

Operator: COG Operating
Well/Lease: Pygmy 27 State 3H
County: Lea

STATE OF NEW MEXICO
DEVIATION REPORT

<u>Footage</u>	<u>Degree</u>
348	0.60
711	0.20
1027	0.30
1364	0.50
1663	0.60
1900	0.40
2150	0.70
2401	0.70
2907	1.50
3382	2.90
3666	1.90
4169	1.50
4921	1.70
5452	1.90
5953	1.60
6238	1.40
6892	1.20
7486	1.60
7814	0.90
8149	1.40
8413	1.20
8701	0.90
9290	0.60
9839	0.50
10123	0.80
10424	1.00

HOBBS OCD

JUN 02 2015

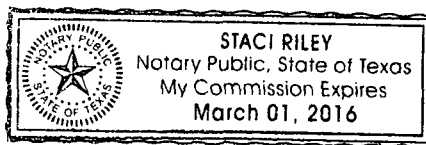
RECEIVED

30-025-42068

Signed By: Charles Walsh
Charles Walsh, Division Manager
Pioneer Drilling Company

Appeared before me on March 30, 2015

Staci Riley
Notary Public



JUN 08 2015

PM



March 5, 2015

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

HOBBS OCD

JUN 02 2015

RECEIVED

Attn: Kanicia Castillo

RE: **Pygmy 27 State 3H**

Please find enclosed a copy of the survey from 0.00' to 10330.00' ran on the above referenced well.

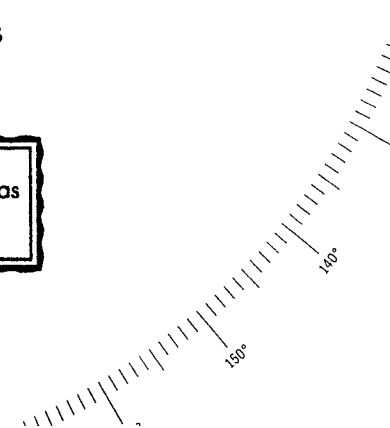
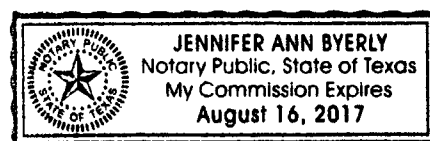
If I can be of any further service, please do not hesitate to call me at 800-606-4976.

Sincerely,

Kimberly D Moller
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 5 day of March, A.D., 2015, by Kimberly D Moller.

Jennifer Ann Byerly
Notary Public, State of Texas



Company: COG Operating LLC

Lease/Well: Pygmy 27 State/3H

Rig Name: Pioneer 20

State/County: New Mexico /Lea

Latitude: 32.46, Longitude: -103.56

GRID North is 0.42 Degrees East of True North

VS-Azi: 0.00 Degrees



Depth Reference : 17 FT

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: survey.ut

Minimum Curvature Method

Report Date/Time: 3/5/2015 / 08:10

VES Survey International

(432) 563-5444

West Texas

Surveyor: Javier Estrada

Pygmy 27 State 3H / API 30-025-42068

HOBBS OGD

JUN 02 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	0.23	349.71	100.00	0.19	-0.04	0.19	0.20	349.71	0.23
200.00	0.23	321.47	200.00	0.55	-0.20	0.55	0.58	340.34	0.11
300.00	0.29	195.17	300.00	0.46	-0.39	0.46	0.60	320.02	0.46
400.00	0.36	334.36	400.00	0.50	-0.59	0.50	0.77	310.48	0.61
500.00	0.32	311.80	500.00	0.97	-0.93	0.97	1.35	316.21	0.14
600.00	0.26	335.99	599.99	1.37	-1.23	1.37	1.84	317.95	0.13
700.00	0.14	162.06	699.99	1.46	-1.29	1.46	1.94	318.55	0.40
800.00	0.27	143.37	799.99	1.15	-1.11	1.15	1.60	316.09	0.14
900.00	0.26	199.31	899.99	0.75	-1.05	0.75	1.29	305.54	0.25
1000.00	0.19	215.00	999.99	0.39	-1.22	0.39	1.28	287.83	0.09
1100.00	0.12	102.08	1099.99	0.23	-1.21	0.23	1.24	280.85	0.26
1200.00	0.16	159.37	1199.99	0.08	-1.06	0.08	1.07	274.20	0.14
1300.00	0.24	141.88	1299.99	-0.22	-0.88	-0.22	0.91	255.90	0.10
1400.00	0.40	241.91	1399.99	-0.55	-1.06	-0.55	1.20	242.46	0.50
1500.00	0.42	175.25	1499.99	-1.08	-1.34	-1.08	1.72	231.14	0.45
1600.00	0.68	188.85	1599.98	-2.03	-1.40	-2.03	2.47	214.64	0.29
1700.00	0.59	214.90	1699.98	-3.04	-1.79	-3.04	3.52	210.47	0.30
1800.00	0.36	193.46	1799.97	-3.76	-2.15	-3.76	4.34	209.77	0.28

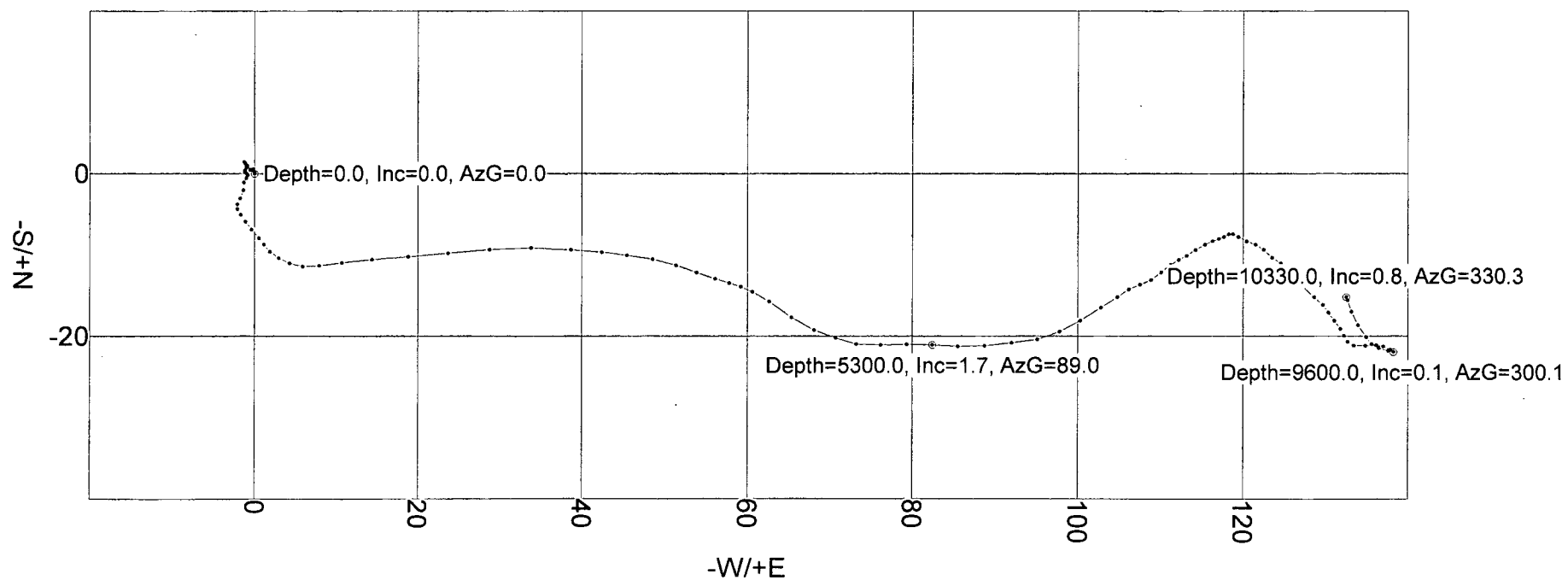
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.32	160.99	1899.97	-4.33	-2.14	-4.33	4.83	206.27	0.19
2000.00	0.63	144.55	1999.97	-5.04	-1.73	-5.04	5.33	198.92	0.34
2100.00	0.55	144.72	2099.96	-5.88	-1.13	-5.88	5.98	190.91	0.09
2200.00	0.88	140.51	2199.96	-6.86	-0.37	-6.86	6.87	183.08	0.34
2300.00	0.70	138.33	2299.95	-7.90	0.52	-7.90	7.92	176.21	0.18
2400.00	0.45	147.63	2399.94	-8.69	1.14	-8.69	8.76	172.53	0.26
2500.00	0.86	136.77	2499.93	-9.57	1.86	-9.57	9.75	168.99	0.43
2600.00	0.74	112.70	2599.92	-10.36	2.97	-10.36	10.78	164.00	0.35
2700.00	0.96	117.78	2699.91	-11.00	4.31	-11.00	11.82	158.62	0.23
2800.00	1.02	90.93	2799.90	-11.41	5.93	-11.41	12.86	152.52	0.46
2900.00	1.30	84.93	2899.88	-11.32	7.95	-11.32	13.83	144.91	0.31
3000.00	1.90	80.25	2999.84	-10.94	10.72	-10.94	15.31	135.59	0.61
3100.00	2.33	87.00	3099.77	-10.55	14.38	-10.55	17.84	126.28	0.50
3200.00	2.78	84.06	3199.67	-10.20	18.83	-10.20	21.41	118.44	0.47
3300.00	2.85	86.10	3299.55	-9.78	23.72	-9.78	25.65	112.40	0.12
3400.00	2.95	83.75	3399.42	-9.33	28.76	-9.33	30.23	107.97	0.16
3500.00	2.86	91.69	3499.29	-9.12	33.81	-9.12	35.02	105.09	0.41
3600.00	2.69	93.94	3599.18	-9.35	38.64	-9.35	39.76	103.61	0.20
3700.00	1.66	95.87	3699.10	-9.66	42.42	-9.66	43.51	102.83	1.03
3800.00	1.85	98.12	3799.06	-10.04	45.46	-10.04	46.56	102.45	0.20
3900.00	1.75	99.43	3899.01	-10.52	48.57	-10.52	49.69	102.22	0.10
4000.00	1.59	110.71	3998.97	-11.26	51.38	-11.26	52.60	102.36	0.36
4100.00	1.44	109.44	4098.93	-12.17	53.86	-12.17	55.22	102.73	0.16
4200.00	1.27	107.99	4198.90	-12.93	56.10	-12.93	57.57	102.98	0.17
4300.00	0.79	104.70	4298.89	-13.45	57.82	-13.45	59.37	103.09	0.48
4400.00	0.88	110.58	4398.88	-13.89	59.21	-13.89	60.82	103.20	0.12
4500.00	0.86	118.62	4498.86	-14.52	60.59	-14.52	62.30	103.48	0.12
4600.00	1.83	121.29	4598.84	-15.72	62.62	-15.72	64.56	104.09	0.97
4700.00	1.98	130.23	4698.78	-17.66	65.30	-17.66	67.65	105.13	0.33
4800.00	1.72	107.67	4798.73	-19.23	68.05	-19.23	70.71	105.78	0.77
4900.00	1.47	113.34	4898.69	-20.19	70.65	-20.19	73.48	105.95	0.29
5000.00	1.61	100.76	4998.65	-20.96	73.21	-20.96	76.15	105.98	0.37
5100.00	1.82	84.44	5098.61	-21.07	76.16	-21.07	79.03	105.46	0.53
5200.00	1.84	92.66	5198.56	-20.99	79.35	-20.99	82.08	104.82	0.26
5300.00	1.71	89.00	5298.51	-21.04	82.45	-21.04	85.09	104.32	0.18
5400.00	1.85	97.87	5398.46	-21.23	85.53	-21.23	88.13	103.94	0.31
5500.00	1.91	80.72	5498.41	-21.19	88.78	-21.19	91.27	103.42	0.56
5600.00	1.88	86.61	5598.36	-20.82	92.06	-20.82	94.39	102.74	0.20
5700.00	1.73	76.84	5698.31	-20.38	95.16	-20.38	97.32	102.09	0.34

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	1.54	63.65	5798.27	-19.44	97.83	-19.44	99.75	101.24	0.42
5900.00	1.70	58.11	5898.23	-18.06	100.30	-18.06	101.91	100.21	0.23
6000.00	1.68	57.06	5998.18	-16.48	102.79	-16.48	104.10	99.11	0.04
6100.00	1.01	56.00	6098.16	-15.19	104.75	-15.19	105.84	98.25	0.66
6200.00	0.92	55.22	6198.14	-14.24	106.14	-14.24	107.09	97.64	0.09
6300.00	0.83	80.12	6298.13	-13.65	107.52	-13.65	108.38	97.24	0.39
6400.00	0.89	54.81	6398.12	-13.08	108.86	-13.08	109.65	96.85	0.38
6500.00	0.86	49.97	6498.11	-12.15	110.08	-12.15	110.75	96.30	0.08
6600.00	0.81	52.71	6598.10	-11.23	111.22	-11.23	111.78	95.77	0.07
6700.00	0.54	66.13	6698.09	-10.61	112.21	-10.61	112.71	95.40	0.31
6800.00	0.70	57.89	6798.08	-10.10	113.16	-10.10	113.61	95.10	0.18
6900.00	0.82	53.92	6898.07	-9.36	114.25	-9.36	114.63	94.68	0.13
7000.00	0.68	70.08	6998.07	-8.74	115.38	-8.74	115.71	94.33	0.25
7100.00	0.50	60.43	7098.06	-8.32	116.32	-8.32	116.62	94.09	0.21
7200.00	0.40	77.43	7198.06	-8.03	117.04	-8.03	117.31	93.92	0.16
7300.00	0.38	58.46	7298.06	-7.78	117.67	-7.78	117.92	93.78	0.13
7400.00	0.36	61.20	7398.05	-7.45	118.22	-7.45	118.46	93.61	0.03
7500.00	0.32	110.70	7498.05	-7.40	118.76	-7.40	118.99	93.57	0.29
7600.00	0.56	125.18	7598.05	-7.78	119.42	-7.78	119.67	93.73	0.26
7700.00	0.75	113.54	7698.04	-8.32	120.42	-8.32	120.71	93.95	0.23
7800.00	0.60	107.25	7798.04	-8.74	121.52	-8.74	121.83	94.11	0.17
7900.00	0.78	133.59	7898.03	-9.36	122.51	-9.36	122.87	94.37	0.36
8000.00	0.82	134.00	7998.02	-10.33	123.52	-10.33	123.95	94.78	0.04
8100.00	0.70	111.33	8098.01	-11.05	124.61	-11.05	125.10	95.07	0.32
8200.00	1.21	145.87	8198.00	-12.15	125.77	-12.15	126.36	95.52	0.75
8300.00	1.28	135.91	8297.97	-13.83	127.14	-13.83	127.89	96.21	0.23
8400.00	1.02	128.67	8397.95	-15.18	128.61	-15.18	129.50	96.73	0.30
8500.00	0.67	138.46	8497.94	-16.18	129.69	-16.18	130.70	97.11	0.37
8600.00	0.62	148.68	8597.94	-17.08	130.36	-17.08	131.48	97.46	0.13
8700.00	0.80	142.45	8697.93	-18.09	131.07	-18.09	132.31	97.86	0.20
8800.00	0.60	147.87	8797.92	-19.09	131.77	-19.09	133.15	98.24	0.22
8900.00	0.51	154.89	8897.92	-19.94	132.24	-19.94	133.73	98.57	0.11
9000.00	0.48	141.38	8997.91	-20.67	132.69	-20.67	134.29	98.85	0.12
9100.00	0.56	109.18	9097.91	-21.16	133.42	-21.16	135.09	99.01	0.30
9200.00	1.06	81.54	9197.90	-21.19	134.80	-21.19	136.45	98.93	0.62
9300.00	0.53	95.40	9297.89	-21.10	136.17	-21.10	137.79	98.81	0.56
9400.00	0.46	107.21	9397.88	-21.26	137.00	-21.26	138.64	98.82	0.12
9500.00	0.63	121.45	9497.88	-21.66	137.86	-21.66	139.55	98.93	0.22
9600.00	0.10	300.08	9597.88	-21.91	138.25	-21.91	139.98	99.00	0.73

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	279.09	9697.88	-21.78	137.62	-21.78	139.34	98.99	0.55
9800.00	0.75	289.31	9797.87	-21.47	136.45	-21.47	138.13	98.94	0.16
9900.00	0.46	318.73	9897.86	-20.95	135.57	-20.95	137.18	98.79	0.42
10000.00	0.76	322.04	9997.86	-20.13	134.90	-20.13	136.39	98.49	0.31
10100.00	1.27	328.60	10097.84	-18.66	133.91	-18.66	135.20	97.93	0.52
10200.00	0.87	343.84	10197.82	-16.98	133.12	-16.98	134.20	97.27	0.49
10300.00	0.85	340.88	10297.81	-15.55	132.67	-15.55	133.57	96.69	0.05
10330.00	0.76	330.31	10327.81	-15.17	132.49	-15.17	133.36	96.53	0.58



VES Survey International
(432) 563-5444
West Texas
Surveyor: Javier Estrada
Pygmy 27 State 3H / API 30-025-42068





COG Operating LLC

Lea County, NM

Pygmy 27 State

#3H

OH

Design: OH

Survey Report - Geographic

08 March, 2015

HOBBS OCD

JUN 02 2015

RECEIVED





TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Lea County, NM	TVD Reference:	KB @ 3772.0usft (Pioneer 20)
Site:	Pygmy 27 State	MD Reference:	KB @ 3772.0usft (Pioneer 20)
Well:	#3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	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		Pygmy 27 State				
Site Position:		Northing:	530,624.00 usft	Latitude:	32° 27' 23.167 N	
From:	Map	Easting:	737,904.20 usft	Longitude:	103° 33' 43.387 W	
Position Uncertainty:		0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.41 °

Well	#3H					
Well Position	+N/-S	0.0 usft	Northing:	530,631.20 usft	Latitude:	32° 27' 23.142 N
	+E/-W	0.0 usft	Easting:	739,247.50 usft	Longitude:	103° 33' 27.710 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,755.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/30/2015	7.15	60.31	48,392

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	179.60	

Survey Program	Date 3/8/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	10,330.0	GYRO #1 (OH)	Good_gyro	Good Gyro
10,384.0	15,365.0	MWD #1 (OH)	Good_gyro	Good Gyro

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	530,631.20	739,247.50	32° 27' 23.142 N	103° 33' 27.710 W
100.0	0.23	349.71	100.0	0.2	0.0	530,631.40	739,247.46	32° 27' 23.144 N	103° 33' 27.711 W
200.0	0.23	321.47	200.0	0.6	-0.2	530,631.75	739,247.30	32° 27' 23.148 N	103° 33' 27.713 W
300.0	0.29	195.17	300.0	0.5	-0.4	530,631.67	739,247.11	32° 27' 23.147 N	103° 33' 27.715 W
400.0	0.36	334.36	400.0	0.5	-0.6	530,631.71	739,246.91	32° 27' 23.147 N	103° 33' 27.717 W
500.0	0.32	311.80	500.0	1.0	-0.9	530,632.17	739,246.56	32° 27' 23.152 N	103° 33' 27.721 W
600.0	0.26	335.99	600.0	1.4	-1.2	530,632.57	739,246.26	32° 27' 23.156 N	103° 33' 27.725 W
700.0	0.14	162.06	700.0	1.5	-1.3	530,632.66	739,246.21	32° 27' 23.157 N	103° 33' 27.725 W
800.0	0.27	143.37	800.0	1.2	-1.1	530,632.35	739,246.39	32° 27' 23.154 N	103° 33' 27.723 W
900.0	0.26	199.31	900.0	0.7	-1.0	530,631.95	739,246.45	32° 27' 23.150 N	103° 33' 27.722 W
1,000.0	0.19	215.00	1,000.0	0.4	-1.2	530,631.60	739,246.28	32° 27' 23.146 N	103° 33' 27.724 W



TDS
Survey Report - Geographic



Company: COG Operating LLC
Project: Lea County, NM
Site: Pygmy 27 State
Well: #3H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #3H
TVD Reference: KB @ 3772.0usft (Pioneer 20)
MD Reference: KB @ 3772.0usft (Pioneer 20)
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
1,100.0	0.12	102.08	1,100.0	0.2	-1.2	530,631.44	739,246.29	32° 27' 23.145 N	103° 33' 27.724 W
1,200.0	0.16	159.37	1,200.0	0.1	-1.1	530,631.29	739,246.44	32° 27' 23.143 N	103° 33' 27.723 W
1,300.0	0.24	141.88	1,300.0	-0.2	-0.9	530,631.00	739,246.62	32° 27' 23.140 N	103° 33' 27.721 W
1,400.0	0.40	241.91	1,400.0	-0.5	-1.1	530,630.67	739,246.44	32° 27' 23.137 N	103° 33' 27.723 W
1,500.0	0.42	175.25	1,500.0	-1.1	-1.3	530,630.14	739,246.16	32° 27' 23.132 N	103° 33' 27.726 W
1,600.0	0.68	188.85	1,600.0	-2.0	-1.4	530,629.18	739,246.10	32° 27' 23.122 N	103° 33' 27.727 W
1,700.0	0.59	214.90	1,700.0	-3.0	-1.8	530,628.18	739,245.72	32° 27' 23.112 N	103° 33' 27.731 W
1,800.0	0.36	193.46	1,800.0	-3.8	-2.1	530,627.45	739,245.35	32° 27' 23.105 N	103° 33' 27.736 W
1,900.0	0.32	160.99	1,900.0	-4.3	-2.1	530,626.88	739,245.37	32° 27' 23.100 N	103° 33' 27.735 W
2,000.0	0.63	144.55	2,000.0	-5.0	-1.7	530,626.17	739,245.77	32° 27' 23.093 N	103° 33' 27.731 W
2,100.0	0.55	144.72	2,100.0	-5.9	-1.1	530,625.33	739,246.37	32° 27' 23.084 N	103° 33' 27.724 W
2,200.0	0.88	140.51	2,200.0	-6.9	-0.4	530,624.34	739,247.14	32° 27' 23.074 N	103° 33' 27.715 W
2,300.0	0.70	138.33	2,299.9	-7.9	0.5	530,623.29	739,248.03	32° 27' 23.064 N	103° 33' 27.705 W
2,400.0	0.45	147.63	2,399.9	-8.7	1.2	530,622.51	739,248.65	32° 27' 23.056 N	103° 33' 27.698 W
2,500.0	0.86	136.77	2,499.9	-9.6	1.9	530,621.63	739,249.37	32° 27' 23.047 N	103° 33' 27.689 W
2,600.0	0.74	112.70	2,599.9	-10.4	3.0	530,620.83	739,250.48	32° 27' 23.039 N	103° 33' 27.676 W
2,700.0	0.96	117.78	2,699.9	-11.0	4.3	530,620.19	739,251.82	32° 27' 23.033 N	103° 33' 27.661 W
2,800.0	1.02	90.93	2,799.9	-11.4	6.0	530,619.79	739,253.45	32° 27' 23.029 N	103° 33' 27.642 W
2,900.0	1.30	84.93	2,899.9	-11.3	8.0	530,619.87	739,255.47	32° 27' 23.030 N	103° 33' 27.618 W
3,000.0	1.90	80.25	2,999.8	-10.9	10.7	530,620.25	739,258.23	32° 27' 23.033 N	103° 33' 27.586 W
3,100.0	2.33	87.00	3,099.8	-10.6	14.4	530,620.64	739,261.90	32° 27' 23.037 N	103° 33' 27.543 W
3,200.0	2.78	84.06	3,199.7	-10.2	18.8	530,621.00	739,266.34	32° 27' 23.040 N	103° 33' 27.491 W
3,300.0	2.85	86.10	3,299.6	-9.8	23.7	530,621.42	739,271.23	32° 27' 23.044 N	103° 33' 27.434 W
3,400.0	2.95	83.75	3,399.4	-9.3	28.8	530,621.87	739,276.27	32° 27' 23.048 N	103° 33' 27.375 W
3,500.0	2.86	91.69	3,499.3	-9.1	33.8	530,622.07	739,281.32	32° 27' 23.049 N	103° 33' 27.316 W
3,600.0	2.69	93.94	3,599.2	-9.4	38.7	530,621.84	739,286.16	32° 27' 23.047 N	103° 33' 27.260 W
3,700.0	1.66	95.87	3,699.1	-9.7	42.4	530,621.53	739,289.94	32° 27' 23.043 N	103° 33' 27.216 W
3,800.0	1.85	98.12	3,799.1	-10.0	45.5	530,621.15	739,292.98	32° 27' 23.040 N	103° 33' 27.180 W
3,900.0	1.75	99.43	3,899.0	-10.5	48.6	530,620.68	739,296.08	32° 27' 23.035 N	103° 33' 27.144 W
4,000.0	1.59	110.71	3,999.0	-11.3	51.4	530,619.93	739,298.89	32° 27' 23.027 N	103° 33' 27.111 W
4,100.0	1.44	109.44	4,098.9	-12.2	53.9	530,619.03	739,301.37	32° 27' 23.018 N	103° 33' 27.083 W
4,200.0	1.27	107.99	4,198.9	-12.9	56.1	530,618.27	739,303.61	32° 27' 23.010 N	103° 33' 27.057 W
4,300.0	0.79	104.70	4,298.9	-13.5	57.8	530,617.75	739,305.33	32° 27' 23.005 N	103° 33' 27.036 W
4,400.0	0.88	110.58	4,398.9	-13.9	59.2	530,617.30	739,306.71	32° 27' 23.000 N	103° 33' 27.020 W
4,500.0	0.86	118.62	4,498.9	-14.5	60.6	530,616.67	739,308.09	32° 27' 22.994 N	103° 33' 27.004 W
4,600.0	1.83	121.29	4,598.8	-15.7	62.6	530,615.49	739,310.11	32° 27' 22.982 N	103° 33' 26.981 W
4,700.0	1.98	130.23	4,698.8	-17.7	65.3	530,613.54	739,312.80	32° 27' 22.963 N	103° 33' 26.950 W
4,800.0	1.72	107.67	4,798.7	-19.2	68.0	530,611.97	739,315.55	32° 27' 22.947 N	103° 33' 26.918 W
4,900.0	1.47	113.34	4,898.7	-20.2	70.7	530,611.01	739,318.15	32° 27' 22.937 N	103° 33' 26.887 W
5,000.0	1.61	100.76	4,998.7	-21.0	73.2	530,610.23	739,320.71	32° 27' 22.929 N	103° 33' 26.858 W
5,100.0	1.82	84.44	5,098.6	-21.1	76.2	530,610.13	739,323.67	32° 27' 22.928 N	103° 33' 26.823 W
5,200.0	1.84	92.66	5,198.6	-21.0	79.4	530,610.21	739,326.86	32° 27' 22.929 N	103° 33' 26.786 W
5,300.0	1.71	89.00	5,298.5	-21.0	82.5	530,610.16	739,329.95	32° 27' 22.928 N	103° 33' 26.750 W
5,400.0	1.85	97.87	5,398.5	-21.2	85.5	530,609.96	739,333.04	32° 27' 22.926 N	103° 33' 26.714 W
5,500.0	1.91	80.72	5,498.4	-21.2	88.8	530,610.01	739,336.29	32° 27' 22.926 N	103° 33' 26.676 W
5,600.0	1.88	86.61	5,598.4	-20.8	92.1	530,610.38	739,339.57	32° 27' 22.930 N	103° 33' 26.638 W
5,700.0	1.73	76.84	5,698.3	-20.4	95.2	530,610.82	739,342.68	32° 27' 22.934 N	103° 33' 26.601 W
5,800.0	1.54	63.65	5,798.3	-19.4	97.9	530,611.76	739,345.35	32° 27' 22.943 N	103° 33' 26.570 W
5,900.0	1.70	58.11	5,898.2	-18.1	100.3	530,613.14	739,347.81	32° 27' 22.956 N	103° 33' 26.541 W
6,000.0	1.68	57.06	5,998.2	-16.5	102.8	530,614.72	739,350.30	32° 27' 22.972 N	103° 33' 26.512 W
6,100.0	1.01	56.00	6,098.2	-15.2	104.8	530,616.01	739,352.26	32° 27' 22.984 N	103° 33' 26.489 W
6,200.0	0.92	55.22	6,198.1	-14.2	106.2	530,616.96	739,353.65	32° 27' 22.994 N	103° 33' 26.473 W
6,300.0	0.83	80.12	6,298.1	-13.7	107.5	530,617.54	739,355.03	32° 27' 22.999 N	103° 33' 26.457 W
6,400.0	0.89	54.81	6,398.1	-13.1	108.9	530,618.11	739,356.38	32° 27' 23.005 N	103° 33' 26.441 W
6,500.0	0.86	49.97	6,498.1	-12.2	110.1	530,619.04	739,357.58	32° 27' 23.014 N	103° 33' 26.427 W



TDS
Survey Report - Geographic



Company: COG Operating LLC
Project: Lea County, NM
Site: Pygmy 27 State
Well: #3H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #3H
TVD Reference: KB @ 3772.0usft (Pioneer 20)
MD Reference: KB @ 3772.0usft (Pioneer 20)
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	0.81	52.71	6,598.1	-11.2	111.2	530,619.95	739,358.72	32° 27' 23.023 N	103° 33' 26.413 W
6,700.0	0.54	66.13	6,698.1	-10.6	112.2	530,620.57	739,359.71	32° 27' 23.029 N	103° 33' 26.402 W
6,800.0	0.70	57.89	6,798.1	-10.1	113.2	530,621.09	739,360.66	32° 27' 23.034 N	103° 33' 26.390 W
6,900.0	0.82	53.92	6,898.1	-9.4	114.3	530,621.83	739,361.76	32° 27' 23.041 N	103° 33' 26.378 W
7,000.0	0.68	70.08	6,998.1	-8.7	115.4	530,622.46	739,362.90	32° 27' 23.047 N	103° 33' 26.364 W
7,100.0	0.50	60.43	7,098.1	-8.3	116.3	530,622.87	739,363.83	32° 27' 23.051 N	103° 33' 26.353 W
7,200.0	0.40	77.43	7,198.1	-8.0	117.1	530,623.17	739,364.55	32° 27' 23.054 N	103° 33' 26.345 W
7,300.0	0.38	58.46	7,298.1	-7.8	117.7	530,623.42	739,365.18	32° 27' 23.057 N	103° 33' 26.338 W
7,400.0	0.36	61.20	7,398.1	-7.5	118.2	530,623.74	739,365.73	32° 27' 23.060 N	103° 33' 26.331 W
7,500.0	0.32	110.70	7,498.1	-7.4	118.8	530,623.79	739,366.27	32° 27' 23.060 N	103° 33' 26.325 W
7,600.0	0.56	125.18	7,598.0	-7.8	119.4	530,623.41	739,366.93	32° 27' 23.057 N	103° 33' 26.317 W
7,700.0	0.75	113.54	7,698.0	-8.3	120.4	530,622.87	739,367.93	32° 27' 23.051 N	103° 33' 26.305 W
7,800.0	0.60	107.25	7,798.0	-8.7	121.5	530,622.45	739,369.03	32° 27' 23.047 N	103° 33' 26.293 W
7,900.0	0.78	133.59	7,898.0	-9.4	122.5	530,621.83	739,370.02	32° 27' 23.041 N	103° 33' 26.281 W
8,000.0	0.82	134.00	7,998.0	-10.3	123.5	530,620.86	739,371.03	32° 27' 23.031 N	103° 33' 26.269 W
8,100.0	0.70	111.33	8,098.0	-11.1	124.6	530,620.14	739,372.12	32° 27' 23.024 N	103° 33' 26.257 W
8,200.0	1.21	145.87	8,198.0	-12.2	125.8	530,619.05	739,373.28	32° 27' 23.013 N	103° 33' 26.243 W
8,300.0	1.28	135.91	8,298.0	-13.8	127.1	530,617.37	739,374.65	32° 27' 22.996 N	103° 33' 26.228 W
8,400.0	1.02	128.67	8,398.0	-15.2	128.6	530,616.01	739,376.12	32° 27' 22.983 N	103° 33' 26.211 W
8,500.0	0.67	138.46	8,497.9	-16.2	129.7	530,615.02	739,377.20	32° 27' 22.973 N	103° 33' 26.198 W
8,600.0	0.62	148.68	8,597.9	-17.1	130.4	530,614.12	739,377.87	32° 27' 22.964 N	103° 33' 26.190 W
8,700.0	0.80	142.45	8,697.9	-18.1	131.1	530,613.10	739,378.58	32° 27' 22.954 N	103° 33' 26.182 W
8,800.0	0.60	147.87	8,797.9	-19.1	131.8	530,612.11	739,379.28	32° 27' 22.944 N	103° 33' 26.174 W
8,900.0	0.51	154.89	8,897.9	-19.9	132.3	530,611.26	739,379.75	32° 27' 22.935 N	103° 33' 26.169 W
9,000.0	0.48	141.38	8,997.9	-20.7	132.7	530,610.53	739,380.20	32° 27' 22.928 N	103° 33' 26.163 W
9,100.0	0.56	109.18	9,097.9	-21.2	133.4	530,610.04	739,380.92	32° 27' 22.923 N	103° 33' 26.155 W
9,200.0	1.06	81.54	9,197.9	-21.2	134.8	530,610.02	739,382.30	32° 27' 22.923 N	103° 33' 26.139 W
9,300.0	0.53	95.40	9,297.9	-21.1	136.2	530,610.11	739,383.67	32° 27' 22.924 N	103° 33' 26.123 W
9,400.0	0.46	107.21	9,397.9	-21.3	137.0	530,609.95	739,384.52	32° 27' 22.922 N	103° 33' 26.113 W
9,500.0	0.63	121.45	9,497.9	-21.7	137.9	530,609.54	739,385.37	32° 27' 22.918 N	103° 33' 26.103 W
9,600.0	0.10	300.08	9,597.9	-21.9	138.3	530,609.30	739,385.76	32° 27' 22.916 N	103° 33' 26.099 W
9,700.0	0.64	279.09	9,697.9	-21.8	137.6	530,609.43	739,385.14	32° 27' 22.917 N	103° 33' 26.106 W
9,800.0	0.75	289.31	9,797.9	-21.5	136.5	530,609.74	739,383.97	32° 27' 22.920 N	103° 33' 26.119 W
9,900.0	0.46	318.73	9,897.9	-20.9	135.6	530,610.25	739,383.08	32° 27' 22.925 N	103° 33' 26.130 W
10,000.0	0.76	322.04	9,997.9	-20.1	134.9	530,611.08	739,382.41	32° 27' 22.933 N	103° 33' 26.137 W
10,100.0	1.27	328.60	10,097.8	-18.7	133.9	530,612.55	739,381.43	32° 27' 22.948 N	103° 33' 26.149 W
10,200.0	0.87	343.84	10,197.8	-17.0	133.1	530,614.22	739,380.64	32° 27' 22.965 N	103° 33' 26.158 W
10,300.0	0.85	340.88	10,297.8	-15.6	132.7	530,615.65	739,380.18	32° 27' 22.979 N	103° 33' 26.163 W
10,330.0	0.76	330.31	10,327.8	-15.2	132.5	530,616.03	739,380.01	32° 27' 22.983 N	103° 33' 26.165 W
TIE-IN to VES Gyro									
10,384.0	0.80	354.90	10,381.8	-14.5	132.3	530,616.72	739,379.80	32° 27' 22.989 N	103° 33' 26.167 W
10,416.0	0.40	54.50	10,413.8	-14.2	132.4	530,617.01	739,379.87	32° 27' 22.992 N	103° 33' 26.167 W
10,447.0	2.80	156.70	10,444.8	-14.8	132.8	530,616.38	739,380.26	32° 27' 22.986 N	103° 33' 26.162 W
10,479.0	6.70	167.30	10,476.7	-17.4	133.5	530,613.84	739,380.98	32° 27' 22.961 N	103° 33' 26.154 W
10,510.0	10.50	173.70	10,507.3	-21.9	134.2	530,609.26	739,381.69	32° 27' 22.915 N	103° 33' 26.146 W
10,542.0	10.80	180.30	10,538.8	-27.8	134.5	530,603.37	739,381.99	32° 27' 22.857 N	103° 33' 26.143 W
10,573.0	11.10	178.00	10,569.2	-33.7	134.6	530,597.48	739,382.08	32° 27' 22.799 N	103° 33' 26.142 W
10,604.0	13.80	178.47	10,599.5	-40.4	134.8	530,590.80	739,382.28	32° 27' 22.733 N	103° 33' 26.141 W
10,636.0	17.70	177.50	10,630.3	-49.1	135.1	530,582.12	739,382.60	32° 27' 22.647 N	103° 33' 26.138 W
10,667.0	22.60	176.80	10,659.4	-59.7	135.6	530,571.46	739,383.14	32° 27' 22.541 N	103° 33' 26.132 W
10,699.0	27.40	176.70	10,688.4	-73.2	136.4	530,557.96	739,383.90	32° 27' 22.408 N	103° 33' 26.125 W
10,731.0	31.20	178.40	10,716.3	-88.9	137.1	530,542.32	739,384.56	32° 27' 22.253 N	103° 33' 26.118 W
10,763.0	33.90	181.30	10,743.2	-106.1	137.1	530,525.11	739,384.59	32° 27' 22.083 N	103° 33' 26.119 W
10,795.0	37.80	183.00	10,769.2	-124.8	136.4	530,506.39	739,383.87	32° 27' 21.897 N	103° 33' 26.129 W
10,826.0	42.50	183.70	10,792.9	-144.8	135.2	530,486.44	739,382.70	32° 27' 21.700 N	103° 33' 26.145 W



TDS
Survey Report - Geographic



Company: COG Operating LLC
Project: Lea County, NM
Site: Pygmy 27 State
Well: #3H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #3H
TVD Reference: KB @ 3772.0usft (Pioneer 20)
MD Reference: KB @ 3772.0usft (Pioneer 20)
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
10,858.0	46.60	183.00	10,815.7	-167.2	133.9	530,464.03	739,381.39	32° 27' 21.478 N	103° 33' 26.162 W
10,890.0	50.20	181.40	10,836.9	-191.1	133.0	530,440.13	739,380.48	32° 27' 21.242 N	103° 33' 26.174 W
10,922.0	53.50	180.80	10,856.7	-216.2	132.5	530,414.97	739,380.00	32° 27' 20.993 N	103° 33' 26.182 W
10,954.0	56.80	179.70	10,874.9	-242.5	132.4	530,388.71	739,379.89	32° 27' 20.733 N	103° 33' 26.186 W
10,985.0	60.30	179.70	10,891.1	-268.9	132.5	530,362.27	739,380.03	32° 27' 20.472 N	103° 33' 26.186 W
11,017.0	63.60	179.10	10,906.2	-297.2	132.8	530,334.04	739,380.33	32° 27' 20.192 N	103° 33' 26.185 W
11,049.0	66.20	178.90	10,919.7	-326.1	133.3	530,305.06	739,380.84	32° 27' 19.905 N	103° 33' 26.182 W
11,077.0	69.20	178.80	10,930.4	-352.0	133.9	530,279.17	739,381.36	32° 27' 19.649 N	103° 33' 26.178 W
11,109.0	73.40	179.50	10,940.6	-382.3	134.3	530,248.87	739,381.80	32° 27' 19.349 N	103° 33' 26.175 W
11,141.0	76.20	180.80	10,949.0	-413.2	134.2	530,217.99	739,381.72	32° 27' 19.044 N	103° 33' 26.179 W
11,172.0	78.90	181.60	10,955.7	-443.5	133.6	530,187.73	739,381.09	32° 27' 18.744 N	103° 33' 26.189 W
11,204.0	80.10	182.10	10,961.5	-474.9	132.6	530,156.28	739,380.07	32° 27' 18.433 N	103° 33' 26.203 W
11,236.0	81.10	182.30	10,966.7	-506.5	131.4	530,124.73	739,378.86	32° 27' 18.121 N	103° 33' 26.220 W
11,268.0	81.70	182.40	10,971.5	-538.1	130.1	530,093.12	739,377.56	32° 27' 17.809 N	103° 33' 26.238 W
11,300.0	83.30	182.60	10,975.7	-569.8	128.7	530,061.43	739,376.18	32° 27' 17.495 N	103° 33' 26.257 W
11,363.0	86.10	183.30	10,981.5	-632.4	125.5	529,998.79	739,372.95	32° 27' 16.875 N	103° 33' 26.300 W
11,458.0	88.80	183.30	10,985.8	-727.2	120.0	529,904.05	739,367.48	32° 27' 15.938 N	103° 33' 26.372 W
11,552.0	89.60	181.60	10,987.1	-821.1	116.0	529,810.14	739,363.47	32° 27' 15.009 N	103° 33' 26.427 W
11,647.0	90.00	179.80	10,987.4	-916.0	114.8	529,715.16	739,362.31	32° 27' 14.070 N	103° 33' 26.448 W
11,742.0	90.80	178.90	10,986.7	-1,011.0	115.9	529,620.17	739,363.38	32° 27' 13.130 N	103° 33' 26.444 W
11,837.0	88.90	178.80	10,987.0	-1,106.0	117.8	529,525.19	739,365.29	32° 27' 12.190 N	103° 33' 26.429 W
11,964.0	88.60	177.90	10,989.8	-1,232.9	121.4	529,398.27	739,368.95	32° 27' 10.934 N	103° 33' 26.397 W
12,027.0	88.50	176.70	10,991.3	-1,295.8	124.4	529,335.37	739,371.91	32° 27' 10.311 N	103° 33' 26.368 W
12,122.0	88.40	177.00	10,993.9	-1,390.7	129.6	529,240.54	739,377.13	32° 27' 9.372 N	103° 33' 26.315 W
12,217.0	88.20	179.00	10,996.7	-1,485.6	132.9	529,145.65	739,380.45	32° 27' 8.433 N	103° 33' 26.285 W
12,312.0	87.70	180.50	11,000.1	-1,580.5	133.4	529,050.71	739,380.86	32° 27' 7.494 N	103° 33' 26.288 W
12,407.0	87.20	182.60	11,004.4	-1,675.4	130.8	528,955.85	739,378.29	32° 27' 6.555 N	103° 33' 26.326 W
12,503.0	88.00	184.00	11,008.4	-1,771.1	125.3	528,860.09	739,372.77	32° 27' 5.608 N	103° 33' 26.398 W
12,598.0	88.60	183.60	11,011.2	-1,865.9	119.0	528,765.35	739,366.48	32° 27' 4.671 N	103° 33' 26.480 W
12,693.0	89.80	182.90	11,012.5	-1,960.7	113.6	528,670.51	739,361.09	32° 27' 3.733 N	103° 33' 26.551 W
12,787.0	90.40	181.50	11,012.4	-2,054.6	110.0	528,576.58	739,357.48	32° 27' 2.804 N	103° 33' 26.601 W
12,882.0	90.70	179.90	11,011.4	-2,149.6	108.8	528,481.60	739,356.32	32° 27' 1.864 N	103° 33' 26.623 W
12,978.0	89.80	180.00	11,011.0	-2,245.6	108.9	528,385.60	739,356.41	32° 27' 0.914 N	103° 33' 26.630 W
13,072.0	89.60	182.20	11,011.5	-2,339.6	107.1	528,291.62	739,354.60	32° 26' 59.984 N	103° 33' 26.659 W
13,166.0	90.20	183.30	11,011.7	-2,433.5	102.6	528,197.73	739,350.09	32° 26' 59.055 N	103° 33' 26.719 W
13,259.0	91.00	183.10	11,010.7	-2,526.3	97.4	528,104.88	739,344.90	32° 26' 58.137 N	103° 33' 26.788 W
13,354.0	90.30	183.50	11,009.6	-2,621.2	91.9	528,010.05	739,339.43	32° 26' 57.199 N	103° 33' 26.860 W
13,449.0	90.10	183.00	11,009.3	-2,716.0	86.6	527,915.20	739,334.05	32° 26' 56.261 N	103° 33' 26.930 W
13,544.0	90.60	182.60	11,008.7	-2,810.9	81.9	527,820.32	739,329.41	32° 26' 55.322 N	103° 33' 26.993 W
13,639.0	91.10	181.70	11,007.3	-2,905.8	78.3	527,725.40	739,325.84	32° 26' 54.383 N	103° 33' 27.042 W
13,732.0	90.70	181.30	11,005.9	-2,998.8	75.9	527,632.44	739,323.41	32° 26' 53.464 N	103° 33' 27.079 W
13,799.0	89.80	181.10	11,005.6	-3,065.7	74.5	527,565.46	739,322.01	32° 26' 52.801 N	103° 33' 27.101 W
13,894.0	89.60	180.70	11,006.1	-3,160.7	73.0	527,470.47	739,320.52	32° 26' 51.861 N	103° 33' 27.126 W
13,988.0	87.70	183.70	11,008.3	-3,254.6	69.4	527,376.58	739,316.91	32° 26' 50.932 N	103° 33' 27.176 W
14,083.0	89.30	183.10	11,010.8	-3,349.4	63.8	527,281.78	739,311.28	32° 26' 49.995 N	103° 33' 27.250 W
14,178.0	89.90	181.90	11,011.4	-3,444.3	59.6	527,186.88	739,307.13	32° 26' 49.056 N	103° 33' 27.306 W
14,273.0	89.50	181.70	11,011.9	-3,539.3	56.7	527,091.93	739,304.15	32° 26' 48.117 N	103° 33' 27.349 W
14,368.0	90.70	180.80	11,011.8	-3,634.2	54.6	526,996.95	739,302.08	32° 26' 47.177 N	103° 33' 27.381 W
14,463.0	92.60	179.20	11,009.0	-3,729.2	54.6	526,902.00	739,302.08	32° 26' 46.237 N	103° 33' 27.389 W
14,558.0	91.90	179.40	11,005.3	-3,824.1	55.7	526,807.08	739,303.24	32° 26' 45.298 N	103° 33' 27.384 W
14,652.0	91.00	180.20	11,002.9	-3,918.1	56.1	526,713.11	739,303.56	32° 26' 44.368 N	103° 33' 27.388 W
14,747.0	88.20	179.80	11,003.6	-4,013.1	56.1	526,618.12	739,303.56	32° 26' 43.428 N	103° 33' 27.396 W
14,842.0	87.70	179.10	11,007.0	-4,108.0	57.0	526,523.19	739,304.48	32° 26' 42.489 N	103° 33' 27.394 W
14,937.0	87.30	179.60	11,011.1	-4,202.9	58.1	526,428.29	739,305.55	32° 26' 41.550 N	103° 33' 27.389 W
15,032.0	87.70	179.20	11,015.3	-4,297.8	59.0	526,333.38	739,306.55	32° 26' 40.611 N	103° 33' 27.386 W



TDS
Survey Report - Geographic



Company: COG Operating LLC
Project: Lea County, NM
Site: Pygmy 27 State
Well: #3H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #3H
TVD Reference: KB @ 3772.0usft (Pioneer 20)
MD Reference: KB @ 3772.0usft (Pioneer 20)
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
15,126.0	88.10	178.40	11,018.7	-4,391.7	61.0	526,239.47	739,308.51	32° 26' 39.681 N	103° 33' 27.371 W
15,221.0	88.20	181.00	11,021.8	-4,486.7	61.5	526,144.53	739,309.01	32° 26' 38.742 N	103° 33' 27.373 W
15,315.0	89.10	180.80	11,024.0	-4,580.6	60.0	526,050.57	739,307.53	32° 26' 37.812 N	103° 33' 27.398 W
Final MWD Survey									
15,365.0	89.10	180.80	11,024.8	-4,630.6	59.3	526,000.58	739,306.84	32° 26' 37.317 N	103° 33' 27.410 W
Projection to Bit/TD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,330.0	10,327.8	-15.2	132.5	TIE-IN to VES Gyro
15,315.0	11,024.0	-4,580.6	60.0	Final MWD Survey
15,365.0	11,024.8	-4,630.6	59.3	Projection to Bit/TD

Checked By: _____ Approved By: _____ Date: _____



COG Operating LLC
Project: Lea County, NM
Site: Pygmy 27 State
Well: #3H
Wellbore: OH
Plan: Plan #2 (#3H/OH)

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	TFace	Vsect	Target
1	10330.0	0.76	330.31	10327.8	-15.2	132.5	0.00	0.00	16.1	
2	10504.3	0.76	330.31	10502.1	-13.2	131.4	0.00	0.00	14.1	
3	11255.8	89.53	181.15	10985.0	-486.5	118.6	12.00	-149.16	487.3	
4	15529.9	89.53	181.15	11020.0	-4759.6	33.1	0.00	0.00	4759.7	PBHL (P27S #3H/OH)

WELL DETAILS: #3H

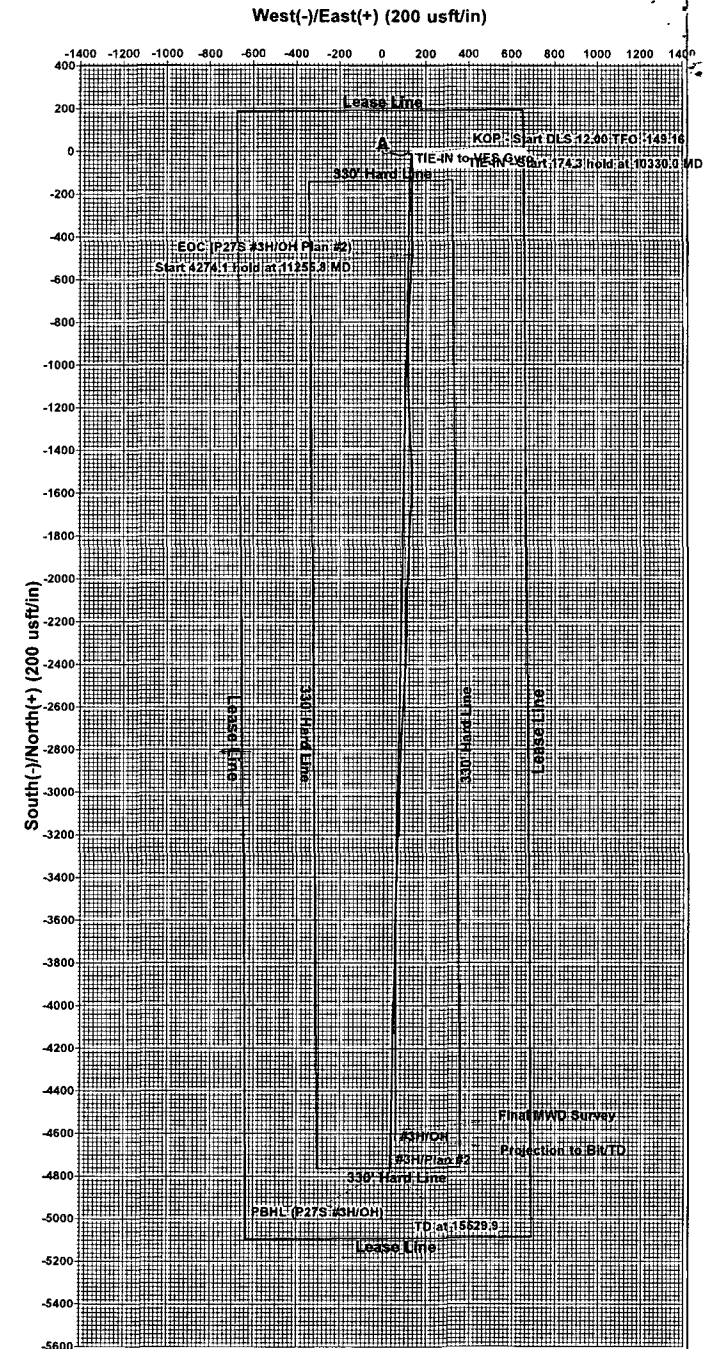
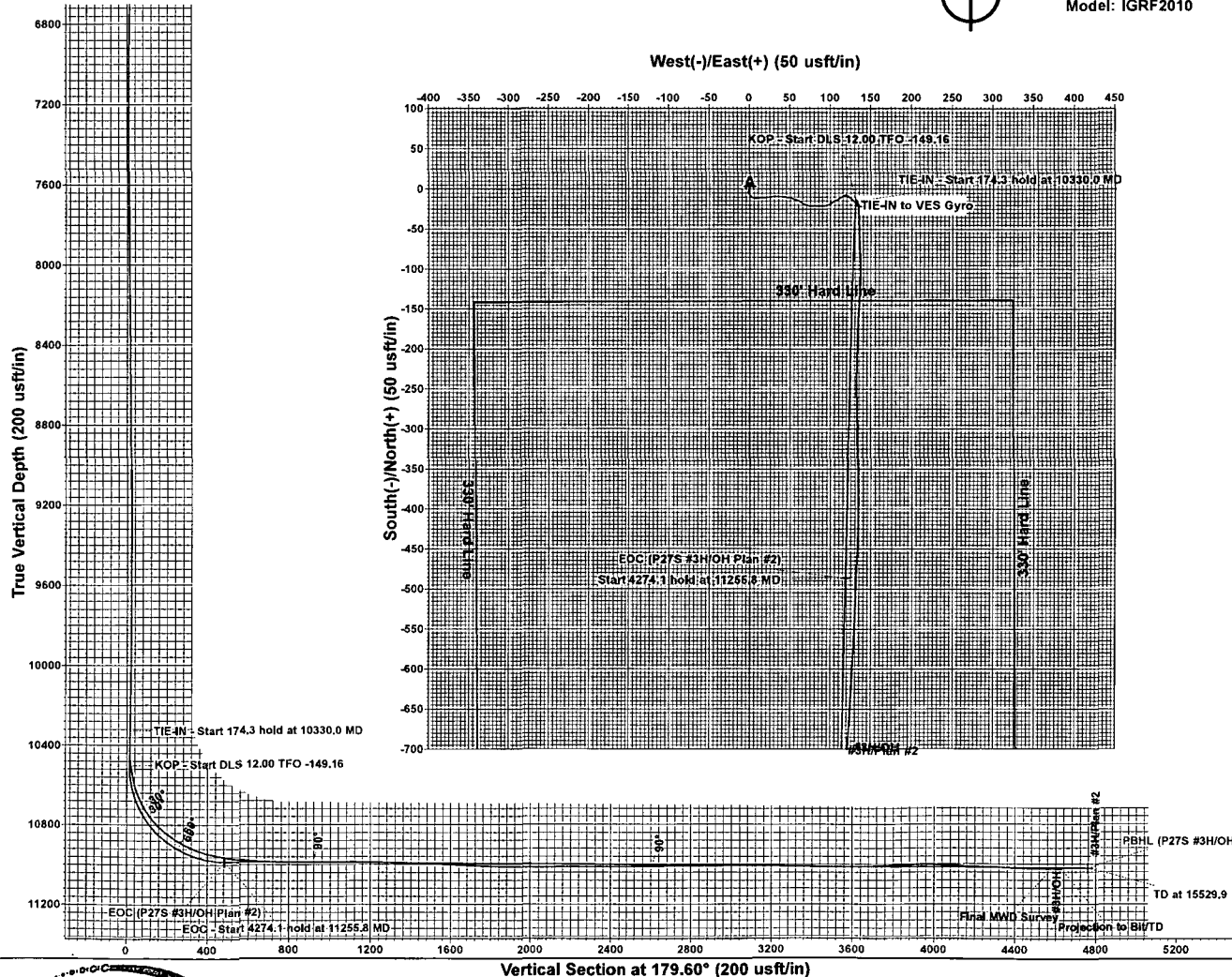
Ground Elevation:: 3755.0
RKB Elevation: KB @ 3772.0usft (Pioneer 20)
Rig Name: Pioneer 20

Northing 530631.20 Easting 739247.50 Latitude 32° 27' 23.142 N Longitude 103° 33' 27.710 W



Azimuths to Grid North
True North: -0.42°
Magnetic North: 6.73°

Magnetic Field
Strength: 48391.9snT
Dip Angle: 60.31°
Date: 1/30/2015
Model: IGRF2010



Plan: Plan #2 (#3H/OH)
Created By: Well Planner Date: 13:36, March 08 2015

Terra Directional Services
322 Spring Hill Drive, Suite A100, Spring, Texas 77386
432.425.7532

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