



CONCHO

NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 25 2017

RECEIVED

COG Operating LLC

Eddy County, NM (NAD-27 2015)

Collier 22 State Com #43H

API #: 30-015-44044

SHL: 1650' FNL, 140' FWL, Sec 22, T17S, R28E, Unit E

PP: 1667' FNL, 330' FWL, Sec 22, T17S, R28E, Unit E

BHL: 1673' FNL, 220' FEL, Sec 22, T17S, R28E, Unit H

Design: BHL: 1672' FNL, 220' FEL, Sec 22, T17S, R28E, Unit H

Standard Survey Report

27 April, 2017





TDS
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 1650' FNL, 140' FWL, Sec 22, T17S, R28E, Unit E
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3592.00usft (Patriot 6)
Site:	Collier 22 State Com #43H	MD Reference:	KB @ 3592.00usft (Patriot 6)
Well:	SHL: 1650' FNL, 140' FWL, Sec 22, T17S, R28E, Unit E	North Reference:	Grid
Wellbore:	BHL: 1672' FNL, 220' FEL, Sec 22, T17S, R28E, Unit H	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 1672' FNL, 220' FEL, Sec 22, T17S, R28E, Unit H	Database:	EDM 5000.1 Single User Db

Project	Eddy County, NM (NAD-27 2015)		
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	Collier 22 State Com #43H				
Site Position:		Northing:	662,964.70 usft	Latitude:	32° 49' 20.900 N
From:	Map	Easting:	549,798.10 usft	Longitude:	104° 10' 16.421 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.09 °

Well	SHL: 1650' FNL, 140' FWL, Sec 22, T17S, R28E, Unit E					
Well Position	+N/-S	0.00 usft	Northing:	662,964.70 usft	Latitude:	32° 49' 20.900 N
	+E/-W	0.00 usft	Easting:	549,798.10 usft	Longitude:	104° 10' 16.421 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,574.00 usft

Wellbore	BHL: 1672' FNL, 220' FEL, Sec 22, T17S, R28E, Unit H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/10/2016	7.33	60.52	48,281

Design	BHL: 1672' FNL, 220' FEL, Sec 22, T17S, R28E, Unit H				
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	89.83	

Survey Program	Date	4/27/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
25.00	315.00	VES Gyro #1 (BHL: 1672' FNL, 220' FEL,	VES-ISCWSA-GYRO-3	Biaxial Semi-Cont. Gyro	
315.00	7,831.00	TDS MWD #2 (BHL: 1672' FNL, 220' FEL,	MWD	MWD - Standard	

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	
25.00	0.24	65.86	25.00	0.02	0.05	0.05	0.96	0.96	0.00	
50.00	0.09	87.07	50.00	0.04	0.12	0.12	0.64	-0.60	84.84	
75.00	0.05	123.54	75.00	0.04	0.14	0.14	0.23	-0.16	145.88	
100.00	0.12	179.25	100.00	0.01	0.15	0.15	0.40	0.28	222.84	
125.00	0.25	165.35	125.00	-0.07	0.17	0.17	0.55	0.52	-55.60	
150.00	0.35	158.94	150.00	-0.20	0.21	0.21	0.42	0.40	-25.64	



TDS
Survey Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Collier 22 State Com #43H
Well: SHL: 1650' FNL, 140' FWL, Sec 22, T17S, R28E, Unit E
Wellbore: BHL: 1672' FNL, 220' FEL, Sec 22, T17S, R28E, Unit H
Design: BHL: 1672' FNL, 220' FEL, Sec 22, T17S, R28E, Unit H

Local Co-ordinate Reference: Well SHL: 1650' FNL, 140' FWL, Sec 22, T17S, R28E, Unit E
TVD Reference: KB @ 3592.00usft (Patriot 6)
MD Reference: KB @ 3592.00usft (Patriot 6)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 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)
175.00	0.41	158.53	175.00	-0.35	0.27	0.27	0.24	0.24	-1.64
200.00	0.33	143.70	200.00	-0.49	0.34	0.34	0.50	-0.32	-59.32
225.00	0.34	163.27	225.00	-0.62	0.41	0.41	0.46	0.04	78.28
250.00	0.30	176.33	250.00	-0.76	0.43	0.43	0.33	-0.16	52.24
275.00	0.36	196.92	275.00	-0.90	0.42	0.41	0.53	0.24	82.36
300.00	0.18	216.91	300.00	-1.00	0.37	0.37	0.80	-0.72	79.96
315.00	0.29	219.47	315.00	-1.05	0.33	0.33	0.74	0.73	17.07
Tie-In to VES Gyro									
392.00	0.30	250.00	392.00	-1.27	0.02	0.01	0.20	0.01	39.65
First TDS MWD Survey									
422.00	1.10	272.10	421.99	-1.29	-0.34	-0.35	2.77	2.67	73.67
452.00	2.00	264.20	451.98	-1.33	-1.15	-1.16	3.08	3.00	-26.33
483.00	1.90	267.60	482.96	-1.41	-2.20	-2.21	0.49	-0.32	10.97
512.00	2.70	270.00	511.94	-1.43	-3.37	-3.37	2.78	2.76	8.28
542.00	4.10	274.40	541.89	-1.34	-5.14	-5.15	4.74	4.67	14.67
604.00	4.40	275.80	603.72	-0.93	-9.72	-9.72	0.51	0.48	2.26
694.00	4.10	276.40	693.47	-0.23	-16.35	-16.35	0.34	-0.33	0.67
788.00	3.60	277.10	787.26	0.51	-22.62	-22.62	0.53	-0.53	0.74
862.00	3.30	276.50	861.09	1.18	-28.24	-28.23	0.32	-0.32	-0.64
977.00	2.90	273.30	975.95	1.63	-33.35	-33.35	0.46	-0.42	-3.37
1,071.00	2.50	271.60	1,069.84	1.83	-37.78	-37.77	0.43	-0.43	-1.81
1,150.00	2.50	273.70	1,148.77	1.98	-41.22	-41.21	0.12	0.00	2.66
1,236.00	2.40	275.70	1,234.69	2.28	-44.88	-44.87	0.15	-0.12	2.33
1,299.00	3.10	266.30	1,297.62	2.31	-47.89	-47.89	1.32	1.11	-14.92
1,393.00	4.40	257.80	1,391.41	1.38	-53.95	-53.95	1.50	1.38	-9.04
1,486.00	4.20	255.50	1,484.15	-0.23	-60.74	-60.74	0.28	-0.22	-2.47
1,580.00	3.70	255.20	1,577.93	-1.86	-67.00	-67.01	0.53	-0.53	-0.32
1,674.00	3.40	251.10	1,671.75	-3.54	-72.57	-72.58	0.42	-0.32	-4.36
1,767.00	4.00	255.00	1,764.55	-5.27	-78.32	-78.33	0.70	0.65	4.19
1,860.00	5.50	261.20	1,857.23	-6.80	-85.85	-85.87	1.70	1.61	6.67
1,954.00	5.20	261.40	1,950.82	-8.12	-94.52	-94.54	0.32	-0.32	0.21
2,047.00	5.20	261.20	2,043.44	-9.40	-102.85	-102.88	0.02	0.00	-0.22
2,141.00	3.90	252.50	2,137.14	-11.01	-110.11	-110.14	1.56	-1.38	-9.26
2,235.00	1.70	256.70	2,231.02	-12.29	-114.51	-114.55	2.35	-2.34	4.47
2,328.00	0.90	32.50	2,324.01	-11.99	-115.46	-115.50	2.61	-0.86	146.02
2,391.00	1.00	40.20	2,387.00	-11.16	-114.84	-114.88	0.26	0.16	12.22
2,422.00	1.10	36.40	2,418.00	-10.71	-114.49	-114.52	0.39	0.32	-12.26
2,453.00	1.80	36.00	2,448.99	-10.08	-114.03	-114.06	2.26	2.26	-1.29
2,484.00	3.90	66.40	2,479.95	-9.26	-112.78	-112.80	8.12	6.77	98.06
2,515.00	6.60	77.70	2,510.82	-8.46	-110.07	-110.09	9.29	8.71	36.45
2,546.00	10.10	84.80	2,541.49	-7.83	-105.62	-105.64	11.75	11.29	22.90



TDS
Survey Report



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Site:	Collier 22 State Com #43H	MD Reference:	KB @ 3592.00usft (Patriot 6)
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Wellbore:	BHL: 1672' FNL, 220' FEL, Sec 22, T17S, R28E, Unit H	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 1672' FNL, 220' FEL, Sec 22, T17S, R28E, Unit H	Database:	EDM 5000.1 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)
2,578.00	13.70	85.60	2,572.79	-7.29	-99.05	-99.07	11.26	11.25	2.50
2,608.00	16.80	89.20	2,601.73	-6.95	-91.17	-91.19	10.80	10.33	12.00
2,640.00	19.60	92.10	2,632.13	-7.09	-81.18	-81.20	9.19	8.75	9.06
2,671.00	23.00	93.50	2,661.01	-7.65	-69.93	-69.95	11.09	10.97	4.52
2,702.00	26.80	93.80	2,689.12	-8.48	-56.91	-56.93	12.26	12.26	0.97
2,733.00	30.60	93.80	2,716.31	-9.47	-42.06	-42.09	12.26	12.26	0.00
2,764.00	34.40	93.40	2,742.45	-10.51	-25.44	-25.47	12.28	12.26	-1.29
2,796.00	37.30	92.60	2,768.38	-11.49	-6.72	-6.76	9.18	9.06	-2.50
2,827.00	39.40	91.40	2,792.69	-12.15	12.50	12.46	7.19	6.77	-3.87
2,858.00	42.00	91.20	2,816.19	-12.61	32.71	32.67	8.40	8.39	-0.65
2,890.00	44.80	91.00	2,839.44	-13.03	54.69	54.65	8.76	8.75	-0.63
2,920.00	46.10	90.80	2,860.49	-13.37	76.06	76.02	4.36	4.33	-0.67
2,952.00	46.70	90.80	2,882.56	-13.69	99.23	99.19	1.88	1.88	0.00
2,983.00	47.10	90.90	2,903.74	-14.03	121.87	121.82	1.31	1.29	0.32
3,014.00	47.40	91.00	2,924.78	-14.40	144.63	144.58	1.00	0.97	0.32
3,046.00	47.90	90.90	2,946.34	-14.79	168.27	168.23	1.58	1.56	-0.31
3,074.94	48.27	90.81	2,965.67	-15.12	189.81	189.76	1.31	1.29	-0.32
As-Drilled PP									
3,077.00	48.30	90.80	2,967.04	-15.14	191.34	191.30	1.31	1.29	-0.32
3,108.00	50.10	90.30	2,987.29	-15.36	214.81	214.76	5.93	5.81	-1.61
3,140.00	53.10	89.70	3,007.17	-15.36	239.88	239.84	9.49	9.38	-1.88
3,172.00	55.30	89.10	3,025.89	-15.08	265.83	265.79	7.04	6.88	-1.88
3,203.00	57.30	89.00	3,043.09	-14.66	291.62	291.57	6.46	6.45	-0.32
3,235.00	60.60	89.20	3,059.59	-14.23	319.03	318.98	10.33	10.31	0.63
3,267.00	64.10	89.80	3,074.44	-13.98	347.37	347.32	11.06	10.94	1.88
3,298.00	67.10	90.00	3,087.24	-13.93	375.60	375.55	9.70	9.68	0.65
3,329.00	69.60	90.20	3,098.68	-13.98	404.41	404.36	8.09	8.06	0.65
3,361.00	72.00	89.90	3,109.20	-14.01	434.62	434.58	7.55	7.50	-0.94
3,392.00	74.20	89.60	3,118.21	-13.88	464.28	464.24	7.16	7.10	-0.97
3,424.00	76.60	88.90	3,126.28	-13.47	495.24	495.20	7.79	7.50	-2.19
3,456.00	78.40	87.60	3,133.20	-12.52	526.47	526.43	6.88	5.63	-4.06
3,487.00	80.70	87.20	3,138.83	-11.13	556.92	556.89	7.53	7.42	-1.29
3,519.00	83.60	87.80	3,143.20	-9.75	588.59	588.56	9.25	9.06	1.88
3,550.00	86.20	88.50	3,145.95	-8.76	619.45	619.42	8.68	8.39	2.26
3,582.00	88.90	89.70	3,147.32	-8.25	651.41	651.38	9.23	8.44	3.75
3,613.00	90.10	90.10	3,147.59	-8.20	682.41	682.38	4.08	3.87	1.29
3,644.00	90.80	90.60	3,147.35	-8.39	713.41	713.38	2.77	2.26	1.61
3,738.00	92.70	89.20	3,144.48	-8.23	807.36	807.33	2.51	2.02	-1.49
3,832.00	91.50	87.70	3,141.03	-5.69	901.25	901.23	2.04	-1.28	-1.60
3,926.00	88.50	87.60	3,141.03	-1.83	995.16	995.15	3.19	-3.19	-0.11
4,021.00	89.10	87.00	3,143.02	2.64	1,090.04	1,090.04	0.89	0.63	-0.63



TDS
Survey Report



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Site: Collier 22 State Com #43H
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Wellbore: BHL: 1672' FNL, 220' FEL, Sec 22, T17S, R28E, Unit H
Design: BHL: 1672' FNL, 220' FEL, Sec 22, T17S, R28E, Unit H

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4,116.00	89.60	87.70	3,144.10	7.03	1,184.93	1,184.94	0.91	0.53	0.74
4,149.00	90.10	87.40	3,144.18	8.45	1,217.90	1,217.92	1.77	1.52	-0.91
4,243.00	88.90	91.40	3,145.01	9.43	1,311.87	1,311.89	4.44	-1.28	4.26
4,337.00	88.60	91.40	3,147.06	7.13	1,405.82	1,405.83	0.32	-0.32	0.00
4,433.00	89.20	91.60	3,148.90	4.62	1,501.77	1,501.77	0.66	0.63	0.21
4,527.00	89.10	92.10	3,150.29	1.59	1,595.71	1,595.70	0.54	-0.11	0.53
4,621.00	89.70	89.60	3,151.28	0.19	1,689.68	1,689.68	2.73	0.64	-2.66
4,716.00	89.80	88.10	3,151.69	2.10	1,784.66	1,784.66	1.58	0.11	-1.58
4,810.00	90.50	88.80	3,151.45	4.64	1,878.62	1,878.63	1.05	0.74	0.74
4,907.00	91.10	88.90	3,150.09	6.59	1,975.60	1,975.61	0.63	0.62	0.10
5,002.00	90.80	90.70	3,148.52	6.92	2,070.58	2,070.59	1.92	-0.32	1.89
5,095.00	90.20	90.90	3,147.71	5.62	2,163.56	2,163.57	0.88	-0.65	0.22
5,190.00	90.60	90.60	3,147.04	4.38	2,258.55	2,258.56	0.53	0.42	-0.32
5,284.00	90.10	90.70	3,146.47	3.31	2,352.55	2,352.55	0.54	-0.53	0.11
5,379.00	89.90	89.90	3,146.47	2.81	2,447.54	2,447.54	0.87	-0.21	-0.84
5,472.00	90.50	88.60	3,146.14	4.03	2,540.53	2,540.53	1.54	0.65	-1.40
5,567.00	90.50	89.50	3,145.31	5.61	2,635.51	2,635.52	0.95	0.00	0.95
5,661.00	89.40	89.00	3,145.40	6.84	2,729.51	2,729.51	1.29	-1.17	-0.53
5,755.00	89.80	88.60	3,146.05	8.81	2,823.48	2,823.50	0.60	0.43	-0.43
5,850.00	89.80	87.70	3,146.38	11.87	2,918.43	2,918.45	0.95	0.00	-0.95
5,944.00	91.90	89.20	3,144.99	14.41	3,012.38	3,012.41	2.75	2.23	1.60
6,039.00	89.80	90.30	3,143.58	14.83	3,107.36	3,107.39	2.50	-2.21	1.16
6,133.00	89.80	90.60	3,143.91	14.09	3,201.36	3,201.38	0.32	0.00	0.32
6,226.00	88.70	89.80	3,145.13	13.77	3,294.35	3,294.37	1.46	-1.18	-0.86
6,320.00	88.20	91.40	3,147.67	12.78	3,388.30	3,388.33	1.78	-0.53	1.70
6,415.00	89.30	90.90	3,149.74	10.88	3,483.26	3,483.28	1.27	1.16	-0.53
6,509.00	89.30	90.70	3,150.89	9.56	3,577.24	3,577.26	0.21	0.00	-0.21
6,604.00	88.80	90.60	3,152.46	8.49	3,672.22	3,672.23	0.54	-0.53	-0.11
6,697.00	89.50	90.40	3,153.84	7.67	3,765.21	3,765.22	0.78	0.75	-0.22
6,792.00	90.80	91.30	3,153.60	6.27	3,860.20	3,860.20	1.66	1.37	0.95
6,885.00	91.00	89.80	3,152.13	5.37	3,953.18	3,953.18	1.63	0.22	-1.61
6,980.00	90.80	90.10	3,150.64	5.46	4,048.17	4,048.16	0.38	-0.21	0.32
7,074.00	90.90	89.20	3,149.25	6.03	4,142.15	4,142.15	0.96	0.11	-0.96
7,169.00	90.20	88.90	3,148.34	7.60	4,237.13	4,237.14	0.80	-0.74	-0.32
7,264.00	90.60	89.10	3,147.67	9.28	4,332.12	4,332.13	0.47	0.42	0.21
7,359.00	90.40	88.90	3,146.84	10.92	4,427.10	4,427.11	0.30	-0.21	-0.21
7,454.00	90.20	89.00	3,146.35	12.66	4,522.08	4,522.10	0.24	-0.21	0.11
7,550.00	91.50	89.70	3,144.92	13.75	4,618.06	4,618.08	1.54	1.35	0.73
7,645.00	91.40	89.80	3,142.52	14.17	4,713.03	4,713.05	0.15	-0.11	0.11
7,739.00	91.00	89.90	3,140.55	14.41	4,807.01	4,807.03	0.44	-0.43	0.11
7,765.00	90.90	90.20	3,140.12	14.39	4,833.01	4,833.03	1.22	-0.38	1.15



TDS
Survey Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Collier 22 State Corn #43H
Well: SHL: 1650' FNL, 140' FWL, Sec 22, T17S, R28E, Unit E
Wellbore: BHL: 1672' FNL, 220' FEL, Sec 22, T17S, R28E, Unit H
Design: BHL: 1672' FNL, 220' FEL, Sec 22, T17S, R28E, Unit H

Local Co-ordinate Reference: Well SHL: 1650' FNL, 140' FWL, Sec 22, T17S, R28E, Unit E
TVD Reference: KB @ 3592.00usft (Patriot 6)
MD Reference: KB @ 3592.00usft (Patriot 6)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 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)
Last TDS MWD Survey									
7,831.00	90.90	90.20	3,139.08	14.16	4,899.00	4,899.02	0.00	0.00	0.00
Projection to Bit/TD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
315.00	315.00	-1.05	0.33	Tie-In to VES Gyro
392.00	392.00	-1.27	0.02	First TDS MWD Survey
3,074.94	2,965.67	-15.12	189.81	As-Drilled PP
7,765.00	3,140.12	14.39	4,833.01	Last TDS MWD Survey
7,831.00	3,139.08	14.16	4,899.00	Projection to Bit/TD

Checked By: _____ Approved By: _____ Date: _____



April 19, 2017

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

Attn: Kanicia Castillo

RE: **Collier 22 State Com No. 043H**

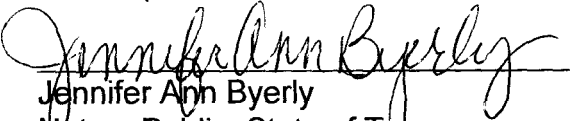
Please find enclosed a copy of the survey from 0' to 315' ran on the above referenced well.

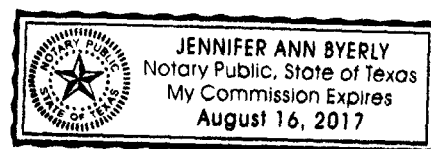
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 19th day of April, A.D., 2017, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





Company: COG OPERATING
Lease/Well: COLLIER 22 STATE COM No./043H

Rig Name: PATRIOT 6
State/County: NEW MEXICO/EDDY
VS-Azi: 0.00 Degrees
Latitude: 32.82247, Longitude: -104.17123
Grid North = True North -0.09 degs (NAD 27)
Grid Correction Applied = -0.09 degs

AM OIL CONSERVATION
ARTESIA DISTRICT
AUG 25 2017
RECEIVED

Depth Reference : RKB = 28 FEET
DRILLOG HA GYRO SURVEY CALCULATIONS
Filename: e-line gyro-de_01.ut
Minimum Curvature Method
Report Date/Time: 4/19/2017 / 16:03
VES Survey International
Midland, TX
(432)-563-5444
Surveyor: Christopher Hair
Collier 22 State Com No. 043H / API 30-015-44044

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	****
25.00	0.24	65.86	25.00	0.02	0.05	0.02	0.05	65.86	0.95
50.00	0.09	87.07	50.00	0.04	0.12	0.04	0.12	69.31	0.62
75.00	0.05	123.54	75.00	0.04	0.14	0.04	0.15	74.81	0.25
100.00	0.12	179.25	100.00	0.01	0.15	0.01	0.15	87.03	0.40
125.00	0.25	165.35	125.00	-0.07	0.17	-0.07	0.18	112.84	0.55
150.00	0.35	158.94	150.00	-0.19	0.21	-0.19	0.29	133.05	0.44
175.00	0.41	158.53	175.00	-0.35	0.27	-0.35	0.44	142.44	0.22
200.00	0.33	143.70	200.00	-0.49	0.34	-0.49	0.60	144.95	0.48
225.00	0.34	163.27	225.00	-0.62	0.41	-0.62	0.74	146.65	0.46
250.00	0.30	176.33	250.00	-0.76	0.44	-0.76	0.88	150.21	0.34
275.00	0.36	196.92	275.00	-0.90	0.42	-0.90	0.99	155.21	0.53
300.00	0.18	216.91	300.00	-1.01	0.37	-1.01	1.07	159.85	0.81
315.00	0.29	219.47	315.00	-1.06	0.33	-1.06	1.11	162.53	0.72



VES Survey International
Midland, TX
(432)-563-5444

Surveyor: Christopher Hair

Collier 22 State Com No. 043H / API 30-015-44044

VES

SURVEY

INTERNATIONAL

5

Depth=0.0, Inc=0.0, AzG=0.0
Z

Depth=315.0, Inc=0.3, AzG=219.5

0

5

-W/+E

DATE: 11/15/2017



I Christopher Hair certify that I am employed by VES Survey International. That I did on the day(s) of 04/15/17 through 04/15/17 conduct or supervise the taking of a Rate Gyro survey from a depth of 0.00 feet to a depth of 315.00 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 Operating for the Collier 22 State Com Well # 43H API # 30-015-44044 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.

A handwritten signature in black ink, appearing to read "Chris Hair", written over a horizontal line.

Christopher Hair
Service Technician
VES Survey International