

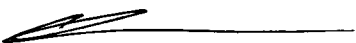


HOBBS OCD

JUL 20 2018

RECEIVED

I Chris Randall certify that I am employed by VES Survey International. That I did on the day(s) of 12/18/17 through 12/18/17 conduct or supervise the taking of a Rate Gyro survey from a depth of 0.00 feet to a depth of 2,184.00 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 COG/ Concho for the Zeppo 5 Fed Com Well # 25H API # 30-025-44141 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 VES Survey International.



Chris Randall
Service Technician
VES Survey International

HOBBS OCD

JUL 20 2018

RECEIVED

COG OPERATING, LLC

Lea County, NM (NAD27) NMEZ

Zeppo 5 Federal COM

#25H

OH

Design: OH

Standard Survey Report

03 January, 2018

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well #25H
Project:	Lea County, NM (NAD27) NMEZ	TVD Reference:	RKB @ 4118.00usft (Silver Oak 3 - KB=18')
Site:	Zeppo 5 Federal COM	MD Reference:	RKB @ 4118.00usft (Silver Oak 3 - KB=18')
Well:	#25H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14 Single User Db

Project:	Lea County, NM (NAD27) NMEZ		
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:	Zeppo 5 Federal COM			
Site Position:		Northing:	678,462.50 usft	Latitude: 32° 51' 50.294 N
From:	Map	Easting:	668,662.80 usft	Longitude: 103° 47' 2.548 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.30 °

Well:	#25H			
Well Position	+N/-S	0.00 usft	Northing:	678,459.60 usft
	+E/-W	0.00 usft	Easting:	667,828.00 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level: 4,100.00 usft

Wellbore:	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2015	12/11/17	7.05	60.61	48,239.33982436

Design:	OH			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	179.64

Survey Program	Date	01/03/18			
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
100.00	2,184.00	Survey #1 - Gyro (OH)	GYD_DP_MS	Gyrodata gyro-compassing and drop	
2,352.00	13,897.00	Survey #2 - VON MWD (OH)	MWD	MWD v3: standard declination	
13,950.00	13,950.00	Survey #3 - PTB (OH)	Projection	Projection	

Survey									
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate
(usft)	(°)	(°)	(usft)	(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
SHL(Z5FC#25H)									
100.00	0.18	41.44	100.00	0.12	0.10	-0.12	0.18	0.18	0.00
200.00	0.27	111.79	200.00	0.15	0.43	-0.15	0.27	0.09	70.35
300.00	0.36	142.60	300.00	-0.19	0.84	0.19	0.19	0.09	30.81
400.00	0.05	157.85	400.00	-0.48	1.04	0.49	0.31	-0.31	15.25
500.00	0.37	123.61	500.00	-0.70	1.33	0.71	0.33	0.32	-34.24
600.00	0.45	138.90	599.99	-1.17	1.86	1.18	0.13	0.08	15.29
700.00	0.32	138.18	699.99	-1.68	2.30	1.69	0.13	-0.13	-0.72

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well #25H
Project:	Lea County, NM (NAD27) NMEZ	TVD Reference:	RKB @ 4118.00usft (Silver Oak 3 - KB=18')
Site:	Zeppo 5 Federal COM	MD Reference:	RKB @ 4118.00usft (Silver Oak 3 - KB=18')
Well:	#25H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14 Single User.Db

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	0.32	163.71	799.99	-2.15	2.56	2.17	0.14	0.00	25.53
900.00	0.04	172.41	899.99	-2.46	2.65	2.47	0.28	-0.28	8.70
1,000.00	0.32	140.28	999.99	-2.70	2.83	2.72	0.29	0.28	-32.13
1,100.00	0.24	113.99	1,099.99	-3.00	3.20	3.02	0.15	-0.08	-26.29
1,200.00	0.12	120.34	1,199.99	-3.14	3.48	3.16	0.12	-0.12	6.35
1,300.00	0.33	149.58	1,299.99	-3.44	3.72	3.47	0.23	0.21	29.24
1,400.00	0.23	156.27	1,399.99	-3.88	3.95	3.90	0.11	-0.10	6.69
1,500.00	0.17	160.49	1,499.98	-4.20	4.08	4.23	0.06	-0.06	4.22
1,600.00	0.10	137.15	1,599.98	-4.40	4.18	4.43	0.09	-0.07	-23.34
1,700.00	0.21	133.85	1,699.98	-4.59	4.38	4.62	0.11	0.11	-3.30
1,800.00	0.19	89.54	1,799.98	-4.72	4.67	4.75	0.15	-0.02	-44.31
1,900.00	0.13	87.77	1,899.98	-4.71	4.95	4.75	0.06	-0.06	-1.77
2,000.00	0.37	93.50	1,999.98	-4.73	5.39	4.76	0.24	0.24	5.73
2,100.00	0.58	88.47	2,099.98	-4.74	6.22	4.77	0.21	0.21	-5.03
2,184.00	0.57	96.64	2,183.97	-4.77	7.06	4.82	0.10	-0.01	9.73
2,352.00	1.05	321.99	2,351.97	-3.66	6.94	3.70	0.90	0.29	-80.15
2,447.00	3.55	325.73	2,446.88	-0.54	4.75	0.57	2.63	2.63	3.94
2,542.00	3.44	328.44	2,541.70	4.32	1.60	-4.31	0.21	-0.12	2.85
2,637.00	3.26	325.66	2,636.54	8.98	-1.42	-8.99	0.26	-0.19	-2.93
2,732.00	3.17	326.44	2,731.39	13.40	-4.39	-13.42	0.11	-0.09	0.82
2,826.00	2.91	327.13	2,825.26	17.57	-7.12	-17.61	0.28	-0.28	0.73
2,921.00	2.79	329.79	2,920.14	21.59	-9.60	-21.65	0.19	-0.13	2.80
3,015.00	2.55	327.89	3,014.04	25.34	-11.86	-25.41	0.27	-0.26	-2.02
3,110.00	2.32	326.89	3,108.96	28.74	-14.03	-28.83	0.25	-0.24	-1.05
3,207.00	3.36	303.68	3,205.84	31.96	-17.47	-32.07	1.58	1.07	-23.93
3,302.00	3.32	300.95	3,300.68	34.92	-22.15	-35.06	0.17	-0.04	-2.87
3,397.00	3.48	305.53	3,395.51	38.01	-26.85	-38.18	0.33	0.17	4.82
3,492.00	3.55	318.97	3,490.33	41.90	-31.13	-42.10	0.87	0.07	14.15
3,586.00	3.36	321.51	3,584.16	46.26	-34.75	-46.47	0.26	-0.20	2.70
3,680.00	3.18	322.23	3,678.01	50.47	-38.07	-50.71	0.20	-0.19	0.77
3,775.00	3.08	322.69	3,772.87	54.59	-41.23	-54.84	0.11	-0.11	0.48
3,869.00	2.99	321.34	3,866.73	58.51	-44.29	-58.79	0.12	-0.10	-1.44
3,963.00	2.87	321.27	3,960.61	62.26	-47.29	-62.55	0.13	-0.13	-0.07
4,058.00	2.90	322.13	4,055.49	66.01	-50.26	-66.33	0.06	0.03	0.91
4,152.00	2.75	323.03	4,149.38	69.69	-53.07	-70.02	0.17	-0.16	0.96
4,247.00	2.64	324.70	4,244.27	73.30	-55.71	-73.64	0.14	-0.12	1.76
4,341.00	2.63	324.44	4,338.17	76.82	-58.21	-77.18	0.02	-0.01	-0.28
4,436.00	2.69	325.10	4,433.07	80.42	-60.75	-80.80	0.07	0.06	0.69
4,531.00	2.68	325.77	4,527.97	84.08	-63.28	-84.48	0.03	-0.01	0.71
4,625.00	2.71	326.74	4,621.86	87.76	-65.73	-88.17	0.06	0.03	1.03
4,720.00	3.95	309.91	4,716.70	91.74	-69.48	-92.17	1.65	1.31	-17.72
4,815.00	4.11	309.77	4,811.47	96.01	-74.60	-96.48	0.17	0.17	-0.15
4,910.00	3.52	323.12	4,906.26	100.52	-78.97	-101.02	1.12	-0.62	14.05

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well #25H
Project:	Lea County, NM (NAD27) NMEZ	TVD Reference:	RKB @ 4118.00usft (Silver Oak 3 - KB=18')
Site:	Zeppo 5 Federal COM	MD Reference:	RKB @ 4118.00usft (Silver Oak 3 - KB=18')
Well:	#25H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14 Single User Db

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)	
5,004.00	2.20	318.22	5,000.14	104.18	-81.90	-104.69	1.43	-1.40	-5.21	
5,098.00	2.07	316.07	5,094.07	106.75	-84.28	-107.27	0.16	-0.14	-2.29	
5,193.00	1.05	280.05	5,189.04	108.13	-86.33	-108.67	1.44	-1.07	-37.92	
5,288.00	0.58	155.10	5,284.03	107.85	-86.99	-108.39	1.54	-0.49	-131.53	
5,383.00	0.91	154.05	5,379.03	106.73	-86.45	-107.28	0.35	0.35	-1.11	
5,478.00	0.85	150.25	5,474.01	105.44	-85.77	-105.98	0.09	-0.06	-4.00	
5,509.00	0.99	149.86	5,505.01	105.01	-85.53	-105.55	0.45	0.45	-1.26	
5,541.00	2.32	167.63	5,537.00	104.14	-85.25	-104.68	4.41	4.16	55.53	
KOP: 5541.00' MD, 5537.00' TVD										
5,561.94	4.11	170.39	5,557.90	102.99	-85.03	-103.52	8.59	8.56	13.18	
KOP(Z7FC#25H)										
5,573.00	5.06	171.06	5,568.93	102.11	-84.89	-102.65	8.59	8.57	6.05	
5,604.00	8.39	172.32	5,599.71	98.52	-84.37	-99.05	10.75	10.74	4.06	
5,636.00	12.45	175.53	5,631.18	92.77	-83.79	-93.29	12.81	12.69	10.03	
5,668.00	16.50	175.88	5,662.15	84.79	-83.20	-85.31	12.66	12.66	1.09	
5,699.00	20.50	177.26	5,691.55	74.98	-82.62	-75.49	12.98	12.90	4.45	
5,731.00	24.30	178.33	5,721.13	62.79	-82.16	-63.31	11.94	11.88	3.34	
5,762.00	26.82	178.77	5,749.09	49.42	-81.83	-49.94	8.15	8.13	1.42	
5,793.00	29.09	179.65	5,776.47	34.89	-81.63	-35.41	7.44	7.32	2.84	
5,825.00	31.52	179.44	5,804.10	18.75	-81.50	-19.26	7.60	7.59	-0.66	
5,857.00	33.27	179.78	5,831.12	1.60	-81.39	-2.12	5.50	5.47	1.06	
5,888.00	35.77	180.17	5,856.66	-15.96	-81.38	15.45	8.10	8.06	1.26	
5,920.00	39.76	180.21	5,881.95	-35.56	-81.44	35.04	12.47	12.47	0.13	
5,951.00	43.19	180.06	5,905.17	-56.08	-81.49	55.57	11.07	11.06	-0.48	
5,983.00	43.99	179.69	5,928.35	-78.15	-81.44	77.63	2.62	2.50	-1.16	
6,013.00	44.15	179.52	5,949.90	-99.01	-81.30	98.50	0.66	0.53	-0.57	
6,044.00	44.36	179.72	5,972.11	-120.65	-81.16	120.13	0.81	0.68	0.65	
6,076.00	44.48	179.34	5,994.96	-143.04	-80.97	142.53	0.91	0.38	-1.19	
6,107.00	44.54	179.52	6,017.07	-164.77	-80.76	164.26	0.45	0.19	0.58	
6,139.00	44.66	179.27	6,039.85	-187.24	-80.52	186.73	0.66	0.38	-0.78	
6,171.00	45.68	179.24	6,062.41	-209.93	-80.22	209.42	3.19	3.19	-0.09	
6,202.00	48.87	179.65	6,083.44	-232.70	-80.01	232.19	10.34	10.29	1.32	
6,234.00	52.71	178.64	6,103.67	-257.49	-79.63	256.98	12.25	12.00	-3.16	
6,265.00	56.14	178.24	6,121.70	-282.69	-78.94	282.19	11.11	11.06	-1.29	
6,297.00	59.96	179.20	6,138.63	-309.83	-78.34	309.33	12.21	11.94	3.00	
6,328.00	62.51	179.01	6,153.55	-337.00	-77.91	336.50	8.24	8.23	-0.61	
6,360.00	64.69	179.06	6,167.78	-365.65	-77.43	365.16	6.81	6.81	0.16	
6,391.00	68.12	179.68	6,180.18	-394.06	-77.12	393.56	11.22	11.06	2.00	
6,423.00	71.92	180.02	6,191.11	-424.13	-77.04	423.63	11.92	11.88	1.06	
6,454.00	76.14	179.72	6,199.64	-453.92	-76.98	453.43	13.64	13.61	-0.97	
6,486.00	79.79	179.65	6,206.31	-485.21	-76.80	484.72	11.41	11.41	-0.22	
6,497.95	80.74	179.27	6,208.33	-496.99	-76.69	496.50	8.55	7.97	-3.14	
PP(Z5FC#25H)										
6,517.00	82.26	178.68	6,211.15	-515.83	-76.36	515.34	8.55	7.97	-3.12	

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well #25H
Project:	Lea County, NM (NAD27) NMEZ	TVD Reference:	RKB @ 4118.00usft (Silver Oak 3 - KB=18')
Site:	Zeppo 5 Federal COM	MD Reference:	RKB @ 4118.00usft (Silver Oak 3 - KB=18')
Well:	#25H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14 Single User Db

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)
EOC: 6517.00' MD, 6211.15' TVD, 82.26° INC, 178.68° AZ, 515.34' VS									
6,549.00	84.71	178.52	6,214.78	-547.61	-75.58	547.12	7.67	7.66	-0.50
6,581.00	86.74	178.34	6,217.16	-579.51	-74.71	579.03	6.37	6.34	-0.56
6,613.00	87.51	178.33	6,218.77	-611.45	-73.78	610.98	2.41	2.41	-0.03
6,644.00	89.64	178.65	6,219.54	-642.43	-72.96	641.96	6.95	6.87	1.03
6,708.00	91.09	179.16	6,219.13	-706.42	-71.74	705.95	2.40	2.27	0.80
6,802.00	92.32	179.11	6,216.34	-800.36	-70.32	799.90	1.31	1.31	-0.05
6,896.00	91.55	179.49	6,213.16	-894.30	-69.17	893.85	0.91	-0.82	0.40
6,931.00	89.53	179.39	6,212.83	-929.29	-68.83	928.84	5.78	-5.77	-0.29
6,994.00	88.50	180.12	6,213.92	-992.28	-68.56	991.83	2.00	-1.63	1.16
7,026.00	88.29	179.89	6,214.81	-1,024.27	-68.56	1,023.82	0.97	-0.66	-0.72
7,120.00	89.66	179.48	6,216.49	-1,118.25	-68.05	1,117.80	1.52	1.46	-0.44
7,215.00	89.43	179.70	6,217.25	-1,213.25	-67.37	1,212.80	0.34	-0.24	0.23
7,310.00	89.44	179.49	6,218.18	-1,308.24	-66.69	1,307.79	0.22	0.01	-0.22
7,404.00	89.34	180.10	6,219.18	-1,402.23	-66.36	1,401.79	0.66	-0.11	0.65
7,499.00	89.20	180.69	6,220.40	-1,497.22	-67.01	1,496.77	0.64	-0.15	0.62
7,594.00	88.95	181.01	6,221.93	-1,592.20	-68.42	1,591.74	0.43	-0.26	0.34
7,689.00	88.94	181.19	6,223.68	-1,687.17	-70.25	1,686.69	0.19	-0.01	0.19
7,784.00	88.72	179.63	6,225.62	-1,782.14	-70.93	1,781.66	1.66	-0.23	-1.64
7,879.00	88.67	179.86	6,227.78	-1,877.11	-70.50	1,876.63	0.25	-0.05	0.24
7,973.00	88.24	179.78	6,230.32	-1,971.08	-70.21	1,970.60	0.47	-0.46	-0.09
8,067.00	89.68	179.49	6,232.02	-2,065.06	-69.61	2,064.58	1.56	1.53	-0.31
8,162.00	89.92	179.59	6,232.35	-2,160.06	-68.85	2,159.58	0.27	0.25	0.11
8,258.00	89.89	180.21	6,232.51	-2,256.06	-68.68	2,255.58	0.65	-0.03	0.65
8,352.00	89.97	180.70	6,232.63	-2,350.05	-69.42	2,349.57	0.53	0.09	0.52
8,447.00	87.73	180.37	6,234.53	-2,445.02	-70.31	2,444.53	2.38	-2.36	-0.35
8,542.00	87.76	180.88	6,238.27	-2,539.94	-71.35	2,539.44	0.54	0.03	0.54
8,637.00	87.74	179.69	6,242.00	-2,634.87	-71.82	2,634.36	1.25	-0.02	-1.25
8,732.00	88.80	178.44	6,244.87	-2,729.81	-70.27	2,729.31	1.72	1.12	-1.32
8,825.00	90.51	178.99	6,245.43	-2,822.78	-68.18	2,822.29	1.93	1.84	0.59
8,918.00	90.39	179.68	6,244.70	-2,915.77	-67.10	2,915.29	0.75	-0.13	0.74
9,013.00	90.62	180.52	6,243.86	-3,010.76	-67.27	3,010.28	0.92	0.24	0.88
9,109.00	89.06	179.67	6,244.13	-3,106.76	-67.43	3,106.28	1.85	-1.63	-0.89
9,203.00	89.24	179.16	6,245.52	-3,200.74	-66.47	3,200.26	0.58	0.19	-0.54
9,298.00	89.40	179.22	6,246.65	-3,295.73	-65.13	3,295.25	0.18	0.17	0.06
9,392.00	89.32	180.06	6,247.70	-3,389.72	-64.54	3,389.25	0.90	-0.09	0.89
9,487.00	89.90	179.08	6,248.35	-3,484.71	-63.82	3,484.24	1.20	0.61	-1.03
9,582.00	89.05	177.66	6,249.22	-3,579.67	-61.12	3,579.21	1.74	-0.89	-1.49
9,675.00	89.19	178.04	6,250.65	-3,672.59	-57.63	3,672.16	0.44	0.15	0.41
9,771.00	89.29	178.53	6,251.92	-3,768.54	-54.76	3,768.12	0.52	0.10	0.51
9,866.00	89.78	178.68	6,252.69	-3,863.51	-52.45	3,863.10	0.54	0.52	0.16
9,959.00	90.52	179.30	6,252.45	-3,956.49	-50.81	3,956.09	1.04	0.80	0.67
10,054.00	90.70	179.83	6,251.44	-4,051.48	-50.09	4,051.09	0.59	0.19	0.56
10,149.00	89.70	179.67	6,251.11	-4,146.48	-49.67	4,146.09	1.07	-1.05	-0.17

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well #25H
Project:	Lea County, NM (NAD27) NMEZ	TVD Reference:	RKB @ 4118.00usft (Silver Oak 3 - KB=18')
Site:	Zeppo 5 Federal COM	MD Reference:	RKB @ 4118.00usft (Silver Oak 3 - KB=18')
Well:	#25H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14 Single User Db

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)
10,244.00	90.02	179.99	6,251.34	-4,241.48	-49.39	4,241.09	0.48	0.34	0.34
10,337.00	88.41	178.41	6,252.61	-4,334.46	-48.09	4,334.07	2.43	-1.73	-1.70
10,432.00	88.82	179.15	6,254.91	-4,429.41	-46.07	4,429.03	0.89	0.43	0.78
10,526.00	88.55	179.41	6,257.07	-4,523.37	-44.89	4,523.00	0.40	-0.29	0.28
10,619.00	88.26	179.21	6,259.65	-4,616.33	-43.77	4,615.96	0.38	-0.31	-0.22
10,714.00	88.78	180.41	6,262.11	-4,711.30	-43.46	4,710.93	1.38	0.55	1.26
10,809.00	89.23	181.05	6,263.76	-4,806.27	-44.67	4,805.90	0.82	0.47	0.67
10,904.00	88.94	179.65	6,265.27	-4,901.26	-45.25	4,900.88	1.50	-0.31	-1.47
10,999.00	89.29	179.30	6,266.74	-4,996.24	-44.38	4,995.86	0.52	0.37	-0.37
11,093.00	89.94	179.43	6,267.37	-5,090.23	-43.33	5,089.86	0.71	0.69	0.14
11,188.00	90.10	179.86	6,267.34	-5,185.23	-42.75	5,184.86	0.48	0.17	0.45
11,283.00	90.39	179.83	6,266.93	-5,280.23	-42.49	5,279.86	0.31	0.31	-0.03
11,376.00	90.97	180.52	6,265.83	-5,373.22	-42.77	5,372.85	0.97	0.62	0.74
11,472.00	89.76	180.11	6,265.22	-5,469.22	-43.30	5,468.84	1.33	-1.26	-0.43
11,566.00	90.22	180.12	6,265.24	-5,563.22	-43.49	5,562.83	0.49	0.49	0.01
11,659.00	88.82	179.80	6,266.01	-5,656.21	-43.42	5,655.83	1.54	-1.51	-0.34
11,754.00	89.02	179.91	6,267.81	-5,751.19	-43.18	5,750.81	0.24	0.21	0.12
11,848.00	89.98	181.92	6,268.63	-5,845.17	-44.68	5,844.78	2.37	1.02	2.14
11,942.00	88.86	178.55	6,269.58	-5,939.15	-45.07	5,938.75	3.78	-1.19	-3.59
12,037.00	88.96	178.87	6,271.38	-6,034.11	-42.93	6,033.72	0.35	0.11	0.34
12,131.00	89.10	178.38	6,272.98	-6,128.07	-40.68	6,127.69	0.54	0.15	-0.52
12,226.00	89.50	179.69	6,274.14	-6,223.05	-39.08	6,222.68	1.44	0.42	1.38
12,321.00	90.11	180.23	6,274.46	-6,318.04	-39.01	6,317.67	0.86	0.64	0.57
12,415.00	90.40	179.88	6,274.04	-6,412.04	-39.10	6,411.67	0.48	0.31	-0.37
12,510.00	89.62	179.19	6,274.02	-6,507.04	-38.33	6,506.67	1.10	-0.82	-0.73
12,604.00	89.96	179.35	6,274.37	-6,601.03	-37.13	6,600.67	0.40	0.36	0.17
12,699.00	90.34	180.15	6,274.12	-6,696.03	-36.72	6,695.67	0.93	0.40	0.84
12,794.00	88.76	178.64	6,274.87	-6,791.01	-35.71	6,790.66	2.30	-1.66	-1.59
12,888.00	88.88	178.67	6,276.80	-6,884.97	-33.51	6,884.62	0.13	0.13	0.03
12,983.00	89.20	179.59	6,278.39	-6,979.94	-32.07	6,979.60	1.03	0.34	0.97
13,078.00	89.70	180.11	6,279.31	-7,074.94	-31.82	7,074.60	0.76	0.53	0.55
13,173.00	89.02	179.23	6,280.37	-7,169.93	-31.27	7,169.59	1.17	-0.72	-0.93
13,268.00	89.14	179.19	6,281.89	-7,264.91	-29.96	7,264.58	0.13	0.13	-0.04
13,362.00	89.76	179.58	6,282.79	-7,358.90	-28.95	7,358.57	0.78	0.66	0.41
13,456.00	89.89	180.58	6,283.08	-7,452.90	-29.08	7,452.57	1.07	0.14	1.06
13,551.00	90.34	180.88	6,282.89	-7,547.89	-30.29	7,547.55	0.57	0.47	0.32
13,646.00	89.76	180.34	6,282.81	-7,642.88	-31.31	7,642.53	0.83	-0.61	-0.57
13,740.00	89.43	179.01	6,283.47	-7,736.87	-30.77	7,736.53	1.46	-0.35	-1.41
13,835.00	90.00	179.68	6,283.95	-7,831.87	-29.69	7,831.53	0.93	0.60	0.71
13,897.00	90.06	179.97	6,283.91	-7,893.87	-29.50	7,893.52	0.48	0.10	0.47
Final MWD Survey: 13897.00' MD, 6283.91' TVD									
13,950.00	90.06	179.97	6,283.86	-7,946.87	-29.47	7,946.52	0.00	0.00	0.00
BHL: 13950.00' MD, 6283.86' TVD, 90.06° INC, 179.97° AZ, -7946.87' +N/-S, -29.47' +E/-W, 7946.52' VS - 350' FWL/121' FSL, 13950.00' MD, 9									

Survey Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well #25H
Project:	Lea County, NM (NAD27) NMEZ	TVD Reference:	RKB @ 4118.00usft (Silver Oak 3 - KB=18')
Site:	Zeppo 5 Federal COM	MD Reference:	RKB @ 4118.00usft (Silver Oak 3 - KB=18')
Well:	#25H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.14 Single User Db

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)
-----------------------	-----------------	-------------	-----------------------	--------------	--------------	-------------------------	-------------------------	------------------------	-----------------------

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,541.00	5,537.00	104.14	-85.25	KOP: 5541.00' MD, 5537.00' TVD
6,517.00	6,211.15	-515.83	-76.36	EOC: 6517.00' MD, 6211.15' TVD, 82.26° INC, 178.68° AZ, 515.34' VS
13,897.00	6,283.91	-7,893.87	-29.50	Final MWD Survey: 13897.00' MD, 6283.91' TVD
13,950.00	6,283.86	-7,946.87	-29.47	BHL: 13950.00' MD, 6283.86' TVD, 90.06° INC, 179.97° AZ, -7946.87' +N/-S, -2
13,950.00	6,283.86	-7,946.87	-29.47	350' FWL/121' FSL, 13950.00' MD, 90.06° INC, 6283.86' TVD

Checked By: _____ Approved By: _____ Date: _____



HOBBS OCD

JUL 20 2018

RECEIVED

December 20, 2017

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

Attn: Kanicia Castillo

RE: Zeppo 5 Federal Com No. 025H

Please find enclosed a copy of the survey from 0' to 2184' ran on the above referenced well.

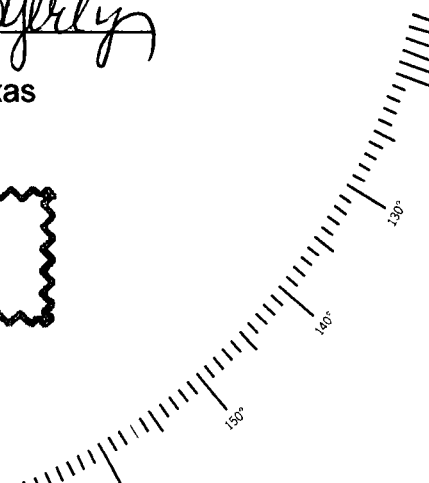
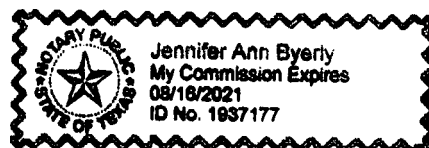
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 20th day of December, A.D., 2017, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





Company: COG OPERATING LLC
Lease/Well: ZEPPO 5 FEDERAL COM No./025H

Rig Name: SILVER OAK 3
State/County: NEW MEXICO/EDDY
VS-Azi: 179.64 Degrees
Latitude: 32.86397, Longitude: 0.00000
Grid North = True North -0.30 degs (NAD 27)
Grid Correction Applied = -0.30 degs



Depth Reference = : RKB = 18 FEET

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: eline gyro2-de_01.ut

Minimum Curvature Method

Report Date/Time: 12/20/2017 / 13:50

VES Survey International
Woodward Oklahoma
580-254-5000

Surveyor: Chris Randall
Zeppo 5 Federal Com No. 025H / API 30-025-44141

HOBBS OCD

JUL 20 2018

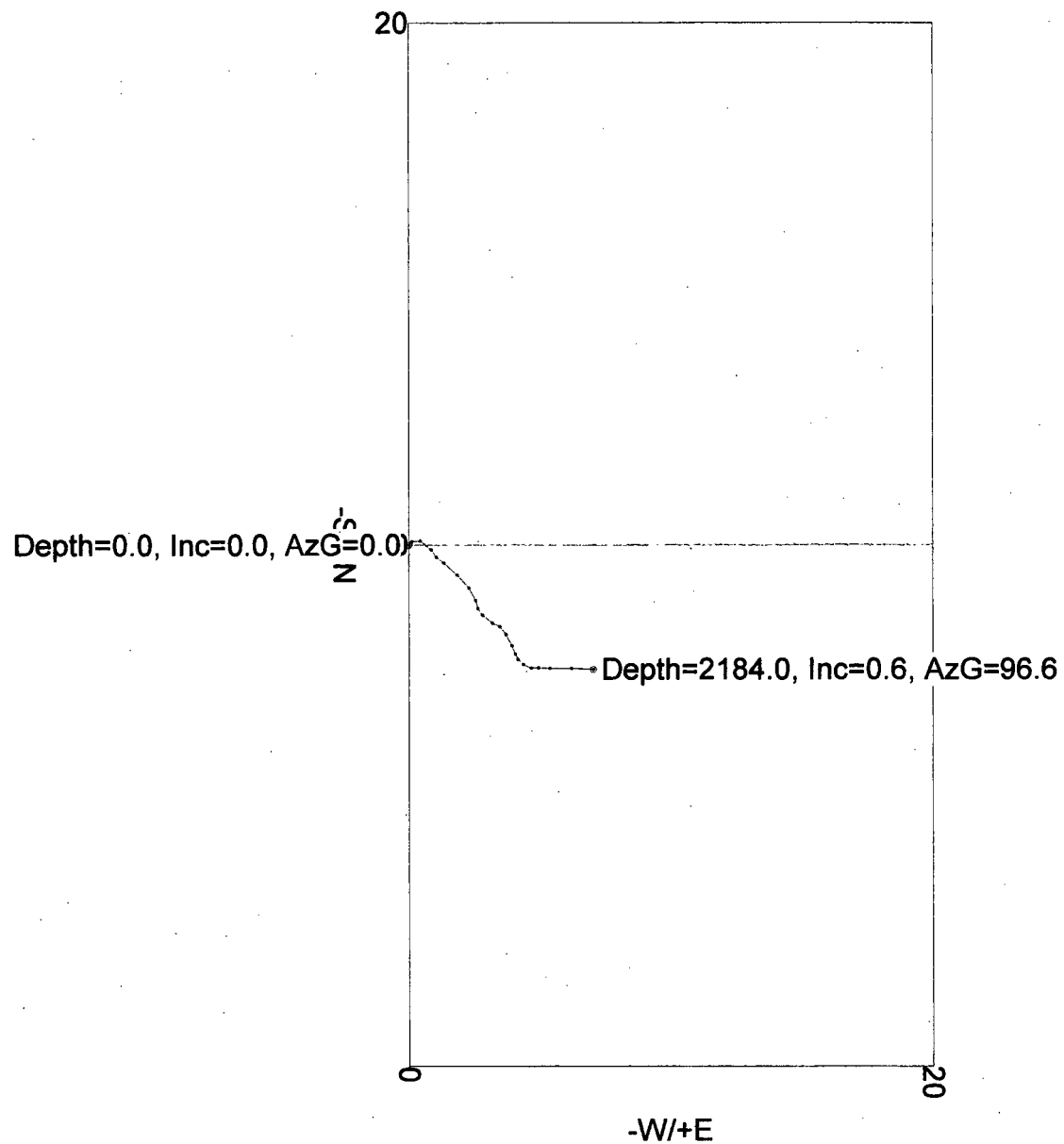
RECEIVED

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N-S FT	+E-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.18	41.44	100.00	0.12	0.11	-0.12	0.16	41.44	0.18
200.00	0.27	111.79	200.00	0.15	0.43	-0.15	0.46	70.81	0.27
300.00	0.36	142.60	300.00	-0.18	0.85	0.19	0.87	102.28	0.18
400.00	0.05	157.85	400.00	-0.47	1.05	0.47	1.15	114.01	0.31
500.00	0.37	123.61	500.00	-0.68	1.33	0.69	1.49	117.10	0.33
600.00	0.45	138.90	599.99	-1.15	1.85	1.16	2.18	121.86	0.13
700.00	0.32	138.18	699.99	-1.65	2.29	1.67	2.83	125.76	0.13
800.00	0.32	163.71	799.99	-2.12	2.56	2.14	3.32	129.72	0.14
900.00	0.04	172.41	899.99	-2.43	2.64	2.44	3.59	132.61	0.27
1000.00	0.32	140.28	999.99	-2.68	2.83	2.70	3.90	133.53	0.29
1100.00	0.24	113.99	1099.99	-2.99	3.20	3.01	4.38	133.03	0.15
1200.00	0.12	120.34	1199.99	-3.13	3.48	3.15	4.68	131.90	0.13
1300.00	0.33	149.58	1299.99	-3.43	3.72	3.45	5.06	132.66	0.24
1400.00	0.23	156.27	1399.99	-3.86	3.95	3.89	5.52	134.38	0.10
1500.00	0.17	160.49	1499.98	-4.19	4.08	4.21	5.84	135.76	0.07
1600.00	0.10	137.15	1599.98	-4.39	4.19	4.42	6.07	136.36	0.08

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
1700.00	0.21	133.85	1699.98	-4.59	4.38	4.61	6.34	136.30	0.11
1800.00	0.19	89.54	1799.98	-4.71	4.68	4.74	6.65	135.18	0.15
1900.00	0.13	87.77	1899.98	-4.71	4.96	4.74	6.84	133.50	0.06
2000.00	0.37	93.50	1999.98	-4.72	5.40	4.76	7.17	131.20	0.25
2100.00	0.58	88.47	2099.98	-4.73	6.23	4.77	7.82	127.22	0.21
2184.00	0.57	96.64	2183.97	-4.77	7.07	4.81	8.53	124.00	0.10



VES Survey International
Woodward Oklahoma
580-254-5000
Surveyor: Chris Randall
Zeppo 5 Federal Com No. 025H / API 30-025-44141



VES Survey Date: 12/18/2017



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

HOBBS OCD

JUL 20 2018

RECEIVED

January 8, 2018

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

RE: Zeppo 5 Fed Com 25H
2490' FNL & 2210' FEL
Sec. 8, T17S, R32E
Lea County, New Mexico

Dear Sir,

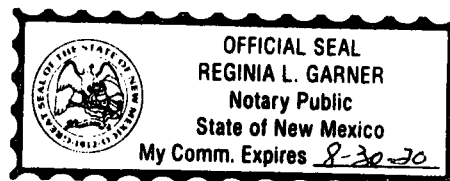
The attached is the Deviation Survey for the above captioned well.

Very truly yours,

Chris Graham
Asst. Operations Manager

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 8th day of January, 2018.

Notary Public

Zeppo 5 Fed Com 25H

Date	Depth	Deviation	Direction	TVD
12/15/2017	274	0.70		
12/16/2017	469	1.10		
12/16/2017	704	0.60		
12/16/2017	865	0.60		
12/18/2017	1053	0.90		
12/18/2017	1306	0.90		
12/18/2017	1622	0.90		
12/18/2017	1906	1.00		
12/20/2017	2352	1.05	321.99	2351.00
12/20/2017	2447	3.55	325.00	2446.00
12/20/2017	2542	3.44	328.00	2541.00
12/20/2017	2637	3.26	325.00	2636.00
12/21/2017	2826	2.91	322.13	
12/21/2017	2921	2.79	329.79	
12/21/2017	3015	2.55	327.89	
12/21/2017	3110	2.32	326.89	
12/21/2017	3207	3.36	303.68	
12/21/2017	3302	3.32	300.95	
12/21/2017	3397	3.48	305.50	3395.51
12/21/2017	3492	3.55	318.97	3490.33
12/21/2017	3586	3.36	321.51	3584.16
12/21/2017	3680	3.18	322.23	3678.01
12/21/2017	3775	3.08	322.69	3772.87
12/21/2017	3869	2.99	321.34	3866.73
12/22/2017	3963	2.87	321.27	
12/22/2017	4058	2.90	322.13	
12/22/2017	4152	2.75	323.03	
12/22/2017	4341	2.63	324.44	
12/22/2017	4436	2.69	325.10	
12/22/2017	4531	2.68	325.77	
12/22/2017	4720	3.95	309.91	4716.70
12/22/2017	4815	4.11	309.77	4811.47
12/22/2017	4910	3.52	323.12	4906.26
12/22/2017	5004	2.20	318.22	5000.14
12/22/2017	5098	2.07	316.07	5094.00
12/22/2017	5193	1.05	280.05	5189.04
12/23/2017	5288	0.58	155.10	
12/23/2017	5383	0.91	154.05	
12/23/2017	5478	0.85	150.25	
12/23/2017	5573	5.06	171.06	
12/23/2017	5699	20.50	177.26	
12/23/2017	5731	24.00	178.33	

Date	Depth	Deviation	Direction	TVD
12/23/2017	5857	33.27	179.78	5831.42
12/24/2017	5920	39.76	180.21	5881.95
12/24/2017	5951	43.19	180.06	5905.17
12/24/2017	6013	44.15	179.52	5949.90
12/24/2017	6076	44.48	179.34	5994.96
12/24/2017	6139	44.66	179.27	6039.85
12/24/2017	6202	48.87	179.65	6085.44
12/24/2017	6328	59.96	179.20	6138.63
12/24/2017	6423	71.92	180.92	6191.11
12/24/2017	6468	79.79	179.65	6206.31
12/25/2017	6581	86.74	178.34	6217.16
12/25/2017	6613	87.51	178.33	6218.77
12/25/2017	6708	91.09	179.16	6219.13
12/25/2017	6802	92.32	179.11	6216.34
12/25/2017	6896	91.55	179.49	6213.16
12/26/2017	6994	88.50	180.12	
12/26/2017	7120	89.66	179.48	
12/26/2017	7310	89.44	179.48	
12/26/2017	7404	89.34	180.10	
12/26/2017	7594	88.95	181.01	6219.55
12/26/2017	7689	88.94	181.19	6221.30
12/26/2017	7879	88.67	179.86	6225.40
12/26/2017	7973	88.24	179.78	6227.00
12/27/2017	8067	89.68	179.49	6229.64
12/27/2017	8162	89.92	179.59	6229.98
12/27/2017	8258	89.89	180.21	6230.14
12/27/2017	8352	89.97	180.70	6230.25
12/27/2017	8447	87.73	180.37	6232.16
12/27/2017	8542	87.76	180.88	6235.89
12/27/2017	8637	87.74	179.69	6239.00
12/27/2017	8732	88.80	178.44	6242.00
12/27/2017	8825	90.51	178.95	6243.00
12/28/2017	8918	90.39	179.68	
12/28/2017	9013	90.62	180.32	
12/28/2017	9109	89.06	179.67	
12/28/2017	9203	89.24	179.66	
12/28/2017	9298	89.40	179.22	
12/29/2017	9392	89.32	180.06	6247.00
12/29/2017	9487	89.90	179.08	6248.00
12/29/2017	9582	89.05	177.66	6249.00
12/29/2017	9675	89.19	178.04	6250.00
12/29/2017	9771	89.29	178.53	6251.00
12/29/2017	9959	90.52	179.30	
12/29/2017	10054	90.70	179.83	
12/29/2017	10149	89.70	179.67	

Date	Depth	Deviation	Direction	TVD
12/29/2017	10244	90.02	179.99	
12/30/2017	10337	88.41	178.41	6252.00
12/30/2017	10432	88.82	179.15	6254.00
12/30/2017	10526	88.55	179.41	6257.00
12/30/2017	10619	88.26	179.21	6259.00
12/30/2017	10809	89.23	181.05	6263.00
12/30/2017	10904	88.94	179.65	
12/30/2017	10999	89.99	179.30	
12/30/2017	11093	89.94	179.43	
12/30/2017	11188	90.10	179.86	
12/30/2017	11283	90.39	179.83	
12/30/2017	11376	90.97	180.52	
12/31/2017	11472	89.76	180.11	6228.00
12/31/2017	11566	90.22	180.12	6228.00
12/31/2017	11659	88.82	179.80	6229.00
12/31/2017	11848	89.92	181.92	
12/31/2017	11942	88.86	178.55	
12/31/2017	12037	88.96	178.87	
12/31/2017	12131	89.10	118.38	
12/31/2017	12226	89.50	179.69	
1/1/2018	12321	90.11	180.20	6274.00
1/1/2018	12415	90.40	179.88	6274.00
1/1/2018	12510	89.62	179.19	6274.00
1/1/2018	12699	90.34	180.15	
1/1/2018	12794	88.16	178.64	
1/1/2018	12888	88.88	178.67	
1/1/2018	12983	89.20	179.59	
1/1/2018	13078	89.70	180.11	
1/2/2018	13173	89.02	179.23	6280.00
1/2/2018	13268	89.14	179.19	6281.00
1/2/2018	13362	89.76	179.58	6282.00
1/2/2018	13456	89.89	180.58	6283.00
1/2/2018	13537	90.34	180.88	
1/2/2018	13646	89.76	180.34	
1/2/2018	13740	89.43	179.01	
1/2/2018	13855	95.00	179.68	