



I Eric Warner certify that I am employed by VES Survey International. That I did on the day(s) of 03/06/16 through 03/06/16 conduct or supervise the taking of a Rate Gyro survey from a depth of 0.00 feet to a depth of 10,745.00 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 Concho for the Admiral Federal COM Well # 002H API # 30-015-42820 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 be "Eric Warner", written over a horizontal line.

Eric Warner
Service Technician
Vaughn Energy Services



March 10, 2016

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

Attn: Kanicia Castillo

RE: **Admiral Federal Com No 002H**

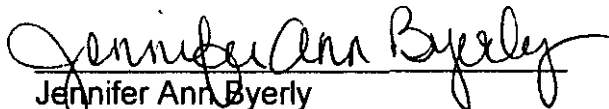
Please find enclosed a copy of the survey from 0' to 10,745' ran on the above referenced well.

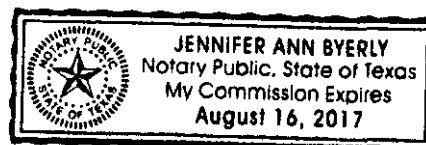
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 10th day of March, A.D., 2016, by Keith Havelka.

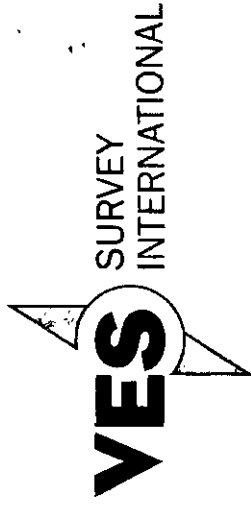

Jennifer Ann Byerly
Notary Public, State of Texas





Company: Concho

Lease/Well: Admiral Federal Com No/002H



Rig Name: Latshaw 44

State/County: New Mexico/Eddy

VS-Azi: 0.00 Degrees

Latitude: 32.09400, Longitude: -103.98710

Grid North = True North -0.18 degs (NAD 27)

Grid Correction Applied = -0.18 degs

Depth Reference : RKB= 25 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: admiral federal com #002h.ut

Minimum Curvature Method

Report Date/Time: 3/10/2016 / 15:59

VES Survey International
West Texas
432-563-5444

Surveyor: Eric Warner

Admiral Federal Com No 002H / API 30-015-42820

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	0.25	40.34	100.00	0.17	0.14	0.17	0.22	40.34	0.25
200.00	0.24	84.68	200.00	0.35	0.49	0.35	0.61	54.61	0.19
300.00	0.30	352.85	300.00	0.63	0.67	0.63	0.92	47.06	0.39
400.00	0.57	248.90	400.00	0.70	0.18	0.70	0.73	14.08	0.70
500.00	0.10	1.41	499.99	0.61	-0.29	0.61	0.67	334.77	0.61
600.00	0.55	260.74	599.99	0.61	-0.76	0.61	0.98	308.88	0.58
700.00	0.76	298.74	699.99	0.85	-1.82	0.85	2.01	295.16	0.47
800.00	0.73	292.42	799.98	1.41	-2.99	1.41	3.30	295.35	0.09
900.00	0.90	300.33	899.97	2.06	-4.26	2.06	4.73	295.78	0.20
1000.00	0.65	282.55	999.96	2.58	-5.49	2.58	6.07	295.14	0.34
1100.00	1.00	282.60	1099.95	2.89	-6.90	2.89	7.48	292.73	0.35
1200.00	1.16	274.27	1199.93	3.16	-8.77	3.16	9.32	289.81	0.22
1300.00	0.46	264.43	1299.92	3.19	-10.18	3.19	10.67	287.42	0.71
1400.00	0.76	280.30	1399.91	3.27	-11.23	3.27	11.70	286.25	0.34
1500.00	0.13	325.06	1499.91	3.48	-11.95	3.48	12.45	286.25	0.67
1600.00	0.22	301.58	1599.91	3.67	-12.18	3.67	12.72	286.79	0.11

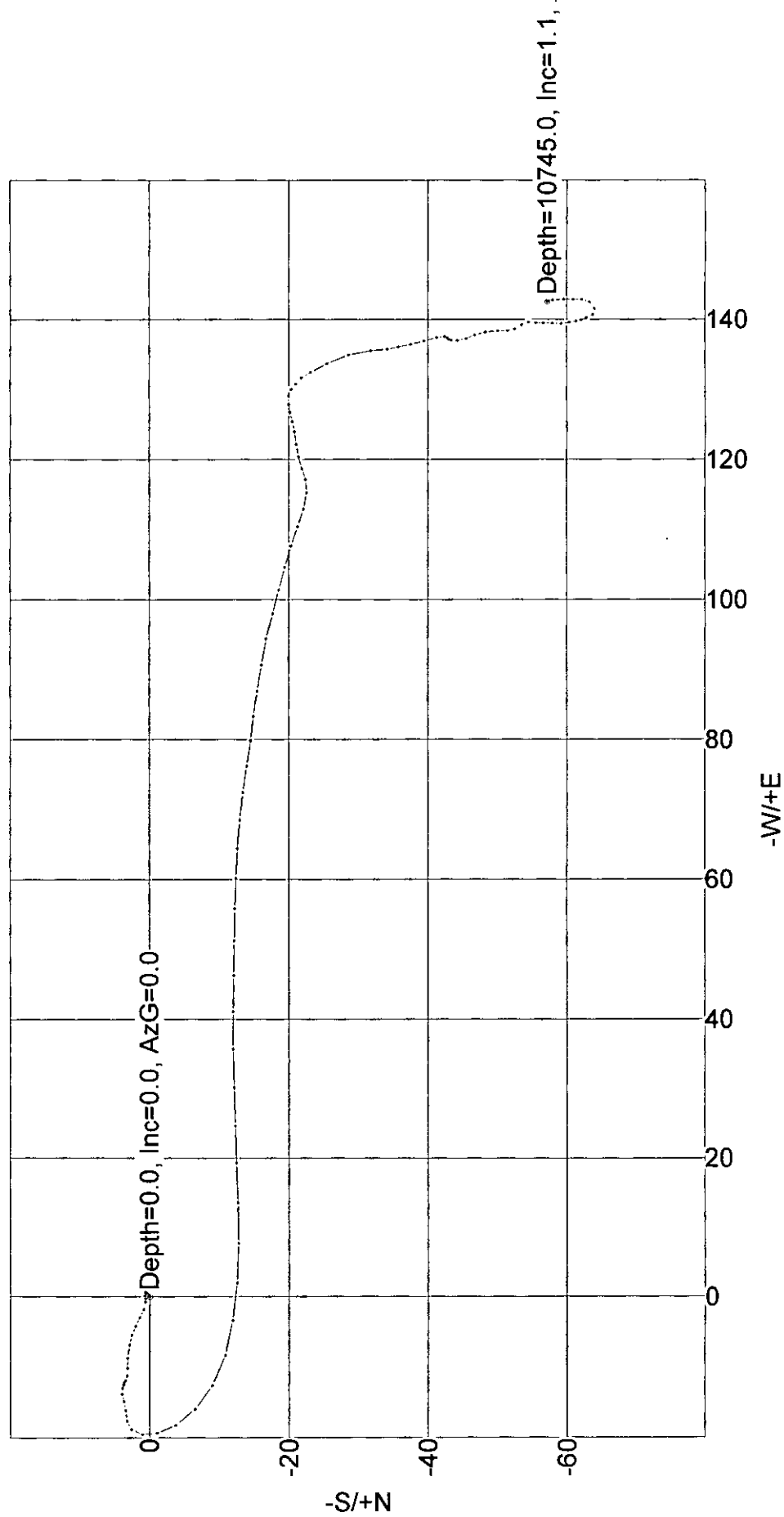
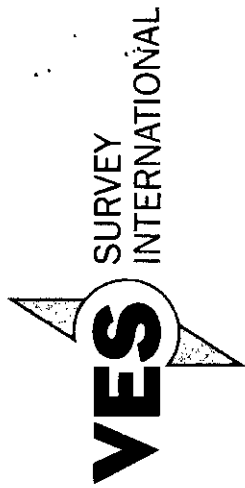
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1700.00	0.25	269.97	1699.91	3.77	-12.55	3.77	13.11	286.74	0.13
1800.00	0.38	301.82	1799.91	3.95	-13.05	3.95	13.63	286.84	0.21
1900.00	0.58	253.30	1899.91	3.98	-13.81	3.98	14.38	286.06	0.43
2000.00	0.65	256.29	1999.90	3.70	-14.84	3.70	15.30	283.99	0.07
2100.00	0.89	262.03	2099.89	3.46	-16.16	3.46	16.53	282.08	0.26
2200.00	0.78	262.74	2199.88	3.26	-17.61	3.26	17.91	280.50	0.11
2300.00	0.87	222.18	2299.87	2.62	-18.80	2.62	18.98	277.93	0.58
2400.00	1.15	191.67	2399.86	1.07	-19.51	1.07	19.54	273.14	0.60
2500.00	1.42	162.79	2499.83	-1.10	-19.35	-1.10	19.38	266.74	0.69
2600.00	1.89	152.04	2599.79	-3.75	-18.20	-3.75	18.59	258.37	0.56
2700.00	2.23	131.56	2699.73	-6.49	-15.98	-6.49	17.25	247.88	0.80
2800.00	2.56	122.48	2799.64	-8.98	-12.64	-8.98	15.51	234.61	0.50
2900.00	2.80	105.22	2899.53	-10.82	-8.40	-10.82	13.70	217.83	0.84
3000.00	3.05	99.76	2999.40	-11.91	-3.42	-11.91	12.39	196.01	0.37
3100.00	3.20	93.96	3099.25	-12.56	1.99	-12.56	12.71	171.00	0.35
3200.00	3.38	90.17	3199.09	-12.76	7.72	-12.76	14.91	148.80	0.28
3300.00	3.36	88.50	3298.91	-12.69	13.61	-12.69	18.61	133.00	0.10
3400.00	3.12	87.10	3398.75	-12.47	19.26	-12.47	22.94	122.94	0.26
3500.00	3.16	89.34	3498.60	-12.31	24.72	-12.31	27.62	116.46	0.13
3600.00	3.18	87.67	3598.45	-12.16	30.24	-12.16	32.60	111.91	0.09
3700.00	3.12	89.42	3698.30	-12.02	35.73	-12.02	37.70	108.60	0.11
3800.00	3.03	90.41	3798.16	-12.01	41.09	-12.01	42.81	106.30	0.10
3900.00	2.90	91.64	3898.02	-12.10	46.27	-12.10	47.83	104.66	0.14
4000.00	2.77	90.11	3997.90	-12.17	51.22	-12.17	52.65	103.37	0.15
4100.00	2.52	92.38	4097.79	-12.27	55.84	-12.27	57.17	102.39	0.27
4200.00	2.44	92.03	4197.70	-12.44	60.17	-12.44	61.44	101.68	0.08
4300.00	2.41	93.09	4297.61	-12.62	64.39	-12.62	65.62	101.09	0.06
4400.00	2.30	96.94	4397.53	-12.98	68.49	-12.98	69.71	100.73	0.19
4500.00	2.22	96.07	4497.45	-13.43	72.41	-13.43	73.64	100.51	0.09
4600.00	2.14	100.97	4597.38	-13.99	76.17	-13.99	77.44	100.41	0.20
4700.00	2.04	96.35	4697.31	-14.54	79.77	-14.54	81.08	100.33	0.20
4800.00	2.05	96.27	4797.25	-14.93	83.31	-14.93	84.64	100.16	0.01
4900.00	2.11	100.64	4897.18	-15.47	86.90	-15.47	88.27	100.09	0.17
5000.00	2.23	98.44	4997.11	-16.09	90.63	-16.09	92.05	100.07	0.14
5100.00	2.16	102.33	5097.03	-16.78	94.39	-16.78	95.87	100.08	0.17
5200.00	2.07	106.07	5196.97	-17.68	97.96	-17.68	99.55	100.23	0.16
5300.00	1.99	103.11	5296.90	-18.57	101.39	-18.57	103.07	100.38	0.13
5400.00	1.86	106.69	5396.85	-19.43	104.63	-19.43	106.42	100.52	0.18
5500.00	1.75	106.29	5496.80	-20.32	107.64	-20.32	109.54	100.69	0.11

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
5600.00	1.60	112.32	5596.76	-21.28	110.40	-21.28	112.43	100.91	0.23
5700.00	1.41	104.30	5696.72	-22.12	112.88	-22.12	115.03	101.09	0.29
5800.00	1.32	97.49	5796.69	-22.57	115.22	-22.57	117.41	101.08	0.18
5900.00	0.93	66.93	5896.67	-22.40	117.11	-22.40	119.23	100.83	0.70
6000.00	0.98	77.06	5996.66	-21.89	118.69	-21.89	120.69	100.45	0.18
6100.00	0.98	71.30	6096.65	-21.43	120.33	-21.43	122.22	100.10	0.10
6200.00	1.18	85.01	6196.63	-21.06	122.17	-21.06	123.97	99.78	0.32
6300.00	0.90	79.28	6296.61	-20.83	123.96	-20.83	125.70	99.54	0.30
6400.00	0.80	75.10	6396.60	-20.51	125.40	-20.51	127.06	99.29	0.12
6500.00	0.72	77.85	6496.59	-20.19	126.69	-20.19	128.29	99.06	0.08
6600.00	0.62	85.25	6596.59	-20.02	127.84	-20.02	129.40	98.90	0.13
6700.00	0.74	92.63	6696.58	-20.00	129.03	-20.00	130.57	98.81	0.15
6800.00	0.52	134.41	6796.57	-20.35	130.00	-20.35	131.58	98.90	0.49
6900.00	0.65	128.41	6896.57	-21.02	130.77	-21.02	132.44	99.13	0.14
7000.00	0.67	139.93	6996.56	-21.82	131.59	-21.82	133.38	99.41	0.14
7100.00	1.16	152.02	7096.55	-23.16	132.44	-23.16	134.45	99.92	0.52
7200.00	1.86	152.39	7196.51	-25.49	133.66	-25.49	136.07	100.80	0.71
7300.00	2.01	163.73	7296.46	-28.61	134.91	-28.61	137.91	101.97	0.41
7400.00	1.72	175.76	7396.40	-31.79	135.51	-31.79	139.19	103.20	0.49
7500.00	1.01	171.64	7496.37	-34.16	135.75	-34.16	139.98	104.12	0.71
7600.00	0.85	167.63	7596.36	-35.76	136.04	-35.76	140.66	104.73	0.18
7700.00	1.21	169.66	7696.34	-37.51	136.39	-37.51	141.45	105.38	0.37
7800.00	1.08	160.95	7796.32	-39.44	136.88	-39.44	142.45	106.07	0.22
7900.00	1.06	168.63	7896.31	-41.24	137.37	-41.24	143.43	106.71	0.14
8000.00	0.28	185.56	7996.30	-42.39	137.53	-42.39	143.92	107.13	0.80
8100.00	0.26	226.00	8096.30	-42.79	137.35	-42.79	143.86	107.30	0.18
8200.00	0.14	210.57	8196.30	-43.05	137.13	-43.05	143.72	107.43	0.13
8300.00	0.26	199.08	8296.30	-43.37	136.99	-43.37	143.69	107.57	0.13
8400.00	0.77	176.02	8396.29	-44.26	136.96	-44.26	143.93	107.91	0.54
8500.00	0.69	156.90	8496.29	-45.48	137.24	-45.48	144.58	108.33	0.25
8600.00	0.85	160.47	8596.28	-46.73	137.73	-46.73	145.44	108.74	0.17
8700.00	0.96	168.70	8696.26	-48.26	138.14	-48.26	146.33	109.26	0.17
8800.00	1.12	179.47	8796.25	-50.06	138.31	-50.06	147.09	109.90	0.25
8900.00	0.49	175.43	8896.24	-51.46	138.36	-51.46	147.62	110.40	0.63
9000.00	0.72	161.94	8996.23	-52.49	138.59	-52.49	148.19	110.74	0.27
9100.00	0.64	133.08	9096.22	-53.47	139.19	-53.47	149.11	111.01	0.35
9200.00	0.70	182.22	9196.22	-54.47	139.58	-54.47	149.83	111.32	0.56
9300.00	0.55	187.08	9296.21	-55.56	139.50	-55.56	150.15	111.72	0.16
9400.00	0.68	180.35	9396.21	-56.64	139.43	-56.64	150.50	112.11	0.15

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Direction Deg	Severity Deg/100
9500.00	0.78	181.49	9496.20	-57.92	139.41	-57.92	150.98	112.56	0.10
9600.00	0.67	182.15	9596.19	-59.18	139.37	-59.18	151.42	113.01	0.12
9700.00	0.74	162.52	9696.18	-60.37	139.54	-60.37	152.04	113.40	0.25
9800.00	0.41	188.84	9796.18	-61.34	139.88	-61.34	152.56	113.71	0.41
9900.00	0.50	145.20	9896.18	-62.05	139.88	-62.05	153.02	113.92	0.35
									0.14
									0.12
									0.95
10000.00	0.51	160.82	9996.17	-62.83	140.27	-62.83	153.70	114.13	0.54
10100.00	0.62	155.89	10096.17	-63.74	140.64	-63.74	154.41	114.38	0.33
10200.00	0.79	71.61	10196.16	-64.02	141.51	-64.02	155.32	114.34	
10300.00	0.69	29.20	10296.15	-63.27	142.46	-63.27	155.88	113.95	
10400.00	0.70	1.44	10396.15	-62.14	142.77	-62.14	155.71	113.52	
									0.03
									0.14
									0.16
10500.00	0.72	2.69	10496.14	-60.90	142.82	-60.90	155.26	113.10	
10600.00	0.86	359.74	10596.13	-59.53	142.84	-59.53	154.75	112.52	
10700.00	0.95	351.44	10696.12	-57.96	142.71	-57.96	154.03	112.10	
10745.00	1.11	339.43	10741.11	-57.18	142.51	-57.18	153.55	111.86	



VES Survey International
West Texas
432-563-5444
Surveyor: Eric Warner
Admiral Federal Com No 002H / API 30-015-42820





COG Operating LLC

Eddy County, NM (NAD-27 2015)

Admiral Federal Com #2H

Admiral Federal Com #2H

30-015-42820

Lateral #1

Design: Lateral #1

Survey Report - Geographic

25 March, 2016





TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Admiral Federal Com #2H
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3012.50usft (Latshaw 44)
Site:	Admiral Federal Com #2H	MD Reference:	KB @ 3012.50usft (Latshaw 44)
Well:	Admiral Federal Com #2H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	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	Admiral Federal Com #2H		
Site Position:		Northing:	398,074.40 usft
From:	Map	Easting:	607,380.50 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in
		Latitude:	32° 5' 38.212 N
		Longitude:	103° 59' 11.708 W
		Grid Convergence:	0.18 °

Well	Admiral Federal Com #2H		
Well Position	+N-S	0.00 usft	Northing:
	+E-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 5' 38.212 N
		Longitude:	103° 59' 11.708 W
		Ground Level:	2,987.50 usft

Wellbore	Lateral #1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2015	1/7/2016	7.29
			Dip Angle
			(°)
			59.89
			Field Strength
			(nT)
			47,967

Design	Lateral #1		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N-S	+E-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			359.50

Survey Program	Date 3/25/2016		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.00	9,600.00	VES Gyro #1 (Lateral #1)	VES-ISCWSA-GYRO-3
9,732.00	20,131.00	TDS MWD #2 (Lateral #1)	MWD
			Description
			Biaxial Semi-Cont. Gyro
			MWD - Standard

Survey									
Measured	Inclination	Azimuth	Vertical			Map	Map		
Depth	(°)	(°)	Depth	+N-S	+E-W	Northing	Easting	Latitude	Longitude
(usft)			(usft)	(usft)	(usft)	(usft)	(usft)		
0.00	0.00	0.00	0.00	0.00	0.00	398,074.40	607,380.50	32° 5' 38.212 N	103° 59' 11.708 W
100.00	0.25	40.34	100.00	0.17	0.14	398,074.57	607,380.64	32° 5' 38.214 N	103° 59' 11.706 W
200.00	0.24	84.68	200.00	0.35	0.49	398,074.75	607,380.99	32° 5' 38.216 N	103° 59' 11.702 W
300.00	0.30	352.85	300.00	0.63	0.67	398,075.03	607,381.17	32° 5' 38.219 N	103° 59' 11.700 W
400.00	0.57	248.90	400.00	0.71	0.17	398,075.11	607,380.67	32° 5' 38.219 N	103° 59' 11.706 W
500.00	0.10	1.41	499.99	0.62	-0.29	398,075.02	607,380.21	32° 5' 38.219 N	103° 59' 11.712 W
600.00	0.55	260.74	599.99	0.63	-0.76	398,075.03	607,379.74	32° 5' 38.219 N	103° 59' 11.717 W
700.00	0.76	298.74	699.99	0.87	-1.82	398,075.27	607,378.69	32° 5' 38.221 N	103° 59' 11.729 W
800.00	0.73	292.42	799.98	1.43	-2.99	398,075.83	607,377.51	32° 5' 38.227 N	103° 59' 11.743 W
900.00	0.90	300.33	899.97	2.07	-4.26	398,076.47	607,376.25	32° 5' 38.233 N	103° 59' 11.758 W
1,000.00	0.65	282.55	999.96	2.59	-5.49	398,076.99	607,375.02	32° 5' 38.238 N	103° 59' 11.772 W



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Admiral Federal Com #2H
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3012.50usft (Latshaw 44)
Site:	Admiral Federal Com #2H	MD Reference:	KB @ 3012.50usft (Latshaw 44)
Well:	Admiral Federal Com #2H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
1,100.00	1.00	282.60	1,099.95	2.91	-6.89	398,077.31	607,373.61	32° 5' 38.241 N	103° 59' 11.788 W	
1,200.00	1.16	274.27	1,199.93	3.17	-8.75	398,077.57	607,371.75	32° 5' 38.244 N	103° 59' 11.810 W	
1,300.00	0.46	264.43	1,299.92	3.21	-10.16	398,077.61	607,370.34	32° 5' 38.245 N	103° 59' 11.826 W	
1,400.00	0.76	280.30	1,399.91	3.29	-11.21	398,077.69	607,369.29	32° 5' 38.245 N	103° 59' 11.838 W	
1,500.00	0.13	325.06	1,499.91	3.50	-11.93	398,077.90	607,368.57	32° 5' 38.247 N	103° 59' 11.847 W	
1,600.00	0.22	301.58	1,599.91	3.69	-12.16	398,078.09	607,368.34	32° 5' 38.249 N	103° 59' 11.849 W	
1,700.00	0.25	269.97	1,699.91	3.79	-12.54	398,078.19	607,367.96	32° 5' 38.250 N	103° 59' 11.854 W	
1,800.00	0.38	301.82	1,799.91	3.97	-13.04	398,078.37	607,367.46	32° 5' 38.252 N	103° 59' 11.860 W	
1,900.00	0.58	253.30	1,899.91	4.00	-13.81	398,078.40	607,366.69	32° 5' 38.252 N	103° 59' 11.869 W	
2,000.00	0.65	256.29	1,999.90	3.72	-14.84	398,078.12	607,365.66	32° 5' 38.250 N	103° 59' 11.881 W	
2,100.00	0.89	262.03	2,099.89	3.48	-16.16	398,077.87	607,364.34	32° 5' 38.247 N	103° 59' 11.896 W	
2,200.00	0.78	262.74	2,199.88	3.28	-17.61	398,077.68	607,362.89	32° 5' 38.245 N	103° 59' 11.913 W	
2,300.00	0.87	222.18	2,299.87	2.63	-18.79	398,077.03	607,361.71	32° 5' 38.239 N	103° 59' 11.927 W	
2,400.00	1.15	191.67	2,399.86	1.09	-19.51	398,075.49	607,361.00	32° 5' 38.224 N	103° 59' 11.935 W	
2,500.00	1.42	162.79	2,499.83	-1.08	-19.34	398,073.32	607,361.16	32° 5' 38.202 N	103° 59' 11.933 W	
2,600.00	1.89	152.04	2,599.79	-3.72	-18.20	398,070.68	607,362.30	32° 5' 38.176 N	103° 59' 11.920 W	
2,700.00	2.23	131.56	2,699.73	-6.47	-15.97	398,067.93	607,364.53	32° 5' 38.149 N	103° 59' 11.894 W	
2,800.00	2.56	122.48	2,799.64	-8.96	-12.63	398,065.44	607,367.87	32° 5' 38.124 N	103° 59' 11.855 W	
2,900.00	2.80	105.22	2,899.53	-10.80	-8.39	398,063.60	607,372.11	32° 5' 38.106 N	103° 59' 11.806 W	
3,000.00	3.05	99.76	2,999.40	-11.89	-3.42	398,062.51	607,377.09	32° 5' 38.095 N	103° 59' 11.748 W	
3,100.00	3.20	93.96	3,099.25	-12.53	1.99	398,061.87	607,382.49	32° 5' 38.088 N	103° 59' 11.685 W	
3,200.00	3.38	90.17	3,199.09	-12.73	7.72	398,061.67	607,388.23	32° 5' 38.086 N	103° 59' 11.619 W	
3,300.00	3.36	88.50	3,298.91	-12.67	13.60	398,061.73	607,394.10	32° 5' 38.087 N	103° 59' 11.551 W	
3,400.00	3.12	87.10	3,398.76	-12.45	19.25	398,061.95	607,399.75	32° 5' 38.089 N	103° 59' 11.485 W	
3,500.00	3.16	89.34	3,498.60	-12.28	24.72	398,062.12	607,405.23	32° 5' 38.090 N	103° 59' 11.421 W	
3,600.00	3.18	87.67	3,598.45	-12.14	30.25	398,062.26	607,410.75	32° 5' 38.091 N	103° 59' 11.357 W	
3,700.00	3.12	89.42	3,698.30	-12.00	35.74	398,062.40	607,416.25	32° 5' 38.093 N	103° 59' 11.293 W	
3,800.00	3.03	90.41	3,798.16	-11.99	41.11	398,062.41	607,421.61	32° 5' 38.092 N	103° 59' 11.231 W	
3,900.00	2.90	91.54	3,898.02	-12.08	46.28	398,062.32	607,426.78	32° 5' 38.091 N	103° 59' 11.171 W	
4,000.00	2.77	90.11	3,997.90	-12.15	51.22	398,062.25	607,431.73	32° 5' 38.091 N	103° 59' 11.113 W	
4,100.00	2.52	92.38	4,097.79	-12.24	55.84	398,062.16	607,436.34	32° 5' 38.089 N	103° 59' 11.060 W	
4,200.00	2.44	92.03	4,197.70	-12.41	60.16	398,061.99	607,440.66	32° 5' 38.088 N	103° 59' 11.009 W	
4,300.00	2.41	93.09	4,297.61	-12.60	64.39	398,061.80	607,444.89	32° 5' 38.086 N	103° 59' 10.960 W	
4,400.00	2.30	96.94	4,397.53	-12.95	68.48	398,061.44	607,448.98	32° 5' 38.082 N	103° 59' 10.913 W	
4,500.00	2.22	96.07	4,497.45	-13.40	72.40	398,061.00	607,452.90	32° 5' 38.077 N	103° 59' 10.867 W	
4,600.00	2.14	100.97	4,597.38	-13.96	76.15	398,060.44	607,456.66	32° 5' 38.072 N	103° 59' 10.823 W	
4,700.00	2.04	98.35	4,697.31	-14.51	79.76	398,059.88	607,460.26	32° 5' 38.066 N	103° 59' 10.782 W	
4,800.00	2.05	96.27	4,797.25	-14.91	83.30	398,059.49	607,463.81	32° 5' 38.062 N	103° 59' 10.740 W	
4,900.00	2.11	100.64	4,897.18	-15.44	86.89	398,058.96	607,467.39	32° 5' 38.057 N	103° 59' 10.699 W	
5,000.00	2.23	98.44	4,997.11	-16.07	90.62	398,058.33	607,471.13	32° 5' 38.051 N	103° 59' 10.655 W	
5,100.00	2.16	102.33	5,097.04	-16.76	94.39	398,057.64	607,474.89	32° 5' 38.044 N	103° 59' 10.612 W	
5,200.00	2.07	106.07	5,196.97	-17.66	97.97	398,056.74	607,478.47	32° 5' 38.035 N	103° 59' 10.570 W	
5,300.00	1.99	103.11	5,296.90	-18.55	101.39	398,055.85	607,481.90	32° 5' 38.026 N	103° 59' 10.530 W	
5,400.00	1.86	106.69	5,396.85	-19.41	104.64	398,054.99	607,485.14	32° 5' 38.017 N	103° 59' 10.492 W	
5,500.00	1.75	106.29	5,496.80	-20.31	107.66	398,054.09	607,488.16	32° 5' 38.008 N	103° 59' 10.457 W	
5,600.00	1.60	112.32	5,596.76	-21.26	110.42	398,053.13	607,490.92	32° 5' 37.998 N	103° 59' 10.425 W	
5,700.00	1.41	104.30	5,696.72	-22.10	112.90	398,052.30	607,493.40	32° 5' 37.990 N	103° 59' 10.397 W	
5,800.00	1.32	97.49	5,796.69	-22.55	115.23	398,051.85	607,495.74	32° 5' 37.986 N	103° 59' 10.369 W	
5,900.00	0.93	66.93	5,896.67	-22.38	117.12	398,052.01	607,497.63	32° 5' 37.987 N	103° 59' 10.347 W	
6,000.00	0.98	77.06	5,996.66	-21.87	118.70	398,052.52	607,499.21	32° 5' 37.992 N	103° 59' 10.329 W	
6,100.00	0.98	71.30	6,096.65	-21.41	120.35	398,052.99	607,500.85	32° 5' 37.997 N	103° 59' 10.310 W	
6,200.00	1.18	85.01	6,196.63	-21.05	122.18	398,053.35	607,502.68	32° 5' 38.000 N	103° 59' 10.289 W	
6,300.00	0.90	79.28	6,296.61	-20.81	123.98	398,053.59	607,504.48	32° 5' 38.003 N	103° 59' 10.268 W	
6,400.00	0.80	75.10	6,396.60	-20.48	125.42	398,053.91	607,505.93	32° 5' 38.006 N	103° 59' 10.251 W	
6,500.00	0.72	77.85	6,496.59	-20.17	126.71	398,054.23	607,507.22	32° 5' 38.009 N	103° 59' 10.236 W	



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Admiral Federal Com #2H
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3012.50usft (Latshaw 44)
Site:	Admiral Federal Com #2H	MD Reference:	KB @ 3012.50usft (Latshaw 44)
Well:	Admiral Federal Com #2H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,600.00	0.62	85.25	6,596.59	-20.00	127.87	398,054.40	607,508.37	32° 5' 38.010 N	103° 59' 10.222 W
6,700.00	0.74	92.63	6,696.58	-19.98	129.05	398,054.42	607,509.56	32° 5' 38.011 N	103° 59' 10.209 W
6,800.00	0.52	134.41	6,796.57	-20.33	130.02	398,054.07	607,510.52	32° 5' 38.007 N	103° 59' 10.197 W
6,900.00	0.65	128.41	6,896.57	-21.00	130.79	398,053.40	607,511.29	32° 5' 38.000 N	103° 59' 10.189 W
7,000.00	0.67	139.93	6,996.56	-21.80	131.61	398,052.60	607,512.11	32° 5' 37.993 N	103° 59' 10.179 W
7,100.00	1.16	152.02	7,096.55	-23.14	132.46	398,051.26	607,512.97	32° 5' 37.979 N	103° 59' 10.169 W
7,200.00	1.86	152.39	7,196.51	-25.47	133.69	398,048.93	607,514.19	32° 5' 37.956 N	103° 59' 10.155 W
7,300.00	2.01	163.73	7,296.46	-28.59	134.93	398,045.81	607,515.44	32° 5' 37.925 N	103° 59' 10.141 W
7,400.00	1.72	175.76	7,396.40	-31.77	135.53	398,042.63	607,516.04	32° 5' 37.894 N	103° 59' 10.134 W
7,500.00	1.01	171.64	7,496.37	-34.14	135.77	398,040.26	607,516.28	32° 5' 37.870 N	103° 59' 10.131 W
7,600.00	0.85	167.63	7,596.36	-35.74	136.06	398,038.66	607,516.56	32° 5' 37.854 N	103° 59' 10.128 W
7,700.00	1.21	169.66	7,696.34	-37.50	136.41	398,036.90	607,516.91	32° 5' 37.837 N	103° 59' 10.124 W
7,800.00	1.08	160.95	7,796.32	-39.43	136.91	398,034.97	607,517.41	32° 5' 37.818 N	103° 59' 10.118 W
7,900.00	1.06	168.63	7,896.31	-41.23	137.40	398,033.17	607,517.90	32° 5' 37.800 N	103° 59' 10.112 W
8,000.00	0.28	185.56	7,996.30	-42.38	137.55	398,032.02	607,518.06	32° 5' 37.789 N	103° 59' 10.111 W
8,100.00	0.26	226.00	8,096.30	-42.78	137.37	398,031.62	607,517.87	32° 5' 37.785 N	103° 59' 10.113 W
8,200.00	0.14	210.57	8,196.30	-43.04	137.14	398,031.36	607,517.65	32° 5' 37.782 N	103° 59' 10.116 W
8,300.00	0.26	199.08	8,296.30	-43.36	137.01	398,031.04	607,517.51	32° 5' 37.779 N	103° 59' 10.117 W
8,400.00	0.77	176.02	8,396.29	-44.25	136.98	398,030.15	607,517.48	32° 5' 37.770 N	103° 59' 10.117 W
8,500.00	0.69	156.90	8,496.29	-45.47	137.26	398,028.93	607,517.76	32° 5' 37.758 N	103° 59' 10.114 W
8,600.00	0.85	160.47	8,596.28	-46.72	137.75	398,027.68	607,518.25	32° 5' 37.746 N	103° 59' 10.109 W
8,700.00	0.96	168.70	8,696.26	-48.24	138.16	398,026.16	607,518.66	32° 5' 37.731 N	103° 59' 10.104 W
8,800.00	1.12	179.47	8,796.25	-50.04	138.33	398,024.36	607,518.83	32° 5' 37.713 N	103° 59' 10.102 W
8,900.00	0.49	175.43	8,896.24	-51.45	138.37	398,022.95	607,518.88	32° 5' 37.699 N	103° 59' 10.102 W
9,000.00	0.72	161.94	8,996.23	-52.47	138.60	398,021.93	607,519.11	32° 5' 37.689 N	103° 59' 10.099 W
9,100.00	0.64	133.08	9,096.22	-53.45	139.21	398,020.95	607,519.71	32° 5' 37.679 N	103° 59' 10.092 W
9,200.00	0.70	182.22	9,196.22	-54.44	139.59	398,019.96	607,520.09	32° 5' 37.669 N	103° 59' 10.087 W
9,300.00	0.55	187.08	9,296.21	-55.53	139.51	398,018.87	607,520.01	32° 5' 37.658 N	103° 59' 10.088 W
9,400.00	0.68	180.35	9,396.21	-56.60	139.44	398,017.80	607,519.95	32° 5' 37.648 N	103° 59' 10.089 W
9,500.00	0.78	181.49	9,496.20	-57.87	139.42	398,016.53	607,519.93	32° 5' 37.635 N	103° 59' 10.090 W
9,600.00	0.67	182.15	9,596.19	-59.13	139.38	398,015.26	607,519.89	32° 5' 37.623 N	103° 59' 10.090 W
Tie-In to VES Gyro									
9,732.00	6.20	352.60	9,727.96	-52.83	138.44	398,021.57	607,518.94	32° 5' 37.685 N	103° 59' 10.101 W
First TDS MWD Survey									
9,763.00	11.10	356.00	9,758.60	-48.19	138.01	398,026.21	607,518.51	32° 5' 37.731 N	103° 59' 10.106 W
9,795.00	14.80	358.90	9,789.78	-41.03	137.72	398,033.37	607,518.22	32° 5' 37.802 N	103° 59' 10.109 W
9,826.00	19.00	358.60	9,819.43	-32.02	137.52	398,042.38	607,518.02	32° 5' 37.891 N	103° 59' 10.111 W
9,858.00	23.10	356.40	9,849.29	-20.54	137.00	398,053.86	607,517.50	32° 5' 38.005 N	103° 59' 10.116 W
9,890.00	26.40	356.40	9,878.35	-7.17	136.16	398,067.22	607,516.66	32° 5' 38.137 N	103° 59' 10.126 W
9,921.00	29.20	355.90	9,905.77	7.25	135.18	398,081.65	607,515.69	32° 5' 38.280 N	103° 59' 10.136 W
9,953.00	32.20	355.90	9,933.28	23.54	134.01	398,097.94	607,514.52	32° 5' 38.441 N	103° 59' 10.149 W
9,984.00	35.10	356.70	9,959.08	40.68	132.91	398,115.08	607,513.41	32° 5' 38.611 N	103° 59' 10.162 W
10,016.00	37.20	357.00	9,984.92	59.53	131.87	398,133.93	607,512.38	32° 5' 38.797 N	103° 59' 10.173 W
10,048.00	39.30	356.80	10,010.05	79.31	130.80	398,153.71	607,511.31	32° 5' 38.993 N	103° 59' 10.185 W
10,079.00	42.00	357.90	10,033.57	99.48	129.87	398,173.88	607,510.38	32° 5' 39.193 N	103° 59' 10.195 W
10,111.00	45.50	358.10	10,056.68	121.59	129.10	398,195.99	607,509.61	32° 5' 39.412 N	103° 59' 10.203 W
10,143.00	48.50	358.20	10,078.50	144.98	128.35	398,219.38	607,508.85	32° 5' 39.643 N	103° 59' 10.211 W
10,174.00	51.20	358.20	10,098.49	168.66	127.60	398,243.06	607,508.11	32° 5' 39.878 N	103° 59' 10.218 W
10,205.00	54.00	357.80	10,117.31	193.27	126.74	398,267.67	607,507.25	32° 5' 40.121 N	103° 59' 10.228 W
10,237.00	56.50	357.10	10,135.55	219.54	125.57	398,293.94	607,506.07	32° 5' 40.381 N	103° 59' 10.240 W
10,268.00	59.60	356.70	10,151.95	245.80	124.15	398,320.20	607,504.65	32° 5' 40.641 N	103° 59' 10.256 W
10,300.00	61.70	356.90	10,167.64	273.65	122.59	398,348.04	607,503.09	32° 5' 40.917 N	103° 59' 10.273 W
10,331.00	63.70	357.70	10,181.86	301.16	121.29	398,375.56	607,501.80	32° 5' 41.189 N	103° 59' 10.287 W
10,363.00	65.80	358.10	10,195.50	330.08	120.23	398,404.48	607,500.74	32° 5' 41.475 N	103° 59' 10.298 W
10,395.00	68.70	358.30	10,207.88	359.57	119.31	398,433.97	607,499.81	32° 5' 41.767 N	103° 59' 10.308 W



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Admiral Federal Com #2H
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3012.50usft (Latshaw 44)
Site:	Admiral Federal Com #2H	MD Reference:	KB @ 3012.50usft (Latshaw 44)
Well:	Admiral Federal Com #2H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
10,426.00	73.50	359.70	10,217.92	388.89	118.80	398,463.29	607,499.31	32° 5' 42.057 N	103° 59' 10.313 W	
10,454.00	76.80	0.40	10,225.09	415.95	118.83	398,490.35	607,499.33	32° 5' 42.325 N	103° 59' 10.311 W	
10,485.00	79.10	0.90	10,231.56	446.26	119.17	398,520.66	607,499.67	32° 5' 42.625 N	103° 59' 10.306 W	
10,517.00	80.80	0.90	10,237.15	477.77	119.67	398,552.17	607,500.17	32° 5' 42.937 N	103° 59' 10.299 W	
10,548.00	82.90	0.70	10,241.54	508.45	120.09	398,582.85	607,500.60	32° 5' 43.240 N	103° 59' 10.293 W	
10,580.00	84.60	359.80	10,245.03	540.26	120.23	398,614.66	607,500.74	32° 5' 43.555 N	103° 59' 10.290 W	
10,612.00	86.00	359.70	10,247.65	572.15	120.09	398,646.55	607,500.60	32° 5' 43.871 N	103° 59' 10.291 W	
10,706.00	90.80	359.80	10,250.27	666.08	119.68	398,740.48	607,500.19	32° 5' 44.800 N	103° 59' 10.292 W	
10,801.00	91.90	0.90	10,248.03	761.05	120.26	398,835.45	607,500.77	32° 5' 45.740 N	103° 59' 10.282 W	
10,896.00	91.90	1.10	10,244.88	855.99	121.92	398,930.38	607,502.42	32° 5' 46.680 N	103° 59' 10.259 W	
10,991.00	90.70	359.70	10,242.73	950.96	122.58	399,025.35	607,503.09	32° 5' 47.620 N	103° 59' 10.248 W	
11,086.00	91.20	359.40	10,241.15	1,045.94	121.84	399,120.34	607,502.34	32° 5' 48.560 N	103° 59' 10.253 W	
11,181.00	89.30	358.00	10,240.74	1,140.91	119.68	399,215.31	607,500.19	32° 5' 49.499 N	103° 59' 10.274 W	
11,276.00	89.40	357.50	10,241.82	1,235.83	115.95	399,310.23	607,496.46	32° 5' 50.439 N	103° 59' 10.314 W	
11,371.00	90.00	357.50	10,242.31	1,330.73	111.81	399,405.13	607,492.31	32° 5' 51.378 N	103° 59' 10.359 W	
11,466.00	91.00	357.90	10,241.48	1,425.65	108.00	399,500.05	607,488.50	32° 5' 52.318 N	103° 59' 10.399 W	
11,561.00	89.40	357.50	10,241.15	1,520.57	104.18	399,594.97	607,484.69	32° 5' 53.257 N	103° 59' 10.440 W	
11,656.00	89.60	357.30	10,241.98	1,615.47	99.88	399,689.87	607,480.38	32° 5' 54.197 N	103° 59' 10.487 W	
11,751.00	89.90	357.30	10,242.40	1,710.36	95.40	399,784.76	607,475.90	32° 5' 55.136 N	103° 59' 10.535 W	
11,845.00	89.80	358.30	10,242.64	1,804.29	91.79	399,878.69	607,472.30	32° 5' 56.066 N	103° 59' 10.574 W	
11,940.00	89.50	359.40	10,243.22	1,899.27	89.89	399,973.67	607,470.39	32° 5' 57.006 N	103° 59' 10.592 W	
12,035.00	88.40	359.20	10,244.96	1,994.25	88.72	400,068.65	607,469.23	32° 5' 57.945 N	103° 59' 10.602 W	
12,130.00	88.80	359.60	10,247.29	2,089.21	87.73	400,163.61	607,468.23	32° 5' 58.885 N	103° 59' 10.610 W	
12,225.00	88.90	358.70	10,249.19	2,184.18	86.32	400,258.58	607,466.82	32° 5' 59.825 N	103° 59' 10.623 W	
12,320.00	88.40	358.70	10,251.43	2,279.13	84.17	400,353.53	607,464.67	32° 6' 0.765 N	103° 59' 10.644 W	
12,415.00	89.30	359.40	10,253.34	2,374.10	82.59	400,448.50	607,463.10	32° 6' 1.705 N	103° 59' 10.659 W	
12,509.00	89.60	358.90	10,254.24	2,468.08	81.20	400,542.48	607,461.70	32° 6' 2.635 N	103° 59' 10.672 W	
12,604.00	88.80	357.20	10,255.57	2,563.01	77.97	400,637.41	607,458.47	32° 6' 3.575 N	103° 59' 10.706 W	
12,699.00	88.20	356.30	10,258.05	2,657.83	72.58	400,732.23	607,453.09	32° 6' 4.513 N	103° 59' 10.765 W	
12,794.00	88.90	356.80	10,260.46	2,752.62	68.87	400,827.02	607,447.37	32° 6' 5.451 N	103° 59' 10.828 W	
12,889.00	89.70	357.70	10,261.62	2,847.51	62.31	400,921.90	607,442.81	32° 6' 6.391 N	103° 59' 10.877 W	
12,984.00	89.80	357.40	10,262.03	2,942.42	58.25	401,016.82	607,438.75	32° 6' 7.330 N	103° 59' 10.921 W	
13,079.00	89.10	357.80	10,262.94	3,037.33	54.27	401,111.73	607,434.77	32° 6' 8.269 N	103° 59' 10.964 W	
13,174.00	90.80	359.20	10,263.03	3,132.29	51.78	401,206.69	607,432.29	32° 6' 9.209 N	103° 59' 10.989 W	
13,269.00	91.60	359.00	10,261.04	3,227.26	50.29	401,301.66	607,430.80	32° 6' 10.149 N	103° 59' 11.003 W	
13,364.00	92.00	358.90	10,258.05	3,322.19	48.55	401,396.59	607,429.06	32° 6' 11.089 N	103° 59' 11.019 W	
13,458.00	92.20	359.40	10,254.61	3,416.12	47.16	401,490.52	607,427.66	32° 6' 12.018 N	103° 59' 11.032 W	
13,553.00	91.10	0.10	10,251.87	3,511.08	46.74	401,585.48	607,427.25	32° 6' 12.958 N	103° 59' 11.033 W	
13,648.00	90.40	358.90	10,250.63	3,606.06	45.92	401,680.46	607,426.42	32° 6' 13.898 N	103° 59' 11.040 W	
13,743.00	89.50	0.10	10,250.71	3,701.06	45.09	401,775.46	607,425.59	32° 6' 14.838 N	103° 59' 11.046 W	
13,838.00	91.30	1.80	10,250.05	3,796.04	46.66	401,870.43	607,427.16	32° 6' 15.778 N	103° 59' 11.024 W	
13,933.00	89.60	0.50	10,249.30	3,891.01	48.57	401,965.41	607,429.07	32° 6' 16.718 N	103° 59' 10.998 W	
14,028.00	90.10	0.00	10,249.55	3,986.01	48.98	402,060.40	607,429.49	32° 6' 17.658 N	103° 59' 10.990 W	
14,123.00	88.70	359.90	10,250.55	4,081.00	48.90	402,155.40	607,429.40	32° 6' 18.598 N	103° 59' 10.987 W	
14,217.00	89.50	0.20	10,252.02	4,174.99	48.98	402,249.38	607,429.48	32° 6' 19.528 N	103° 59' 10.983 W	
14,312.00	90.20	359.50	10,252.27	4,269.98	48.73	402,344.38	607,429.24	32° 6' 20.468 N	103° 59' 10.982 W	
14,408.00	89.50	359.60	10,252.52	4,365.98	47.98	402,440.38	607,428.48	32° 6' 21.418 N	103° 59' 10.987 W	
14,502.00	88.50	357.20	10,254.16	4,459.92	45.35	402,534.32	607,425.86	32° 6' 22.348 N	103° 59' 11.014 W	
14,597.00	89.10	357.40	10,256.15	4,554.79	40.88	402,629.19	607,421.38	32° 6' 23.287 N	103° 59' 11.063 W	
14,692.00	88.20	357.40	10,258.39	4,649.67	36.57	402,724.07	607,417.08	32° 6' 24.226 N	103° 59' 11.109 W	
14,787.00	88.70	358.00	10,260.96	4,744.56	32.76	402,818.96	607,413.26	32° 6' 25.165 N	103° 59' 11.150 W	
14,882.00	89.40	358.60	10,262.54	4,839.50	29.94	402,913.90	607,410.45	32° 6' 26.105 N	103° 59' 11.179 W	
14,977.00	89.00	357.90	10,263.86	4,934.45	27.04	403,008.85	607,407.55	32° 6' 27.045 N	103° 59' 11.209 W	
15,072.00	89.40	356.70	10,265.19	5,029.33	22.57	403,103.73	607,403.07	32° 6' 27.984 N	103° 59' 11.258 W	
15,167.00	90.20	358.10	10,265.52	5,124.23	18.26	403,198.63	607,398.76	32° 6' 28.923 N	103° 59' 11.304 W	

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Admiral Federal Com #2H
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3012.50usft (Latshaw 44)
Site:	Admiral Federal Com #2H	MD Reference:	KB @ 3012.50usft (Latshaw 44)
Well:	Admiral Federal Com #2H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
15,262.00	88.70	356.70	10,266.43	5,219.12	13.95	403,293.52	607,394.45	32° 6' 29.862 N	103° 59' 11.351 W	
15,356.00	90.00	358.00	10,267.50	5,313.01	9.60	403,387.41	607,390.11	32° 6' 30.792 N	103° 59' 11.398 W	
15,452.00	90.20	357.40	10,267.33	5,408.93	5.75	403,483.33	607,386.26	32° 6' 31.741 N	103° 59' 11.439 W	
15,546.00	90.60	357.10	10,266.67	5,502.82	1.24	403,577.22	607,381.75	32° 6' 32.670 N	103° 59' 11.488 W	
15,641.00	90.10	358.00	10,266.09	5,597.73	-2.82	403,672.13	607,377.68	32° 6' 33.610 N	103° 59' 11.532 W	
15,736.00	90.50	359.10	10,265.60	5,692.70	-5.22	403,767.10	607,375.28	32° 6' 34.550 N	103° 59' 11.556 W	
15,831.00	91.50	0.00	10,263.94	5,787.68	-5.97	403,862.08	607,374.53	32° 6' 35.490 N	103° 59' 11.561 W	
15,926.00	92.00	359.20	10,261.04	5,882.63	-6.63	403,957.03	607,373.87	32° 6' 36.429 N	103° 59' 11.565 W	
16,020.00	90.20	359.50	10,259.23	5,976.60	-7.70	404,051.00	607,372.81	32° 6' 37.360 N	103° 59' 11.574 W	
16,114.00	90.80	359.80	10,258.41	6,070.60	-8.27	404,145.00	607,372.23	32° 6' 38.290 N	103° 59' 11.577 W	
16,208.00	89.30	358.90	10,258.33	6,164.59	-9.34	404,238.99	607,371.17	32° 6' 39.220 N	103° 59' 11.586 W	
16,302.00	89.90	358.70	10,258.99	6,258.57	-11.31	404,332.96	607,369.20	32° 6' 40.150 N	103° 59' 11.606 W	
16,397.00	87.90	357.60	10,260.81	6,353.49	-14.37	404,427.89	607,366.13	32° 6' 41.090 N	103° 59' 11.638 W	
16,491.00	87.60	358.10	10,264.50	6,447.35	-17.90	404,521.75	607,362.61	32° 6' 42.019 N	103° 59' 11.675 W	
16,586.00	87.60	357.80	10,268.48	6,542.21	-21.29	404,616.61	607,359.21	32° 6' 42.957 N	103° 59' 11.711 W	
16,681.00	88.30	358.40	10,271.88	6,637.09	-24.44	404,711.49	607,356.06	32° 6' 43.896 N	103° 59' 11.744 W	
16,776.00	88.00	358.00	10,274.94	6,732.00	-27.42	404,806.40	607,353.08	32° 6' 44.836 N	103° 59' 11.775 W	
16,871.00	89.50	0.00	10,277.02	6,826.95	-29.08	404,901.35	607,351.42	32° 6' 45.776 N	103° 59' 11.791 W	
16,966.00	89.70	0.90	10,277.68	6,921.95	-28.33	404,996.35	607,352.17	32° 6' 46.716 N	103° 59' 11.779 W	
17,061.00	90.40	1.10	10,277.60	7,016.93	-26.67	405,091.33	607,353.83	32° 6' 47.656 N	103° 59' 11.756 W	
17,155.00	91.40	1.70	10,276.12	7,110.89	-24.38	405,185.29	607,356.13	32° 6' 48.585 N	103° 59' 11.726 W	
17,250.00	90.70	1.00	10,274.38	7,205.85	-22.14	405,280.25	607,358.36	32° 6' 49.525 N	103° 59' 11.696 W	
17,344.00	90.60	0.60	10,273.31	7,299.83	-20.83	405,374.23	607,359.68	32° 6' 50.455 N	103° 59' 11.677 W	
17,438.00	90.50	0.20	10,272.41	7,393.83	-20.17	405,468.22	607,360.33	32° 6' 51.385 N	103° 59' 11.666 W	
17,532.00	90.60	0.40	10,271.51	7,487.82	-19.68	405,562.22	607,360.82	32° 6' 52.315 N	103° 59' 11.657 W	
17,627.00	91.20	1.30	10,270.02	7,582.80	-18.27	405,657.19	607,362.23	32° 6' 53.255 N	103° 59' 11.637 W	
17,722.00	90.00	359.50	10,269.02	7,677.78	-17.61	405,752.18	607,362.90	32° 6' 54.195 N	103° 59' 11.626 W	
17,817.00	90.50	359.40	10,268.61	7,772.78	-18.52	405,847.18	607,361.98	32° 6' 55.135 N	103° 59' 11.633 W	
17,911.00	89.00	356.90	10,269.02	7,866.72	-21.55	405,941.12	607,358.95	32° 6' 56.065 N	103° 59' 11.665 W	
18,006.00	90.30	357.50	10,269.60	7,961.60	-26.19	406,036.00	607,354.31	32° 6' 57.004 N	103° 59' 11.715 W	
18,101.00	88.00	356.20	10,271.01	8,056.44	-31.41	406,130.84	607,349.09	32° 6' 57.943 N	103° 59' 11.772 W	
18,196.00	88.80	357.00	10,273.66	8,151.23	-37.05	406,225.63	607,343.46	32° 6' 58.881 N	103° 59' 11.834 W	
18,291.00	90.20	357.70	10,274.49	8,246.12	-41.44	406,320.52	607,339.07	32° 6' 59.821 N	103° 59' 11.882 W	
18,386.00	91.00	358.00	10,273.49	8,341.05	-45.00	406,415.45	607,335.50	32° 7' 0.760 N	103° 59' 11.919 W	
18,481.00	91.00	356.90	10,271.84	8,435.94	-49.23	406,510.34	607,331.28	32° 7' 1.699 N	103° 59' 11.965 W	
18,575.00	90.60	357.50	10,270.52	8,529.82	-53.82	406,604.22	607,326.69	32° 7' 2.629 N	103° 59' 12.015 W	
18,670.00	90.20	357.70	10,269.86	8,624.73	-57.80	406,699.13	607,322.71	32° 7' 3.568 N	103° 59' 12.058 W	
18,766.00	89.80	357.90	10,269.86	8,720.66	-61.48	406,795.06	607,319.02	32° 7' 4.517 N	103° 59' 12.097 W	
18,860.00	89.50	357.80	10,270.43	8,814.59	-65.01	406,888.99	607,315.50	32° 7' 5.447 N	103° 59' 12.134 W	
18,955.00	89.00	358.00	10,271.68	8,909.52	-68.49	406,983.92	607,312.01	32° 7' 6.387 N	103° 59' 12.171 W	
19,051.00	90.10	358.90	10,272.43	9,005.48	-71.09	407,079.88	607,309.42	32° 7' 7.336 N	103° 59' 12.198 W	
19,146.00	91.20	0.90	10,271.35	9,100.47	-71.25	407,174.87	607,309.25	32° 7' 8.276 N	103° 59' 12.196 W	
19,241.00	89.80	0.90	10,270.53	9,195.45	-69.76	407,269.85	607,310.74	32° 7' 9.216 N	103° 59' 12.175 W	
19,336.00	88.70	0.10	10,271.77	9,290.44	-68.93	407,364.84	607,311.57	32° 7' 10.156 N	103° 59' 12.162 W	
19,431.00	88.40	358.80	10,274.17	9,385.40	-69.84	407,459.80	607,310.66	32° 7' 11.096 N	103° 59' 12.169 W	
19,526.00	88.50	358.40	10,276.74	9,480.34	-72.16	407,554.73	607,308.34	32° 7' 12.036 N	103° 59' 12.193 W	
19,621.00	88.40	358.50	10,279.31	9,575.27	-74.73	407,649.67	607,305.77	32° 7' 12.975 N	103° 59' 12.219 W	
19,716.00	88.70	357.80	10,281.72	9,670.19	-77.80	407,744.58	607,302.71	32° 7' 13.915 N	103° 59' 12.251 W	
19,811.00	88.40	357.40	10,284.12	9,765.07	-81.77	407,839.47	607,298.73	32° 7' 14.854 N	103° 59' 12.294 W	
19,906.00	88.30	357.70	10,286.86	9,859.95	-85.83	407,934.34	607,294.67	32° 7' 15.793 N	103° 59' 12.337 W	
20,001.00	88.70	358.00	10,289.34	9,954.85	-89.40	408,029.24	607,291.11	32° 7' 16.732 N	103° 59' 12.375 W	
20,072.00	89.50	358.10	10,290.46	10,025.80	-91.81	408,100.19	607,288.69	32° 7' 17.434 N	103° 59' 12.401 W	
Final MWD Survey										
20,131.00	89.50	358.10	10,290.97	10,084.76	-93.77	408,159.16	607,286.74	32° 7' 18.018 N	103° 59' 12.421 W	
Projection to BitTD										



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Admiral Federal Com #2H
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3012.50usft (Latshaw 44)
Site:	Admiral Federal Com #2H	MD Reference:	KB @ 3012.50usft (Latshaw 44)
Well:	Admiral Federal Com #2H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 5000.1 Single User Db

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,600.00	9,596.19	-59.13	139.38	Tie-In to VES Gyro
9,732.00	9,727.96	-52.83	138.44	First TDS MWD Survey
20,072.00	10,290.46	10,025.80	-91.81	Final MWD Survey
20,131.00	10,290.97	10,084.76	-93.77	Projection to Bit/TD

Checked By: _____	Approved By: _____	Date: _____
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