



NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 16 2015

RECEIVED

30 015 42978

I Geof Davis certify that I am employed by Vaughn Energy Services. That I did on the day(s) of 08/13/15 through 08/13/15 conduct or supervise the taking of a HA Gyro survey from a depth of 0 feet to a depth of 1133 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Vaughn Energy Services, that I am authorized and qualified to make this report; that this survey was conducted at the request of Concho Oil & Gas for the Bradley 8 Fee No Well # DD8H API # 30-015-42978 in Eddy County / Parish New Mexico; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Vaughn Energy Services

A handwritten signature in black ink, appearing to read "Geof Davis", is written over a horizontal line.

Geof Davis
Service Technician
Vaughn Energy Services



NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 16 2015

RECEIVED

August 19, 2015

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

Attn: Kanicia Castillo

RE: **Bradley 8 Fee No 008H**

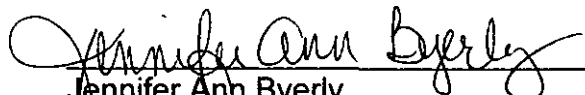
Please find enclosed a copy of the survey from 0' to 1133' ran on the above referenced well.

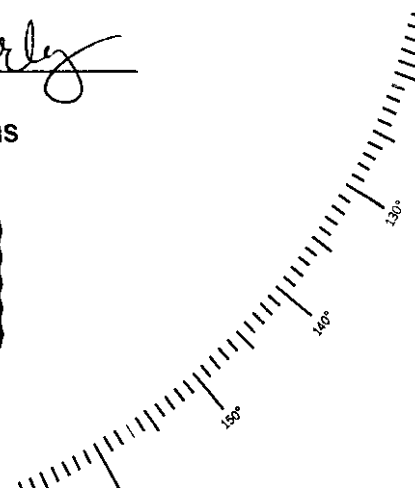
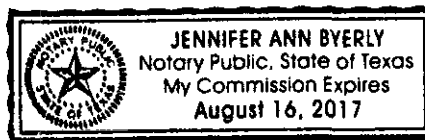
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

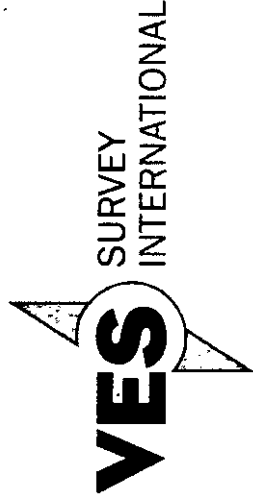
This instrument was acknowledged before me on the 19 day of August, A.D., 2015, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





Company: Concho Oil & Gas
Well: Bradley 8 Fee No 008H



Rig Name: Silver Oak 3
State/County: New Mexico/Eddy
VS-Azi: 0.00 Degrees
Latitude: 32.66825, Longitude: -104.39583
Grid North = True North +0.03 degs (NAD 27)
Grid Correction Applied = +0.03 degs

Depth Reference : RKB = 18 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: eline gyro-de_01.ut
Minimum Curvature Method
Report Date/Time: 8/19/2015 / 14:35

VES Survey International
Midland, Texas
432-563-6444

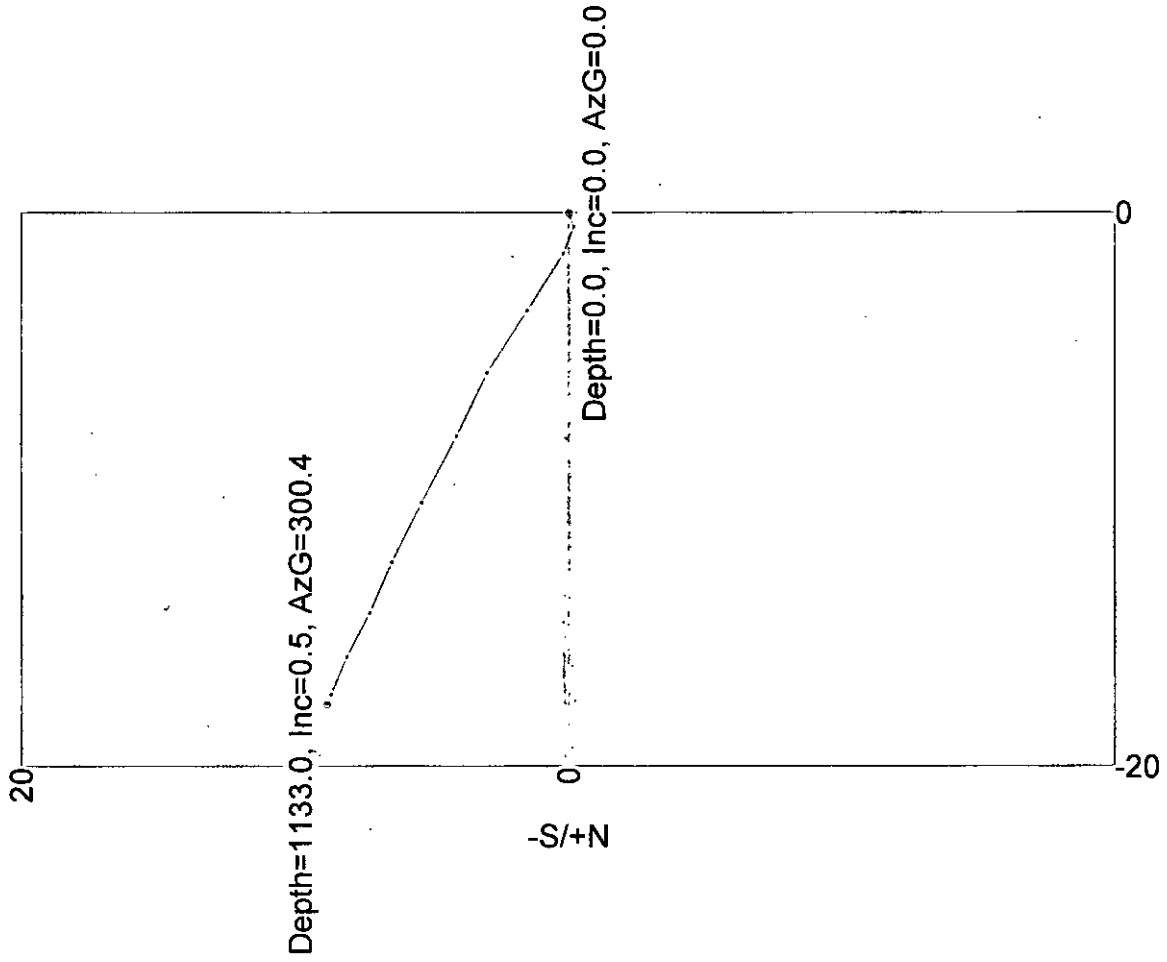
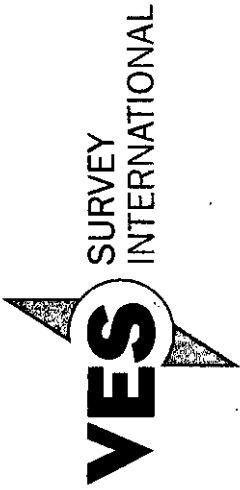
Surveyor: Geof Davis

Bradley 8 Fee No 008H / API 30-015-42978

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	0.19	252.18	100.00	-0.05	-0.15	-0.05	0.16	252.18	0.19
200.00	0.24	246.35	200.00	-0.18	-0.50	-0.18	0.54	249.86	0.06
300.00	1.05	300.40	299.99	0.19	-1.49	0.19	1.50	277.40	0.93
400.00	1.74	304.37	399.96	1.51	-3.53	1.51	3.84	293.20	0.70
500.00	1.33	301.66	499.93	2.98	-5.77	2.98	6.50	297.30	0.41
600.00	1.59	291.32	599.89	4.09	-8.06	4.09	9.04	296.95	0.37
700.00	1.56	304.64	699.86	5.37	-10.47	5.37	11.77	297.17	0.37
800.00	1.23	286.58	799.83	6.46	-12.62	6.46	14.17	297.09	0.55
900.00	1.10	301.08	899.81	7.26	-14.47	7.26	16.18	296.64	0.32
1000.00	0.95	294.46	999.79	8.09	-16.04	8.09	17.96	296.77	0.19
1100.00	0.75	291.21	1099.78	8.67	-17.40	8.67	19.44	296.49	0.20
1133.00	0.55	300.43	1132.78	8.83	-17.74	8.83	19.82	296.46	0.69



VES Survey International
Midland, Texas
432-563-5444
Surveyor: Geof Davis
Bradley 8 Fee No 008H / API 30-015-42978



VES Survey Date: 8/13/2015



PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288

NM OIL CONSERVATION
ARTESIA DISTRICT
NOV 16 2015

RECEIVED

August 24, 2015

COG, LLC
One Concho Center
600 W. Illinois Ave.
Midland, TX 79701

RE: Bradley 8 Fee #8H
190' FSL & 340' FEL
Sec. 8, T19S, R26E
Eddy County, New Mexico

Dear Sir,

The attached is the Deviation Survey for the above captioned well.

Very truly yours,

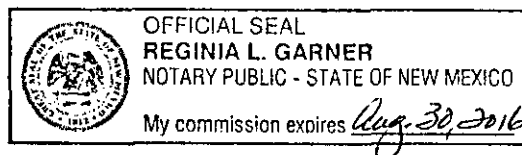
A handwritten signature in cursive script that reads "Chris Graham".

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 24th day of August, 2015.

A handwritten signature in cursive script that reads "Regina L. Garner".

Notary Public

BRADLEY 8 FEE #8H

Date	Depth	Deviation	Direction	TVD
8/13/2015	196	0.80	0.00	0.00
8/13/2015	371	1.90	0.00	0.00
8/13/2015	460	2.00	0.00	0.00
8/13/2015	581	1.60	0.00	0.00
8/13/2015	830	1.00	0.00	0.00
8/13/2015	1144	1.10	0.00	0.00
8/15/2015	1227	0.70	300.60	0.00
8/15/2015	1321	3.10	181.80	0.00
8/16/2015	1415	1.40	215.10	0.00
8/16/2015	1510	4.00	197.60	0.00
8/16/2015	1605	7.80	184.60	0.00
8/16/2015	1700	10.20	179.70	0.00
8/17/2015	1795	10.30	172.50	1791.00
8/17/2015	1890	10.20	173.90	1884.00
8/17/2015	1985	10.30	167.00	1978.00
8/17/2015	2079	10.20	170.00	2070.00
8/17/2015	2174	9.90	169.60	2164.00
8/17/2015	2269	6.50	166.00	0.00
8/17/2015	2364	3.40	179.40	0.00
8/17/2015	2435	1.70	188.50	0.00
8/17/2015	2456	1.20	192.70	0.00
8/17/2015	2488	0.40	239.20	0.00
8/17/2015	2519	2.60	347.70	0.00
8/17/2015	2551	5.40	351.30	0.00
8/18/2015	2583	8.50	353.00	2571.00
8/18/2015	2646	14.20	353.40	2664.00
8/18/2015	2710	20.40	357.60	2694.00
8/18/2015	2773	26.40	357.70	2752.00
8/18/2015	2836	33.30	357.40	2806.00
8/18/2015	2899	38.90	358.60	2857.00
8/18/2015	2992	46.50	358.00	0.00
8/18/2015	3024	49.00	357.80	0.00
8/18/2015	3056	51.20	357.90	0.00
8/18/2015	3087	53.70	358.80	0.00
8/18/2015	3119	56.30	359.50	0.00
8/18/2015	3150	59.10	0.20	0.00
8/18/2015	3371	83.90	0.00	0.00
8/18/2015	3403	87.60	0.00	0.00
8/18/2015	3435	89.20	359.00	0.00
8/18/2015	3529	90.20	358.50	0.00
8/18/2015	3642	90.90	358.00	0.00
8/18/2015	3719	89.50	358.70	0.00

8/19/2015	3812	90.40	358.50	3095.00
8/19/2015	3908	91.40	358.30	3094.00
8/19/2015	4003	89.90	358.20	3093.00
8/19/2015	4098	90.60	357.90	3092.00
8/19/2015	4192	91.40	357.60	3091.00
8/19/2015	4292	90.20	358.00	0.00
8/19/2015	4386	91.10	358.10	0.00
8/19/2015	4480	90.30	358.30	0.00
8/20/2015	4575	90.30	358.40	0.00
8/20/2015	4670	90.60	358.50	0.00
8/20/2015	4764	90.90	358.50	0.00
8/20/2015	4859	89.70	358.80	0.00
8/20/2015	4954	90.00	358.60	0.00
8/20/2015	5049	90.00	358.60	0.00
8/20/2015	5144	90.20	358.50	0.00
8/20/2015	5239	90.20	358.40	0.00
8/20/2015	5335	91.10	359.40	0.00
8/21/2015	5429	91.20	359.30	0.00
8/21/2015	5524	91.30	359.20	0.00
8/21/2015	5619	91.90	359.60	0.00
8/21/2015	5713	91.10	359.30	0.00
8/21/2015	5807	89.90	358.90	0.00
8/21/2015	5902	90.20	358.90	0.00
8/21/2015	5997	90.60	359.10	0.00
8/21/2015	6092	91.20	359.40	0.00
8/21/2015	6186	90.00	359.90	0.00
8/21/2015	6281	89.70	358.60	0.00
8/21/2015	6376	89.50	358.10	0.00
8/21/2015	6470	89.70	357.90	0.00
8/22/2015	6565	90.20	375.60	0.00
8/22/2015	6660	90.60	357.20	0.00
8/22/2015	6755	91.10	358.60	0.00
8/22/2015	6849	91.70	358.70	0.00
8/22/2015	6944	90.40	358.90	0.00
8/22/2015	7038	90.60	358.90	0.00
8/22/2015	7133	91.20	358.90	0.00
8/22/2015	7228	90.10	359.90	0.00
8/22/2015	7323	90.50	0.20	0.00
8/22/2015	7417	90.00	359.70	0.00
8/22/2015	7512	90.00	358.40	0.00
8/22/2015	7606	90.50	358.50	0.00
8/22/2015	7695	90.80	357.90	0.00

EOF



NM OIL CONSERVATION
ARTESIA DISTRICT
NOV 16 2015

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COG Operating LLC

Eddy County, NM (NAD27 NME)

Bradley 8 Fee

#8H

OH / Job #1514107

Design: Surveys (Silver Oak 3)

Standard Survey Report

23 August, 2015





Phoenix Technology Services LP
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #8H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3382.00usft (Silver Oak 3)
Site:	Bradley 8 Fee	MD Reference:	KB @ 3382.00usft (Silver Oak 3)
Well:	#8H	North Reference:	Grid
Wellbore:	OH / Job #1514107	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	Compass 5000 GCR

Project	Eddy County, NM (NAD27 NME)		
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	Bradley 8 Fee				
Site Position:		Northing:	606,797.50 usft	Latitude:	32° 40' 5.40482 N
From:	Map	Easting:	478,847.80 usft	Longitude:	104° 24' 7.45386 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.04 °

Well	#8H					
Well Position	+N/-S	0.00 usft	Northing:	606,825.70 usft	Latitude:	32° 40' 5.69562 N
	+E/-W	0.00 usft	Easting:	480,767.20 usft	Longitude:	104° 23' 44.99953 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,364.00 usft

Wellbore	OH / Job #1514107				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/5/2015	7.62	60.53	48,426

Design	Surveys (Silver Oak 3)				
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	358.67

Survey Program	Date	8/23/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	1,133.00	VES Gyro Survey (OH / Job #1514107)	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,227.00	7,750.00	Phoenix MWD Survey (OH / Job #1514107)	PHX+MWD+HDGM	PHX+MWD+HDGM	

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	0.19	252.18	100.00	-0.05	-0.16	-0.05	0.19	0.19	0.00	
200.00	0.24	246.35	200.00	-0.19	-0.51	-0.17	0.05	0.05	-5.83	
300.00	1.05	300.40	299.99	0.19	-1.49	0.23	0.93	0.81	54.05	
400.00	1.74	304.37	399.96	1.51	-3.53	1.60	0.70	0.69	3.97	
500.00	1.33	301.66	499.93	2.98	-5.77	3.11	0.42	-0.41	-2.71	
600.00	1.59	291.32	599.89	4.09	-8.05	4.28	0.37	0.26	-10.34	
700.00	1.56	304.64	699.86	5.37	-10.47	5.61	0.37	-0.03	13.32	
800.00	1.23	286.58	799.83	6.45	-12.62	6.74	0.55	-0.33	-18.06	
900.00	1.10	301.08	899.81	7.25	-14.47	7.59	0.32	-0.13	14.50	



Phoenix Technology Services LP
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #8H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3382.00usft (Silver Oak 3)
Site:	Bradley 8 Fee	MD Reference:	KB @ 3382.00usft (Silver Oak 3)
Well:	#8H	North Reference:	Grid
Wellbore:	OH / Job #1514107	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	Compass 5000 GCR

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)
1,000.00	0.95	294.46	999.79	8.09	-16.04	8.46	0.19	-0.15	-6.62
1,100.00	0.75	291.21	1,099.78	8.67	-17.41	9.08	0.21	-0.20	-3.25
1,133.00	0.55	300.43	1,132.78	8.83	-17.75	9.24	0.68	-0.61	27.94
Tie-on to VES Gyro Survey									
1,227.00	0.70	300.60	1,226.77	9.35	-18.63	9.78	0.16	0.16	0.18
First Phoenix MWD Survey									
1,321.00	3.10	181.80	1,320.73	7.10	-19.20	7.55	3.71	2.55	-126.38
1,415.00	1.40	215.10	1,414.66	3.62	-19.94	4.09	2.21	-1.81	35.43
1,510.00	4.00	197.60	1,509.54	-0.49	-21.61	0.02	2.84	2.74	-18.42
1,605.00	7.80	184.60	1,604.03	-10.07	-23.13	-9.53	4.22	4.00	-13.68
1,700.00	10.20	179.70	1,697.85	-24.91	-23.61	-24.36	2.65	2.53	-5.16
1,795.00	10.30	172.50	1,791.34	-41.75	-22.45	-41.21	1.35	0.11	-7.58
1,890.00	10.20	173.90	1,884.82	-58.53	-20.45	-58.04	0.28	-0.11	1.47
1,985.00	10.30	167.00	1,978.31	-75.17	-17.65	-74.74	1.30	0.11	-7.26
2,079.00	10.20	170.00	2,070.81	-91.55	-14.31	-91.20	0.58	-0.11	3.19
2,174.00	9.90	169.60	2,164.35	-107.87	-11.37	-107.58	0.32	-0.32	-0.42
2,269.00	6.50	166.00	2,258.37	-121.12	-8.60	-120.89	3.62	-3.58	-3.79
2,364.00	3.40	179.40	2,353.01	-129.16	-7.27	-128.96	3.46	-3.26	14.11
2,435.00	1.70	188.50	2,423.93	-132.31	-7.40	-132.10	2.45	-2.39	12.82
2,456.00	1.20	192.70	2,444.93	-132.83	-7.50	-132.62	2.43	-2.38	20.00
2,488.00	0.40	239.20	2,476.92	-133.21	-7.67	-133.00	3.03	-2.50	145.31
2,519.00	2.60	347.70	2,507.91	-132.58	-7.91	-132.36	8.88	7.10	350.00
2,551.00	5.40	351.30	2,539.83	-130.39	-8.29	-130.16	8.78	8.75	11.25
2,583.00	8.50	353.00	2,571.59	-126.55	-8.81	-126.31	9.71	9.69	5.31
2,614.00	11.60	353.10	2,602.11	-121.18	-9.46	-120.93	10.00	10.00	0.32
2,646.00	14.20	353.40	2,633.30	-114.09	-10.30	-113.82	8.13	8.13	0.94
2,678.00	17.10	355.10	2,664.11	-105.50	-11.15	-105.21	9.17	9.06	5.31
2,710.00	20.40	357.60	2,694.41	-95.23	-11.79	-94.93	10.61	10.31	7.81
2,741.00	23.30	358.20	2,723.18	-83.71	-12.21	-83.40	9.38	9.35	1.94
2,773.00	26.40	357.70	2,752.22	-70.27	-12.69	-69.95	9.71	9.69	-1.56
2,805.00	30.10	357.20	2,780.40	-55.14	-13.37	-54.81	11.59	11.56	-1.56
2,836.00	33.30	357.40	2,806.77	-38.87	-14.13	-38.53	10.33	10.32	0.65
2,867.00	36.00	358.30	2,832.27	-21.26	-14.79	-20.91	8.86	8.71	2.90
2,899.00	38.90	358.60	2,857.67	-1.81	-15.32	-1.45	9.08	9.06	0.94
2,930.00	41.50	358.20	2,881.35	18.19	-15.88	18.55	8.43	8.39	-1.29
2,961.00	43.90	358.00	2,904.13	39.20	-16.57	39.57	7.75	7.74	-0.65
2,992.00	46.50	358.00	2,925.97	61.18	-17.34	61.57	8.39	8.39	0.00
3,024.00	49.00	357.80	2,947.48	84.85	-18.21	85.25	7.83	7.81	-0.63
3,056.00	51.20	357.90	2,968.01	109.38	-19.13	109.79	6.88	6.88	0.31
3,087.00	53.70	358.80	2,986.90	133.94	-19.84	134.37	8.39	8.06	2.90
3,119.00	56.30	359.50	3,005.25	160.15	-20.22	160.58	8.32	8.13	2.19
3,150.00	59.10	0.20	3,021.82	186.35	-20.29	186.77	9.23	9.03	2.26
3,182.00	62.00	0.80	3,037.55	214.21	-20.04	214.62	9.21	9.06	1.88



Phoenix Technology Services LP
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #8H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3382.00usft (Silver Oak 3)
Site:	Bradley 8 Fee	MD Reference:	KB @ 3382.00usft (Silver Oak 3)
Well:	#8H	North Reference:	Grid
Wellbore:	OH / Job #1514107	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	Compass 5000 GCR

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)
3,214.00	65.80	1.50	3,051.63	242.94	-19.46	243.33	12.04	11.88	2.19
3,245.00	69.00	2.50	3,063.54	271.54	-18.46	271.89	10.74	10.32	3.23
3,277.00	72.30	3.00	3,074.14	301.69	-17.01	302.00	10.42	10.31	1.56
3,308.00	76.20	2.70	3,082.55	331.48	-15.53	331.75	12.62	12.58	-0.97
3,339.00	80.30	1.90	3,088.86	361.80	-14.31	362.04	13.46	13.23	-2.58
3,371.00	83.90	1.30	3,093.26	393.48	-13.43	393.69	11.40	11.25	-1.88
3,403.00	87.60	359.70	3,095.63	425.39	-13.15	425.58	12.59	11.56	-5.00
3,435.00	89.20	359.00	3,096.53	457.37	-13.51	457.56	5.46	5.00	-2.19
3,529.00	90.20	358.50	3,097.02	551.34	-15.57	551.56	1.19	1.06	-0.53
3,624.00	90.90	358.00	3,096.11	646.30	-18.47	646.55	0.91	0.74	-0.53
3,719.00	89.50	358.70	3,095.77	741.25	-21.20	741.54	1.65	-1.47	0.74
3,812.00	90.40	358.50	3,095.86	834.22	-23.47	834.54	0.99	0.97	-0.22
3,908.00	91.40	358.30	3,094.35	930.17	-26.15	930.53	1.06	1.04	-0.21
4,003.00	89.90	358.20	3,093.27	1,025.12	-29.05	1,025.52	1.58	-1.58	-0.11
4,098.00	90.60	357.90	3,092.86	1,120.06	-32.29	1,120.51	0.80	0.74	-0.32
4,192.00	91.40	357.60	3,091.21	1,213.98	-35.98	1,214.48	0.91	0.85	-0.32
4,292.00	90.20	358.00	3,089.82	1,313.89	-39.82	1,314.46	1.26	-1.20	0.40
4,386.00	91.10	358.10	3,088.75	1,407.83	-43.01	1,408.45	0.96	0.96	0.11
4,481.00	90.30	358.30	3,087.59	1,502.77	-46.00	1,503.44	0.87	-0.84	0.21
4,575.00	90.30	358.40	3,087.10	1,596.73	-48.70	1,597.43	0.11	0.00	0.11
4,670.00	90.60	358.50	3,086.35	1,691.70	-51.27	1,692.43	0.33	0.32	0.11
4,764.00	90.90	358.50	3,085.12	1,785.66	-53.73	1,786.42	0.32	0.32	0.00
4,859.00	89.70	358.80	3,084.63	1,880.63	-55.97	1,881.42	1.30	-1.26	0.32
4,954.00	90.00	358.60	3,084.87	1,975.60	-58.13	1,976.42	0.38	0.32	-0.21
5,049.00	90.00	358.60	3,084.87	2,070.57	-60.45	2,071.42	0.00	0.00	0.00
5,144.00	90.20	358.50	3,084.71	2,165.54	-62.85	2,166.42	0.24	0.21	-0.11
5,239.00	90.20	358.40	3,084.38	2,260.51	-65.42	2,261.42	0.11	0.00	-0.11
5,335.00	91.10	359.40	3,083.29	2,356.48	-67.26	2,357.41	1.40	0.94	1.04
5,429.00	91.20	359.30	3,081.40	2,450.46	-68.33	2,451.38	0.15	0.11	-0.11
5,524.00	91.30	359.20	3,079.33	2,545.42	-69.57	2,546.35	0.15	0.11	-0.11
5,619.00	91.90	359.60	3,076.68	2,640.38	-70.57	2,641.31	0.76	0.63	0.42
5,713.00	91.10	359.30	3,074.22	2,734.34	-71.47	2,735.27	0.91	-0.85	-0.32
5,807.00	89.90	358.90	3,073.40	2,828.33	-72.95	2,829.26	1.35	-1.28	-0.43
5,902.00	90.20	358.90	3,073.31	2,923.31	-74.77	2,924.26	0.32	0.32	0.00
5,997.00	90.60	359.10	3,072.65	3,018.29	-76.43	3,019.25	0.47	0.42	0.21
6,092.00	91.20	359.40	3,071.16	3,113.27	-77.67	3,114.24	0.71	0.63	0.32
6,186.00	90.00	359.50	3,070.17	3,207.26	-78.57	3,208.22	1.28	-1.28	0.11
6,281.00	89.70	358.60	3,070.42	3,302.25	-80.15	3,303.22	1.00	-0.32	-0.95
6,376.00	89.50	358.10	3,071.08	3,397.20	-82.88	3,398.21	0.57	-0.21	-0.53
6,470.00	89.70	357.90	3,071.74	3,491.14	-86.17	3,492.20	0.30	0.21	-0.21
6,565.00	90.20	357.60	3,071.82	3,586.07	-89.89	3,587.19	0.61	0.53	-0.32
6,660.00	90.60	357.20	3,071.16	3,680.97	-94.20	3,682.17	0.60	0.42	-0.42
6,755.00	91.10	358.60	3,069.75	3,775.89	-97.68	3,777.14	1.56	0.53	1.47
6,849.00	91.70	358.70	3,067.45	3,869.84	-99.90	3,871.12	0.65	0.64	0.11



Phoenix Technology Services LP
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #8H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3382.00usft (Silver Oak 3)
Site:	Bradley 8 Fee	MD Reference:	KB @ 3382.00usft (Silver Oak 3)
Well:	#8H	North Reference:	Grid
Wellbore:	OH / Job #1514107	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	Compass 5000 GCR

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)
6,944.00	90.40	358.90	3,065.71	3,964.80	-101.89	3,966.10	1.38	-1.37	0.21
7,038.00	90.60	358.90	3,064.89	4,058.78	-103.69	4,060.09	0.21	0.21	0.00
7,133.00	91.20	358.90	3,083.40	4,153.75	-105.52	4,155.08	0.63	0.63	0.00
7,228.00	90.10	359.90	3,062.32	4,248.74	-106.51	4,250.06	1.56	-1.16	1.05
7,323.00	90.50	0.20	3,061.83	4,343.73	-106.43	4,345.03	0.53	0.42	0.32
7,417.00	90.00	359.70	3,061.42	4,437.73	-106.51	4,439.01	0.75	-0.53	-0.53
7,512.00	90.00	358.40	3,061.42	4,532.72	-108.08	4,534.01	1.37	0.00	-1.37
7,606.00	90.50	358.50	3,061.01	4,626.68	-110.63	4,628.00	0.54	0.53	0.11
7,695.00	90.80	357.90	3,060.00	4,715.63	-113.42	4,716.99	0.75	0.34	-0.67
Final Phoenix MWD Survey									
7,750.00	90.80	357.90	3,059.23	4,770.59	-115.44	4,771.98	0.00	0.00	0.00
Projection to TD									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,133.00	1,132.78	8.83	-17.75	Tie-on to VES Gyro Survey
1,227.00	1,226.77	9.35	-18.63	First Phoenix MWD Survey
7,695.00	3,060.00	4,715.63	-113.42	Final Phoenix MWD Survey
7,750.00	3,059.23	4,770.59	-115.44	Projection to TD

Checked By: _____ Approved By: _____ Date: _____