

**McVAY DRILLING COMPANY**

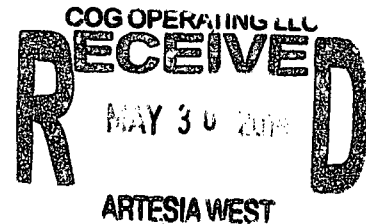
P.O. Box 2450
Hobbs, New Mexico 88241
(575) 397-3311
FAX: 39-DRILL

Well Name and Num: Salada Vista 36 State #5H
Location: Sec 31, T19S, R31E
Operator: COG
Drilling Contractor: McVay Drilling Company

30-015-41830

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:

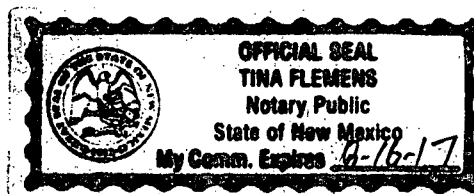
<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>
0.65	228	12.10	6957	91.90	12742
2.20	657	14.10	7338	91.90	13058
3.00	906	12.08	7623	92.90	13533
5.20	1346	13.70	7934		
3.30	1853	13.10	8030		
1.90	2234	22.20	8317		
1.80	2709	25.90	8412		
1.30	3185	69.50	9113		
0.80	3564	91.70	9559		
1.20	3945	90.30	10038		
8.00	4389	90.40	10325		
10.20	4484	91.10	11185		
12.20	5152	91.50	11377		
14.10	5342	90.90	11699		
12.40	5913	92.60	11889		
14.10	6008	92.80	12268		
13.50	6483	93.40	12648		



By: Hunter Cant

Subscribed and sworn to before me this 20th day of May, 2014

Tina Flemens
Notary Public, Lea County, New Mexico





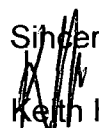
May 21, 2014

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

Attn: Kanicia Castillo

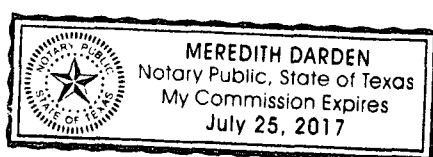
RE: **Salada Vista 36 State Com No. 005H**

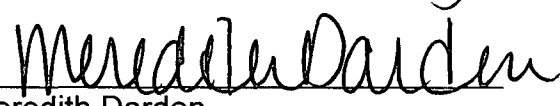
Please find enclosed a copy of the survey from 0.00' to 4,042.00' ran on the above referenced well.

Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 21st day of May, A.D., 2014, by Keith Havelka.




Meredith Darden
Notary Public, State of Texas

Company: COG Operating, LLC (Concho)
Lease/Well: Salada Vista 36 State Com/No. 005H



Rig Name: Mcvay #6
State/County: Texas/Eddy
Latitude: 32.61, Longitude: -103.92
GRID North is 0.22 Degrees East of True North
VS-Azi: 0.00 Degrees



Rkb : 18 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut
Minimum Curvature Method
Report Date/Time: 5/23/2014 / 13:52

VES Survey International
Fort Worth, Texas
817-908-3586
Surveyor: Jason Wilson
Salada Vista 36 State Com No. 005H / API 30-015-41830

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	****
50.00	0.19	14.84	50.00	0.08	0.02	0.08	0.08	14.84	0.39
100.00	0.17	27.05	100.00	0.23	0.08	0.23	0.24	18.55	0.09
200.00	0.21	28.09	200.00	0.52	0.23	0.52	0.57	23.80	0.04
300.00	1.18	36.33	299.99	1.52	0.93	1.52	1.78	31.47	0.97
400.00	2.02	45.64	399.95	3.58	2.80	3.58	4.54	38.02	0.87
500.00	2.37	37.61	499.88	6.45	5.32	6.45	8.36	39.52	0.47
600.00	2.56	36.78	599.78	9.88	7.92	9.88	12.66	38.73	0.19
700.00	2.54	38.36	699.69	13.40	10.63	13.40	17.11	38.43	0.07
800.00	2.84	26.57	799.58	17.36	13.12	17.36	21.76	37.08	0.63
900.00	3.40	39.60	899.43	21.86	16.12	21.86	27.16	36.40	0.90
1000.00	4.33	36.77	999.20	27.18	20.27	27.18	33.91	36.72	0.95
1100.00	5.29	34.75	1098.85	33.99	25.16	33.99	42.29	36.51	0.97
1200.00	5.48	37.59	1198.40	41.57	30.71	41.57	51.68	36.45	0.33
1300.00	5.05	31.51	1297.98	49.10	35.92	49.10	60.84	36.19	0.71
1400.00	4.49	44.47	1397.64	55.65	40.96	55.65	69.10	36.36	1.21
1500.00	3.55	48.66	1497.39	60.49	46.03	60.49	76.01	37.27	0.99
1600.00	2.57	51.20	1597.25	63.94	50.11	63.94	81.23	38.08	0.99
1700.00	2.19	70.76	1697.16	65.98	53.66	65.98	85.04	39.12	0.89

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
1800.00	2.43	89.42	1797.08	66.63	57.59	66.63	88.07	40.84	0.79
1900.00	3.05	85.24	1896.97	66.87	62.37	66.87	91.44	43.00	0.65
2000.00	2.90	75.75	1996.83	67.71	67.47	67.71	95.59	44.90	0.52
2100.00	2.36	61.42	2096.73	69.32	71.73	69.32	99.76	45.98	0.84
2200.00	1.95	53.80	2196.66	71.31	74.92	71.31	103.43	46.41	0.50
2300.00	2.07	36.16	2296.60	73.78	77.36	73.78	106.90	46.36	0.63
2400.00	1.85	32.47	2396.54	76.59	79.29	76.59	110.24	45.99	0.26
2500.00	1.83	53.56	2496.49	78.90	81.44	78.90	113.39	45.91	0.67
2600.00	1.85	54.38	2596.44	80.79	84.04	80.79	116.58	46.13	0.03
2700.00	1.52	62.05	2696.39	82.35	86.52	82.35	119.45	46.41	0.40
2800.00	1.87	71.35	2796.35	83.49	89.23	83.49	122.20	46.90	0.44
2900.00	2.14	72.58	2896.29	84.57	92.56	84.57	125.38	47.58	0.28
3000.00	2.14	68.32	2996.22	85.82	96.08	85.82	128.83	48.23	0.16
3100.00	1.58	75.44	3096.17	86.86	99.15	86.86	131.82	48.78	0.60
3200.00	1.15	91.58	3196.14	87.18	101.49	87.18	133.80	49.34	0.58
3300.00	0.87	86.24	3296.12	87.20	103.26	87.20	135.15	49.82	0.29
3400.00	0.84	131.98	3396.11	86.77	104.56	86.77	135.87	50.31	0.66
3500.00	0.96	137.37	3496.10	85.66	105.66	85.66	136.03	50.97	0.15
3600.00	0.51	133.80	3596.09	84.74	106.55	84.74	136.14	51.50	0.45
3700.00	0.59	142.38	3696.09	84.03	107.18	84.03	136.20	51.90	0.11
3800.00	0.32	158.54	3796.08	83.36	107.60	83.36	136.11	52.23	0.29
3900.00	0.71	169.50	3896.08	82.50	107.81	82.50	135.75	52.58	0.39
4000.00	1.68	178.14	3996.06	80.42	107.97	80.42	134.63	53.32	0.99
4042.00	1.89	179.86	4038.04	79.11	107.99	79.11	133.87	53.78	0.51



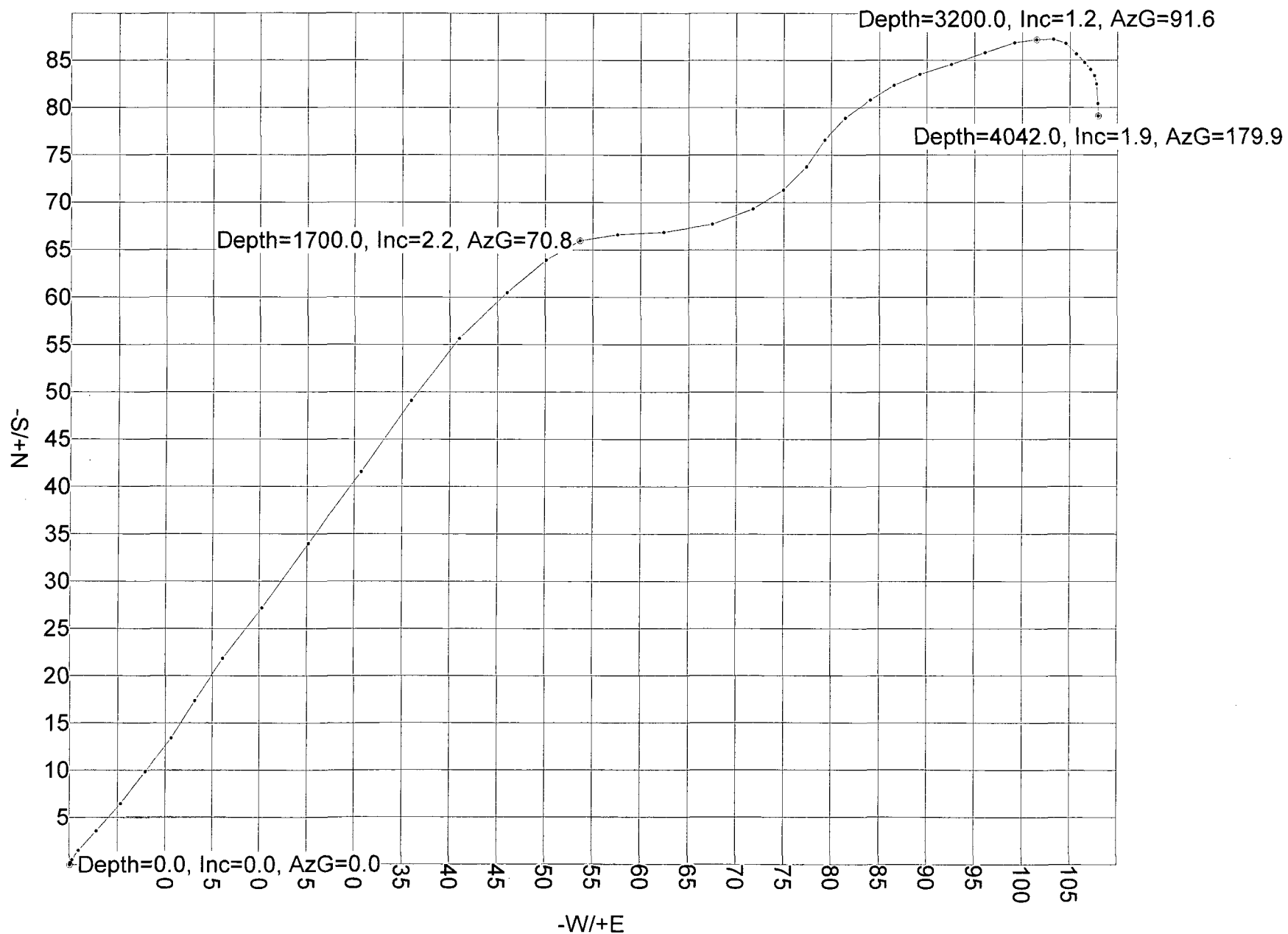
VES Survey International

Fort Worth, Texas

817-908-3586

Surveyor: Jason Wilson

Salada Vista 36 State Com No. 005H / API 30-015-41830



VES Survey Date: 05/11/2014

COG OPERATING, LLC

Eddy County, NM

Salada Vista 36 State 5H

5H

Lateral

Design: Surveys

Standard Survey Report

27 May, 2014

Archer

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 5H
Project:	Eddy County, NM	TVD Reference:	3401'GL+18'KB @ 3419.00usft (Planning)
Site:	Salada Vista 36 State 5H	MD Reference:	3401'GL+18'KB @ 3419.00usft (Planning)
Well:	5H	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	Salada Vista 36 State 5H		
Site Position:		Northing:	587,506.40 usft
From:	Map	Easting:	628,545.40 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in
		Latitude:	32° 36' 52.08 N
		Longitude:	103° 54' 57.09 W
		Grid Convergence:	0.23 °

Well	5H		
Well Position	+N/-S	0.00 usft	Northing: 587,506.40 usft
	+E/-W	0.00 usft	Easting: 628,545.40 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 36' 52.08 N
		Longitude:	103° 54' 57.09 W
		Ground Level:	3,401.00 usft

Wellbore	Lateral		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010	5/6/2014	7.42
			Dip Angle (°)
			60.42
			Field Strength (nT)
			48,525

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)
	0.00	0.00	0.00
			Direction (°)
			254.06

Survey Program	Date	5/27/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
50.00	4,042.00	Survey #2 (Lateral)	Gyroscope	Gyroscope
4,119.00	13,533.00	Survey #3 (Lateral)	MWD	Std MWD
13,680.00	13,680.00	Survey #4 (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
50.00	0.19	14.84	50.00	0.08	0.02	-0.04	0.38	0.38	0.00
100.00	0.17	27.05	100.00	0.23	0.08	-0.14	0.09	-0.04	24.42
200.00	0.21	28.09	200.00	0.52	0.23	-0.36	0.04	0.04	1.04
300.00	1.18	36.33	299.99	1.51	0.93	-1.31	0.97	0.97	8.24
400.00	2.02	45.64	399.95	3.57	2.80	-3.67	0.88	0.84	9.31
500.00	2.37	37.61	499.88	6.44	5.32	-6.88	0.47	0.35	-8.03
600.00	2.56	36.78	599.78	9.87	7.92	-10.32	0.19	0.19	-0.83
700.00	2.54	38.36	699.69	13.40	10.63	-13.90	0.07	-0.02	1.58

Archer Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 5H
Project:	Eddy County, NM	TVD Reference:	3401'GL+18'KB @ 3419.00usft (Planning)
Site:	Salada Vista 36 State 5H	MD Reference:	3401'GL+18'KB @ 3419.00usft (Planning)
Well:	5H	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)
800.00	2.84	26.57	799.58	17.35	13.11	-17.37	0.63	0.30	-11.79
900.00	3.40	39.60	899.43	21.85	16.11	-21.49	0.90	0.56	13.03
1,000.00	4.33	36.77	999.20	27.16	20.26	-26.94	0.95	0.93	-2.83
1,100.00	5.29	34.75	1,098.85	33.97	25.15	-33.51	0.97	0.96	-2.02
1,200.00	5.48	37.59	1,198.41	41.54	30.69	-40.92	0.33	0.19	2.84
1,300.00	5.05	31.51	1,297.98	49.08	35.90	-48.00	0.70	-0.43	-6.08
1,400.00	4.49	44.47	1,397.64	55.62	40.94	-54.64	1.21	-0.56	12.96
1,500.00	3.55	48.66	1,497.39	60.46	46.01	-60.84	0.98	-0.94	4.19
1,600.00	2.57	51.20	1,597.25	63.91	50.08	-65.71	0.99	-0.98	2.54
1,700.00	2.19	70.76	1,697.17	65.95	53.63	-69.68	0.89	-0.38	19.56
1,800.00	2.43	89.42	1,797.09	66.60	57.56	-73.63	0.79	0.24	18.66
1,900.00	3.05	85.24	1,896.97	66.84	62.33	-78.29	0.65	0.62	-4.18
2,000.00	2.90	75.75	1,996.84	67.68	67.43	-83.42	0.51	-0.15	-9.49
2,100.00	2.36	61.42	2,096.73	69.29	71.69	-87.96	0.85	-0.54	-14.33
2,200.00	1.95	53.80	2,196.66	71.28	74.87	-91.57	0.50	-0.41	-7.62
2,300.00	2.07	36.16	2,296.60	73.74	77.31	-94.59	0.63	0.12	-17.64
2,400.00	1.85	32.47	2,396.54	76.56	79.24	-97.22	0.25	-0.22	-3.69
2,500.00	1.83	53.56	2,496.49	78.87	81.40	-99.92	0.67	-0.02	21.09
2,600.00	1.85	54.38	2,596.44	80.76	83.99	-102.94	0.03	0.02	0.82
2,700.00	1.52	62.05	2,696.40	82.32	86.48	-105.76	0.40	-0.33	7.67
2,800.00	1.87	71.35	2,796.35	83.47	89.19	-108.68	0.44	0.35	9.30
2,900.00	2.14	72.58	2,896.29	84.55	92.52	-112.18	0.27	0.27	1.23
3,000.00	2.14	68.32	2,996.22	85.80	96.04	-115.90	0.16	0.00	-4.26
3,100.00	1.58	75.44	3,096.17	86.83	99.11	-119.14	0.60	-0.56	7.12
3,200.00	1.15	91.58	3,196.14	87.15	101.44	-121.47	0.57	-0.43	16.14
3,300.00	0.87	86.24	3,296.13	87.17	103.20	-123.17	0.30	-0.28	-5.34
3,400.00	0.84	131.98	3,396.12	86.73	104.51	-124.30	0.67	-0.03	45.74
3,500.00	0.96	137.37	3,496.10	85.63	105.62	-125.07	0.15	0.12	5.39
3,600.00	0.51	133.80	3,596.09	84.70	106.51	-125.67	0.45	-0.45	-3.57
3,700.00	0.59	142.38	3,696.09	83.99	107.14	-126.09	0.11	0.08	8.58
3,800.00	0.32	158.54	3,796.09	83.32	107.56	-126.30	0.30	-0.27	16.16
3,900.00	0.71	169.50	3,896.08	82.45	107.77	-126.27	0.40	0.39	10.96
4,000.00	1.68	178.14	3,996.06	80.38	107.94	-125.86	0.98	0.97	8.64
4,042.00	1.89	179.86	4,038.04	79.07	107.96	-125.52	0.52	0.50	4.10
4,119.00	2.60	174.50	4,114.98	76.06	108.13	-124.85	0.96	0.92	-6.96
4,230.00	6.10	183.60	4,225.64	67.67	108.00	-122.43	3.20	3.15	8.20
4,294.00	7.40	185.20	4,289.20	60.17	107.41	-119.80	2.05	2.03	2.50
4,389.00	8.00	186.90	4,383.34	47.51	106.06	-115.03	0.68	0.63	1.79
4,484.00	10.20	182.50	4,477.14	32.54	104.90	-109.80	2.43	2.32	-4.63
4,581.00	13.20	185.40	4,572.12	12.93	103.48	-103.06	3.15	3.09	2.99
4,677.00	14.50	181.30	4,665.33	-10.00	102.18	-95.51	1.70	1.35	-4.27
4,772.00	14.40	181.10	4,757.32	-33.70	101.68	-88.52	0.12	-0.11	-0.21
4,867.00	13.70	179.10	4,849.48	-56.76	101.63	-82.14	0.90	-0.74	-2.11

Archer

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 5H
Project:	Eddy County, NM	TVD Reference:	3401'GL+18'KB @ 3419.00usft (Planning)
Site:	Salada Vista 36 State 5H	MD Reference:	3401'GL+18'KB @ 3419.00usft (Planning)
Well:	5H	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)
4,962.00	13.60	178.50	4,941.80	-79.17	102.10	-76.44	0.18	-0.11	-0.63
5,057.00	12.50	178.90	5,034.34	-100.62	102.59	-71.02	1.16	-1.16	0.42
5,152.00	12.20	175.20	5,127.14	-120.90	103.63	-66.45	0.89	-0.32	-3.89
5,247.00	14.40	176.10	5,219.59	-142.69	105.27	-62.05	2.33	2.32	0.95
5,342.00	14.10	176.70	5,311.67	-166.03	106.74	-57.06	0.35	-0.32	0.63
5,437.00	13.60	177.60	5,403.90	-188.74	107.88	-51.91	0.57	-0.53	0.95
5,532.00	13.30	178.10	5,496.30	-210.82	108.71	-46.65	0.34	-0.32	0.53
5,627.00	13.10	179.00	5,588.79	-232.51	109.26	-41.22	0.30	-0.21	0.95
5,722.00	12.80	179.00	5,681.37	-253.79	109.63	-35.74	0.32	-0.32	0.00
5,817.00	12.60	180.10	5,774.05	-274.68	109.79	-30.16	0.33	-0.21	1.16
5,913.00	12.40	180.40	5,867.77	-295.45	109.70	-24.37	0.22	-0.21	0.31
6,008.00	14.10	180.80	5,960.24	-317.23	109.47	-18.17	1.79	1.79	0.42
6,103.00	14.50	181.90	6,052.30	-340.68	108.91	-11.19	0.51	0.42	1.16
6,198.00	14.20	176.30	6,144.34	-364.20	109.27	-5.08	1.49	-0.32	-5.89
6,294.00	14.20	176.40	6,237.40	-387.70	110.77	-0.07	0.03	0.00	0.10
6,388.00	13.50	178.10	6,328.67	-410.17	111.86	5.05	0.86	-0.74	1.81
6,483.00	13.90	178.20	6,420.97	-432.66	112.59	10.53	0.42	0.42	0.11
6,578.00	13.00	178.30	6,513.36	-454.75	113.26	15.94	0.95	-0.95	0.11
6,673.00	12.10	178.10	6,606.09	-475.38	113.91	20.99	0.95	-0.95	-0.21
6,768.00	14.70	178.90	6,698.50	-497.39	114.47	26.49	2.74	2.74	0.84
6,862.00	12.80	177.70	6,789.80	-519.72	115.12	32.00	2.04	-2.02	-1.28
6,957.00	12.10	178.10	6,882.56	-540.18	115.87	36.89	0.74	-0.74	0.42
7,052.00	13.80	174.70	6,975.15	-561.42	117.25	41.40	1.96	1.79	-3.58
7,148.00	13.40	172.60	7,068.45	-583.85	119.74	45.16	0.66	-0.42	-2.19
7,243.00	13.20	172.50	7,160.91	-605.52	122.57	48.39	0.21	-0.21	-0.11
7,338.00	14.10	181.40	7,253.23	-627.85	123.70	53.43	2.40	0.95	9.37
7,433.00	13.70	181.80	7,345.45	-650.66	123.07	60.30	0.43	-0.42	0.42
7,528.00	12.90	181.90	7,437.90	-672.50	122.36	66.98	0.84	-0.84	0.11
7,623.00	12.80	192.60	7,530.54	-693.37	119.71	75.26	2.50	-0.11	11.26
7,718.00	12.40	205.10	7,623.26	-712.88	113.09	86.98	2.90	-0.42	13.16
7,813.00	13.10	214.50	7,715.93	-731.00	102.66	101.98	2.30	0.74	9.89
7,909.00	13.80	225.10	7,809.31	-748.05	88.39	120.39	2.67	0.73	11.04
7,934.00	13.70	226.50	7,833.60	-752.19	84.13	125.62	1.39	-0.40	5.60
8,030.00	13.10	235.90	7,926.99	-766.12	66.87	146.04	2.35	-0.63	9.79
8,126.00	13.70	244.30	8,020.39	-777.15	47.62	167.58	2.12	0.63	8.75
8,157.00	13.80	247.10	8,050.50	-780.18	40.91	174.87	2.17	0.32	9.03
8,189.00	14.50	248.20	8,081.53	-783.15	33.67	182.64	2.34	2.19	3.44
8,221.00	16.40	250.00	8,112.37	-786.18	25.70	191.13	6.12	5.94	5.63
8,253.00	18.00	252.20	8,142.94	-789.24	16.75	200.58	5.40	5.00	6.88
8,285.00	20.40	254.30	8,173.16	-792.26	6.67	211.10	7.80	7.50	6.56
8,317.00	22.20	256.80	8,202.97	-795.15	-4.58	222.72	6.30	5.63	7.81
8,348.00	24.40	259.00	8,231.44	-797.71	-16.57	234.95	7.63	7.10	7.10
8,380.00	26.90	260.30	8,260.29	-800.19	-30.20	248.73	8.01	7.81	4.06

Archer

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 5H
Project:	Eddy County, NM	TVD Reference:	3401'GL+18'KB @ 3419.00usft (Planning)
Site:	Salada Vista 36 State 5H	MD Reference:	3401'GL+18'KB @ 3419.00usft (Planning)
Well:	5H	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)	
8,412.00	28.90	261.30	8,288.57	-802.58	-44.98	263.60	6.42	6.25	3.13	
8,444.00	31.30	262.70	8,316.25	-804.81	-60.87	279.49	7.81	7.50	4.38	
8,476.00	33.80	263.80	8,343.22	-806.82	-77.97	296.49	8.03	7.81	3.44	
8,508.00	35.30	265.60	8,369.58	-808.50	-96.03	314.32	5.67	4.69	5.63	
8,540.00	36.40	266.50	8,395.51	-809.78	-114.73	332.65	3.81	3.44	2.81	
8,572.00	38.90	267.10	8,420.85	-810.87	-134.25	351.72	7.90	7.81	1.88	
8,603.00	40.90	266.30	8,444.63	-812.02	-154.10	371.12	6.66	6.45	-2.58	
8,635.00	42.70	266.10	8,468.48	-813.43	-175.38	391.97	5.64	5.63	-0.63	
8,667.00	44.00	265.80	8,491.75	-814.99	-197.29	413.47	4.11	4.06	-0.94	
8,698.00	46.40	265.90	8,513.60	-816.58	-219.23	435.00	7.75	7.74	0.32	
8,730.00	48.20	265.60	8,535.30	-818.32	-242.68	458.03	5.67	5.63	-0.94	
8,762.00	49.80	265.50	8,556.29	-820.20	-266.75	481.69	5.01	5.00	-0.31	
8,794.00	51.80	265.20	8,576.51	-822.21	-291.47	506.01	6.29	6.25	-0.94	
8,826.00	52.90	263.40	8,596.06	-824.73	-316.68	530.94	5.63	3.44	-5.63	
8,858.00	53.90	260.70	8,615.14	-828.28	-342.12	556.38	7.46	3.13	-8.44	
8,890.00	54.30	258.00	8,633.91	-833.07	-367.59	582.19	6.95	1.25	-8.44	
8,921.00	55.70	257.00	8,651.69	-838.57	-392.38	607.53	5.23	4.52	-3.23	
8,953.00	58.30	257.60	8,669.12	-844.47	-418.56	634.32	8.28	8.13	1.88	
8,985.00	60.70	258.80	8,685.36	-850.10	-445.54	661.82	8.17	7.50	3.75	
9,017.00	63.10	259.40	8,700.43	-855.44	-473.26	689.94	7.68	7.50	1.88	
9,049.00	65.60	259.90	8,714.28	-860.62	-501.64	718.65	7.94	7.81	1.56	
9,081.00	68.00	260.60	8,726.88	-865.60	-530.62	747.88	7.76	7.50	2.19	
9,113.00	69.50	261.50	8,738.48	-870.24	-560.08	777.49	5.37	4.69	2.81	
9,145.00	70.90	261.80	8,749.32	-874.61	-589.87	807.33	4.46	4.38	0.94	
9,176.00	72.70	261.80	8,759.00	-878.81	-619.02	836.51	5.81	5.81	0.00	
9,208.00	74.40	261.80	8,768.06	-883.19	-649.39	866.92	5.31	5.31	0.00	
9,240.00	76.40	261.40	8,776.13	-887.71	-680.02	897.62	6.37	6.25	-1.25	
9,272.00	79.50	261.10	8,782.81	-892.47	-710.95	928.66	9.73	9.69	-0.94	
9,304.00	82.10	261.80	8,787.93	-897.17	-742.19	959.99	8.41	8.13	2.19	
9,336.00	85.00	262.40	8,791.52	-901.54	-773.68	991.47	9.25	9.06	1.88	
9,368.00	86.90	262.80	8,793.78	-905.65	-805.33	1,023.03	6.07	5.94	1.25	
9,400.00	88.50	262.80	8,795.06	-909.65	-837.05	1,054.63	5.00	5.00	0.00	
9,432.00	89.90	263.00	8,795.51	-913.61	-868.80	1,086.25	4.42	4.38	0.63	
9,464.00	90.20	262.80	8,795.48	-917.56	-900.56	1,117.87	1.13	0.94	-0.63	
9,559.00	91.70	262.50	8,793.91	-929.71	-994.76	1,211.79	1.61	1.58	-0.32	
9,655.00	91.70	261.60	8,791.06	-942.99	-1,089.79	1,306.82	0.94	0.00	-0.94	
9,750.00	90.20	261.50	8,789.49	-956.94	-1,183.75	1,400.99	1.58	-1.58	-0.11	
9,846.00	91.10	261.20	8,788.40	-971.38	-1,278.65	1,496.21	0.99	0.94	-0.31	
9,942.00	89.70	261.20	8,787.73	-986.07	-1,373.51	1,591.46	1.46	-1.46	0.00	
10,038.00	90.30	260.60	8,787.73	-1,001.25	-1,468.31	1,686.78	0.88	0.63	-0.63	
10,133.00	89.50	262.00	8,787.89	-1,015.62	-1,562.21	1,781.02	1.70	-0.84	1.47	
10,229.00	90.30	261.60	8,788.06	-1,029.31	-1,657.23	1,876.14	0.93	0.83	-0.42	
10,325.00	90.40	262.10	8,787.47	-1,042.92	-1,752.25	1,971.26	0.53	0.10	0.52	
10,420.00	91.80	261.60	8,785.65	-1,056.39	-1,846.28	2,065.36	1.56	1.47	-0.53	

Archer

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 5H
Project:	Eddy County, NM	TVD Reference:	3401'GL+18'KB @ 3419.00usft (Planning)
Site:	Salada Vista 36 State 5H	MD Reference:	3401'GL+18'KB @ 3419.00usft (Planning)
Well:	5H	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)	
10,516.00	91.00	262.50	8,783.30	-1,069.66	-1,941.32	2,160.40	1.25	-0.83	0.94	
10,612.00	89.40	264.40	8,782.97	-1,080.61	-2,036.69	2,255.11	2.59	-1.67	1.98	
10,707.00	91.60	264.50	8,782.14	-1,089.80	-2,131.23	2,348.54	2.32	2.32	0.11	
10,803.00	92.10	263.70	8,779.04	-1,099.66	-2,226.67	2,443.02	0.98	0.52	-0.83	
10,899.00	93.00	265.10	8,774.77	-1,109.02	-2,322.12	2,537.37	1.73	0.94	1.46	
10,931.00	93.40	265.10	8,772.98	-1,111.75	-2,353.95	2,568.73	1.25	1.25	0.00	
11,027.00	92.80	264.70	8,767.79	-1,120.27	-2,449.43	2,662.88	0.75	-0.63	-0.42	
11,122.00	91.00	266.00	8,764.64	-1,127.96	-2,544.06	2,755.98	2.34	-1.89	1.37	
11,185.00	91.10	266.40	8,763.49	-1,132.14	-2,606.91	2,817.56	0.65	0.16	0.63	
11,280.00	92.40	266.30	8,760.59	-1,138.18	-2,701.67	2,910.34	1.37	1.37	-0.11	
11,377.00	91.50	266.20	8,757.29	-1,144.52	-2,798.41	3,005.10	0.93	-0.93	-0.10	
11,414.00	91.80	266.10	8,756.22	-1,147.01	-2,835.31	3,041.27	0.85	0.81	-0.27	
11,509.00	88.70	265.80	8,755.81	-1,153.72	-2,930.06	3,134.22	3.28	-3.26	-0.32	
11,604.00	89.60	265.80	8,757.21	-1,160.67	-3,024.79	3,227.22	0.95	0.95	0.00	
11,699.00	90.90	265.50	8,756.80	-1,167.88	-3,119.51	3,320.28	1.40	1.37	-0.32	
11,794.00	92.70	265.20	8,753.82	-1,175.58	-3,214.15	3,413.40	1.92	1.89	-0.32	
11,889.00	92.60	264.00	8,749.42	-1,184.51	-3,308.63	3,506.69	1.27	-0.11	-1.26	
11,983.00	91.10	263.80	8,746.39	-1,194.49	-3,402.04	3,599.26	1.61	-1.60	-0.21	
12,078.00	92.00	264.00	8,743.82	-1,204.58	-3,496.47	3,692.83	0.97	0.95	0.21	
12,173.00	90.90	264.10	8,741.42	-1,214.42	-3,590.93	3,786.36	1.16	-1.16	0.11	
12,268.00	92.80	264.10	8,738.35	-1,224.18	-3,685.37	3,879.85	2.00	2.00	0.00	
12,363.00	92.50	265.40	8,733.96	-1,232.87	-3,779.87	3,973.10	1.40	-0.32	1.37	
12,458.00	93.80	265.20	8,728.74	-1,240.64	-3,874.40	4,066.14	1.38	1.37	-0.21	
12,553.00	92.40	265.40	8,723.60	-1,248.41	-3,968.94	4,159.18	1.49	-1.47	0.21	
12,648.00	93.40	266.50	8,718.79	-1,255.11	-4,063.58	4,252.02	1.56	1.05	1.16	
12,742.00	91.90	267.60	8,714.45	-1,259.95	-4,157.35	4,343.52	1.98	-1.60	1.17	
12,774.00	91.80	268.60	8,713.41	-1,261.01	-4,189.32	4,374.54	3.14	-0.31	3.13	
12,869.00	90.30	268.60	8,711.67	-1,263.33	-4,284.27	4,466.48	1.58	-1.58	0.00	
12,964.00	88.40	267.20	8,712.75	-1,266.81	-4,379.19	4,558.72	2.48	-2.00	-1.47	
13,058.00	87.10	266.40	8,716.44	-1,272.05	-4,472.97	4,650.33	1.62	-1.38	-0.85	
13,153.00	88.00	266.20	8,720.50	-1,278.17	-4,567.69	4,743.09	0.97	0.95	-0.21	
13,248.00	89.70	267.20	8,722.41	-1,283.64	-4,662.51	4,835.76	2.08	1.79	1.05	
13,343.00	91.60	266.70	8,721.33	-1,288.70	-4,757.36	4,928.36	2.07	2.00	-0.53	
13,438.00	90.90	268.00	8,719.26	-1,293.09	-4,852.23	5,020.79	1.55	-0.74	1.37	
13,533.00	92.90	267.90	8,716.11	-1,296.48	-4,947.12	5,112.96	2.11	2.11	-0.11	
13,680.00	92.90	267.90	8,708.67	-1,301.86	-5,093.83	5,255.51	0.00	0.00	0.00	

Archer

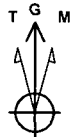
Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well 5H
Project:	Eddy County, NM	TVD Reference:	3401'GL+18'KB @ 3419.00usft (Planning)
Site:	Salada Vista 36 State 5H	MD Reference:	3401'GL+18'KB @ 3419.00usft (Planning)
Well:	5H	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									
Salada Vista 36-5H Surf.	0.00	0.00	0.00	0.00	0.00	587,506.40	628,545.40	32° 36' 52.08 N	103° 54' 57.09 W
- actual wellpath hits target center									
- Point									
Salada Vista 36-5H BHL	0.00	0.01	8,708.67	-1,301.86	-5,093.83	586,204.54	623,451.58	32° 36' 39.39 N	103° 55' 56.70 W
- actual wellpath hits target center									
- Point									

COG OPERATING, LLC

Field: Eddy County, NM
Site: Salada Vista 36 State 5H
Well: 5H
Wellbore: Lateral
Plan: Surveys



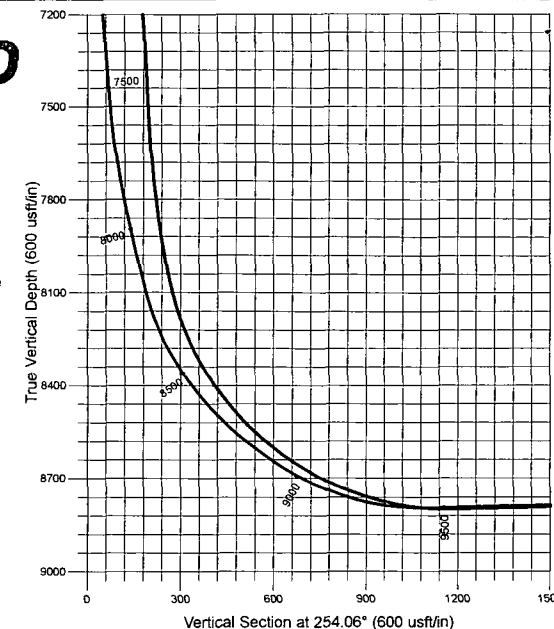
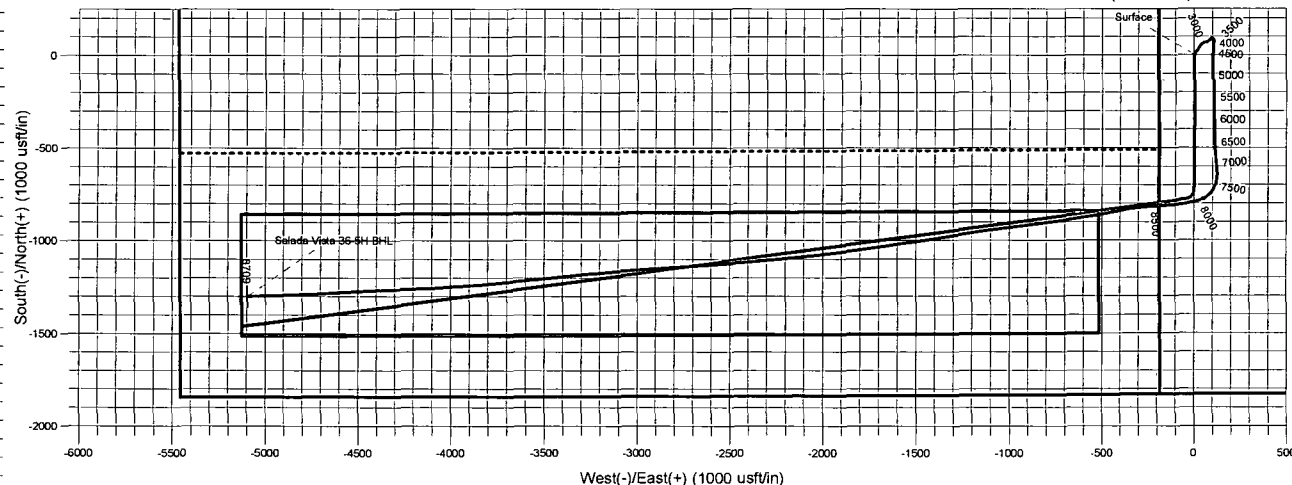
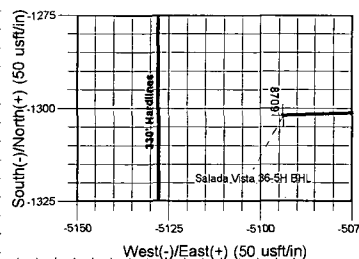
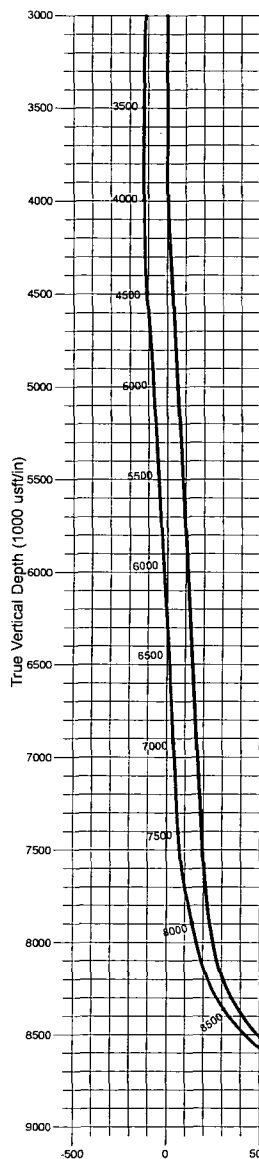
Azimuths to Grid North
True North: -0.23°
Magnetic North: 7.19°

Magnetic Field
Strength: 48524.7 nT
Dip Angle: 60.42°
Date: 5/6/2014
Model: IGRF2010



TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Salada Vista 36-5H Surface	0.00	0.00	0.00	587506.40	628545.40	32° 36' 52.08 N	103° 54' 57.09 W	Point
Salada Vista 36-5H BHL	8708.67	-1301.86	-5093.83	586204.54	623451.57	32° 36' 39.39 N	103° 55' 56.70 W	Point



LEGEND

- 5H, Lateral, Plan #3a V0
- Surveys

Archer

ARCHER DIRECTIONAL DRILLING SERVICES
12101 Cutten Rd. Houston, Texas 77066
Phone: 281-301-2600 Fax: 281-301-2795

Design: Surveys (5H/Lateral)
Created By: Ivonne Gonzalez
Date: 11:18, May 27 2014