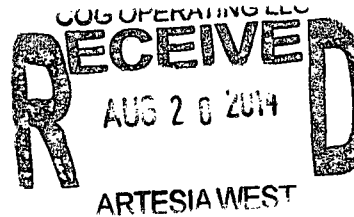


**McVAY DRILLING COMPANY**

P.O. Box 2450
Hobbs, New Mexico 88241
(575) 397-3311
FAX: 39-DRILL

30-015-42433



Well Name and Num: Dump Yard 2 State 1H
Location: Sec 2, T21S, R28E
Operator: COG
Drilling Contractor: McVay Drilling Company

The undersigned certifies that he is an authorized representative of the drilling contractor who drilled the above described well and that he has conducted deviation tests and obtained the following results:

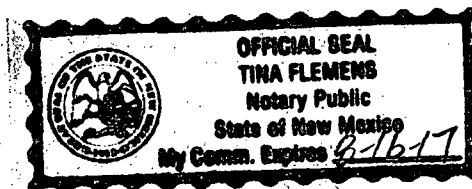
Degrees @	Depth	Degrees @	Depth	Degrees @	Depth
1.25	201	0.20	6830	90.60	12562
1.75	526	1.90	7792	90.70	12941
2.25	817	19.80	8047	90.80	13321
2.50	910	36.50	8272	89.80	13606
2.00	1258	55.80	8494	89.50	13985
1.20	1623	77.40	8718	89.10	14270
1.30	2083	90.20	9026	92.70	14460
1.70	2559	91.40	9313	92.40	14650
0.80	2814	90.70	9600	91.00	14935
1.40	3245	91.00	9887	90.90	15030
0.90	3500	91.80	10270		
0.60	4136	91.00	10653		
0.40	4583	91.80	10940		
1.80	5056	91.10	11323		
0.20	5563	91.60	11514		
0.40	6132	91.90	11610		
0.00	6355	90.20	12088		

NM OIL CONSERVATION
ARTESIA DISTRICT
JAN 07 2015
RECEIVED

By: Hunter Crum

Subscribed and sworn to before me this 18th day of August, 2014

Tina Flemens
Notary Public, Lea County, New Mexico





August 5, 2014

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

Attn: Kanicia Castillo

RE: **Dump Yard 2 State No. 001H**

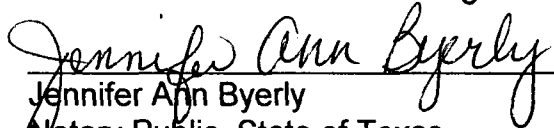
Please find enclosed a copy of the survey from 0.00' to 7650.00' ran on the above referenced well.

Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 5 day of August, A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas



Company: COG Operating, Inc. (Concho)
Lease/Well: Dump Yard 2 State /No. 001H



Rig Name: McVay 6
State/County: New Mexico/Eddy
Latitude: 32.50, Longitude: -104.06
GRID North is 0.15 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB= 18 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut
Minimum Curvature Method
Report Date/Time: 8/5/2014 / 10:37

VES Survey International
West Texas
(432) 563-5444
Surveyor: Bryan Massey
Dump Yard 2 State No. 001H / API 30-015-42433

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	0.47	94.79	100.00	-0.03	0.41	-0.03	0.41	94.79	0.47
200.00	0.77	91.68	199.99	-0.09	1.49	-0.09	1.50	93.39	0.30
300.00	0.20	106.53	299.99	-0.16	2.34	-0.16	2.34	93.89	0.58
400.00	0.37	244.04	399.99	-0.35	2.22	-0.35	2.25	99.00	0.54
500.00	1.23	261.65	499.98	-0.65	0.86	-0.65	1.08	126.92	0.89
600.00	2.71	257.47	599.92	-1.32	-2.51	-1.32	2.83	242.29	1.48
700.00	3.07	257.59	699.79	-2.41	-7.43	-2.41	7.81	252.06	0.36
800.00	3.19	263.39	799.64	-3.30	-12.81	-3.30	13.23	255.55	0.34
900.00	3.06	273.56	899.49	-3.46	-18.24	-3.46	18.57	259.28	0.57
1000.00	2.49	280.69	999.37	-2.89	-23.04	-2.89	23.22	262.86	0.67
1100.00	2.18	274.81	1099.29	-2.33	-27.07	-2.33	27.17	265.09	0.39
1200.00	2.00	277.10	1199.22	-1.95	-30.70	-1.95	30.76	266.36	0.20
1300.00	1.57	279.56	1299.18	-1.51	-33.78	-1.51	33.81	267.45	0.44
1400.00	1.12	278.94	1399.15	-1.13	-36.09	-1.13	36.11	268.21	0.45
1500.00	1.13	280.95	1499.13	-0.79	-38.03	-0.79	38.03	268.81	0.04
1600.00	1.06	262.84	1599.11	-0.72	-39.92	-0.72	39.92	268.97	0.35
1700.00	1.08	276.29	1699.09	-0.73	-41.77	-0.73	41.78	269.00	0.25
1800.00	1.03	277.65	1799.08	-0.51	-43.60	-0.51	43.61	269.34	0.06

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	1.10	264.00	1899.06	-0.49	-45.44	-0.49	45.45	269.39	0.26
2000.00	1.05	263.10	1999.04	-0.69	-47.30	-0.69	47.30	269.16	0.05
2100.00	1.62	259.45	2099.01	-1.06	-49.60	-1.06	49.61	268.77	0.58
2200.00	1.61	265.32	2198.97	-1.44	-52.39	-1.44	52.41	268.43	0.17
2300.00	2.07	261.88	2298.92	-1.81	-55.58	-1.81	55.61	268.14	0.47
2400.00	2.17	261.64	2398.85	-2.34	-59.24	-2.34	59.28	267.74	0.10
2500.00	1.93	273.48	2498.79	-2.51	-62.79	-2.51	62.85	267.71	0.48
2600.00	1.62	273.15	2598.74	-2.33	-65.89	-2.33	65.93	267.97	0.32
2700.00	1.66	266.09	2698.70	-2.35	-68.75	-2.35	68.79	268.04	0.21
2800.00	1.31	266.04	2798.67	-2.53	-71.34	-2.53	71.38	267.97	0.35
2900.00	1.51	265.75	2898.64	-2.71	-73.79	-2.71	73.84	267.90	0.19
3000.00	1.41	267.64	2998.60	-2.85	-76.34	-2.85	76.39	267.86	0.10
3100.00	1.52	262.13	3098.57	-3.09	-78.88	-3.09	78.94	267.76	0.17
3200.00	1.43	248.84	3198.54	-3.72	-81.35	-3.72	81.44	267.38	0.35
3300.00	1.21	244.58	3298.51	-4.62	-83.47	-4.62	83.60	266.83	0.24
3400.00	1.00	252.32	3398.49	-5.34	-85.25	-5.34	85.42	266.42	0.26
3500.00	0.87	242.15	3498.48	-5.96	-86.75	-5.96	86.96	266.07	0.21
3600.00	0.52	219.62	3598.47	-6.66	-87.72	-6.66	87.97	265.66	0.44
3700.00	0.49	184.77	3698.47	-7.44	-88.04	-7.44	88.36	265.17	0.31
3800.00	0.49	204.25	3798.47	-8.26	-88.26	-8.26	88.64	264.65	0.17
3900.00	0.50	212.07	3898.46	-9.02	-88.66	-9.02	89.12	264.19	0.07
4000.00	0.59	216.87	3998.46	-9.80	-89.20	-9.80	89.74	263.73	0.10
4100.00	0.64	216.58	4098.45	-10.66	-89.84	-10.66	90.47	263.24	0.06
4200.00	0.59	223.41	4198.45	-11.47	-90.52	-11.47	91.25	262.78	0.09
4300.00	0.30	180.85	4298.44	-12.11	-90.88	-12.11	91.68	262.41	0.42
4400.00	0.19	280.14	4398.44	-12.35	-91.05	-12.35	91.88	262.28	0.38
4500.00	0.10	325.80	4498.44	-12.24	-91.26	-12.24	92.08	262.36	0.14
4600.00	0.07	350.08	4598.44	-12.11	-91.32	-12.11	92.12	262.45	0.05
4700.00	0.30	320.39	4698.44	-11.85	-91.50	-11.85	92.26	262.62	0.24
4800.00	0.33	343.50	4798.44	-11.37	-91.75	-11.37	92.45	262.94	0.13
4900.00	0.18	242.32	4898.44	-11.16	-91.97	-11.16	92.64	263.08	0.41
5000.00	0.20	265.75	4998.44	-11.25	-92.28	-11.25	92.96	263.05	0.08
5100.00	0.41	309.41	5098.44	-11.04	-92.73	-11.04	93.39	263.21	0.30
5200.00	0.19	285.79	5198.44	-10.76	-93.17	-10.76	93.79	263.41	0.24
5300.00	0.19	311.56	5298.44	-10.61	-93.46	-10.61	94.06	263.53	0.09
5400.00	0.12	327.20	5398.44	-10.41	-93.64	-10.41	94.22	263.66	0.08
5500.00	0.11	345.50	5498.44	-10.23	-93.72	-10.23	94.28	263.77	0.04
5600.00	0.20	341.28	5598.44	-9.97	-93.80	-9.97	94.33	263.93	0.10
5700.00	0.18	350.82	5698.43	-9.65	-93.88	-9.65	94.37	264.13	0.04

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	0.17	298.11	5798.43	-9.42	-94.03	-9.42	94.51	264.28	0.16
5900.00	0.18	310.89	5898.43	-9.25	-94.28	-9.25	94.73	264.39	0.04
6000.00	0.22	329.54	5998.43	-8.98	-94.50	-8.98	94.92	264.57	0.08
6100.00	0.30	337.99	6098.43	-8.57	-94.69	-8.57	95.08	264.83	0.09
6200.00	0.30	312.52	6198.43	-8.15	-94.99	-8.15	95.34	265.10	0.13
6300.00	0.28	284.30	6298.43	-7.91	-95.42	-7.91	95.74	265.26	0.14
6400.00	0.39	282.23	6398.43	-7.78	-95.98	-7.78	96.30	265.37	0.11
6500.00	0.59	224.65	6498.42	-8.07	-96.68	-8.07	97.01	265.23	0.50
6600.00	0.82	231.94	6598.42	-8.88	-97.61	-8.88	98.01	264.80	0.25
6700.00	0.73	185.61	6698.41	-9.96	-98.23	-9.96	98.74	264.21	0.62
6800.00	0.35	63.05	6798.41	-10.45	-98.03	-10.45	98.58	263.91	0.96
6900.00	0.96	68.15	6898.40	-10.01	-96.98	-10.01	97.50	264.11	0.61
7000.00	1.24	63.65	6998.38	-9.21	-95.24	-9.21	95.68	264.47	0.30
7100.00	1.67	71.53	7098.35	-8.27	-92.88	-8.27	93.25	264.91	0.47
7200.00	1.47	70.38	7198.31	-7.38	-90.29	-7.38	90.59	265.33	0.21
7300.00	1.33	92.66	7298.28	-7.00	-87.92	-7.00	88.20	265.45	0.56
7400.00	1.07	126.82	7398.26	-7.62	-86.01	-7.62	86.35	264.94	0.75
7500.00	0.43	180.43	7498.25	-8.55	-85.27	-8.55	85.70	264.27	0.88
7600.00	0.87	224.84	7598.25	-9.47	-85.81	-9.47	86.33	263.70	0.64
7650.00	0.98	231.15	7648.24	-10.00	-86.41	-10.00	86.98	263.40	0.30



VES Survey International

West Texas

(432) 563-5444

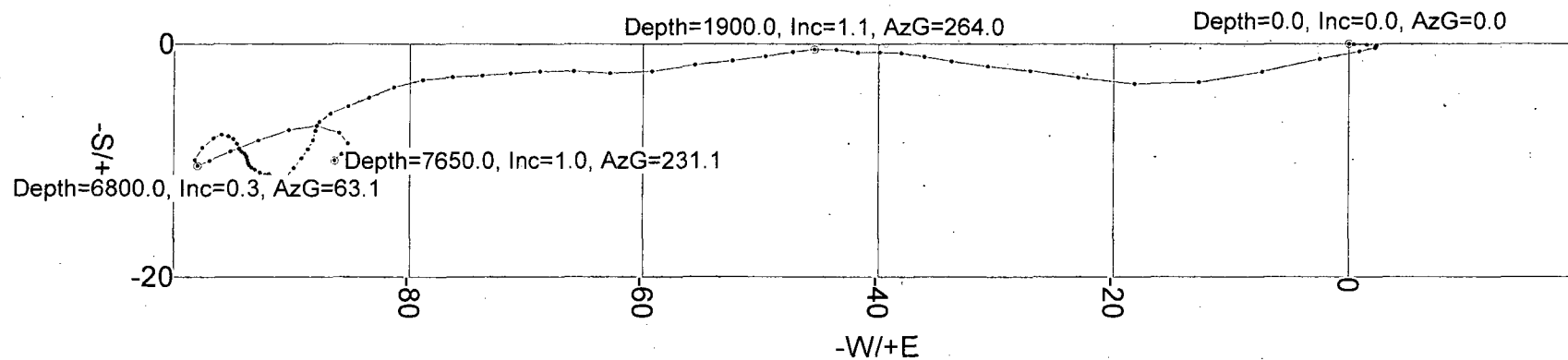
Surveyor: Bryan Massey

Dump Yard 2 State No. 001H / API 30-015-42433



SURVEY
INTERNATIONAL

NM OIL CONSERVATION
ARTESIA DISTRICT
JAN 07 2015
RECEIVED



VES Survey Date: 07/21/2014

Archer Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 1H
Project:	Eddy County, NM	TVD Reference:	3375'GL+17'KB @ 3392.00usft (Planning)
Site:	Dumpyard 2 State 1H	MD Reference:	3375'GL+17'KB @ 3392.00usft (Planning)
Well:	1H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM R5000.1 MULTI

Project	Eddy 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	Dumpyard 2 State 1H		
Site Position:		Northing:	546,609.70 usft
From:	Map	Easting:	583,312.20 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in
		Latitude:	32° 30' 8.82 N
		Longitude:	104° 3' 47.15 W
		Grid Convergence:	0.15 °

Well	1H		
Well Position	+N/-S	0.00 usft	Northing: 546,609.70 usft
	+E/-W	0.00 usft	Easting: 583,312.20 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 30' 8.82 N
		Longitude:	104° 3' 47.15 W
		Ground Level:	3,375.00 usft

Wellbore	Lateral		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	7/19/2014	(°)
			7.45
			60.28
			48,421

Design	Surveys		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			357.04

Survey Program	Date 7/30/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.00	7,650.00	Survey #1 (Lateral)	NS-GYRO-MS
7,760.00	15,030.00	Survey #2 (Lateral)	MWD - Std
15,175.00	15,175.00	Survey #3 (Lateral)	Project
			Description
			North sensing gyrocompassing m/s
			MWD - Standard
			Projection

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.47	94.79	100.00	-0.03	0.41	-0.06	0.47	0.47	0.00
200.00	0.77	91.68	199.99	-0.09	1.49	-0.16	0.30	0.30	-3.11
300.00	0.20	106.53	299.99	-0.16	2.33	-0.28	0.58	-0.57	14.85
400.00	0.37	244.04	399.99	-0.35	2.21	-0.46	0.53	0.17	137.51
500.00	1.23	261.65	499.98	-0.65	0.85	-0.69	0.88	0.86	17.61
600.00	2.71	257.47	599.92	-1.31	-2.52	-1.18	1.49	-1.48	-4.18
700.00	3.07	257.59	699.79	-2.40	-7.44	-2.02	0.36	0.36	0.12
800.00	3.19	263.39	799.64	-3.30	-12.82	-2.63	0.34	0.12	5.80

Archer Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 1H
Project:	Eddy County, NM	TVD Reference:	3375'GL+17'KB @ 3392.00usft (Planning)
Site:	Dumyard 2 State 1H	MD Reference:	3375'GL+17'KB @ 3392.00usft (Planning)
Well:	1H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM R5000.1 MULTI

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
900.00	3.06	273.56	899.49	-3.45	-18.25	-2.51	0.57	-0.13	10.17
1,000.00	2.49	280.69	999.37	-2.88	-23.05	-1.69	0.67	-0.57	7.13
1,100.00	2.18	274.81	1,099.29	-2.32	-27.08	-0.92	0.39	-0.31	-5.88
1,200.00	2.00	277.10	1,199.22	-1.95	-30.70	-0.36	0.20	-0.18	2.29
1,300.00	1.57	279.56	1,299.18	-1.50	-33.78	0.24	0.44	-0.43	2.46
1,400.00	1.12	278.94	1,399.15	-1.12	-36.10	0.74	0.45	-0.45	-0.62
1,500.00	1.13	280.95	1,499.13	-0.79	-38.03	1.18	0.04	0.01	2.01
1,600.00	1.06	262.84	1,599.11	-0.71	-39.92	1.35	0.35	-0.07	-18.11
1,700.00	1.08	276.29	1,699.09	-0.73	-41.77	1.43	0.25	0.02	13.45
1,800.00	1.03	277.65	1,799.08	-0.50	-43.60	1.75	0.06	-0.05	1.36
1,900.00	1.10	264.00	1,899.06	-0.48	-45.45	1.86	0.26	0.07	-13.65
2,000.00	1.05	263.10	1,999.04	-0.69	-47.31	1.75	0.05	-0.05	-0.90
2,100.00	1.62	259.45	2,099.01	-1.06	-49.61	1.50	0.58	0.57	-3.65
2,200.00	1.61	265.32	2,198.97	-1.44	-52.40	1.27	0.17	-0.01	5.87
2,300.00	2.07	261.88	2,298.92	-1.81	-55.59	1.07	0.47	0.46	-3.44
2,400.00	2.17	261.64	2,398.85	-2.34	-59.25	0.73	0.10	0.10	-0.24
2,500.00	1.93	273.48	2,498.79	-2.51	-62.80	0.74	0.49	-0.24	11.84
2,600.00	1.62	273.15	2,598.74	-2.33	-65.90	1.08	0.31	-0.31	-0.33
2,700.00	1.66	266.09	2,698.70	-2.35	-68.75	1.20	0.21	0.04	-7.06
2,800.00	1.31	266.04	2,798.67	-2.53	-71.34	1.16	0.35	-0.35	-0.05
2,900.00	1.51	265.75	2,898.64	-2.70	-73.79	1.11	0.20	0.20	-0.29
3,000.00	1.41	267.64	2,998.61	-2.85	-76.34	1.09	0.11	-0.10	1.89
3,100.00	1.52	262.13	3,098.57	-3.08	-78.88	0.99	0.18	0.11	-5.51
3,200.00	1.43	248.84	3,198.54	-3.72	-81.36	0.49	0.35	-0.09	-13.29
3,300.00	1.21	244.58	3,298.51	-4.62	-83.47	-0.30	0.24	-0.22	-4.26
3,400.00	1.00	252.32	3,398.49	-5.34	-85.26	-0.93	0.26	-0.21	7.74
3,500.00	0.87	242.15	3,498.48	-5.96	-86.76	-1.47	0.21	-0.13	-10.17
3,600.00	0.52	219.62	3,598.47	-6.66	-87.72	-2.12	0.44	-0.35	-22.53
3,700.00	0.49	184.77	3,698.47	-7.44	-88.05	-2.88	0.30	-0.03	-34.85
3,800.00	0.49	204.25	3,798.47	-8.25	-88.26	-3.69	0.17	0.00	19.48
3,900.00	0.50	212.07	3,898.46	-9.01	-88.67	-4.42	0.07	0.01	7.82
4,000.00	0.59	216.87	3,998.46	-9.80	-89.21	-5.18	0.10	0.09	4.80
4,100.00	0.64	216.58	4,098.45	-10.66	-89.85	-6.00	0.05	0.05	-0.29
4,200.00	0.59	223.41	4,198.45	-11.48	-90.53	-6.79	0.09	-0.05	6.83
4,300.00	0.30	180.85	4,298.44	-12.11	-90.89	-7.40	0.42	-0.29	-42.56
4,400.00	0.19	280.14	4,398.44	-12.35	-91.06	-7.63	0.38	-0.11	99.29
4,500.00	0.10	325.80	4,498.44	-12.25	-91.27	-7.52	0.14	-0.09	45.66
4,600.00	0.07	350.08	4,598.44	-12.11	-91.33	-7.38	0.05	-0.03	24.28
4,700.00	0.30	320.39	4,698.44	-11.85	-91.51	-7.11	0.24	0.23	-29.69
4,800.00	0.33	343.50	4,798.44	-11.37	-91.76	-6.62	0.13	0.03	23.11
4,900.00	0.18	242.32	4,898.44	-11.17	-91.98	-6.41	0.41	-0.15	-101.18
5,000.00	0.20	265.75	4,998.44	-11.26	-92.29	-6.48	0.08	0.02	23.43
5,100.00	0.41	309.41	5,098.44	-11.04	-92.74	-6.24	0.30	0.21	43.66

Archer Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 1H
Project:	Eddy County, NM	TVD Reference:	3375'GL+17'KB @ 3392.00usft (Planning)
Site:	Dumpyard 2 State 1H	MD Reference:	3375'GL+17'KB @ 3392.00usft (Planning)
Well:	1H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM R5000.1 MULTI

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,200.00	0.19	285.79	5,198.44	-10.77	-93.18	-5.94	0.25	-0.22	-23.62
5,300.00	0.19	311.56	5,298.44	-10.61	-93.46	-5.77	0.08	0.00	25.77
5,400.00	0.12	327.20	5,398.44	-10.42	-93.64	-5.57	0.08	-0.07	15.64
5,500.00	0.11	345.50	5,498.44	-10.24	-93.72	-5.38	0.04	-0.01	18.30
5,600.00	0.20	341.28	5,598.44	-9.98	-93.80	-5.12	0.09	0.09	-4.22
5,700.00	0.18	350.82	5,698.44	-9.66	-93.88	-4.80	0.04	-0.02	9.54
5,800.00	0.17	298.11	5,798.43	-9.43	-94.04	-4.56	0.16	-0.01	-52.71
5,900.00	0.18	310.89	5,898.43	-9.26	-94.29	-4.38	0.04	0.01	12.78
6,000.00	0.22	329.54	5,998.43	-8.99	-94.51	-4.10	0.08	0.04	18.65
6,100.00	0.30	337.99	6,098.43	-8.58	-94.70	-3.68	0.09	0.08	8.45
6,200.00	0.30	312.52	6,198.43	-8.16	-94.99	-3.25	0.13	0.00	-25.47
6,300.00	0.28	284.30	6,298.43	-7.93	-95.42	-2.99	0.14	-0.02	-28.22
6,400.00	0.39	282.23	6,398.43	-7.79	-95.99	-2.83	0.11	0.11	-2.07
6,500.00	0.59	224.65	6,498.43	-8.09	-96.69	-3.08	0.50	0.20	-57.58
6,600.00	0.82	231.94	6,598.42	-8.90	-97.61	-3.84	0.25	0.23	7.29
6,700.00	0.73	185.61	6,698.41	-9.97	-98.24	-4.88	0.62	-0.09	-46.33
6,800.00	0.35	63.05	6,798.41	-10.47	-98.03	-5.39	0.96	-0.38	-122.56
6,900.00	0.96	68.15	6,898.40	-10.02	-96.98	-4.99	0.61	0.61	5.10
7,000.00	1.24	63.65	6,998.38	-9.22	-95.23	-4.29	0.29	0.28	-4.50
7,100.00	1.67	71.53	7,098.35	-8.28	-92.88	-3.47	0.47	0.43	7.88
7,200.00	1.47	70.38	7,198.31	-7.39	-90.29	-2.72	0.20	-0.20	-1.15
7,300.00	1.33	92.66	7,298.28	-7.01	-87.92	-2.46	0.56	-0.14	22.28
7,400.00	1.07	126.82	7,398.26	-7.63	-86.01	-3.17	0.75	-0.26	34.16
7,500.00	0.43	180.43	7,498.25	-8.56	-85.27	-4.15	0.89	-0.64	53.61
7,600.00	0.87	224.84	7,598.25	-9.47	-85.81	-5.03	0.64	0.44	44.41
7,650.00	0.98	231.15	7,648.24	-10.01	-86.41	-5.54	0.30	0.22	12.62
7,760.00	1.50	238.60	7,758.21	-11.35	-88.37	-6.77	0.49	0.47	6.77
7,792.00	1.90	289.80	7,790.20	-11.39	-89.23	-6.77	4.73	1.25	160.00
7,824.00	3.40	328.30	7,822.17	-10.40	-90.22	-5.73	7.03	4.69	120.31
7,856.00	5.50	339.50	7,854.07	-8.16	-91.26	-3.44	7.07	6.56	35.00
7,888.00	7.60	345.80	7,885.86	-4.67	-92.32	0.10	6.93	6.56	19.69
7,920.00	9.90	349.20	7,917.49	0.08	-93.35	4.90	7.36	7.19	10.63
7,952.00	12.20	350.30	7,948.89	6.12	-94.44	10.99	7.22	7.19	3.44
7,984.00	14.50	350.80	7,980.03	13.41	-95.65	18.33	7.20	7.19	1.56
8,015.00	16.90	351.30	8,009.87	21.69	-96.95	26.67	7.75	7.74	1.61
8,047.00	19.80	352.00	8,040.24	31.66	-98.41	36.70	9.09	9.06	2.19
8,079.00	22.50	351.80	8,070.08	43.09	-100.03	48.20	8.44	8.44	-0.63
8,111.00	24.80	351.30	8,099.39	55.79	-101.92	60.98	7.21	7.19	-1.56
8,143.00	27.10	351.20	8,128.16	69.63	-104.05	74.91	7.19	7.19	-0.31
8,175.00	29.50	351.10	8,156.33	84.61	-106.39	90.00	7.50	7.50	-0.31
8,207.00	31.90	351.40	8,183.85	100.76	-108.87	106.25	7.52	7.50	0.94
8,239.00	33.80	352.40	8,210.73	117.94	-111.31	123.54	6.17	5.94	3.13
8,271.00	36.50	352.70	8,236.89	136.21	-113.70	141.90	8.45	8.44	0.94

Archer Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 1H
Project:	Eddy County, NM	TVD Reference:	3375'GL+17'KB @ 3392.00usft (Planning)
Site:	Dumpyard 2 State 1H	MD Reference:	3375'GL+17'KB @ 3392.00usft (Planning)
Well:	1H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM R5000.1 MULTI

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,303.00	39.20	352.70	8,262.16	155.68	-116.19	161.48	8.44	8.44	0.00
8,334.00	41.90	353.20	8,285.71	175.68	-118.67	181.58	8.77	8.71	1.61
8,366.00	45.90	353.40	8,308.76	197.72	-121.25	203.71	12.51	12.50	0.63
8,398.00	48.20	353.70	8,330.56	220.99	-123.88	227.09	7.22	7.19	0.94
8,430.00	50.70	354.00	8,351.37	245.16	-126.49	251.37	7.84	7.81	0.94
8,462.00	53.10	354.30	8,371.11	270.21	-129.05	276.52	7.54	7.50	0.94
8,494.00	55.80	354.40	8,389.71	296.12	-131.61	302.52	8.44	8.44	0.31
8,526.00	58.50	354.60	8,407.07	322.88	-134.19	329.37	8.45	8.44	0.63
8,558.00	61.80	354.60	8,422.99	350.50	-136.80	357.10	10.31	10.31	0.00
8,590.00	64.90	354.40	8,437.35	378.97	-139.54	385.67	9.70	9.69	-0.63
8,622.00	68.00	354.30	8,450.13	408.16	-142.43	414.97	9.69	9.69	-0.31
8,654.00	71.10	354.60	8,461.31	438.00	-145.33	444.92	9.73	9.69	0.94
8,686.00	74.30	354.80	8,470.82	468.41	-148.15	475.44	10.02	10.00	0.63
8,718.00	77.40	355.10	8,478.65	499.32	-150.88	506.44	9.73	9.69	0.94
8,749.00	80.40	355.40	8,484.61	529.63	-153.40	536.85	9.72	9.68	0.97
8,781.00	83.40	355.40	8,489.12	561.21	-155.94	568.51	9.38	9.38	0.00
8,867.00	90.80	355.60	8,493.47	646.77	-162.67	654.31	8.61	8.60	0.23
8,931.00	90.40	355.20	8,492.80	710.56	-167.81	718.28	0.88	-0.63	-0.63
9,026.00	90.20	354.60	8,492.30	805.18	-176.25	813.21	0.67	-0.21	-0.63
9,122.00	91.40	354.20	8,490.96	900.71	-185.62	909.10	1.32	1.25	-0.42
9,218.00	91.10	353.70	8,488.87	996.16	-195.73	1,004.93	0.61	-0.31	-0.52
9,313.00	90.70	353.40	8,487.38	1,090.54	-206.40	1,099.75	0.53	-0.42	-0.32
9,409.00	90.20	353.80	8,486.62	1,185.94	-217.10	1,195.57	0.67	-0.52	0.42
9,505.00	91.00	353.40	8,485.62	1,281.34	-227.80	1,291.39	0.93	0.83	-0.42
9,600.00	91.00	353.20	8,483.96	1,375.67	-238.89	1,386.17	0.21	0.00	-0.21
9,696.00	90.80	353.40	8,482.45	1,471.01	-250.09	1,481.96	0.29	-0.21	0.21
9,792.00	90.60	353.20	8,481.28	1,566.34	-261.29	1,577.75	0.29	-0.21	-0.21
9,887.00	92.70	354.50	8,478.54	1,660.75	-271.46	1,672.55	2.60	2.21	1.37
9,983.00	91.80	357.30	8,474.77	1,756.42	-278.32	1,768.45	3.06	-0.94	2.92
10,079.00	91.60	357.30	8,471.92	1,852.27	-282.84	1,864.41	0.21	-0.21	0.00
10,174.00	91.30	359.50	8,469.52	1,947.20	-285.49	1,959.34	2.34	-0.32	2.32
10,270.00	91.80	359.90	8,466.92	2,043.16	-285.99	2,055.20	0.67	0.52	0.42
10,366.00	91.70	359.90	8,463.99	2,139.12	-286.16	2,151.04	0.10	-0.10	0.00
10,462.00	91.60	0.20	8,461.23	2,235.08	-286.07	2,246.87	0.33	-0.10	0.31
10,557.00	91.40	0.40	8,458.74	2,330.04	-285.58	2,341.68	0.30	-0.21	0.21
10,653.00	91.00	358.60	8,456.73	2,426.01	-286.41	2,437.57	1.92	-0.42	-1.88
10,749.00	91.60	358.70	8,454.55	2,521.96	-288.67	2,533.50	0.63	0.63	0.10
10,845.00	93.00	356.30	8,450.70	2,617.78	-292.86	2,629.41	2.89	1.46	-2.50
10,940.00	91.80	357.20	8,446.72	2,712.54	-298.24	2,724.33	1.58	-1.26	0.95
11,036.00	91.80	357.20	8,443.71	2,808.38	-302.93	2,820.28	0.00	0.00	0.00
11,132.00	91.30	358.90	8,441.11	2,904.29	-306.19	2,916.22	1.85	-0.52	1.77
11,227.00	91.30	359.20	8,438.95	2,999.25	-307.77	3,011.14	0.32	0.00	0.32
11,323.00	91.10	359.20	8,436.94	3,095.22	-309.11	3,107.05	0.21	-0.21	0.00
11,419.00	91.40	359.80	8,434.85	3,191.19	-309.94	3,202.94	0.70	0.31	0.63

Archer Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 1H
Project:	Eddy County, NM	TVD Reference:	3375'GL+17'KB @ 3392.00usft (Planning)
Site:	Dumpyard 2 State 1H	MD Reference:	3375'GL+17'KB @ 3392.00usft (Planning)
Well:	1H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM R5000.1 MULTI

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
11,514.00	91.60	0.20	8,432.36	3,286.16	-309.94	3,297.78	0.47	0.21	0.42	
11,610.00	91.90	0.50	8,429.43	3,382.11	-309.36	3,393.58	0.44	0.31	0.31	
11,706.00	90.90	0.70	8,427.08	3,478.08	-308.35	3,489.36	1.06	-1.04	0.21	
11,802.00	91.10	0.50	8,425.41	3,574.06	-307.35	3,585.16	0.29	0.21	-0.21	
11,898.00	91.20	1.30	8,423.48	3,670.03	-305.84	3,680.92	0.84	0.10	0.83	
11,993.00	90.20	1.10	8,422.32	3,765.00	-303.85	3,775.66	1.07	-1.05	-0.21	
12,086.00	90.20	1.50	8,422.00	3,857.97	-301.74	3,868.41	0.43	0.00	0.43	
12,182.00	90.20	1.50	8,421.66	3,953.94	-299.23	3,964.12	0.00	0.00	0.00	
12,277.00	90.10	1.20	8,421.41	4,048.91	-296.99	4,058.85	0.33	-0.11	-0.32	
12,372.00	90.50	359.80	8,420.92	4,143.90	-296.16	4,153.67	1.53	0.42	-1.47	
12,467.00	90.50	0.50	8,420.09	4,238.90	-295.91	4,248.53	0.74	0.00	0.74	
12,562.00	90.60	1.20	8,419.18	4,333.88	-294.50	4,343.31	0.74	0.11	0.74	
12,657.00	90.50	1.30	8,418.26	4,428.86	-292.43	4,438.05	0.15	-0.11	0.11	
12,752.00	90.40	1.60	8,417.52	4,523.82	-290.03	4,532.77	0.33	-0.11	0.32	
12,847.00	90.40	1.90	8,416.85	4,618.78	-287.12	4,627.44	0.32	0.00	0.32	
12,941.00	90.70	2.50	8,415.95	4,712.70	-283.52	4,721.06	0.71	0.32	0.64	
13,036.00	90.60	2.00	8,414.87	4,807.62	-279.79	4,815.66	0.54	-0.11	-0.53	
13,131.00	90.50	2.40	8,413.96	4,902.55	-276.14	4,910.27	0.43	-0.11	0.42	
13,226.00	90.30	1.90	8,413.30	4,997.48	-272.58	5,004.89	0.57	-0.21	-0.53	
13,321.00	90.50	2.80	8,412.64	5,092.40	-268.68	5,099.48	0.97	0.21	0.95	
13,416.00	90.80	3.30	8,411.56	5,187.26	-263.63	5,193.95	0.61	0.32	0.53	
13,511.00	90.40	2.50	8,410.56	5,282.13	-258.82	5,288.45	0.94	-0.42	-0.84	
13,606.00	89.80	0.50	8,410.40	5,377.09	-256.33	5,383.15	2.20	-0.63	-2.11	
13,701.00	90.90	3.30	8,409.82	5,472.02	-253.18	5,477.80	3.17	1.16	2.95	
13,795.00	90.00	1.50	8,409.08	5,565.93	-249.25	5,571.38	2.14	-0.96	-1.91	
13,890.00	89.70	2.00	8,409.33	5,660.89	-246.35	5,666.06	0.61	-0.32	0.53	
13,985.00	89.50	2.00	8,409.99	5,755.83	-243.03	5,760.70	0.21	-0.21	0.00	
14,080.00	89.30	1.90	8,410.99	5,850.77	-239.80	5,855.35	0.24	-0.21	-0.11	
14,175.00	89.50	0.90	8,411.98	5,945.73	-237.48	5,950.06	1.07	0.21	-1.05	
14,270.00	89.10	359.80	8,413.14	6,040.72	-236.90	6,044.90	1.23	-0.42	-1.16	
14,365.00	90.70	359.40	8,413.31	6,135.72	-237.56	6,139.80	1.74	1.68	-0.42	
14,460.00	92.70	358.60	8,410.49	6,230.66	-239.22	6,234.70	2.27	2.11	-0.84	
14,555.00	92.30	358.90	8,406.34	6,325.54	-241.29	6,329.56	0.53	-0.42	0.32	
14,650.00	92.40	358.50	8,402.45	6,420.44	-243.44	6,424.44	0.43	0.11	-0.42	
14,745.00	90.60	358.40	8,399.96	6,515.37	-246.01	6,519.38	1.90	-1.89	-0.11	
14,840.00	91.00	359.40	8,398.64	6,610.34	-247.84	6,614.32	1.13	0.42	1.05	
14,935.00	91.00	359.40	8,396.98	6,705.32	-248.83	6,709.22	0.00	0.00	0.00	
15,030.00	90.90	359.20	8,395.40	6,800.30	-249.99	6,804.14	0.24	-0.11	-0.21	
15,175.00	90.90	359.20	8,393.13	6,945.27	-252.01	6,949.01	0.00	0.00	0.00	

Archer

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 1H
Project:	Eddy County, NM	TVD Reference:	3375'GL+17'KB @ 3392.00usft (Planning)
Site:	Dumyard 2 State 1H	MD Reference:	3375'GL+17'KB @ 3392.00usft (Planning)
Well:	1H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM R5000:1 MULTI

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
Dumyard 2-1H Surface	0.00	0.00	0.00	0.00	0.00	546,609.70	583,312.20	32° 30' 8.82 N	104° 3' 47.15 W
- actual wellpath hits target center									
- Point									
Dumyard 2-1H BHL	0.00	0.00	8,393.13	6,945.27	-252.01	553,554.97	583,060.19	32° 31' 17.56 N	104° 3' 49.88 W
- actual wellpath hits target center									
- Point									

COG OPERATING, LLC

Field: Eddy County, NM
Site: Dumpyard 2 State 1H
Well: 1H
Wellbore: Lateral
Plan: Surveys



Azimuths to Grid North
True North: -0.14°
Magnetic North: 7.31°

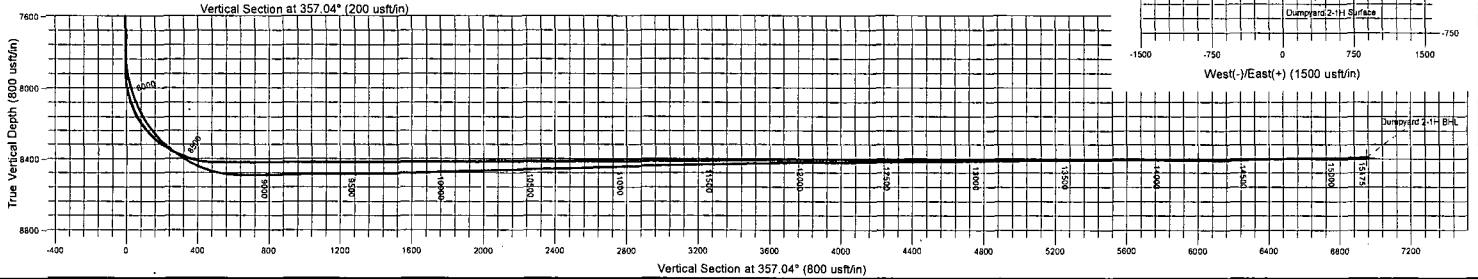
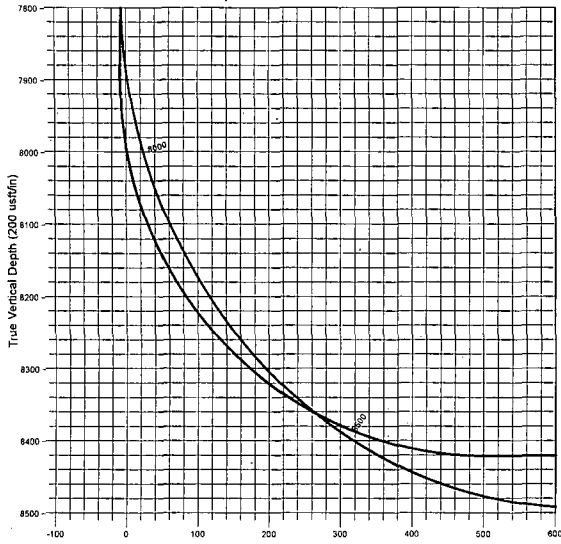
Magnetic Field
Strength: 48421.36nT
Dip Angle: 60.28°
Date: 7/19/2014
Model: IGRF2010



Surveys for offset well State 1
are inclination only surveys.
Radius shows possible displacement

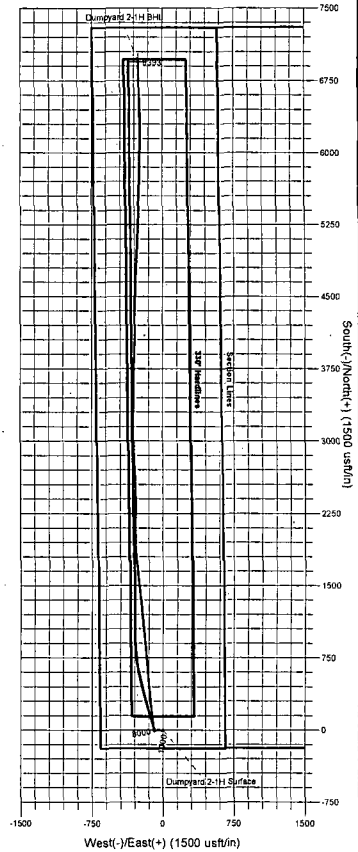
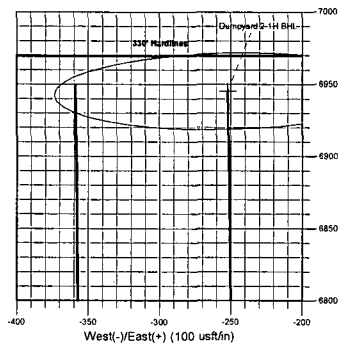
TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Dumpyard 2-1H Surface	0.00	0.00	0.00	546609.70	583312.20	32° 30' 8.82 N	104° 3' 47.15 W	Point
Dumpyard 2-1H BHL	8393.12	6945.27	-252.01	553554.97	583060.19	32° 31' 17.56 N	104° 3' 49.88 W	Point



LEGEND

- 1H, Lateral, Plan #5 V0
- Surveys



Archer

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