

HOBBS OCD

JUN 13 2016

RECEIVED

COG Production L L C

Lea County, NM (NAD27 NME)

Sec. 16, T 21 S. , R 33 E

Warbler State Com 4H

Wellbore #1

Plan: Plan#1

Standard Survey Report

12 May, 2016

Integrity Directional Services, LLC

Survey Report

JUN 13 2016

RECEIVED

Company:	COG Production L L C	Local Co-ordinate Reference:	Well Warbler State Com 4H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=27' @ 3785.00ft
Site:	Sec. 16, T 21 S. , R 33 E	MD Reference:	KB=27' @ 3785.00ft
Well:	Warbler State Com 4H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan#1	Database:	EDM 5000.1 Multi User Db

Project	Lea 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	Sec. 16, T 21 S. , R 33 E
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Site Position:		Northing:	536,198.50 usft	Latitude:	32° 28' 18.509 N
From:	Map	Easting:	735,349.90 usft	Longitude:	103° 34' 12.732 W
Position Uncertainty:	5.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.41 "

Well	Warbler State Com 4H
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Well Position	+N/-S	0.00 ft	Northing:	536,198.50 usft	Latitude:	32° 28' 18.509 N
	+E/-W	0.00 ft	Easting:	735,349.90 usft	Longitude:	103° 34' 12.732 W
Position Uncertainty		5.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	3,758.00 ft

Wellbore	Wellbore #1
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/12/2016	7.09	60.31	48,196

Design	Plan#1
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Audit Notes:

Version:		Phase:	PLAN	Tie On Depth:	0.00
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Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	178.38

Survey Tool Program	Date 5/12/2016
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From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	21,076.69	Plan#1 (Wellbore #1)	MWD	MWD - Standard

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	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	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00

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5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00
8,200.00	0.00	0.00	8,200.00	0.00	0.00	0.00	0.00	0.00	0.00
8,300.00	0.00	0.00	8,300.00	0.00	0.00	0.00	0.00	0.00	0.00
8,400.00	0.00	0.00	8,400.00	0.00	0.00	0.00	0.00	0.00	0.00
8,500.00	0.00	0.00	8,500.00	0.00	0.00	0.00	0.00	0.00	0.00
8,600.00	0.00	0.00	8,600.00	0.00	0.00	0.00	0.00	0.00	0.00
8,700.00	0.00	0.00	8,700.00	0.00	0.00	0.00	0.00	0.00	0.00
8,800.00	0.00	0.00	8,800.00	0.00	0.00	0.00	0.00	0.00	0.00
8,900.00	0.00	0.00	8,900.00	0.00	0.00	0.00	0.00	0.00	0.00
9,000.00	0.00	0.00	9,000.00	0.00	0.00	0.00	0.00	0.00	0.00
9,100.00	0.00	0.00	9,100.00	0.00	0.00	0.00	0.00	0.00	0.00
9,200.00	0.00	0.00	9,200.00	0.00	0.00	0.00	0.00	0.00	0.00
9,300.00	0.00	0.00	9,300.00	0.00	0.00	0.00	0.00	0.00	0.00
9,400.00	0.00	0.00	9,400.00	0.00	0.00	0.00	0.00	0.00	0.00
9,500.00	0.00	0.00	9,500.00	0.00	0.00	0.00	0.00	0.00	0.00
9,600.00	0.00	0.00	9,600.00	0.00	0.00	0.00	0.00	0.00	0.00

Integrity Directional Services, LLC

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Company: COG Production L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 16, T 21 S., R 33 E
Well: Warbler State Com 4H
Wellbore: Wellbore #1
Design: Plan#1

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9,700.00	0.00	0.00	9,700.00	0.00	0.00	0.00	0.00	0.00	0.00
9,800.00	0.00	0.00	9,800.00	0.00	0.00	0.00	0.00	0.00	0.00
9,900.00	0.00	0.00	9,900.00	0.00	0.00	0.00	0.00	0.00	0.00
10,000.00	0.00	0.00	10,000.00	0.00	0.00	0.00	0.00	0.00	0.00
10,100.00	0.00	0.00	10,100.00	0.00	0.00	0.00	0.00	0.00	0.00
10,200.00	0.00	0.00	10,200.00	0.00	0.00	0.00	0.00	0.00	0.00
10,300.00	0.00	0.00	10,300.00	0.00	0.00	0.00	0.00	0.00	0.00
10,400.00	0.00	0.00	10,400.00	0.00	0.00	0.00	0.00	0.00	0.00
10,452.64	0.00	0.00	10,452.64	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 12.00									
10,500.00	5.68	178.38	10,499.92	-2.35	0.07	2.35	12.00	12.00	0.00
10,600.00	17.68	178.38	10,597.67	-22.55	0.64	22.56	12.00	12.00	0.00
10,700.00	29.68	178.38	10,689.08	-62.63	1.77	62.65	12.00	12.00	0.00
10,800.00	41.68	178.38	10,770.16	-120.83	3.41	120.88	12.00	12.00	0.00
10,900.00	53.68	178.38	10,837.36	-194.61	5.49	194.69	12.00	12.00	0.00
11,000.00	65.68	178.38	10,887.75	-280.74	7.92	280.85	12.00	12.00	0.00
11,100.00	77.68	178.38	10,919.12	-375.46	10.59	375.61	12.00	12.00	0.00
11,192.53	88.79	178.38	10,930.00	-467.17	13.18	467.35	12.00	12.00	0.00
Start 2833.28 hold at 11192.53 MD									
11,200.00	88.79	178.38	10,930.16	-474.63	13.39	474.82	0.00	0.00	0.00
11,300.00	88.79	178.38	10,932.27	-574.57	16.20	574.80	0.00	0.00	0.00
11,400.00	88.79	178.38	10,934.39	-674.51	19.02	674.78	0.00	0.00	0.00
11,500.00	88.79	178.38	10,936.51	-774.45	21.84	774.76	0.00	0.00	0.00
11,600.00	88.79	178.38	10,938.63	-874.39	24.66	874.73	0.00	0.00	0.00
11,700.00	88.79	178.38	10,940.75	-974.32	27.48	974.71	0.00	0.00	0.00
11,800.00	88.79	178.38	10,942.86	-1,074.26	30.30	1,074.69	0.00	0.00	0.00
11,900.00	88.79	178.38	10,944.98	-1,174.20	33.12	1,174.67	0.00	0.00	0.00
12,000.00	88.79	178.38	10,947.10	-1,274.14	35.93	1,274.64	0.00	0.00	0.00
12,100.00	88.79	178.38	10,949.22	-1,374.08	38.75	1,374.62	0.00	0.00	0.00
12,200.00	88.79	178.38	10,951.34	-1,474.01	41.57	1,474.60	0.00	0.00	0.00
12,300.00	88.79	178.38	10,953.45	-1,573.95	44.39	1,574.58	0.00	0.00	0.00
12,400.00	88.79	178.38	10,955.57	-1,673.89	47.21	1,674.55	0.00	0.00	0.00
12,500.00	88.79	178.38	10,957.69	-1,773.83	50.03	1,774.53	0.00	0.00	0.00
12,600.00	88.79	178.38	10,959.81	-1,873.76	52.85	1,874.51	0.00	0.00	0.00
12,700.00	88.79	178.38	10,961.92	-1,973.70	55.66	1,974.49	0.00	0.00	0.00
12,800.00	88.79	178.38	10,964.04	-2,073.64	58.48	2,074.46	0.00	0.00	0.00
12,900.00	88.79	178.38	10,966.16	-2,173.58	61.30	2,174.44	0.00	0.00	0.00
13,000.00	88.79	178.38	10,968.28	-2,273.52	64.12	2,274.42	0.00	0.00	0.00
13,100.00	88.79	178.38	10,970.40	-2,373.45	66.94	2,374.40	0.00	0.00	0.00
13,200.00	88.79	178.38	10,972.51	-2,473.39	69.76	2,474.37	0.00	0.00	0.00
13,300.00	88.79	178.38	10,974.63	-2,573.33	72.58	2,574.35	0.00	0.00	0.00
13,400.00	88.79	178.38	10,976.75	-2,673.27	75.39	2,674.33	0.00	0.00	0.00
13,500.00	88.79	178.38	10,978.87	-2,773.20	78.21	2,774.31	0.00	0.00	0.00
13,600.00	88.79	178.38	10,980.98	-2,873.14	81.03	2,874.29	0.00	0.00	0.00

Integrity Directional Services, LLC

Survey Report

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Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=27' @ 3785.00ft
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Well:	Warbler State Com 4H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan#1	Database:	EDM 5000.1 Multi User Db

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,700.00	88.79	178.38	10,983.10	-2,973.08	83.85	2,974.26	0.00	0.00	0.00
13,800.00	88.79	178.38	10,985.22	-3,073.02	86.67	3,074.24	0.00	0.00	0.00
13,900.00	88.79	178.38	10,987.34	-3,172.96	89.49	3,174.22	0.00	0.00	0.00
14,000.00	88.79	178.38	10,989.46	-3,272.89	92.31	3,274.20	0.00	0.00	0.00
14,025.81	88.79	178.38	10,990.00	-3,298.69	93.03	3,300.00	0.00	0.00	0.00
Start Build 2.00									
14,042.55	89.12	178.38	10,990.31	-3,315.41	93.50	3,316.73	2.00	2.00	0.00
Start 2783.60 hold at 14042.55 MD									
14,100.00	89.12	178.38	10,991.19	-3,372.84	95.12	3,374.18	0.00	0.00	0.00
14,200.00	89.12	178.38	10,992.72	-3,472.79	97.94	3,474.17	0.00	0.00	0.00
14,300.00	89.12	178.38	10,994.26	-3,572.74	100.76	3,574.16	0.00	0.00	0.00
14,400.00	89.12	178.38	10,995.79	-3,672.68	103.58	3,674.14	0.00	0.00	0.00
14,500.00	89.12	178.38	10,997.32	-3,772.63	106.40	3,774.13	0.00	0.00	0.00
14,600.00	89.12	178.38	10,998.86	-3,872.58	109.22	3,874.12	0.00	0.00	0.00
14,700.00	89.12	178.38	11,000.39	-3,972.53	112.04	3,974.11	0.00	0.00	0.00
14,800.00	89.12	178.38	11,001.93	-4,072.48	114.86	4,074.10	0.00	0.00	0.00
14,900.00	89.12	178.38	11,003.46	-4,172.43	117.68	4,174.09	0.00	0.00	0.00
15,000.00	89.12	178.38	11,004.99	-4,272.38	120.49	4,274.07	0.00	0.00	0.00
15,100.00	89.12	178.38	11,006.53	-4,372.32	123.31	4,374.06	0.00	0.00	0.00
15,200.00	89.12	178.38	11,008.06	-4,472.27	126.13	4,474.05	0.00	0.00	0.00
15,300.00	89.12	178.38	11,009.59	-4,572.22	128.95	4,574.04	0.00	0.00	0.00
15,400.00	89.12	178.38	11,011.13	-4,672.17	131.77	4,674.03	0.00	0.00	0.00
15,500.00	89.12	178.38	11,012.66	-4,772.12	134.59	4,774.02	0.00	0.00	0.00
15,600.00	89.12	178.38	11,014.19	-4,872.07	137.41	4,874.00	0.00	0.00	0.00
15,700.00	89.12	178.38	11,015.73	-4,972.01	140.23	4,973.99	0.00	0.00	0.00
15,800.00	89.12	178.38	11,017.26	-5,071.96	143.04	5,073.98	0.00	0.00	0.00
15,900.00	89.12	178.38	11,018.80	-5,171.91	145.86	5,173.97	0.00	0.00	0.00
16,000.00	89.12	178.38	11,020.33	-5,271.86	148.68	5,273.96	0.00	0.00	0.00
16,100.00	89.12	178.38	11,021.86	-5,371.81	151.50	5,373.94	0.00	0.00	0.00
16,200.00	89.12	178.38	11,023.40	-5,471.76	154.32	5,473.93	0.00	0.00	0.00
16,300.00	89.12	178.38	11,024.93	-5,571.71	157.14	5,573.92	0.00	0.00	0.00
16,400.00	89.12	178.38	11,026.46	-5,671.65	159.96	5,673.91	0.00	0.00	0.00
16,500.00	89.12	178.38	11,028.00	-5,771.60	162.78	5,773.90	0.00	0.00	0.00
16,600.00	89.12	178.38	11,029.53	-5,871.55	165.60	5,873.89	0.00	0.00	0.00
16,700.00	89.12	178.38	11,031.07	-5,971.50	168.41	5,973.87	0.00	0.00	0.00
16,800.00	89.12	178.38	11,032.60	-6,071.45	171.23	6,073.86	0.00	0.00	0.00
16,826.14	89.12	178.38	11,033.00	-6,097.58	171.97	6,100.00	0.00	0.00	0.00
Start DLS 2.00 TFO 0.00									
16,864.19	89.88	178.38	11,033.33	-6,135.60	173.04	6,138.04	2.00	2.00	0.00
Start 4212.50 hold at 16864.19 MD									
16,900.00	89.88	178.38	11,033.41	-6,171.40	174.05	6,173.86	0.00	0.00	0.00
17,000.00	89.88	178.38	11,033.61	-6,271.36	176.87	6,273.86	0.00	0.00	0.00
17,100.00	89.88	178.38	11,033.82	-6,371.32	179.69	6,373.86	0.00	0.00	0.00
17,200.00	89.88	178.38	11,034.02	-6,471.28	182.51	6,473.86	0.00	0.00	0.00

Integrity Directional Services, LLC

Survey Report

Company: COG Production L L C	Local Co-ordinate Reference: Well Warbler State Com 4H
Project: Lea County, NM (NAD27 NME)	TVD Reference: KB=27' @ 3785.00ft
Site: Sec. 16, T 21 S. , R 33 E	MD Reference: KB=27' @ 3785.00ft
Well: Warbler State Com 4H	North Reference: Grid
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Plan#1	Database: EDM 5000.1 Multi User Db

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,300.00	89.88	178.38	11,034.23	-6,571.24	185.33	6,573.86	0.00	0.00	0.00
17,400.00	89.88	178.38	11,034.43	-6,671.20	188.15	6,673.86	0.00	0.00	0.00
17,500.00	89.88	178.38	11,034.64	-6,771.16	190.97	6,773.86	0.00	0.00	0.00
17,600.00	89.88	178.38	11,034.85	-6,871.12	193.79	6,873.86	0.00	0.00	0.00
17,700.00	89.88	178.38	11,035.05	-6,971.08	196.61	6,973.86	0.00	0.00	0.00
17,800.00	89.88	178.38	11,035.26	-7,071.04	199.42	7,073.86	0.00	0.00	0.00
17,900.00	89.88	178.38	11,035.46	-7,171.00	202.24	7,173.86	0.00	0.00	0.00
18,000.00	89.88	178.38	11,035.67	-7,270.96	205.06	7,273.86	0.00	0.00	0.00
18,100.00	89.88	178.38	11,035.87	-7,370.92	207.88	7,373.86	0.00	0.00	0.00
18,200.00	89.88	178.38	11,036.08	-7,470.88	210.70	7,473.85	0.00	0.00	0.00
18,300.00	89.88	178.38	11,036.29	-7,570.84	213.52	7,573.85	0.00	0.00	0.00
18,400.00	89.88	178.38	11,036.49	-7,670.80	216.34	7,673.85	0.00	0.00	0.00
18,500.00	89.88	178.38	11,036.70	-7,770.76	219.16	7,773.85	0.00	0.00	0.00
18,600.00	89.88	178.38	11,036.90	-7,870.72	221.98	7,873.85	0.00	0.00	0.00
18,700.00	89.88	178.38	11,037.11	-7,970.68	224.80	7,973.85	0.00	0.00	0.00
18,800.00	89.88	178.38	11,037.31	-8,070.64	227.62	8,073.85	0.00	0.00	0.00
18,900.00	89.88	178.38	11,037.52	-8,170.60	230.44	8,173.85	0.00	0.00	0.00
19,000.00	89.88	178.38	11,037.73	-8,270.56	233.26	8,273.85	0.00	0.00	0.00
19,100.00	89.88	178.38	11,037.93	-8,370.52	236.07	8,373.85	0.00	0.00	0.00
19,200.00	89.88	178.38	11,038.14	-8,470.48	238.89	8,473.85	0.00	0.00	0.00
19,300.00	89.88	178.38	11,038.34	-8,570.44	241.71	8,573.85	0.00	0.00	0.00
19,400.00	89.88	178.38	11,038.55	-8,670.40	244.53	8,673.85	0.00	0.00	0.00
19,500.00	89.88	178.38	11,038.76	-8,770.36	247.35	8,773.85	0.00	0.00	0.00
19,600.00	89.88	178.38	11,038.96	-8,870.32	250.17	8,873.85	0.00	0.00	0.00
19,700.00	89.88	178.38	11,039.17	-8,970.29	252.99	8,973.85	0.00	0.00	0.00
19,800.00	89.88	178.38	11,039.37	-9,070.25	255.81	9,073.85	0.00	0.00	0.00
19,900.00	89.88	178.38	11,039.58	-9,170.21	258.63	9,173.85	0.00	0.00	0.00
20,000.00	89.88	178.38	11,039.78	-9,270.17	261.45	9,273.85	0.00	0.00	0.00
20,100.00	89.88	178.38	11,039.99	-9,370.13	264.27	9,373.85	0.00	0.00	0.00
20,200.00	89.88	178.38	11,040.20	-9,470.09	267.09	9,473.85	0.00	0.00	0.00
20,300.00	89.88	178.38	11,040.40	-9,570.05	269.90	9,573.85	0.00	0.00	0.00
20,400.00	89.88	178.38	11,040.61	-9,670.01	272.72	9,673.85	0.00	0.00	0.00
20,500.00	89.88	178.38	11,040.81	-9,769.97	275.54	9,773.85	0.00	0.00	0.00
20,600.00	89.88	178.38	11,041.02	-9,869.93	278.36	9,873.85	0.00	0.00	0.00
20,700.00	89.88	178.38	11,041.22	-9,969.89	281.18	9,973.85	0.00	0.00	0.00
20,800.00	89.88	178.38	11,041.43	-10,069.85	284.00	10,073.85	0.00	0.00	0.00
20,900.00	89.88	178.38	11,041.64	-10,169.81	286.82	10,173.85	0.00	0.00	0.00
21,000.00	89.88	178.38	11,041.84	-10,269.77	289.64	10,273.85	0.00	0.00	0.00
21,076.69	89.88	178.38	11,042.00	-10,346.42	291.80	10,350.53	0.00	0.00	0.00
TD at 21076.69									

Integrity Directional Services, LLC

Survey Report

Company:	COG Production L L C	Local Co-ordinate Reference:	Well Warbler State Com 4H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	KB=27' @ 3785.00ft
Site:	Sec. 16, T 21 S., R 33 E	MD Reference:	KB=27' @ 3785.00ft
Well:	Warbler State Com 4H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan#1	Database:	EDM 5000.1 Multi User Db

Design Targets

Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
- Shape									
Warbler State Com 4H	0.00	0.00	11,042.00	-10,346.42	291.80	525,852.10	735,641.70	32° 26' 36.110 N	103° 34' 10.190 W
- plan hits target center									
- Point									

Plan Annotations

Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S	+E/-W	
		(ft)	(ft)	
10,453	10,453	0	0	Start Build 12.00
11,193	10,930	-467	13	Start 2833.28 hold at 11192.53 MD
14,026	10,990	-3299	93	Start Build 2.00
14,043	10,990	-3315	94	Start 2783.60 hold at 14042.55 MD
16,826	11,033	-6098	172	Start DLS 2.00 TFO 0.00
16,864	11,033	-6136	173	Start 4212.50 hold at 16864.19 MD
21,077	11,042	-10,346	292	TD at 21076.69

Checked By: _____ Approved By: _____ Date: _____

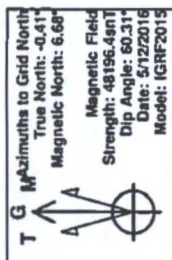


COG Production LLC
Project: Lea County, NM (NAD27 NME)
Site: Sec. 16, T. 21 S., R. 33 E
Well: Warbler State Com 4H
Wellbore: Wellbore #1
Plan: Plan#1 (Warbler State Com 4H/Wellbore #1)



PROJECT DETAILS: Lea County, NM (NAD27 NME)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: Zone 10 West Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid

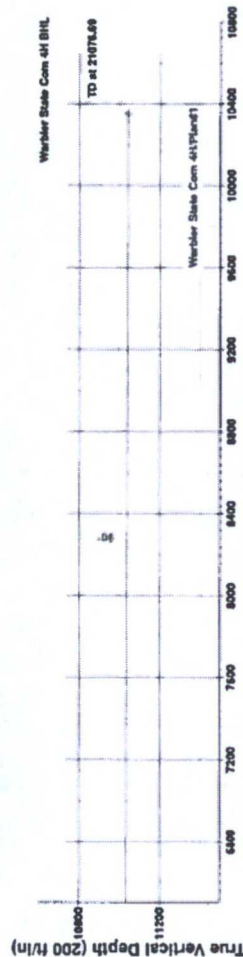
WELL DETAILS: Warbler State Com 4H
Ground Elevation: 3758.00
RKB Elevation: KB=27' @ 3785.00ft
Rig Name:
Northing 536198.50 Easting 735349.90 Latitude 32° 28' 18.509 N Longitude 103° 34' 12.732 W



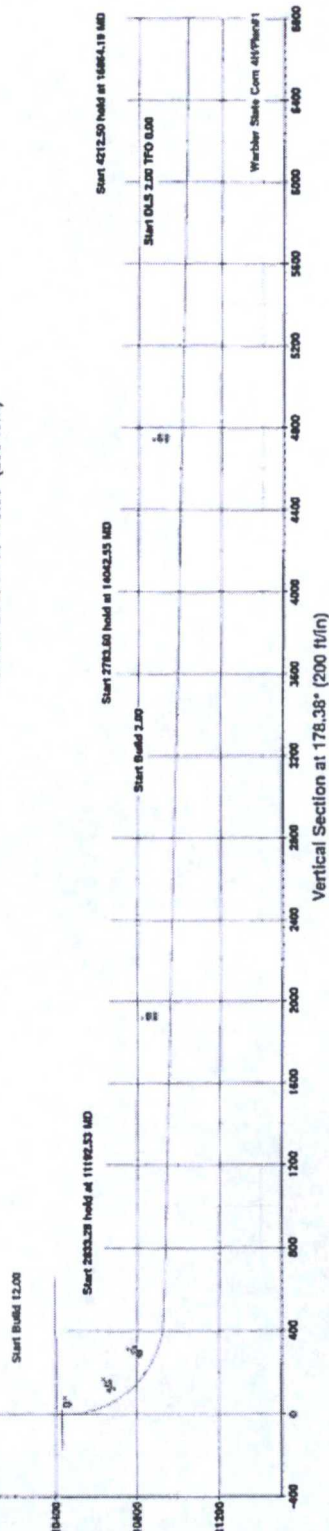
Section Details

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSeal	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Start Build 12.00
2	10452.54	0.00	0.00	10452.54	0.00	0.00	0.00	0.00	0.00	Start 2833.28 hold at 11192.53 MD
3	11192.53	88.79	178.38	10930.00	-467.17	13.18	12.00	178.38	467.35	Start Build 2.00
4	14025.81	88.79	178.38	10990.00	-3298.69	93.03	0.00	0.00	3300.00	Start 2783.60 hold at 14042.55 MD
5	14042.55	88.12	178.38	10990.31	-3315.41	93.50	2.00	0.00	3316.73	Start DLS 2.00 TFO 0.00
6	16826.14	89.12	178.38	11033.00	-6097.58	171.97	0.00	0.00	6100.00	Start 4212.50 hold at 16864.19 MD
7	16864.19	89.88	178.38	11033.33	-6135.60	173.04	2.00	0.00	6136.04	TD at 21076.69
8	21076.69	89.88	178.38	11042.00	-10346.42	291.80	0.00	0.00	10350.53	

True Vertical Depth (200 ft/in)



Vertical Section at 178.38° (200 ft/in)



Warbler State Com 4H/Plan#1