



November 20, 2014

HOBBS OCD

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

MAR 17 2015

RECEIVED

Attn: Kanicia Castillo

RE: Osprey 20 State Com No 004H

Please find enclosed a copy of the survey from 0.00' to 10320.00' ran on the above referenced well.

If I can be of any further service, please do not hesitate to call me at 800-606-4976.

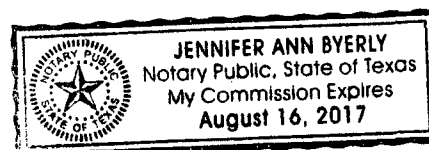
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 20 day of November, A.D., 2014, by Keith Havelka.

Jennifer Ann Byerly
Notary Public, State of Texas



MAR 20 2015



Company: COG Operating
Lease/Well: Osprey 20 State Com /No 004H
Location: Sec 20 T21S R34E
Rig Name: Ensign 772
State/County: New Mexico/Lea
Latitude: 32.46, Longitude: -103.50
GRID North is 0.45 Degrees East of True North
VS-Azi: 0.00 Degrees

HOBBS OCD

MAR 17 2015

RECEIVED



Depth Reference : RKB=31 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: ... com #4h gyro survey-de_01.ut

Minimum Curvature Method

Report Date/Time: 11/20/2014 / 14:57

VES Survey International

West Texas

(432) 563-5444

Surveyor: Chris Bankson

Osprey 20 State Com No 004H / API 30-025-41674

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	0.11	245.95	100.00	-0.04	-0.08	-0.04	0.09	245.95	0.11
200.00	0.23	195.17	200.00	-0.26	-0.22	-0.26	0.34	219.60	0.18
300.00	0.25	316.53	300.00	-0.30	-0.42	-0.30	0.51	234.56	0.41
400.00	0.20	172.54	400.00	-0.31	-0.54	-0.31	0.63	240.03	0.42
500.00	0.36	283.56	500.00	-0.41	-0.83	-0.41	0.92	243.42	0.47
600.00	0.20	330.36	600.00	-0.19	-1.22	-0.19	1.23	261.11	0.27
700.00	0.08	59.54	700.00	0.00	-1.24	0.00	1.24	269.81	0.21
800.00	0.21	198.49	800.00	-0.14	-1.24	-0.14	1.25	263.37	0.28
900.00	0.34	193.38	900.00	-0.60	-1.36	-0.60	1.49	246.09	0.13
1000.00	0.37	183.04	999.99	-1.21	-1.45	-1.21	1.89	230.14	0.07
1100.00	0.33	161.53	1099.99	-1.80	-1.37	-1.80	2.26	217.38	0.14
1200.00	0.37	179.07	1199.99	-2.39	-1.28	-2.39	2.71	208.11	0.11
1300.00	0.30	113.13	1299.99	-2.82	-1.03	-2.82	3.00	200.13	0.37
1400.00	0.44	115.19	1399.99	-3.08	-0.45	-3.08	3.12	188.29	0.14
1500.00	0.36	89.13	1499.98	-3.24	0.21	-3.24	3.25	176.25	0.19
1600.00	0.63	96.34	1599.98	-3.30	1.08	-3.30	3.47	161.87	0.28
1700.00	1.28	106.70	1699.97	-3.68	2.70	-3.68	4.56	143.76	0.66
1800.00	1.70	92.48	1799.93	-4.06	5.25	-4.06	6.64	127.75	0.56

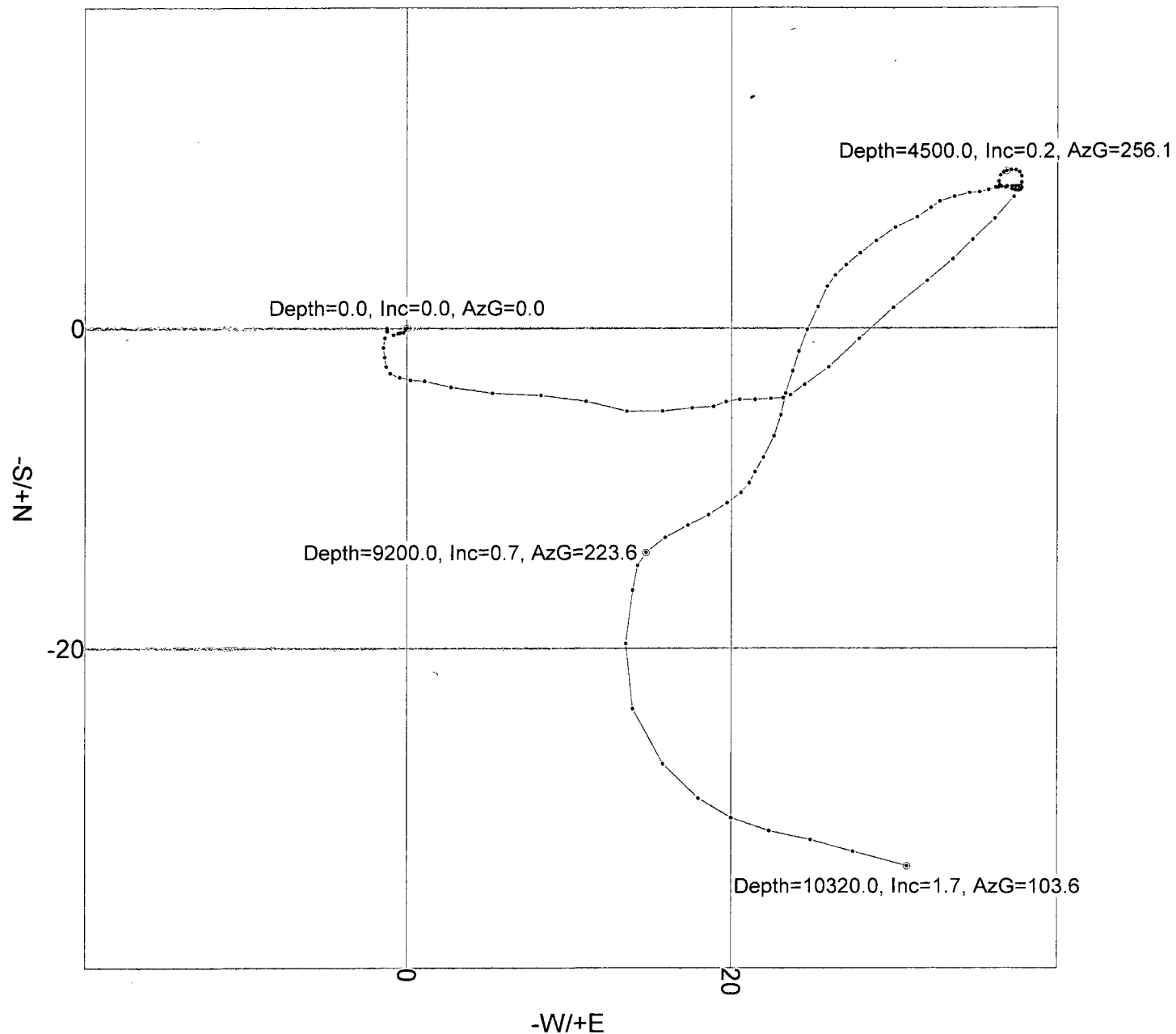
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	1.74	92.24	1899.89	-4.19	8.25	-4.19	9.25	116.92	0.04
2000.00	1.53	103.91	1999.85	-4.57	11.06	-4.57	11.97	112.44	0.39
2100.00	1.43	103.90	2099.81	-5.19	13.56	-5.19	14.52	110.93	0.10
2200.00	1.17	72.70	2199.79	-5.18	15.74	-5.18	16.58	108.23	0.74
2300.00	0.99	97.04	2299.77	-4.99	17.57	-4.99	18.27	105.85	0.49
2400.00	0.57	65.92	2399.76	-4.89	18.89	-4.89	19.51	104.52	0.58
2500.00	0.38	73.22	2499.76	-4.59	19.66	-4.59	20.19	103.14	0.21
2600.00	0.60	84.56	2599.76	-4.45	20.49	-4.45	20.97	102.24	0.24
2700.00	0.50	98.30	2699.75	-4.46	21.44	-4.46	21.90	101.75	0.16
2800.00	0.62	76.99	2799.75	-4.40	22.40	-4.40	22.83	101.12	0.24
2900.00	0.28	107.76	2899.74	-4.35	23.16	-4.35	23.56	100.65	0.40
3000.00	0.39	41.66	2999.74	-4.18	23.62	-4.18	23.99	100.02	0.38
3100.00	0.86	58.30	3099.74	-3.53	24.48	-3.53	24.74	98.20	0.50
3200.00	1.28	50.82	3199.72	-2.43	25.99	-2.43	26.10	95.33	0.44
3300.00	1.68	43.49	3299.68	-0.66	27.86	-0.66	27.87	91.35	0.44
3400.00	1.59	51.44	3399.64	1.28	29.96	1.28	29.99	87.56	0.24
3500.00	1.46	50.06	3499.61	2.96	32.02	2.96	32.16	84.72	0.14
3600.00	0.92	48.47	3599.59	4.30	33.60	4.30	33.87	82.70	0.54
3700.00	1.06	42.13	3699.57	5.52	34.81	5.52	35.25	80.99	0.18
3800.00	1.11	49.17	3799.55	6.84	36.17	6.84	36.81	79.29	0.14
3900.00	0.94	30.48	3899.54	8.19	37.32	8.19	38.21	77.63	0.37
4000.00	0.22	15.48	3999.53	9.08	37.79	9.08	38.87	76.48	0.73
4100.00	0.21	345.39	4099.53	9.45	37.80	9.45	38.96	75.96	0.11
4200.00	0.14	317.91	4199.53	9.72	37.67	9.72	38.91	75.53	0.11
4300.00	0.16	288.54	4299.53	9.85	37.46	9.85	38.73	75.26	0.08
4400.00	0.18	257.05	4399.53	9.86	37.17	9.86	38.46	75.14	0.09
4500.00	0.16	256.09	4499.53	9.79	36.88	9.79	38.16	75.13	0.02
4600.00	0.09	231.54	4599.53	9.71	36.68	9.71	37.95	75.17	0.09
4700.00	0.21	218.19	4699.53	9.52	36.51	9.52	37.73	75.39	0.12
4800.00	0.26	178.73	4799.53	9.15	36.40	9.15	37.54	75.89	0.16
4900.00	0.07	125.19	4899.53	8.89	36.46	8.89	37.53	76.29	0.22
5000.00	0.38	107.56	4999.53	8.76	36.82	8.76	37.85	76.62	0.31
5100.00	0.09	101.35	5099.53	8.65	37.21	8.65	38.20	76.92	0.29
5200.00	0.15	98.28	5199.53	8.61	37.41	8.61	38.39	77.04	0.07
5300.00	0.07	96.57	5299.53	8.58	37.60	8.58	38.57	77.14	0.08
5400.00	0.09	53.07	5399.53	8.63	37.73	8.63	38.71	77.12	0.06
5500.00	0.09	359.20	5499.53	8.75	37.80	8.75	38.80	76.96	0.08
5600.00	0.06	274.49	5599.53	8.84	37.74	8.84	38.76	76.82	0.11
5700.00	0.06	263.61	5699.53	8.84	37.63	8.84	38.65	76.78	0.01

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	0.16	269.27	5799.53	8.83	37.43	8.83	38.46	76.73	0.10
5900.00	0.09	273.03	5899.52	8.83	37.22	8.83	38.25	76.65	0.08
6000.00	0.26	273.45	5999.52	8.85	36.92	8.85	37.96	76.52	0.18
6100.00	0.16	243.30	6099.52	8.80	36.56	8.80	37.61	76.47	0.15
6200.00	0.09	284.20	6199.52	8.76	36.36	8.76	37.40	76.45	0.11
6300.00	0.08	264.94	6299.52	8.77	36.21	8.77	37.26	76.38	0.03
6400.00	0.45	247.10	6399.52	8.61	35.78	8.61	36.80	76.46	0.38
6500.00	0.22	271.69	6499.52	8.47	35.22	8.47	36.23	76.49	0.27
6600.00	0.48	264.54	6599.52	8.43	34.62	8.43	35.63	76.31	0.26
6700.00	0.63	248.53	6699.51	8.19	33.70	8.19	34.68	76.34	0.21
6800.00	0.47	255.89	6799.51	7.89	32.80	7.89	33.73	76.47	0.17
6900.00	0.39	207.76	6899.51	7.49	32.24	7.49	33.10	76.92	0.36
7000.00	0.83	247.97	6999.50	6.92	31.41	6.92	32.16	77.58	0.59
7100.00	0.87	240.32	7099.49	6.27	30.07	6.27	30.72	78.23	0.12
7200.00	0.80	229.59	7199.48	5.44	28.88	5.44	29.39	79.34	0.17
7300.00	0.60	234.72	7299.47	4.69	27.93	4.69	28.32	80.48	0.21
7400.00	0.72	224.64	7399.47	3.94	27.06	3.94	27.34	81.72	0.17
7500.00	0.34	231.54	7499.46	3.30	26.38	3.30	26.59	82.86	0.38
7600.00	0.66	206.63	7599.46	2.60	25.89	2.60	26.02	84.26	0.38
7700.00	0.93	202.84	7699.45	1.34	25.32	1.34	25.35	86.97	0.27
7800.00	0.89	207.48	7799.43	-0.10	24.64	-0.10	24.64	90.22	0.08
7900.00	0.78	192.95	7899.42	-1.45	24.13	-1.45	24.18	93.44	0.24
8000.00	0.70	200.92	7999.42	-2.69	23.76	-2.69	23.91	96.45	0.13
8100.00	0.98	195.45	8099.41	-4.08	23.32	-4.08	23.67	99.92	0.28
8200.00	0.61	186.40	8199.40	-5.43	23.03	-5.43	23.66	103.27	0.38
8300.00	0.99	205.67	8299.39	-6.74	22.60	-6.74	23.58	106.62	0.46
8400.00	0.70	207.02	8399.37	-8.07	21.94	-8.07	23.38	110.19	0.29
8500.00	0.47	211.83	8499.37	-8.97	21.44	-8.97	23.24	112.70	0.24
8600.00	0.43	204.71	8599.37	-9.66	21.07	-9.66	23.18	114.63	0.07
8700.00	0.51	232.52	8699.36	-10.27	20.56	-10.27	22.98	116.54	0.24
8800.00	0.70	232.37	8799.36	-10.91	19.73	-10.91	22.54	118.95	0.19
8900.00	0.86	240.21	8899.35	-11.66	18.59	-11.66	21.94	122.08	0.19
9000.00	0.79	246.52	8999.34	-12.30	17.31	-12.30	21.23	125.41	0.11
9100.00	1.03	236.85	9099.33	-13.07	15.92	-13.07	20.60	129.38	0.28
9200.00	0.71	223.63	9199.31	-14.01	14.74	-14.01	20.34	133.54	0.37
9300.00	0.42	194.31	9299.31	-14.81	14.22	-14.81	20.54	136.16	0.40
9400.00	1.39	189.75	9399.30	-16.37	13.93	-16.37	21.49	139.60	0.97
9500.00	2.44	185.82	9499.24	-19.68	13.51	-19.68	23.87	145.54	1.05
9600.00	2.39	162.33	9599.15	-23.78	13.92	-23.78	27.56	149.65	0.98

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	2.20	140.06	9699.07	-27.24	15.79	-27.24	31.48	149.90	0.90
9800.00	1.32	125.77	9799.03	-29.38	17.96	-29.38	34.44	148.57	0.98
9900.00	1.40	117.22	9899.00	-30.62	19.98	-30.62	36.56	146.88	0.22
10000.00	1.45	101.69	9998.97	-31.43	22.31	-31.43	38.54	144.64	0.39
10100.00	1.56	103.47	10098.93	-32.01	24.87	-32.01	40.53	142.15	0.12
10200.00	1.58	107.34	10198.89	-32.73	27.51	-32.73	42.76	139.95	0.11
10320.00	1.69	103.64	10318.85	-33.65	30.81	-33.65	45.62	137.52	0.13



VES Survey International
West Texas
(432) 563-5444
Surveyor: Chris Bankson
Osprey 20 State Com No 004H / API 30-025-41674



VES Survey Date: 11/7/2014



HOBBS OCD

MAR 17 2015

RECEIVED

COG Operating LLC

Lea County, NM
Osprey 20 State Com
#4H

OH

Design: OH

Survey Report - Geographic

24 November, 2014



PM



TDS
Survey Report - Geographic



Company: COG Operating LLC
Project: Lea County, NM
Site: Osprey 20 State Com
Well: #4H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #4H
TVD Reference: KB @ 3772.6usft
MD Reference: KB @ 3772.6usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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	#4H					
Well Position	+N/-S	0.0 usft	Northing:	533,400.30 usft	Latitude:	32° 27' 49.193 N
	+E/-W	0.0 usft	Easting:	757,328.00 usft	Longitude:	103° 29' 56.456 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,741.2 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/4/2014	7.16	60.34	48,435

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	179.13	

Survey Program	Date 11/24/2014				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	10,320.0	GYRO #1 (OH)	MWD	MWD - Standard	
10,346.0	18,061.0	MWD #1 (OH)	MWD	MWD - Standard	

Survey									
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	533,400.30	757,328.00	32° 27' 49.193 N	103° 29' 56.456 W
100.0	0.11	245.95	100.0	0.0	-0.1	533,400.26	757,327.91	32° 27' 49.193 N	103° 29' 56.457 W
200.0	0.23	195.17	200.0	-0.3	-0.2	533,400.03	757,327.77	32° 27' 49.191 N	103° 29' 56.459 W
300.0	0.25	316.53	300.0	-0.3	-0.4	533,399.99	757,327.57	32° 27' 49.190 N	103° 29' 56.461 W
400.0	0.20	172.54	400.0	-0.3	-0.6	533,399.98	757,327.44	32° 27' 49.190 N	103° 29' 56.463 W
500.0	0.36	283.56	500.0	-0.4	-0.8	533,399.88	757,327.16	32° 27' 49.189 N	103° 29' 56.466 W
600.0	0.20	330.36	600.0	-0.2	-1.2	533,400.11	757,326.76	32° 27' 49.192 N	103° 29' 56.471 W
700.0	0.08	59.54	700.0	0.0	-1.3	533,400.29	757,326.74	32° 27' 49.193 N	103° 29' 56.471 W
800.0	0.21	198.49	800.0	-0.1	-1.3	533,400.15	757,326.74	32° 27' 49.192 N	103° 29' 56.471 W
900.0	0.34	193.38	900.0	-0.6	-1.4	533,399.69	757,326.61	32° 27' 49.187 N	103° 29' 56.473 W
1,000.0	0.37	183.04	1,000.0	-1.2	-1.5	533,399.08	757,326.53	32° 27' 49.181 N	103° 29' 56.474 W



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Lea County, NM	TVD Reference:	KB @ 3772.6usft
Site:	Osprey 20 State Com	MD Reference:	KB @ 3772.6usft
Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	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	0.33	161.53	1,100.0	-1.8	-1.4	533,398.49	757,326.60	32° 27' 49.176 N	103° 29' 56.473 W
1,200.0	0.37	179.07	1,200.0	-2.4	-1.3	533,397.89	757,326.70	32° 27' 49.170 N	103° 29' 56.472 W
1,300.0	0.30	113.13	1,300.0	-2.8	-1.1	533,397.46	757,326.94	32° 27' 49.165 N	103° 29' 56.469 W
1,400.0	0.44	115.19	1,400.0	-3.1	-0.5	533,397.20	757,327.53	32° 27' 49.163 N	103° 29' 56.462 W
1,500.0	0.36	89.13	1,500.0	-3.3	0.2	533,397.04	757,328.19	32° 27' 49.161 N	103° 29' 56.454 W
1,600.0	0.63	96.34	1,600.0	-3.3	1.1	533,396.98	757,329.05	32° 27' 49.160 N	103° 29' 56.444 W
1,700.0	1.28	106.70	1,700.0	-3.7	2.7	533,396.60	757,330.67	32° 27' 49.157 N	103° 29' 56.425 W
1,800.0	1.70	92.48	1,799.9	-4.1	5.2	533,396.22	757,333.22	32° 27' 49.153 N	103° 29' 56.396 W
1,900.0	1.74	92.24	1,899.9	-4.2	8.2	533,396.09	757,336.22	32° 27' 49.151 N	103° 29' 56.361 W
2,000.0	1.53	103.91	1,999.8	-4.6	11.0	533,395.71	757,339.03	32° 27' 49.147 N	103° 29' 56.328 W
2,100.0	1.43	103.90	2,099.8	-5.2	13.5	533,395.09	757,341.54	32° 27' 49.141 N	103° 29' 56.299 W
2,200.0	1.17	72.70	2,199.8	-5.2	15.7	533,395.10	757,343.73	32° 27' 49.141 N	103° 29' 56.273 W
2,300.0	0.99	97.04	2,299.8	-5.0	17.6	533,395.29	757,345.56	32° 27' 49.142 N	103° 29' 56.252 W
2,400.0	0.57	65.92	2,399.8	-4.9	18.9	533,395.39	757,346.87	32° 27' 49.143 N	103° 29' 56.236 W
2,500.0	0.38	73.22	2,499.8	-4.6	19.6	533,395.69	757,347.64	32° 27' 49.146 N	103° 29' 56.227 W
2,600.0	0.60	84.56	2,599.8	-4.5	20.5	533,395.83	757,348.48	32° 27' 49.148 N	103° 29' 56.218 W
2,700.0	0.50	98.30	2,699.8	-4.5	21.4	533,395.82	757,349.43	32° 27' 49.147 N	103° 29' 56.207 W
2,800.0	0.62	76.99	2,799.7	-4.4	22.4	533,395.88	757,350.39	32° 27' 49.148 N	103° 29' 56.195 W
2,900.0	0.28	107.76	2,899.7	-4.4	23.2	533,395.93	757,351.15	32° 27' 49.148 N	103° 29' 56.186 W
3,000.0	0.39	41.66	2,999.7	-4.2	23.6	533,396.11	757,351.61	32° 27' 49.150 N	103° 29' 56.181 W
3,100.0	0.86	58.30	3,099.7	-3.5	24.5	533,396.76	757,352.48	32° 27' 49.156 N	103° 29' 56.171 W
3,200.0	1.28	50.82	3,199.7	-2.4	26.0	533,397.86	757,353.98	32° 27' 49.167 N	103° 29' 56.153 W
3,300.0	1.68	43.49	3,299.7	-0.7	27.9	533,399.62	757,355.86	32° 27' 49.185 N	103° 29' 56.131 W
3,400.0	1.59	51.44	3,399.6	1.3	30.0	533,401.55	757,357.95	32° 27' 49.203 N	103° 29' 56.107 W
3,500.0	1.46	50.06	3,499.6	2.9	32.0	533,403.24	757,360.01	32° 27' 49.220 N	103° 29' 56.082 W
3,600.0	0.92	48.47	3,599.6	4.3	33.6	533,404.59	757,361.59	32° 27' 49.233 N	103° 29' 56.064 W
3,700.0	1.06	42.13	3,699.6	5.5	34.8	533,405.80	757,362.81	32° 27' 49.245 N	103° 29' 56.049 W
3,800.0	1.11	49.17	3,799.6	6.8	36.2	533,407.12	757,364.16	32° 27' 49.258 N	103° 29' 56.034 W
3,900.0	0.94	30.48	3,899.5	8.2	37.3	533,408.46	757,365.31	32° 27' 49.271 N	103° 29' 56.020 W
4,000.0	0.22	15.48	3,999.5	9.1	37.8	533,409.36	757,365.78	32° 27' 49.280 N	103° 29' 56.015 W
4,100.0	0.21	345.39	4,099.5	9.4	37.8	533,409.72	757,365.79	32° 27' 49.284 N	103° 29' 56.014 W
4,200.0	0.14	317.91	4,199.5	9.7	37.7	533,409.99	757,365.66	32° 27' 49.286 N	103° 29' 56.016 W
4,300.0	0.16	288.54	4,299.5	9.8	37.4	533,410.12	757,365.44	32° 27' 49.288 N	103° 29' 56.018 W
4,400.0	0.18	257.05	4,399.5	9.8	37.2	533,410.13	757,365.16	32° 27' 49.288 N	103° 29' 56.022 W
4,500.0	0.16	256.09	4,499.5	9.8	36.9	533,410.06	757,364.87	32° 27' 49.287 N	103° 29' 56.025 W
4,600.0	0.09	231.54	4,599.5	9.7	36.7	533,409.98	757,364.67	32° 27' 49.286 N	103° 29' 56.027 W
4,700.0	0.21	218.19	4,699.5	9.5	36.5	533,409.79	757,364.50	32° 27' 49.284 N	103° 29' 56.029 W
4,800.0	0.26	178.73	4,799.5	9.1	36.4	533,409.41	757,364.39	32° 27' 49.281 N	103° 29' 56.031 W
4,900.0	0.07	125.19	4,899.5	8.9	36.4	533,409.15	757,364.44	32° 27' 49.278 N	103° 29' 56.030 W
5,000.0	0.38	107.56	4,999.5	8.7	36.8	533,409.02	757,364.81	32° 27' 49.277 N	103° 29' 56.026 W
5,100.0	0.09	101.35	5,099.5	8.6	37.2	533,408.90	757,365.20	32° 27' 49.276 N	103° 29' 56.021 W
5,200.0	0.15	98.28	5,199.5	8.6	37.4	533,408.87	757,365.41	32° 27' 49.275 N	103° 29' 56.019 W
5,300.0	0.07	96.57	5,299.5	8.5	37.6	533,408.84	757,365.60	32° 27' 49.275 N	103° 29' 56.017 W
5,400.0	0.09	53.07	5,399.5	8.6	37.7	533,408.88	757,365.72	32° 27' 49.275 N	103° 29' 56.015 W
5,500.0	0.09	359.20	5,499.5	8.7	37.8	533,409.01	757,365.79	32° 27' 49.277 N	103° 29' 56.014 W
5,600.0	0.06	274.49	5,599.5	8.8	37.7	533,409.09	757,365.73	32° 27' 49.277 N	103° 29' 56.015 W
5,700.0	0.06	263.61	5,699.5	8.8	37.6	533,409.09	757,365.63	32° 27' 49.277 N	103° 29' 56.016 W
5,800.0	0.16	269.27	5,799.5	8.8	37.4	533,409.08	757,365.44	32° 27' 49.277 N	103° 29' 56.019 W
5,900.0	0.09	273.03	5,899.5	8.8	37.2	533,409.08	757,365.22	32° 27' 49.277 N	103° 29' 56.021 W
6,000.0	0.26	273.45	5,999.5	8.8	36.9	533,409.10	757,364.91	32° 27' 49.278 N	103° 29' 56.025 W
6,100.0	0.16	243.30	6,099.5	8.8	36.6	533,409.05	757,364.56	32° 27' 49.277 N	103° 29' 56.029 W
6,200.0	0.09	284.20	6,199.5	8.7	36.4	533,409.01	757,364.36	32° 27' 49.277 N	103° 29' 56.031 W
6,300.0	0.08	264.94	6,299.5	8.7	36.2	533,409.02	757,364.22	32° 27' 49.277 N	103° 29' 56.033 W
6,400.0	0.45	247.10	6,399.5	8.6	35.8	533,408.86	757,363.78	32° 27' 49.275 N	103° 29' 56.038 W
6,500.0	0.22	271.69	6,499.5	8.4	35.2	533,408.72	757,363.23	32° 27' 49.274 N	103° 29' 56.044 W



TDS
Survey Report - Geographic



Company: COG Operating LLC
Project: Lea County, NM
Site: Osprey 20 State Com
Well: #4H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #4H
TVD Reference: KB @ 3772.6usft
MD Reference: KB @ 3772.6usft
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	0.48	264.54	6,599.5	8.4	34.6	533,408.68	757,362.62	32° 27' 49.274 N	103° 29' 56.051 W
6,700.0	0.63	248.53	6,699.5	8.1	33.7	533,408.44	757,361.69	32° 27' 49.271 N	103° 29' 56.062 W
6,800.0	0.47	255.89	6,799.5	7.8	32.8	533,408.14	757,360.78	32° 27' 49.268 N	103° 29' 56.073 W
6,900.0	0.39	207.76	6,899.5	7.4	32.2	533,407.74	757,360.23	32° 27' 49.264 N	103° 29' 56.079 W
7,000.0	0.83	247.97	6,999.5	6.9	31.4	533,407.17	757,359.40	32° 27' 49.259 N	103° 29' 56.089 W
7,100.0	0.87	240.32	7,099.5	6.2	30.1	533,406.52	757,358.07	32° 27' 49.253 N	103° 29' 56.105 W
7,200.0	0.80	229.59	7,199.5	5.4	28.9	533,405.69	757,356.87	32° 27' 49.244 N	103° 29' 56.119 W
7,300.0	0.60	234.72	7,299.5	4.6	27.9	533,404.93	757,355.92	32° 27' 49.237 N	103° 29' 56.130 W
7,400.0	0.72	224.64	7,399.5	3.9	27.1	533,404.18	757,355.05	32° 27' 49.230 N	103° 29' 56.140 W
7,500.0	0.34	231.54	7,499.5	3.3	26.4	533,403.55	757,354.37	32° 27' 49.224 N	103° 29' 56.148 W
7,600.0	0.66	206.63	7,599.5	2.6	25.9	533,402.85	757,353.88	32° 27' 49.217 N	103° 29' 56.154 W
7,700.0	0.93	202.84	7,699.4	1.3	25.3	533,401.59	757,353.31	32° 27' 49.204 N	103° 29' 56.161 W
7,800.0	0.89	207.48	7,799.4	-0.1	24.6	533,400.15	757,352.64	32° 27' 49.190 N	103° 29' 56.169 W
7,900.0	0.78	192.95	7,899.4	-1.5	24.1	533,398.80	757,352.13	32° 27' 49.177 N	103° 29' 56.175 W
8,000.0	0.70	200.92	7,999.4	-2.7	23.8	533,397.57	757,351.75	32° 27' 49.165 N	103° 29' 56.179 W
8,100.0	0.98	195.45	8,099.4	-4.1	23.3	533,396.17	757,351.31	32° 27' 49.151 N	103° 29' 56.185 W
8,200.0	0.61	186.40	8,199.4	-5.5	23.0	533,394.82	757,351.02	32° 27' 49.137 N	103° 29' 56.188 W
8,300.0	0.99	205.67	8,299.4	-6.8	22.6	533,393.51	757,350.59	32° 27' 49.124 N	103° 29' 56.193 W
8,400.0	0.70	207.02	8,399.4	-8.1	21.9	533,392.19	757,349.94	32° 27' 49.111 N	103° 29' 56.201 W
8,500.0	0.47	211.83	8,499.4	-9.0	21.4	533,391.30	757,349.44	32° 27' 49.103 N	103° 29' 56.207 W
8,600.0	0.43	204.71	8,599.4	-9.7	21.1	533,390.61	757,349.07	32° 27' 49.096 N	103° 29' 56.211 W
8,700.0	0.51	232.52	8,699.4	-10.3	20.6	533,390.00	757,348.56	32° 27' 49.090 N	103° 29' 56.217 W
8,800.0	0.70	232.37	8,799.4	-11.0	19.7	533,389.35	757,347.72	32° 27' 49.084 N	103° 29' 56.227 W
8,900.0	0.86	240.21	8,899.3	-11.7	18.6	533,388.61	757,346.59	32° 27' 49.076 N	103° 29' 56.240 W
9,000.0	0.79	246.52	8,999.3	-12.3	17.3	533,387.96	757,345.30	32° 27' 49.070 N	103° 29' 56.255 W
9,100.0	1.03	236.85	9,099.3	-13.1	15.9	533,387.19	757,343.92	32° 27' 49.062 N	103° 29' 56.272 W
9,200.0	0.71	223.63	9,199.3	-14.0	14.7	533,386.25	757,342.74	32° 27' 49.053 N	103° 29' 56.286 W
9,300.0	0.42	194.31	9,299.3	-14.9	14.2	533,385.45	757,342.22	32° 27' 49.045 N	103° 29' 56.292 W
9,400.0	1.39	189.75	9,399.3	-16.4	13.9	533,383.90	757,341.92	32° 27' 49.030 N	103° 29' 56.295 W
9,500.0	2.44	185.82	9,499.2	-19.7	13.5	533,380.59	757,341.50	32° 27' 48.997 N	103° 29' 56.300 W
9,600.0	2.39	162.33	9,599.2	-23.8	13.9	533,376.48	757,341.92	32° 27' 48.957 N	103° 29' 56.296 W
9,700.0	2.20	140.06	9,699.1	-27.3	15.8	533,373.02	757,343.79	32° 27' 48.922 N	103° 29' 56.275 W
9,800.0	1.32	125.77	9,799.0	-29.4	18.0	533,370.88	757,345.95	32° 27' 48.901 N	103° 29' 56.249 W
9,900.0	1.40	117.22	9,899.0	-30.7	20.0	533,369.65	757,347.97	32° 27' 48.889 N	103° 29' 56.226 W
10,000.0	1.45	101.69	9,999.0	-31.5	22.3	533,368.83	757,350.30	32° 27' 48.880 N	103° 29' 56.199 W
10,100.0	1.56	103.47	10,098.9	-32.0	24.9	533,368.26	757,352.86	32° 27' 48.874 N	103° 29' 56.169 W
10,200.0	1.58	107.34	10,198.9	-32.8	27.5	533,367.53	757,355.50	32° 27' 48.867 N	103° 29' 56.138 W
10,320.0	1.69	103.64	10,318.8	-33.7	30.8	533,366.62	757,358.80	32° 27' 48.858 N	103° 29' 56.100 W
10,346.0	1.80	107.30	10,344.8	-33.9	31.6	533,366.41	757,359.56	32° 27' 48.856 N	103° 29' 56.091 W
10,383.0	1.80	126.80	10,381.8	-34.4	32.6	533,365.89	757,360.58	32° 27' 48.850 N	103° 29' 56.079 W
10,415.0	5.50	177.70	10,413.8	-36.3	33.0	533,364.05	757,361.05	32° 27' 48.832 N	103° 29' 56.074 W
10,446.0	9.60	184.40	10,444.5	-40.3	32.9	533,359.99	757,360.91	32° 27' 48.792 N	103° 29' 56.076 W
10,477.0	13.80	184.80	10,474.8	-46.6	32.4	533,353.72	757,360.40	32° 27' 48.730 N	103° 29' 56.082 W
10,509.0	17.10	184.10	10,505.7	-55.1	31.7	533,345.23	757,359.74	32° 27' 48.646 N	103° 29' 56.091 W
10,540.0	20.00	182.00	10,535.1	-64.9	31.2	533,335.38	757,359.23	32° 27' 48.549 N	103° 29' 56.098 W
10,572.0	22.40	181.10	10,564.9	-76.5	30.9	533,323.81	757,358.92	32° 27' 48.434 N	103° 29' 56.102 W
10,603.0	25.00	181.10	10,593.3	-88.9	30.7	533,311.36	757,358.69	32° 27' 48.311 N	103° 29' 56.106 W
10,635.0	28.30	180.70	10,621.9	-103.3	30.5	533,297.01	757,358.46	32° 27' 48.169 N	103° 29' 56.110 W
10,667.0	30.80	178.30	10,649.7	-119.1	30.6	533,281.23	757,358.61	32° 27' 48.013 N	103° 29' 56.110 W
10,698.0	32.70	176.90	10,676.1	-135.4	31.3	533,264.93	757,359.30	32° 27' 47.852 N	103° 29' 56.103 W
10,730.0	35.80	178.30	10,702.5	-153.4	32.1	533,246.94	757,360.05	32° 27' 47.673 N	103° 29' 56.096 W
10,761.0	38.80	177.90	10,727.2	-172.1	32.7	533,228.17	757,360.67	32° 27' 47.488 N	103° 29' 56.091 W
10,793.0	41.40	177.00	10,751.6	-192.7	33.6	533,207.58	757,361.59	32° 27' 47.284 N	103° 29' 56.082 W
10,824.0	44.10	176.70	10,774.4	-213.7	34.8	533,186.57	757,362.75	32° 27' 47.076 N	103° 29' 56.070 W
10,856.0	46.10	177.20	10,797.0	-236.4	36.0	533,163.94	757,363.96	32° 27' 46.852 N	103° 29' 56.058 W



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Lea County, NM	TVD Reference:	KB @ 3772.6usft
Site:	Osprey 20 State Com	MD Reference:	KB @ 3772.6usft
Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	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
10,888.0	48.70	178.10	10,818.6	-259.9	36.9	533,140.40	757,364.92	32° 27' 46.619 N	103° 29' 56.049 W
10,919.0	51.60	178.60	10,838.5	-283.7	37.6	533,116.62	757,365.60	32° 27' 46.383 N	103° 29' 56.043 W
10,950.0	54.70	178.30	10,857.1	-308.5	38.3	533,091.82	757,366.27	32° 27' 46.138 N	103° 29' 56.038 W
10,981.0	58.30	177.90	10,874.2	-334.3	39.1	533,065.99	757,367.13	32° 27' 45.882 N	103° 29' 56.030 W
11,013.0	61.40	177.20	10,890.3	-362.0	40.3	533,038.35	757,368.32	32° 27' 45.609 N	103° 29' 56.019 W
11,044.0	63.50	177.40	10,904.6	-389.4	41.6	533,010.90	757,369.61	32° 27' 45.337 N	103° 29' 56.006 W
11,090.0	65.50	177.90	10,924.4	-430.9	43.3	532,969.41	757,371.31	32° 27' 44.926 N	103° 29' 55.990 W
11,138.0	68.30	179.00	10,943.2	-475.0	44.5	532,925.28	757,372.50	32° 27' 44.490 N	103° 29' 55.980 W
11,169.0	72.50	179.30	10,953.6	-504.2	44.9	532,896.09	757,372.93	32° 27' 44.201 N	103° 29' 55.978 W
11,200.0	76.00	179.70	10,962.1	-534.0	45.2	532,866.26	757,373.19	32° 27' 43.906 N	103° 29' 55.978 W
11,232.0	80.60	179.70	10,968.5	-565.4	45.4	532,834.93	757,373.36	32° 27' 43.596 N	103° 29' 55.979 W
11,264.0	85.60	179.50	10,972.4	-597.1	45.6	532,803.18	757,373.58	32° 27' 43.281 N	103° 29' 55.979 W
11,298.0	90.20	179.50	10,973.6	-631.1	45.9	532,769.21	757,373.88	32° 27' 42.945 N	103° 29' 55.978 W
11,362.0	90.60	179.20	10,973.2	-695.1	46.6	532,705.22	757,374.60	32° 27' 42.312 N	103° 29' 55.976 W
11,455.0	89.50	179.00	10,973.1	-788.1	48.1	532,612.23	757,376.06	32° 27' 41.392 N	103° 29' 55.967 W
11,550.0	89.50	179.20	10,973.9	-883.1	49.6	532,517.24	757,377.55	32° 27' 40.452 N	103° 29' 55.958 W
11,643.0	90.00	178.80	10,974.3	-976.0	51.2	532,424.26	757,379.18	32° 27' 39.532 N	103° 29' 55.948 W
11,738.0	89.30	178.60	10,974.9	-1,071.0	53.3	532,329.29	757,381.33	32° 27' 38.592 N	103° 29' 55.932 W
11,832.0	89.30	179.20	10,976.1	-1,165.0	55.1	532,235.31	757,383.14	32° 27' 37.662 N	103° 29' 55.919 W
11,927.0	90.70	180.00	10,976.1	-1,260.0	55.8	532,140.32	757,383.80	32° 27' 36.722 N	103° 29' 55.920 W
12,021.0	91.20	179.90	10,974.5	-1,354.0	55.9	532,046.33	757,383.88	32° 27' 35.792 N	103° 29' 55.928 W
12,115.0	90.60	180.40	10,973.0	-1,448.0	55.6	531,952.34	757,383.64	32° 27' 34.862 N	103° 29' 55.939 W
12,209.0	90.30	179.20	10,972.3	-1,542.0	56.0	531,858.35	757,383.96	32° 27' 33.932 N	103° 29' 55.944 W
12,304.0	91.80	178.40	10,970.6	-1,636.9	58.0	531,763.39	757,385.95	32° 27' 32.992 N	103° 29' 55.929 W
12,398.0	92.20	178.30	10,967.3	-1,730.8	60.7	531,669.48	757,388.66	32° 27' 32.062 N	103° 29' 55.906 W
12,494.0	90.80	179.00	10,964.8	-1,826.8	62.9	531,573.55	757,390.92	32° 27' 31.113 N	103° 29' 55.889 W
12,588.0	91.50	178.30	10,962.9	-1,920.7	65.1	531,479.59	757,393.13	32° 27' 30.183 N	103° 29' 55.871 W
12,683.0	89.80	178.30	10,961.8	-2,015.7	68.0	531,384.64	757,395.95	32° 27' 29.243 N	103° 29' 55.847 W
12,777.0	89.70	179.70	10,962.2	-2,109.6	69.6	531,290.66	757,397.59	32° 27' 28.313 N	103° 29' 55.837 W
12,871.0	90.10	180.00	10,962.4	-2,203.6	69.8	531,196.66	757,397.84	32° 27' 27.383 N	103° 29' 55.842 W
12,964.0	90.60	180.60	10,961.8	-2,296.6	69.4	531,103.67	757,397.35	32° 27' 26.463 N	103° 29' 55.856 W
13,058.0	90.40	181.80	10,961.0	-2,390.6	67.4	531,009.69	757,395.38	32° 27' 25.533 N	103° 29' 55.888 W
13,152.0	89.10	181.60	10,961.4	-2,484.6	64.6	530,915.74	757,392.59	32° 27' 24.604 N	103° 29' 55.929 W
13,246.0	90.00	181.80	10,962.1	-2,578.5	61.8	530,821.78	757,389.81	32° 27' 23.674 N	103° 29' 55.970 W
13,341.0	89.60	181.30	10,962.5	-2,673.5	59.2	530,726.82	757,387.24	32° 27' 22.735 N	103° 29' 56.009 W
13,435.0	88.70	179.50	10,963.9	-2,767.5	58.6	530,632.84	757,386.58	32° 27' 21.805 N	103° 29' 56.025 W
13,529.0	88.60	177.90	10,966.1	-2,861.4	60.7	530,538.89	757,388.71	32° 27' 20.875 N	103° 29' 56.009 W
13,623.0	89.10	178.10	10,968.0	-2,955.3	64.0	530,444.96	757,391.99	32° 27' 19.946 N	103° 29' 55.979 W
13,718.0	88.80	177.40	10,969.7	-3,050.2	67.7	530,350.05	757,395.72	32° 27' 19.006 N	103° 29' 55.944 W
13,811.0	90.60	177.40	10,970.2	-3,143.1	71.9	530,257.16	757,399.94	32° 27' 18.087 N	103° 29' 55.903 W
13,905.0	89.70	177.40	10,969.9	-3,237.0	76.2	530,163.25	757,404.20	32° 27' 17.157 N	103° 29' 55.862 W
13,999.0	91.10	178.80	10,969.3	-3,331.0	79.3	530,069.31	757,407.32	32° 27' 16.227 N	103° 29' 55.834 W
14,092.0	91.00	179.00	10,967.6	-3,424.0	81.1	529,976.35	757,409.10	32° 27' 15.307 N	103° 29' 55.822 W
14,186.0	89.30	179.00	10,967.3	-3,517.9	82.7	529,882.36	757,410.74	32° 27' 14.377 N	103° 29' 55.812 W
14,279.0	89.50	178.80	10,968.3	-3,610.9	84.5	529,789.39	757,412.53	32° 27' 13.457 N	103° 29' 55.799 W
14,374.0	89.00	177.70	10,969.6	-3,705.9	87.4	529,694.44	757,415.43	32° 27' 12.517 N	103° 29' 55.774 W
14,468.0	89.50	177.90	10,970.8	-3,799.8	91.0	529,600.52	757,419.04	32° 27' 11.588 N	103° 29' 55.740 W
14,562.0	91.20	178.40	10,970.2	-3,893.7	94.1	529,506.57	757,422.07	32° 27' 10.658 N	103° 29' 55.714 W
14,656.0	91.40	179.50	10,968.1	-3,987.7	95.8	529,412.61	757,423.80	32° 27' 9.728 N	103° 29' 55.702 W
14,751.0	91.10	180.60	10,966.0	-4,082.7	95.7	529,317.64	757,423.71	32° 27' 8.788 N	103° 29' 55.712 W
14,845.0	90.40	181.40	10,964.8	-4,176.6	94.1	529,223.66	757,422.07	32° 27' 7.858 N	103° 29' 55.739 W
14,940.0	90.70	180.90	10,963.9	-4,271.6	92.2	529,128.69	757,420.17	32° 27' 6.919 N	103° 29' 55.770 W
15,034.0	89.00	180.90	10,964.1	-4,365.6	90.7	529,034.70	757,418.69	32° 27' 5.989 N	103° 29' 55.796 W
15,127.0	88.70	180.20	10,966.0	-4,458.6	89.8	528,941.72	757,417.80	32° 27' 5.069 N	103° 29' 55.815 W
15,222.0	89.00	179.50	10,967.9	-4,553.6	90.0	528,846.74	757,418.05	32° 27' 4.129 N	103° 29' 55.821 W



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Lea County, NM	TVD Reference:	KB @ 3772.6usft
Site:	Osprey 20 State Com	MD Reference:	KB @ 3772.6usft
Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	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
15,316.0	89.40	180.00	10,969.2	-4,647.5	90.5	528,752.76	757,418.46	32° 27' 3.199 N	103° 29' 55.825 W
15,410.0	89.70	180.40	10,969.9	-4,741.5	90.1	528,658.76	757,418.13	32° 27' 2.269 N	103° 29' 55.837 W
15,504.0	88.90	180.00	10,971.1	-4,835.5	89.8	528,564.77	757,417.80	32° 27' 1.339 N	103° 29' 55.849 W
15,598.0	90.50	179.90	10,971.6	-4,929.5	89.9	528,470.77	757,417.88	32° 27' 0.409 N	103° 29' 55.857 W
15,693.0	90.90	179.00	10,970.4	-5,024.5	90.8	528,375.78	757,418.79	32° 26' 59.469 N	103° 29' 55.855 W
15,788.0	90.30	179.20	10,969.4	-5,119.5	92.3	528,280.80	757,420.28	32° 26' 58.529 N	103° 29' 55.846 W
15,882.0	89.40	179.50	10,969.7	-5,213.5	93.4	528,186.81	757,421.35	32° 26' 57.599 N	103° 29' 55.842 W
15,976.0	89.70	179.30	10,970.4	-5,307.5	94.3	528,092.82	757,422.34	32° 26' 56.669 N	103° 29' 55.839 W
16,070.0	89.30	179.00	10,971.2	-5,401.5	95.7	527,998.83	757,423.73	32° 26' 55.739 N	103° 29' 55.832 W
16,165.0	87.60	179.30	10,973.8	-5,496.4	97.1	527,903.88	757,425.14	32° 26' 54.799 N	103° 29' 55.824 W
16,260.0	88.10	179.30	10,977.4	-5,591.3	98.3	527,808.95	757,426.30	32° 26' 53.860 N	103° 29' 55.819 W
16,355.0	88.50	179.30	10,980.2	-5,686.3	99.5	527,714.00	757,427.46	32° 26' 52.920 N	103° 29' 55.814 W
16,449.0	89.30	179.50	10,982.0	-5,780.3	100.4	527,620.03	757,428.44	32° 26' 51.990 N	103° 29' 55.811 W
16,543.0	90.30	178.40	10,982.3	-5,874.3	102.2	527,526.05	757,430.17	32° 26' 51.060 N	103° 29' 55.800 W
16,638.0	90.80	178.60	10,981.4	-5,969.2	104.7	527,431.08	757,432.65	32° 26' 50.120 N	103° 29' 55.779 W
16,732.0	91.50	178.60	10,979.5	-6,063.2	107.0	527,337.13	757,434.95	32° 26' 49.190 N	103° 29' 55.761 W
16,826.0	92.30	178.40	10,976.4	-6,157.1	109.4	527,243.22	757,437.41	32° 26' 48.261 N	103° 29' 55.741 W
16,920.0	92.40	178.80	10,972.5	-6,251.0	111.7	527,149.32	757,439.70	32° 26' 47.332 N	103° 29' 55.723 W
17,015.0	91.30	179.30	10,969.5	-6,345.9	113.3	527,054.39	757,441.28	32° 26' 46.392 N	103° 29' 55.713 W
17,109.0	90.50	179.20	10,968.0	-6,439.9	114.5	526,960.41	757,442.51	32° 26' 45.462 N	103° 29' 55.707 W
17,204.0	89.10	180.00	10,968.3	-6,534.9	115.2	526,865.41	757,443.17	32° 26' 44.522 N	103° 29' 55.708 W
17,298.0	88.70	180.20	10,970.1	-6,628.9	115.0	526,771.43	757,443.01	32° 26' 43.592 N	103° 29' 55.719 W
17,392.0	90.00	180.60	10,971.2	-6,722.9	114.4	526,677.44	757,442.35	32° 26' 42.662 N	103° 29' 55.735 W
17,486.0	88.00	181.60	10,972.8	-6,816.8	112.5	526,583.48	757,440.55	32° 26' 41.732 N	103° 29' 55.765 W
17,581.0	87.80	180.70	10,976.3	-6,911.7	110.6	526,488.56	757,438.64	32° 26' 40.793 N	103° 29' 55.796 W
17,675.0	87.80	181.30	10,979.9	-7,005.7	109.0	526,394.65	757,437.00	32° 26' 39.864 N	103° 29' 55.823 W
17,769.0	87.90	180.70	10,983.5	-7,099.6	107.4	526,300.73	757,435.36	32° 26' 38.935 N	103° 29' 55.851 W
17,864.0	88.30	180.00	10,986.6	-7,194.5	106.8	526,205.78	757,434.78	32° 26' 37.996 N	103° 29' 55.866 W
17,959.0	89.30	179.30	10,988.6	-7,289.5	107.4	526,110.81	757,435.36	32° 26' 37.056 N	103° 29' 55.868 W
18,008.0	89.00	179.20	10,989.3	-7,338.5	108.0	526,061.82	757,436.00	32° 26' 36.571 N	103° 29' 55.865 W
Final MWD Survey									
18,061.0	89.00	179.20	10,990.2	-7,391.5	108.7	526,008.83	757,436.74	32° 26' 36.047 N	103° 29' 55.861 W
Projection to Bit									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
18,008.0	10,989.3	-7,338.5	108.0	Final MWD Survey
18,061.0	10,990.2	-7,391.5	108.7	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____



COG Operating LLC
Project: Lea County, NM
Site: Osprey 20 State Com
Well: #4H
Wellbore: OH
Plan: Plan #2 (#4H/OH)

Section Details										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	
1	10320.0	1.69	103.64	10318.8	-33.7	30.8	0.00	0.00	34.1	
2	10492.4	1.69	103.64	10491.2	-34.9	35.7	0.00	0.00	35.4	
3	11237.6	89.83	179.51	10965.0	-510.8	53.4	12.00	75.88	511.6	
4	18128.5	89.83	179.51	10985.0	-7401.5	112.7	0.00	0.00	7402.4	EOL/PBHL (OSC #4H/OH)

WELL DETAILS: #4H

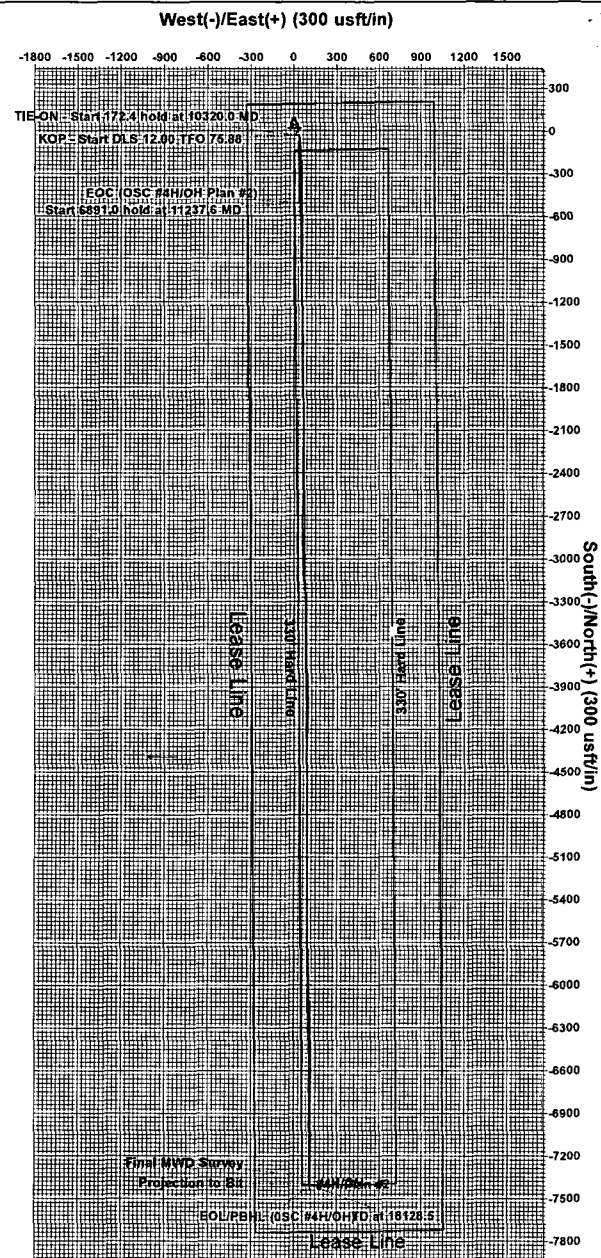
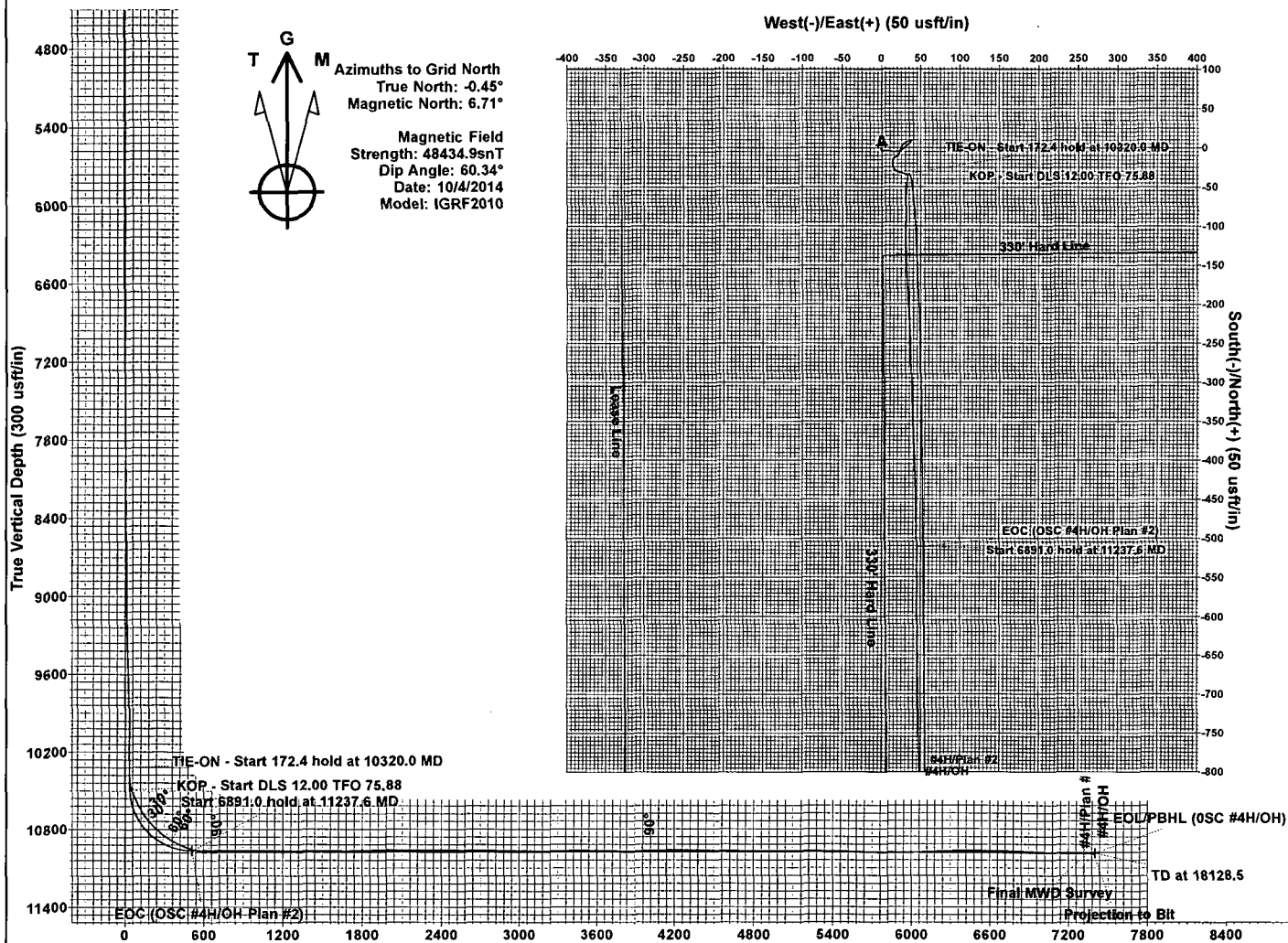
Ground Elevation:: 3741.2
RKB Elevation: KB @ 3772.6usft
Rig Name:

Northing 533400.30 Easting 757328.00 Latitude 32° 27' 49.193 N Longitude 103° 29' 56.456 W



Azimuths to Grid North
True North: -0.45°
Magnetic North: 6.71°

Magnetic Field
Strength: 48434.9snT
Dip Angle: 60.34°
Date: 10/4/2014
Model: IGRF2010



Vertical Section at 179.13° (300 usft/in)

Terra Directional Services LLC
322 Spring Hill Drive, Suite A300, Spring, Tx 77386
Phone: 432-425-7532

Plan: Plan #2 (#4H/OH)
Date: 9:07, November 24 2014

PROJECT DETAILS: Lea County, NM
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid