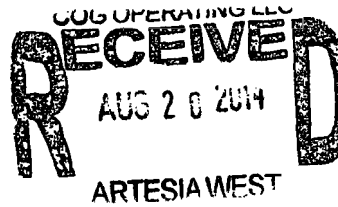




McVAY DRILLING COMPANY
P.O. Box 2450
Hobbs, New Mexico 88241
(575) 397-3311
FAX: 39-DRILL

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:

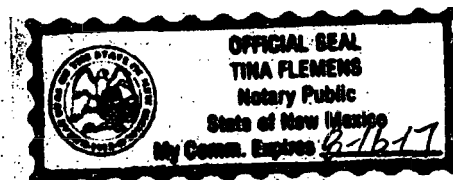
<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>
1.25	201	0.20	6830	90.60	12562
1.75	526	1.90	7792	90.70	12941
2.25	817	19.80	8047	90.80	13321
2.50	910	36.50	8272	89.80	13606
2.00	1258	55.80	8494	89.50	13985
1.20	1623	77.40	8718	89.10	14270
1.30	2083	90.20	9026	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		

NEW MEXICO OIL CONSERVATION
ARTESIA DISTRICT
JAN 07 2015
RECEIVED

By: H. Robert 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**

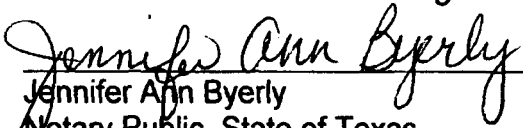
Please find enclosed a copy of the survey from 0.00' to 7650.00' ran on the above referenced well.

Sincerely,


Keith Havelka
Operations

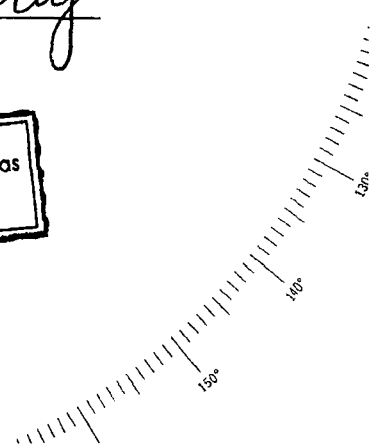
STATE OF TEXAS §
 §
COUNTY OF NUECES §

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



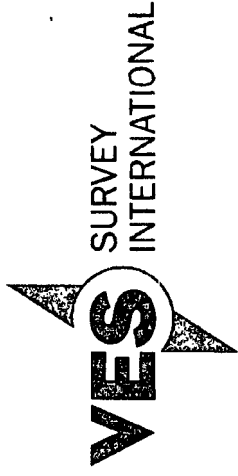
VES Survey International
P.O. Box 261021 Corpus Christi, TX 78426
T (361) 767-0602 F (361) 767-0612
www.vessurvey.com





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

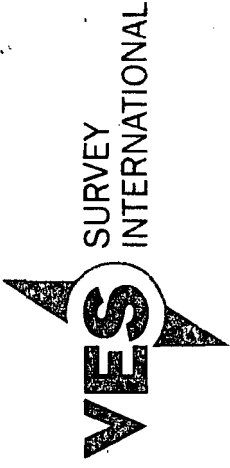
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	0.17	298.11	5798.43	-9.42	-94.03	-9.42	94.51	264.28	0.16
5900.00	0.18	310.89	5898.43	-9.25	-94.28	-9.25	94.73	264.39	0.04
6000.00	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



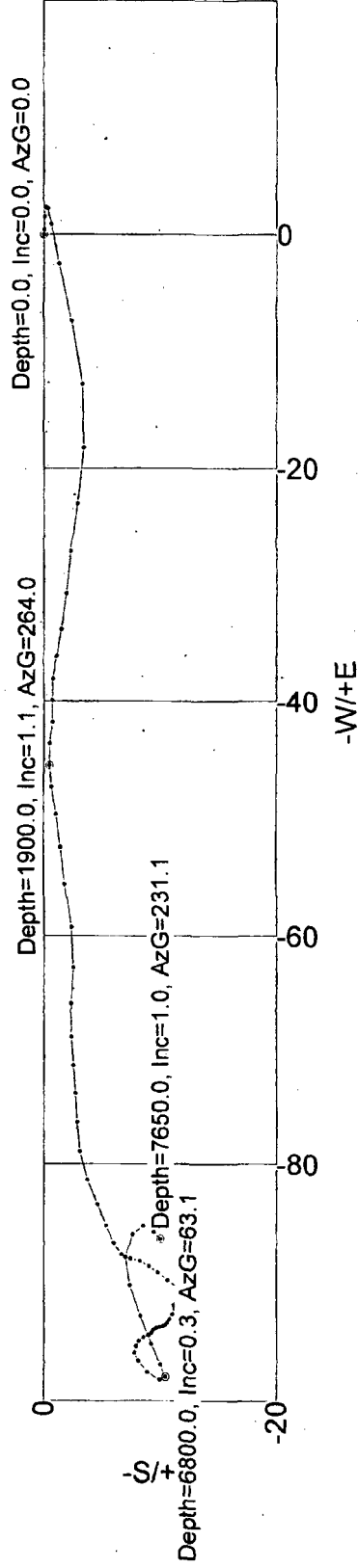
VES Survey International
West Texas
(432) 563-5444

Surveyor: Bryan Massey

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



NM OIL CONSERVATION
ARTESIA DISTRICT
JAN 07 2015
RECEIVED



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	Latitude: 32° 30' 8.82 N
From: Map		Easting:	583,312.20 usft	Longitude: 104° 3' 47.15 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	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
			Ground Level:	3,375.00 usft

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

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

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

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)	
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	-1.16	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:	Dumppyard 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	277.85	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	218.87	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:	Dumppyard 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	-98.98	-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)	Bulld 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:	Dumppyard 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	90.80	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	
13,603.00	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	Dip Angle	Dip Dir.	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
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°

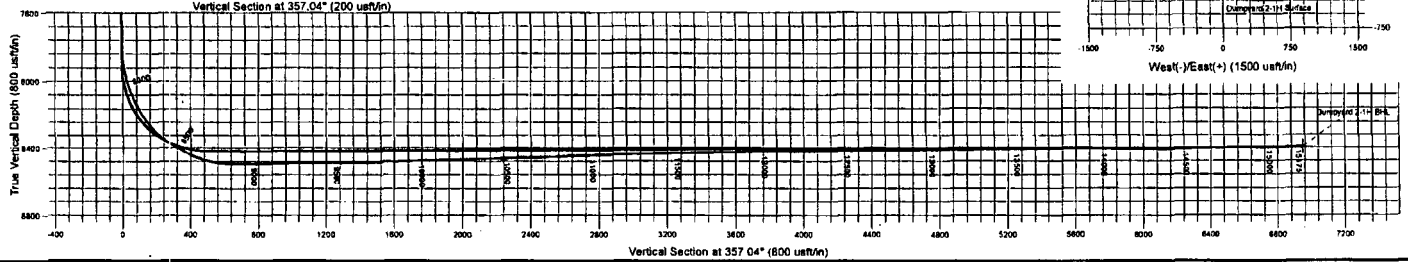
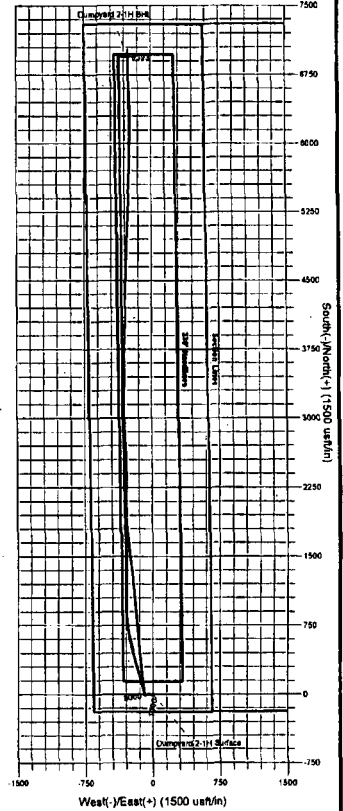
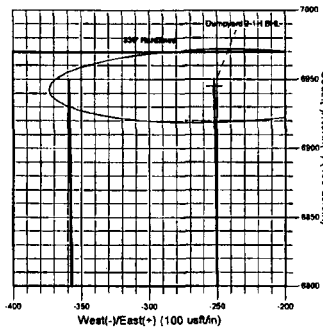
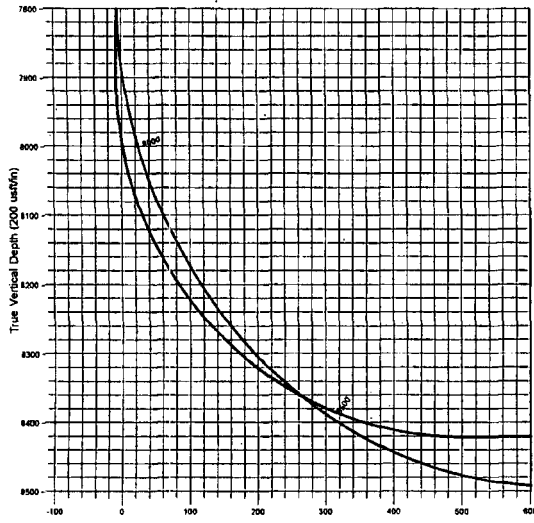
Magnetic Field
Strength: 48421.3anT
Dip Angle: 80.28°
Date: 7/19/2014
Model: IGRF2010



Surveys for offset well 211-1
are indicative only surveys.
Rabbit shows possible displacement

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Nothing	Easting	Latitude	Longitude	Shape
Dumyard 2-1H Surface	0.00	0.00	0.00	546508.76	58312.20	$32^{\circ} 30' 8.82''$ N	$104^{\circ} 3' 47.15''$ W	Point
Dumyard 2-1H BHL	8393.12	6945.27	-252.01	553554.97	583080.19	$32^{\circ} 31' 17.56''$ N	$104^{\circ} 3' 48.88''$ W	Point



Archer

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Design: Surveys (1H/Lateral)
Created By: Ivonne Gonzalez
Date: 9.02, July 30 2014