18	300.15	9799.15	39.67	-6.56	39.67	40.21	350.61	0.54
9900.00	1.70	319.49	9899.12	41.31	-8.41	41.31	42.16	348.50	0.70
10000.00	1.73	297.42	9999.08	43.13	-10.71	43.13	44.44	346.06	0.66
10100.00	1.66	299.87	10099.03	44.55	-13.30	44.55	46.49	343.38	0.10
10200.00	2.02	300.61	10198.98	46.17	-16.08	46.17	48.89	340.80	0.36
10300.00	1.99	295.10	10298.92	47.80	-19.17	47.80	51.50	338.15	0.19
10400.00	2.20	288.64	10398.85	49.15	-22.56	49.15	54.08	335.35	0.31
10500.00	1.69	286.28	10498.79	50.18	-25.79	50.18	56.42	332.80	0.51
10600.00	2.18	282.73	10598.74	51.01	-29.06	51.01	58.71	330.33	0.50
10700.00	2.01	294.27	10698.67	52.15	-32.51	52.15	61.46	328.06	0.45
10800.00	1.80	289.18	10798.62	53.38	-35.59	53.38	64.16	326.31	0.27
10900.00	1.13	283.18	10898.58	54.13	-38.03	54.13	66.15	324.90	0.68
11000.00	0.94	276.00	10998.57	54.44	-39.82	54.44	67.44	323.82	0.23
11100.00	0.83	269.70	11098.55	54.52	-41.36	54.52	68.43	322.81	0.15
11200.00	0.57	256.23	11198.55	54.40	-42.57	54.40	69.07	321.96	0.31
11300.00	0.08	53.39	11298.54	54.32	-42.99	54.32	69.28	321.64	0.65
11400.00	0.33	324.46	11398.54	54.60	-43.10	54.60	69.56	321.71	0.34
11500.00	0.79	344.66	11498.54	55.50	-43.45	55.50	70.48	321.94	0.50
11600.00	0.91	350.42	11598.53	56.95	-43.76	56.95	71.82	322.46	0.15
11700.00	0.52	359.01	11698.52	58.18	-43.90	58.18	72.89	322.96	0.41
11800.00	1.40	337.53	11798.51	59.76	-44.38	59.76	74.44	323.40	0.94
11900.00	0.78	336.46	11898.49	61.52	-45.12	61.52	76.29	323.74	0.63
12000.00	0.26	332.90	11998.48	62.34	-45.49	62.34	77.17	323.88	0.52
12050.00	0.36	288.56	12048.48	62.49	-45.69	62.49	77.41	323.83	0.50



VES Survey International
Midland, TX
432-563-5444
Surveyor: Andrew Askew
Osprey 20 State Com No. 001H / API 30-025-40968



V.E.S. Survey Date: 07/31/2014



COG Operating LLC

Lea County, NM

Osprey 20 State Com

#1H

Sidetrack #1

Design: Sidetrack #1

Survey Report - Geographic

23 September, 2014

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TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Lea County, NM	TVD Reference:	WELL @ 3782.5usft (Original Well Elev)
Site:	Osprey 20 State Com	MD Reference:	WELL @ 3782.5usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	Database:	EDM 5000.1 Single User Db

Project	Lea County, NM		
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	Osprey 20 State Com				
Site Position:		Northing:	536,090.70 usft	Latitude:	32° 28' 15.482 N
From:	Map	Easting:	761,598.00 usft	Longitude:	103° 29' 6.372 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.46 °

Well	#1H					
Well Position	+N/-S	0.0 usft	Northing:	536,090.70 usft	Latitude:	32° 28' 15.482 N
	+E/-W	0.0 usft	Easting:	761,598.00 usft	Longitude:	103° 29' 6.372 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,756.5 usft	

Wellbore	Sidetrack #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/4/2014	7.17	60.35	48,449

Design	Sidetrack #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	10,100.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	181.13	

Survey Program	Date	9/23/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	10,100.0	GYRO (OH)	MWD	MWD - Standard
10,169.0	20,727.0	MWD #2 (Sidetrack #1)	MWD	MWD - Standard

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	536,090.70	761,598.00	32° 28' 15.482 N	103° 29' 6.372 W
100.0	0.59	168.27	100.0	-0.5	0.1	536,090.20	761,598.10	32° 28' 15.477 N	103° 29' 6.371 W
200.0	0.60	154.41	200.0	-1.5	0.4	536,089.22	761,598.43	32° 28' 15.467 N	103° 29' 6.367 W
300.0	0.64	155.86	300.0	-2.5	0.9	536,088.24	761,598.89	32° 28' 15.457 N	103° 29' 6.362 W
400.0	0.32	160.96	400.0	-3.2	1.2	536,087.47	761,599.21	32° 28' 15.450 N	103° 29' 6.358 W
500.0	0.22	171.40	500.0	-3.7	1.3	536,087.01	761,599.33	32° 28' 15.445 N	103° 29' 6.357 W
600.0	0.23	190.41	600.0	-4.1	1.3	536,086.62	761,599.32	32° 28' 15.441 N	103° 29' 6.357 W
700.0	0.03	198.05	700.0	-4.3	1.3	536,086.40	761,599.27	32° 28' 15.439 N	103° 29' 6.357 W
800.0	0.16	198.87	800.0	-4.5	1.2	536,086.25	761,599.22	32° 28' 15.437 N	103° 29' 6.358 W
900.0	0.14	80.22	900.0	-4.6	1.3	536,086.13	761,599.30	32° 28' 15.436 N	103° 29' 6.357 W
1,000.0	0.10	288.52	1,000.0	-4.5	1.3	536,086.18	761,599.33	32° 28' 15.437 N	103° 29' 6.357 W



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Lea County, NM	TVD Reference:	WELL @ 3782.5usft (Original Well Elev)
Site:	Osprey 20 State Com	MD Reference:	WELL @ 3782.5usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	Sidetrack #1	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #1	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,100.0	0.13	277.45	1,100.0	-4.5	1.1	536,086.23	761,599.14	32° 28' 15.437 N	103° 29' 6.359 W
1,200.0	0.11	28.53	1,200.0	-4.4	1.1	536,086.32	761,599.07	32° 28' 15.438 N	103° 29' 6.360 W
1,300.0	0.16	350.56	1,300.0	-4.2	1.1	536,086.55	761,599.10	32° 28' 15.440 N	103° 29' 6.359 W
1,400.0	0.21	311.62	1,400.0	-3.9	0.9	536,086.81	761,598.94	32° 28' 15.443 N	103° 29' 6.361 W
1,500.0	0.03	231.67	1,500.0	-3.8	0.8	536,086.91	761,598.78	32° 28' 15.444 N	103° 29' 6.363 W
1,600.0	0.09	343.32	1,600.0	-3.7	0.7	536,086.97	761,598.73	32° 28' 15.445 N	103° 29' 6.364 W
1,700.0	0.12	12.79	1,700.0	-3.6	0.7	536,087.15	761,598.74	32° 28' 15.446 N	103° 29' 6.364 W
1,800.0	0.15	346.20	1,800.0	-3.3	0.7	536,087.38	761,598.73	32° 28' 15.449 N	103° 29' 6.364 W
1,900.0	0.07	103.08	1,900.0	-3.2	0.8	536,087.49	761,598.76	32° 28' 15.450 N	103° 29' 6.363 W
2,000.0	0.13	297.83	2,000.0	-3.2	0.7	536,087.53	761,598.71	32° 28' 15.450 N	103° 29' 6.364 W
2,100.0	0.10	28.33	2,100.0	-3.0	0.7	536,087.66	761,598.66	32° 28' 15.452 N	103° 29' 6.364 W
2,200.0	0.35	324.25	2,200.0	-2.7	0.5	536,087.98	761,598.52	32° 28' 15.455 N	103° 29' 6.366 W
2,300.0	0.39	265.12	2,300.0	-2.5	0.0	536,088.20	761,598.00	32° 28' 15.457 N	103° 29' 6.372 W
2,400.0	0.32	164.03	2,400.0	-2.8	-0.3	536,087.91	761,597.74	32° 28' 15.454 N	103° 29' 6.375 W
2,500.0	0.24	114.86	2,500.0	-3.2	0.0	536,087.55	761,598.01	32° 28' 15.450 N	103° 29' 6.372 W
2,600.0	0.08	171.07	2,600.0	-3.3	0.2	536,087.39	761,598.21	32° 28' 15.449 N	103° 29' 6.370 W
2,700.0	0.08	77.27	2,700.0	-3.4	0.3	536,087.34	761,598.29	32° 28' 15.448 N	103° 29' 6.369 W
2,800.0	0.32	39.37	2,800.0	-3.1	0.5	536,087.57	761,598.53	32° 28' 15.451 N	103° 29' 6.366 W
2,900.0	0.18	314.34	2,900.0	-2.8	0.6	536,087.90	761,598.60	32° 28' 15.454 N	103° 29' 6.365 W
3,000.0	0.08	24.50	3,000.0	-2.6	0.5	536,088.07	761,598.51	32° 28' 15.456 N	103° 29' 6.366 W
3,100.0	0.31	87.86	3,100.0	-2.6	0.8	536,088.14	761,598.81	32° 28' 15.456 N	103° 29' 6.363 W
3,200.0	0.08	85.52	3,200.0	-2.5	1.2	536,088.16	761,599.15	32° 28' 15.456 N	103° 29' 6.359 W
3,300.0	0.16	314.13	3,300.0	-2.4	1.1	536,088.26	761,599.12	32° 28' 15.457 N	103° 29' 6.359 W
3,400.0	0.24	74.80	3,400.0	-2.3	1.2	536,088.41	761,599.22	32° 28' 15.459 N	103° 29' 6.358 W
3,500.0	0.22	22.38	3,500.0	-2.1	1.5	536,088.64	761,599.50	32° 28' 15.461 N	103° 29' 6.354 W
3,600.0	0.27	358.56	3,600.0	-1.6	1.6	536,089.06	761,599.57	32° 28' 15.465 N	103° 29' 6.354 W
3,700.0	0.19	62.02	3,700.0	-1.3	1.7	536,089.37	761,599.71	32° 28' 15.468 N	103° 29' 6.352 W
3,800.0	0.19	286.07	3,800.0	-1.2	1.7	536,089.49	761,599.69	32° 28' 15.470 N	103° 29' 6.352 W
3,900.0	0.12	125.87	3,900.0	-1.2	1.6	536,089.48	761,599.62	32° 28' 15.469 N	103° 29' 6.353 W
4,000.0	0.29	31.94	4,000.0	-1.1	1.8	536,089.63	761,599.84	32° 28' 15.471 N	103° 29' 6.350 W
4,100.0	0.06	359.92	4,100.0	-0.8	2.0	536,089.90	761,599.97	32° 28' 15.474 N	103° 29' 6.349 W
4,200.0	0.08	7.86	4,200.0	-0.7	2.0	536,090.02	761,599.98	32° 28' 15.475 N	103° 29' 6.349 W
4,300.0	0.46	326.38	4,300.0	-0.3	1.8	536,090.42	761,599.77	32° 28' 15.479 N	103° 29' 6.351 W
4,400.0	1.58	351.47	4,399.9	1.4	1.3	536,092.12	761,599.34	32° 28' 15.496 N	103° 29' 6.356 W
4,500.0	2.12	354.04	4,499.9	4.6	0.9	536,095.33	761,598.94	32° 28' 15.527 N	103° 29' 6.360 W
4,600.0	1.72	352.76	4,599.8	8.0	0.6	536,098.65	761,598.56	32° 28' 15.560 N	103° 29' 6.364 W
4,700.0	1.55	11.70	4,699.8	10.8	0.7	536,101.47	761,598.65	32° 28' 15.588 N	103° 29' 6.363 W
4,800.0	1.85	4.90	4,799.8	13.7	1.1	536,104.40	761,599.06	32° 28' 15.617 N	103° 29' 6.358 W
4,900.0	2.21	359.24	4,899.7	17.2	1.2	536,107.94	761,599.17	32° 28' 15.652 N	103° 29' 6.356 W
5,000.0	2.53	351.96	4,999.6	21.3	0.8	536,112.05	761,598.84	32° 28' 15.693 N	103° 29' 6.360 W
5,100.0	2.65	355.43	5,099.5	25.8	0.3	536,116.54	761,598.35	32° 28' 15.737 N	103° 29' 6.365 W
5,200.0	2.28	355.74	5,199.4	30.1	0.0	536,120.83	761,598.01	32° 28' 15.780 N	103° 29' 6.369 W
5,300.0	1.79	3.49	5,299.3	33.7	0.0	536,124.37	761,597.96	32° 28' 15.815 N	103° 29' 6.369 W
5,400.0	0.80	359.56	5,399.3	35.9	0.1	536,126.63	761,598.05	32° 28' 15.837 N	103° 29' 6.368 W
5,500.0	0.74	2.81	5,499.3	37.3	0.1	536,127.97	761,598.08	32° 28' 15.850 N	103° 29' 6.367 W
5,600.0	0.53	350.56	5,599.3	38.4	0.0	536,129.07	761,598.03	32° 28' 15.861 N	103° 29' 6.368 W
5,700.0	0.34	20.34	5,699.3	39.1	0.1	536,129.81	761,598.06	32° 28' 15.869 N	103° 29' 6.367 W
5,800.0	0.26	14.60	5,799.3	39.6	0.2	536,130.30	761,598.22	32° 28' 15.873 N	103° 29' 6.366 W
5,900.0	0.28	287.57	5,899.3	39.9	0.0	536,130.60	761,598.04	32° 28' 15.876 N	103° 29' 6.368 W
6,000.0	0.34	302.39	5,999.3	40.1	-0.4	536,130.83	761,597.56	32° 28' 15.879 N	103° 29' 6.373 W
6,100.0	0.33	341.35	6,099.3	40.6	-0.8	536,131.26	761,597.22	32° 28' 15.883 N	103° 29' 6.377 W
6,200.0	0.30	268.88	6,199.3	40.8	-1.1	536,131.53	761,596.86	32° 28' 15.886 N	103° 29' 6.381 W
6,300.0	0.33	317.28	6,299.3	41.0	-1.6	536,131.74	761,596.41	32° 28' 15.888 N	103° 29' 6.387 W
6,400.0	0.28	314.36	6,399.3	41.4	-2.0	536,132.12	761,596.04	32° 28' 15.892 N	103° 29' 6.391 W
6,500.0	0.08	256.08	6,499.3	41.6	-2.2	536,132.27	761,595.79	32° 28' 15.893 N	103° 29' 6.394 W



TDS
Survey Report - Geographic



Company: COG Operating LLC
Project: Lea County, NM
Site: Osprey 20 State Com
Well: #1H
Wellbore: Sidetrack #1
Design: Sidetrack #1

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3782.5usft (Original Well Elev)
MD Reference: WELL @ 3782.5usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,600.0	0.11	350.02	6,599.3	41.6	-2.3	536,132.35	761,595.71	32° 28' 15.894 N	103° 29' 6.395 W
6,700.0	0.03	288.06	6,699.3	41.8	-2.3	536,132.45	761,595.67	32° 28' 15.895 N	103° 29' 6.395 W
6,800.0	0.14	162.80	6,799.3	41.6	-2.3	536,132.34	761,595.68	32° 28' 15.894 N	103° 29' 6.395 W
6,900.0	0.27	131.91	6,899.3	41.4	-2.1	536,132.07	761,595.89	32° 28' 15.891 N	103° 29' 6.393 W
7,000.0	0.49	126.28	6,999.3	41.0	-1.6	536,131.66	761,596.41	32° 28' 15.887 N	103° 29' 6.386 W
7,100.0	0.22	115.11	7,099.3	40.6	-1.1	536,131.32	761,596.93	32° 28' 15.884 N	103° 29' 6.380 W
7,200.0	0.18	101.19	7,199.3	40.5	-0.7	536,131.21	761,597.26	32° 28' 15.883 N	103° 29' 6.377 W
7,300.0	0.28	80.95	7,299.3	40.5	-0.3	536,131.22	761,597.65	32° 28' 15.883 N	103° 29' 6.372 W
7,400.0	0.34	195.13	7,399.3	40.3	-0.2	536,130.97	761,597.82	32° 28' 15.880 N	103° 29' 6.370 W
7,500.0	0.23	134.65	7,499.3	39.8	-0.1	536,130.55	761,597.88	32° 28' 15.876 N	103° 29' 6.369 W
7,600.0	0.06	81.67	7,599.3	39.7	0.1	536,130.41	761,598.08	32° 28' 15.875 N	103° 29' 6.367 W
7,700.0	0.16	90.99	7,699.3	39.7	0.3	536,130.42	761,598.27	32° 28' 15.875 N	103° 29' 6.365 W
7,800.0	0.35	117.90	7,799.3	39.6	0.7	536,130.27	761,598.68	32° 28' 15.873 N	103° 29' 6.360 W
7,900.0	0.26	67.97	7,899.3	39.5	1.2	536,130.21	761,599.16	32° 28' 15.873 N	103° 29' 6.355 W
8,000.0	0.30	88.61	7,999.3	39.6	1.6	536,130.31	761,599.63	32° 28' 15.873 N	103° 29' 6.349 W
8,100.0	0.57	122.07	8,099.3	39.3	2.3	536,130.05	761,600.31	32° 28' 15.871 N	103° 29' 6.341 W
8,200.0	0.41	59.38	8,199.3	39.3	3.0	536,129.97	761,601.04	32° 28' 15.870 N	103° 29' 6.333 W
8,300.0	0.48	66.11	8,299.3	39.6	3.7	536,130.32	761,601.73	32° 28' 15.873 N	103° 29' 6.324 W
8,400.0	0.82	62.98	8,399.3	40.1	4.8	536,130.81	761,602.75	32° 28' 15.878 N	103° 29' 6.313 W
8,500.0	0.32	81.70	8,499.3	40.5	5.7	536,131.18	761,603.67	32° 28' 15.882 N	103° 29' 6.302 W
8,600.0	0.02	312.51	8,599.3	40.5	5.9	536,131.23	761,603.93	32° 28' 15.882 N	103° 29' 6.299 W
8,700.0	0.86	201.05	8,699.3	39.8	5.7	536,130.54	761,603.65	32° 28' 15.875 N	103° 29' 6.302 W
8,800.0	0.50	206.87	8,799.3	38.7	5.2	536,129.45	761,603.18	32° 28' 15.865 N	103° 29' 6.308 W
8,900.0	0.09	358.92	8,899.2	38.4	5.0	536,129.14	761,602.98	32° 28' 15.862 N	103° 29' 6.310 W
9,000.0	0.21	262.20	8,999.2	38.5	4.8	536,129.19	761,602.80	32° 28' 15.862 N	103° 29' 6.312 W
9,100.0	0.65	278.80	9,099.2	38.6	4.1	536,129.26	761,602.06	32° 28' 15.863 N	103° 29' 6.321 W
9,200.0	1.19	300.86	9,199.2	39.2	2.6	536,129.88	761,600.61	32° 28' 15.869 N	103° 29' 6.338 W
9,300.0	1.14	276.40	9,299.2	39.8	0.7	536,130.52	761,598.73	32° 28' 15.876 N	103° 29' 6.360 W
9,400.0	0.66	272.04	9,399.2	39.9	-0.8	536,130.65	761,597.16	32° 28' 15.877 N	103° 29' 6.378 W
9,500.0	0.93	237.37	9,499.2	39.5	-2.1	536,130.23	761,595.90	32° 28' 15.873 N	103° 29' 6.393 W
9,600.0	1.14	256.71	9,599.2	38.9	-3.7	536,129.57	761,594.25	32° 28' 15.867 N	103° 29' 6.412 W
9,700.0	0.64	295.77	9,699.2	38.9	-5.2	536,129.58	761,592.78	32° 28' 15.867 N	103° 29' 6.429 W
9,800.0	1.18	300.15	9,799.2	39.6	-6.6	536,130.34	761,591.39	32° 28' 15.874 N	103° 29' 6.445 W
9,900.0	1.70	319.49	9,899.1	41.3	-8.5	536,131.99	761,589.53	32° 28' 15.891 N	103° 29' 6.467 W
10,000.0	1.73	297.42	9,999.1	43.1	-10.8	536,133.81	761,587.23	32° 28' 15.909 N	103° 29' 6.493 W
10,100.0	1.66	299.87	10,099.0	44.5	-13.4	536,135.23	761,584.63	32° 28' 15.923 N	103° 29' 6.524 W
10,169.0	2.11	301.87	10,168.0	45.7	-15.3	536,136.39	761,582.69	32° 28' 15.935 N	103° 29' 6.546 W
10,241.0	9.80	216.60	10,239.6	41.5	-20.1	536,132.16	761,577.90	32° 28' 15.894 N	103° 29' 6.603 W
10,273.0	13.30	215.90	10,271.0	36.3	-23.9	536,126.99	761,574.11	32° 28' 15.843 N	103° 29' 6.647 W
10,304.0	15.60	213.10	10,301.0	29.9	-28.2	536,120.61	761,569.75	32° 28' 15.780 N	103° 29' 6.699 W
10,335.0	17.00	206.90	10,330.7	22.4	-32.6	536,113.08	761,565.42	32° 28' 15.706 N	103° 29' 6.750 W
10,367.0	18.00	198.30	10,361.3	13.5	-36.2	536,104.21	761,561.75	32° 28' 15.618 N	103° 29' 6.794 W
10,398.0	19.10	197.10	10,390.7	4.1	-39.2	536,094.82	761,558.75	32° 28' 15.525 N	103° 29' 6.829 W
10,429.0	19.60	196.00	10,419.9	-5.7	-42.2	536,084.97	761,555.83	32° 28' 15.428 N	103° 29' 6.864 W
10,461.0	22.20	194.60	10,449.8	-16.7	-45.2	536,073.96	761,552.83	32° 28' 15.320 N	103° 29' 6.901 W
10,492.0	25.20	195.30	10,478.2	-28.8	-48.4	536,061.92	761,549.61	32° 28' 15.201 N	103° 29' 6.939 W
10,524.0	28.20	195.00	10,506.8	-42.7	-52.1	536,048.05	761,545.85	32° 28' 15.064 N	103° 29' 6.984 W
10,555.0	29.30	195.00	10,533.9	-57.1	-56.0	536,033.64	761,541.99	32° 28' 14.921 N	103° 29' 7.031 W
10,587.0	31.40	194.80	10,561.6	-72.7	-60.2	536,018.02	761,537.84	32° 28' 14.767 N	103° 29' 7.081 W
10,619.0	34.40	196.00	10,588.4	-89.4	-64.8	536,001.27	761,533.22	32° 28' 14.602 N	103° 29' 7.136 W
10,650.0	35.70	195.70	10,613.8	-106.6	-69.6	535,984.14	761,528.35	32° 28' 14.433 N	103° 29' 7.195 W
10,683.0	35.20	194.60	10,640.7	-125.0	-74.6	535,965.67	761,523.35	32° 28' 14.250 N	103° 29' 7.255 W
10,714.0	35.50	194.30	10,666.0	-142.4	-79.1	535,948.30	761,518.88	32° 28' 14.079 N	103° 29' 7.309 W
10,746.0	37.00	193.60	10,691.8	-160.8	-83.7	535,929.93	761,514.32	32° 28' 13.897 N	103° 29' 7.363 W
10,778.0	39.70	192.50	10,716.9	-180.1	-88.2	535,910.59	761,509.84	32° 28' 13.706 N	103° 29' 7.417 W



TDS
Survey Report - Geographic



Company: COG Operating LLC
Project: Lea County, NM
Site: Osprey 20 State Com
Well: #1H
Wellbore: Sidetrack #1
Design: Sidetrack #1

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3782.5usft (Original Well Elev)
MD Reference: WELL @ 3782.5usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,809.0	44.20	192.50	10,739.9	-200.3	-92.6	535,890.37	761,505.35	32° 28' 13.507 N	103° 29' 7.472 W
10,841.0	47.60	192.70	10,762.2	-222.8	-97.7	535,867.94	761,500.34	32° 28' 13.285 N	103° 29' 7.532 W
10,872.0	49.70	192.40	10,782.7	-245.5	-102.7	535,845.23	761,495.29	32° 28' 13.061 N	103° 29' 7.593 W
10,904.0	51.40	192.00	10,803.0	-269.6	-107.9	535,821.08	761,490.07	32° 28' 12.822 N	103° 29' 7.657 W
10,935.0	53.30	193.20	10,821.9	-293.6	-113.3	535,797.13	761,484.71	32° 28' 12.586 N	103° 29' 7.721 W
10,967.0	55.30	195.30	10,840.6	-318.8	-119.7	535,771.95	761,478.31	32° 28' 12.337 N	103° 29' 7.798 W
10,998.0	57.60	197.50	10,857.7	-343.5	-127.0	535,747.17	761,471.01	32° 28' 12.092 N	103° 29' 7.886 W
11,029.0	60.60	198.20	10,873.6	-368.8	-135.1	535,721.85	761,462.85	32° 28' 11.843 N	103° 29' 7.983 W
11,061.0	64.00	198.20	10,888.5	-395.8	-144.0	535,694.94	761,454.00	32° 28' 11.577 N	103° 29' 8.089 W
11,092.0	67.20	198.20	10,901.3	-422.6	-152.8	535,668.13	761,445.19	32° 28' 11.312 N	103° 29' 8.195 W
11,123.0	69.80	198.20	10,912.7	-450.0	-161.8	535,640.73	761,436.18	32° 28' 11.042 N	103° 29' 8.302 W
11,145.0	71.50	197.80	10,920.0	-469.7	-168.2	535,620.99	761,429.77	32° 28' 10.847 N	103° 29' 8.379 W
11,175.0	74.00	197.30	10,928.9	-497.0	-176.9	535,593.67	761,421.13	32° 28' 10.578 N	103° 29' 8.482 W
11,206.0	76.30	197.50	10,936.8	-525.6	-185.8	535,565.08	761,412.17	32° 28' 10.295 N	103° 29' 8.589 W
11,238.0	78.50	197.60	10,943.8	-555.4	-195.2	535,535.31	761,402.75	32° 28' 10.001 N	103° 29' 8.702 W
11,268.0	80.80	197.30	10,949.2	-583.5	-204.1	535,507.16	761,393.90	32° 28' 9.724 N	103° 29' 8.808 W
11,300.0	82.40	197.30	10,953.9	-613.8	-213.5	535,476.93	761,384.49	32° 28' 9.425 N	103° 29' 8.921 W
11,331.0	83.80	197.10	10,957.6	-643.2	-222.6	535,447.53	761,375.39	32° 28' 9.135 N	103° 29' 9.030 W
11,362.0	86.00	196.70	10,960.3	-672.7	-231.6	535,417.99	761,366.41	32° 28' 8.843 N	103° 29' 9.137 W
11,394.0	87.10	196.40	10,962.3	-703.3	-240.7	535,387.37	761,357.31	32° 28' 8.541 N	103° 29' 9.246 W
11,488.0	87.90	194.60	10,966.4	-793.8	-265.8	535,296.88	761,332.22	32° 28' 7.648 N	103° 29' 9.547 W
11,581.0	88.60	190.20	10,969.2	-884.6	-285.7	535,206.12	761,312.26	32° 28' 6.751 N	103° 29' 9.789 W
11,676.0	89.80	186.50	10,970.5	-978.6	-299.5	535,112.15	761,298.47	32° 28' 5.823 N	103° 29' 9.958 W
11,770.0	90.10	182.90	10,970.6	-1,072.2	-307.2	535,018.48	761,290.77	32° 28' 4.896 N	103° 29' 10.057 W
11,865.0	90.10	178.50	10,970.5	-1,167.2	-308.4	534,923.51	761,289.61	32° 28' 3.957 N	103° 29' 10.079 W
11,961.0	91.80	177.30	10,968.9	-1,263.1	-304.9	534,827.60	761,293.13	32° 28' 3.007 N	103° 29' 10.047 W
12,056.0	91.20	179.40	10,966.4	-1,358.0	-302.1	534,732.67	761,295.86	32° 28' 2.068 N	103° 29' 10.024 W
12,151.0	92.90	179.30	10,963.0	-1,453.0	-301.1	534,637.74	761,296.94	32° 28' 1.128 N	103° 29' 10.020 W
12,247.0	89.60	179.60	10,960.9	-1,548.9	-300.1	534,541.78	761,297.86	32° 28' 0.179 N	103° 29' 10.018 W
12,343.0	91.20	178.90	10,960.2	-1,644.9	-298.9	534,445.80	761,299.12	32° 27' 59.229 N	103° 29' 10.013 W
12,439.0	89.50	179.30	10,959.6	-1,740.9	-297.4	534,349.82	761,300.63	32° 27' 58.279 N	103° 29' 10.004 W
12,534.0	91.10	179.00	10,959.1	-1,835.9	-296.0	534,254.83	761,302.03	32° 27' 57.339 N	103° 29' 9.996 W
12,630.0	89.30	179.30	10,958.8	-1,931.9	-294.5	534,158.85	761,303.46	32° 27' 56.389 N	103° 29' 9.989 W
12,725.0	90.70	179.20	10,958.8	-2,026.8	-293.3	534,063.86	761,304.70	32° 27' 55.449 N	103° 29' 9.983 W
12,819.0	92.20	178.60	10,956.4	-2,120.8	-291.5	533,969.91	761,306.51	32° 27' 54.520 N	103° 29' 9.971 W
12,914.0	90.00	179.20	10,954.6	-2,215.8	-289.7	533,874.95	761,308.33	32° 27' 53.580 N	103° 29' 9.958 W
13,008.0	87.10	179.60	10,957.0	-2,309.7	-288.7	533,780.99	761,309.31	32° 27' 52.650 N	103° 29' 9.955 W
13,103.0	88.60	179.10	10,960.5	-2,404.6	-287.6	533,686.07	761,310.39	32° 27' 51.711 N	103° 29' 9.952 W
13,198.0	90.60	179.00	10,961.2	-2,499.6	-286.0	533,591.09	761,311.97	32° 27' 50.771 N	103° 29' 9.942 W
13,293.0	90.20	180.70	10,960.5	-2,594.6	-285.8	533,496.10	761,312.21	32° 27' 49.831 N	103° 29' 9.948 W
13,387.0	91.50	180.60	10,959.1	-2,688.6	-286.8	533,402.12	761,311.15	32° 27' 48.901 N	103° 29' 9.969 W
13,482.0	90.90	180.10	10,957.1	-2,783.6	-287.4	533,307.14	761,310.57	32° 27' 47.961 N	103° 29' 9.985 W
13,576.0	89.10	179.70	10,957.1	-2,877.6	-287.3	533,213.14	761,310.73	32° 27' 47.031 N	103° 29' 9.991 W
13,671.0	90.90	178.80	10,957.1	-2,972.5	-286.0	533,118.16	761,311.97	32° 27' 46.091 N	103° 29' 9.986 W
13,767.0	89.50	180.20	10,956.8	-3,068.5	-285.2	533,022.16	761,312.81	32° 27' 45.141 N	103° 29' 9.985 W
13,863.0	91.10	179.60	10,956.3	-3,164.5	-285.0	532,926.17	761,312.98	32° 27' 44.191 N	103° 29' 9.992 W
13,958.0	90.60	179.40	10,954.9	-3,259.5	-284.2	532,831.18	761,313.81	32° 27' 43.251 N	103° 29' 9.991 W
14,054.0	89.50	179.30	10,954.8	-3,355.5	-283.1	532,735.19	761,314.90	32° 27' 42.301 N	103° 29' 9.987 W
14,149.0	92.00	179.00	10,953.6	-3,450.5	-281.7	532,640.22	761,316.31	32° 27' 41.362 N	103° 29' 9.979 W
14,244.0	89.60	179.80	10,952.2	-3,545.5	-280.7	532,545.24	761,317.30	32° 27' 40.422 N	103° 29' 9.977 W
14,339.0	91.70	179.50	10,951.2	-3,640.4	-280.1	532,450.25	761,317.88	32° 27' 39.482 N	103° 29' 9.979 W
14,433.0	89.90	178.00	10,949.9	-3,734.4	-278.1	532,356.29	761,319.93	32° 27' 38.552 N	103° 29' 9.963 W
14,528.0	88.10	177.50	10,951.5	-3,829.3	-274.3	532,261.38	761,323.66	32° 27' 37.612 N	103° 29' 9.929 W
14,623.0	90.00	176.70	10,953.1	-3,924.2	-269.5	532,166.52	761,328.47	32° 27' 36.673 N	103° 29' 9.881 W
14,719.0	89.90	178.30	10,953.2	-4,020.1	-265.3	532,070.62	761,332.65	32° 27' 35.724 N	103° 29' 9.841 W



TDS
Survey Report - Geographic



Company: COG Operating LLC
Project: Lea County, NM
Site: Osprey 20 State Com
Well: #1H
Wellbore: Sidetrack #1
Design: Sidetrack #1

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3782.5usft (Original Well Elev)
MD Reference: WELL @ 3782.5usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,813.0	91.80	178.10	10,951.8	-4,114.0	-262.4	531,976.68	761,335.61	32° 27' 34.794 N	103° 29' 9.816 W
14,908.0	89.30	178.30	10,950.9	-4,209.0	-259.4	531,881.74	761,338.59	32° 27' 33.855 N	103° 29' 9.790 W
15,003.0	91.40	177.90	10,950.3	-4,303.9	-256.3	531,786.80	761,341.74	32° 27' 32.915 N	103° 29' 9.762 W
15,097.0	89.50	178.00	10,949.5	-4,397.8	-252.9	531,692.86	761,345.10	32° 27' 31.985 N	103° 29' 9.731 W
15,192.0	90.80	177.00	10,949.3	-4,492.7	-248.8	531,597.96	761,349.24	32° 27' 31.046 N	103° 29' 9.691 W
15,286.0	89.50	178.40	10,949.1	-4,586.7	-245.0	531,504.04	761,353.02	32° 27' 30.116 N	103° 29' 9.656 W
15,381.0	91.40	177.40	10,948.3	-4,681.6	-241.5	531,409.11	761,356.50	32° 27' 29.177 N	103° 29' 9.624 W
15,475.0	89.40	177.40	10,947.7	-4,775.5	-237.2	531,315.22	761,360.76	32° 27' 28.247 N	103° 29' 9.583 W
15,569.0	88.10	177.70	10,949.7	-4,869.4	-233.2	531,221.33	761,364.78	32° 27' 27.318 N	103° 29' 9.545 W
15,664.0	89.30	176.80	10,951.9	-4,964.2	-228.7	531,126.46	761,369.34	32° 27' 26.379 N	103° 29' 9.501 W
15,758.0	88.60	176.90	10,953.6	-5,058.1	-223.5	531,032.62	761,374.50	32° 27' 25.450 N	103° 29' 9.449 W
15,852.0	88.60	179.40	10,955.9	-5,152.0	-220.5	530,938.71	761,377.53	32° 27' 24.520 N	103° 29' 9.422 W
15,946.0	90.20	178.80	10,956.9	-5,246.0	-219.0	530,844.73	761,379.01	32° 27' 23.590 N	103° 29' 9.414 W
16,041.0	91.20	180.80	10,955.7	-5,341.0	-218.7	530,749.74	761,379.34	32° 27' 22.650 N	103° 29' 9.419 W
16,135.0	93.20	180.40	10,952.1	-5,434.9	-219.6	530,655.82	761,378.36	32° 27' 21.721 N	103° 29' 9.439 W
16,229.0	91.50	181.00	10,948.2	-5,528.8	-220.8	530,561.91	761,377.21	32° 27' 20.792 N	103° 29' 9.461 W
16,323.0	89.50	180.40	10,947.4	-5,622.8	-221.9	530,467.92	761,376.06	32° 27' 19.862 N	103° 29' 9.483 W
16,418.0	91.50	178.60	10,946.6	-5,717.8	-221.1	530,372.94	761,376.89	32° 27' 18.922 N	103° 29' 9.482 W
16,512.0	89.70	178.30	10,945.6	-5,811.7	-218.6	530,278.98	761,379.43	32° 27' 17.992 N	103° 29' 9.461 W
16,607.0	89.90	179.90	10,945.9	-5,906.7	-217.1	530,184.00	761,380.93	32° 27' 17.052 N	103° 29' 9.453 W
16,701.0	92.80	178.90	10,943.7	-6,000.7	-216.1	530,090.04	761,381.91	32° 27' 16.123 N	103° 29' 9.450 W
16,809.0	92.90	179.00	10,938.4	-6,108.5	-214.1	529,982.19	761,383.89	32° 27' 15.055 N	103° 29' 9.437 W
16,904.0	91.40	179.70	10,934.8	-6,203.4	-213.0	529,887.27	761,384.96	32° 27' 14.116 N	103° 29' 9.433 W
16,998.0	90.20	179.40	10,933.5	-6,297.4	-212.3	529,793.28	761,385.70	32° 27' 13.186 N	103° 29' 9.433 W
17,092.0	90.10	178.50	10,933.2	-6,391.4	-210.6	529,699.30	761,387.42	32° 27' 12.256 N	103° 29' 9.422 W
17,187.0	90.50	177.80	10,932.7	-6,486.3	-207.5	529,604.35	761,390.49	32° 27' 11.316 N	103° 29' 9.395 W
17,281.0	90.30	178.70	10,932.1	-6,580.3	-204.6	529,510.40	761,393.36	32° 27' 10.386 N	103° 29' 9.370 W
17,375.0	89.50	179.90	10,932.2	-6,674.3	-203.5	529,416.41	761,394.51	32° 27' 9.456 N	103° 29' 9.365 W
17,471.0	89.40	179.20	10,933.2	-6,770.3	-202.7	529,320.42	761,395.26	32° 27' 8.506 N	103° 29' 9.365 W
17,565.0	89.50	178.60	10,934.1	-6,864.3	-200.9	529,226.44	761,397.07	32° 27' 7.576 N	103° 29' 9.353 W
17,659.0	89.30	180.90	10,935.0	-6,958.3	-200.5	529,132.45	761,397.48	32° 27' 6.646 N	103° 29' 9.357 W
17,753.0	88.80	180.90	10,936.6	-7,052.2	-202.0	529,038.48	761,396.00	32° 27' 5.716 N	103° 29' 9.383 W
17,847.0	88.50	181.10	10,938.8	-7,146.2	-203.6	528,944.52	761,394.36	32° 27' 4.787 N	103° 29' 9.411 W
17,941.0	88.00	180.60	10,941.7	-7,240.1	-205.0	528,850.57	761,392.97	32° 27' 3.857 N	103° 29' 9.436 W
18,035.0	87.10	180.30	10,945.7	-7,334.0	-205.8	528,756.66	761,392.23	32° 27' 2.928 N	103° 29' 9.453 W
18,129.0	87.30	181.20	10,950.3	-7,427.9	-207.0	528,662.78	761,391.00	32° 27' 1.999 N	103° 29' 9.476 W
18,222.0	88.90	181.30	10,953.4	-7,520.8	-209.0	528,569.86	761,388.97	32° 27' 1.080 N	103° 29' 9.508 W
18,316.0	90.40	180.70	10,954.0	-7,614.8	-210.7	528,475.88	761,387.33	32° 27' 0.150 N	103° 29' 9.536 W
18,411.0	91.60	180.40	10,952.3	-7,709.8	-211.6	528,380.90	761,386.42	32° 26' 59.210 N	103° 29' 9.556 W
18,506.0	91.70	180.50	10,949.6	-7,804.8	-212.3	528,285.94	761,385.67	32° 26' 58.271 N	103° 29' 9.573 W
18,600.0	91.50	180.70	10,946.9	-7,898.7	-213.3	528,191.98	761,384.69	32° 26' 57.341 N	103° 29' 9.593 W
18,694.0	91.80	180.60	10,944.2	-7,992.7	-214.4	528,098.03	761,383.62	32° 26' 56.412 N	103° 29' 9.614 W
18,789.0	92.30	180.20	10,940.8	-8,087.6	-215.0	528,003.09	761,382.96	32° 26' 55.472 N	103° 29' 9.631 W
18,883.0	92.50	179.80	10,936.9	-8,181.5	-215.0	527,909.17	761,382.96	32° 26' 54.543 N	103° 29' 9.640 W
18,978.0	90.30	180.00	10,934.6	-8,276.5	-214.9	527,814.21	761,383.13	32° 26' 53.603 N	103° 29' 9.647 W
19,072.0	90.50	180.10	10,933.9	-8,370.5	-215.0	527,720.21	761,383.05	32° 26' 52.673 N	103° 29' 9.656 W
19,166.0	90.90	180.30	10,932.8	-8,464.5	-215.3	527,626.22	761,382.72	32° 26' 51.743 N	103° 29' 9.669 W
19,261.0	90.70	180.50	10,931.4	-8,559.5	-215.9	527,531.23	761,382.05	32° 26' 50.803 N	103° 29' 9.685 W
19,355.0	90.90	180.80	10,930.1	-8,653.5	-217.0	527,437.25	761,380.99	32° 26' 49.873 N	103° 29' 9.706 W
19,450.0	90.30	179.90	10,929.1	-8,748.4	-217.6	527,342.25	761,380.41	32° 26' 48.934 N	103° 29' 9.722 W
19,545.0	90.20	179.40	10,928.7	-8,843.4	-217.0	527,247.26	761,380.99	32° 26' 47.994 N	103° 29' 9.724 W
19,639.0	90.10	179.40	10,928.5	-8,937.4	-216.0	527,153.26	761,381.97	32° 26' 47.063 N	103° 29' 9.721 W
19,733.0	90.30	179.30	10,928.2	-9,031.4	-215.0	527,059.27	761,383.04	32° 26' 46.133 N	103° 29' 9.717 W
19,828.0	90.40	179.30	10,927.6	-9,126.4	-213.8	526,964.28	761,384.20	32° 26' 45.193 N	103° 29' 9.713 W
19,922.0	90.80	179.30	10,926.6	-9,220.4	-212.6	526,870.29	761,385.35	32° 26' 44.263 N	103° 29' 9.708 W



TDS
Survey Report - Geographic



Company: COG Operating LLC	Local Co-ordinate Reference: Well #1H	
Project: Lea County, NM	TVD Reference: WELL @ 3782.5usft (Original Well Elev)	
Site: Osprey 20 State Com	MD Reference: WELL @ 3782.5usft (Original Well Elev)	
Well: #1H	North Reference: Grid	
Wellbore: Sidetrack #1	Survey Calculation Method: Minimum Curvature	
Design: Sidetrack #1	Database: EDM 5000.1 Single User Db	

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,016.0	91.00	180.10	10,925.1	-9,314.4	-212.2	526,776.30	761,385.84	32° 26' 43.333 N	103° 29' 9.711 W
20,111.0	91.00	180.20	10,923.5	-9,409.4	-212.4	526,681.32	761,385.59	32° 26' 42.393 N	103° 29' 9.723 W
20,205.0	90.40	179.10	10,922.3	-9,503.4	-211.8	526,587.33	761,386.17	32° 26' 41.463 N	103° 29' 9.725 W
20,300.0	89.50	179.10	10,922.4	-9,598.4	-210.3	526,492.34	761,387.66	32° 26' 40.523 N	103° 29' 9.716 W
20,394.0	88.90	179.20	10,923.7	-9,692.3	-208.9	526,398.36	761,389.05	32° 26' 39.593 N	103° 29' 9.708 W
20,489.0	88.50	178.50	10,925.9	-9,787.3	-207.0	526,303.41	761,390.96	32° 26' 38.653 N	103° 29' 9.695 W
20,583.0	89.90	177.50	10,927.2	-9,881.2	-203.8	526,209.48	761,394.24	32° 26' 37.724 N	103° 29' 9.665 W
20,681.0	89.90	177.60	10,927.3	-9,979.1	-199.6	526,111.57	761,398.43	32° 26' 36.755 N	103° 29' 9.626 W
20,727.0	89.90	177.60	10,927.4	-10,025.1	-197.6	526,065.61	761,400.35	32° 26' 36.300 N	103° 29' 9.607 W
PBHL(OSU#1H)									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL(OSU#1H)	0.00	0.00	10,935.0	-10,035.6	366.6	526,055.10	761,964.60	32° 26' 36.151 N	103° 29' 3.025 W
- actual wellpath misses target center by 564.4usft at 20727.0usft MD (10927.4 TVD, -10025.1 N, -197.6 E)									
- Point									

Checked By: _____	Approved By: _____	Date: _____
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