

PATRIOT DRILLING, LLC

30-015-42440

OPERATOR: COG Operating, LLC
WELL/LEASE: Cookie Tosser St Com 2H
COUNTY: Eddy Co., New Mexico
Sec. 9, T 18S, R 30E

**STATE OF NEW MEXICO
DEVIATION REPORT**

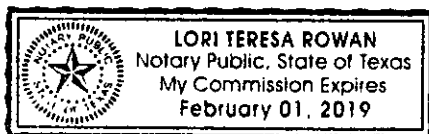
<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
517	1 1/2		
1,170	1 1/4		
1,454	1/2		
1,644	0		
1,848	1/2		

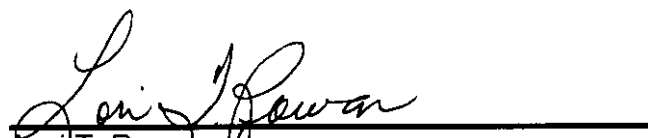
Patriot Drilling, LLC


M. Leroy Peterson, Executive Vice-President

The foregoing instrument was acknowledged before me on this 2nd day of September, 2015 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling, LLC.

My Commission Expires: 02/01/2019




Lori T. Rowan
Notary Public for Ector Co., Texas

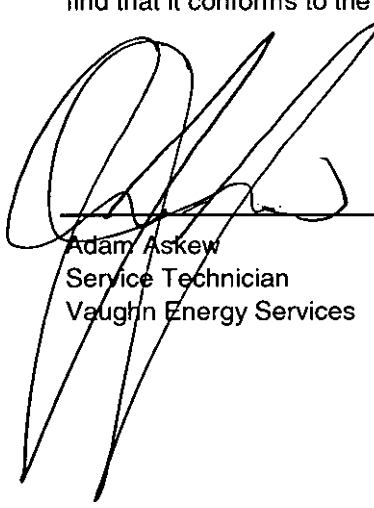
NM OIL CONSERVATION
ARTESIA DISTRICT

MAY 19 2016

RECEIVED



I Adam Askew certify that I am employed by Vaughn Energy Services. That I did on the day(s) of 08/19/15 through 08/19/15 conduct or supervise the taking of a HA Gyro survey from a depth of 0 feet to a depth of 7550 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 Cookie Tosser State Com No Well # 002H API # 30-015-42440 in Lea 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


Adam Askew
Service Technician
Vaughn Energy Services



August 25, 2015

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

Attn: Kanicia Castillo

RE: **Cookie Tosser State Com No 002H**

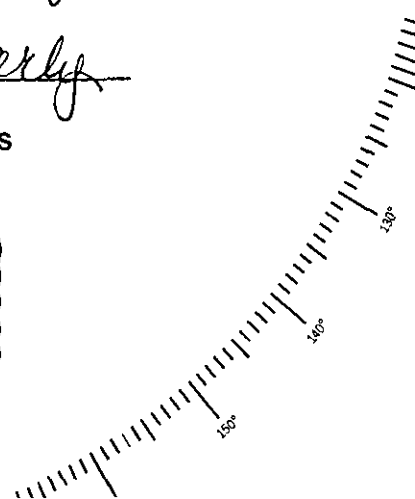
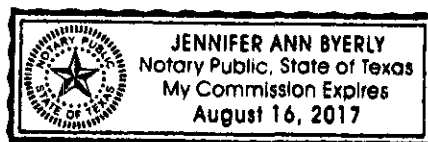
Please find enclosed a copy of the survey from 0' to 7550' ran on the above referenced well.

Sincerely, 
Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 25 day of August,
A.D., 2015, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas

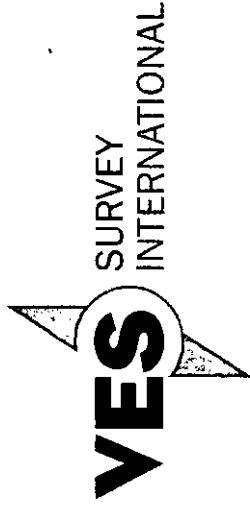




NM OIL CONSERVATION
ARTESIA DISTRICT
MAY 19 2016
RECEIVED

Company: Concho
Lease/Well: Cookie Tosser State Com No/002H

Rig Name: Patriot 6
State/County: New Mexico/Eddy
VS-Azi: 0.00 Degrees
Latitude: 32.75375, Longitude: -103.97171
Grid North = True North -0.20 degs (NAD 27)
Grid Correction Applied = -0.20 degs



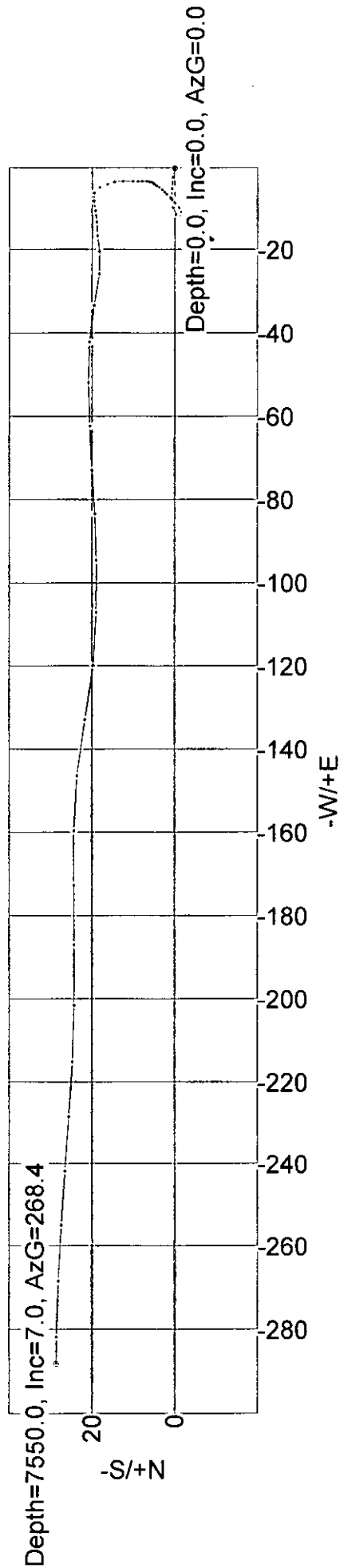
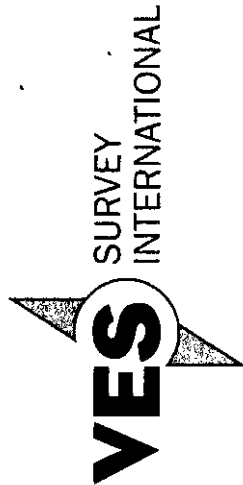
Depth Reference : RKB = 18 feet
DRILLOG HA GYRO SURVEY CALCULATIONS
Filename: gyro survey.ut
Minimum Curvature Method
Report Date/Time: 8/25/2015 / 10:14
VES Survey International
Midland, Texas
432-563-5444
Surveyor: Adam Askew
Cookie Tosser State Com No 002H / API 30-015-42440

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	0.09	202.01	100.00	-0.07	-0.03	-0.07	0.08	202.01	0.09
200.00	0.62	291.75	200.00	0.06	-0.56	0.06	0.57	276.09	0.63
300.00	1.49	277.97	299.98	0.44	-2.36	0.44	2.40	280.62	0.90
400.00	1.82	272.02	399.94	0.68	-5.24	0.68	5.28	277.39	0.37
500.00	1.17	266.60	499.90	0.67	-7.84	0.67	7.87	274.92	0.66
600.00	1.17	262.83	599.88	0.49	-9.87	0.49	9.89	272.82	0.08
700.00	1.09	224.11	699.86	-0.33	-11.55	-0.33	11.56	268.39	0.75
800.00	1.10	175.43	799.85	-1.97	-12.14	-1.97	12.30	260.80	0.90
900.00	1.26	224.13	899.83	-3.71	-12.83	-3.71	13.36	253.85	0.99
1000.00	1.24	244.52	999.81	-4.97	-14.57	-4.97	15.40	251.17	0.44
1100.00	1.49	233.60	1099.78	-6.21	-16.60	-6.21	17.72	249.49	0.36
1200.00	0.87	195.02	1199.76	-7.72	-17.84	-7.72	19.44	246.60	0.98
1300.00	0.34	95.15	1299.75	-8.48	-17.74	-8.48	19.67	244.44	0.99
1400.00	0.19	225.21	1399.75	-8.63	-17.56	-8.63	19.57	243.83	0.49
1500.00	0.16	208.29	1499.75	-8.87	-17.75	-8.87	19.84	243.44	0.06
1600.00	0.08	104.92	1599.75	-9.02	-17.74	-9.02	19.90	243.06	0.20

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	0.13	148.31	1699.75	-9.13	-17.61	-9.13	19.84	242.59	0.09
1800.00	0.36	35.93	1799.75	-8.98	-17.37	-8.98	19.55	242.66	0.43
1900.00	0.39	43.63	1899.75	-8.48	-16.95	-8.48	18.95	243.42	0.06
2000.00	0.41	28.97	1999.75	-7.92	-16.54	-7.92	18.34	244.41	0.10
2100.00	0.55	52.49	2099.74	-7.32	-15.98	-7.32	17.58	245.40	0.24
2200.00	0.69	53.09	2199.74	-6.66	-15.13	-6.66	16.53	246.22	0.14
2300.00	0.54	38.82	2299.73	-5.94	-14.35	-5.94	15.53	247.52	0.21
2400.00	0.80	38.33	2399.72	-5.03	-13.63	-5.03	14.52	249.75	0.26
2500.00	0.83	41.40	2499.71	-3.94	-12.72	-3.94	13.32	252.78	0.05
2600.00	0.80	26.84	2599.70	-2.77	-11.92	-2.77	12.24	256.90	0.21
2700.00	0.79	55.81	2699.70	-1.76	-11.03	-1.76	11.17	260.95	0.40
2800.00	0.81	56.87	2799.69	-0.98	-9.87	-0.98	9.92	264.32	0.02
2900.00	1.05	48.62	2899.67	0.01	-8.59	0.01	8.59	270.06	0.27
3000.00	0.78	44.37	2999.66	1.10	-7.43	1.10	7.51	278.40	0.28
3100.00	0.59	42.78	3099.65	1.96	-6.61	1.96	6.89	286.53	0.18
3200.00	0.36	55.72	3199.65	2.52	-5.99	2.52	6.50	292.80	0.25
3300.00	0.53	38.25	3299.65	3.06	-5.44	3.06	6.25	299.35	0.21
3400.00	0.51	38.42	3399.64	3.77	-4.88	3.77	6.17	307.69	0.02
3500.00	0.46	25.42	3499.64	4.48	-4.43	4.48	6.31	315.32	0.12
3600.00	0.22	53.02	3599.64	4.96	-4.11	4.96	6.44	320.36	0.29
3700.00	0.32	41.09	3699.64	5.29	-3.77	5.29	6.50	324.50	0.12
3800.00	0.24	349.58	3799.63	5.71	-3.62	5.71	6.76	327.60	0.26
3900.00	0.36	23.86	3899.63	6.21	-3.53	6.21	7.14	330.35	0.21
4000.00	0.37	10.33	3999.63	6.81	-3.35	6.81	7.59	333.83	0.09
4100.00	0.82	352.04	4099.63	7.83	-3.39	7.83	8.54	336.61	0.48
4200.00	0.44	7.99	4199.62	8.92	-3.43	8.92	9.56	338.93	0.41
4300.00	1.00	0.12	4299.61	10.16	-3.38	10.16	10.71	341.61	0.57
4400.00	1.63	0.25	4399.58	12.46	-3.37	12.46	12.90	344.85	0.64
4500.00	0.86	348.21	4499.56	14.62	-3.52	14.62	15.03	346.46	0.81
4600.00	1.17	335.37	4599.54	16.28	-4.10	16.28	16.79	345.87	0.38
4700.00	1.23	336.92	4699.52	18.20	-4.94	18.20	18.85	344.80	0.07
4800.00	1.07	287.25	4799.50	19.46	-6.26	19.46	20.45	342.17	0.98
4900.00	1.22	260.41	4899.49	19.57	-8.20	19.57	21.22	337.25	0.55
5000.00	1.56	261.71	4999.46	19.19	-10.59	19.19	21.92	331.10	0.34
5100.00	1.68	266.07	5099.42	18.90	-13.40	18.90	23.17	324.66	0.17
5200.00	2.06	268.40	5199.36	18.75	-16.65	18.75	25.07	318.38	0.39
5300.00	2.39	256.51	5299.29	18.21	-20.47	18.21	27.40	311.66	0.57
5400.00	3.89	278.34	5399.14	18.22	-25.85	18.22	31.62	305.17	1.89
5500.00	4.91	279.89	5498.84	19.44	-33.42	19.44	38.66	300.19	1.03

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
5500.00	5.27	275.51	5598.45	20.62	-42.21	20.62	46.97	296.04	0.53
5700.00	5.84	268.00	5697.98	20.88	-51.87	20.88	55.92	291.93	0.92
5800.00	6.16	268.16	5797.43	20.53	-62.32	20.53	65.61	288.24	0.31
5900.00	6.06	266.14	5896.86	20.01	-72.94	20.01	75.63	285.34	0.24
6000.00	6.01	266.14	5996.31	19.30	-83.43	19.30	85.63	283.02	0.04
6100.00	6.88	270.36	6095.68	18.98	-94.64	18.98	96.53	281.34	0.99
6200.00	7.45	269.85	6194.90	19.01	-107.12	19.01	108.79	280.06	0.58
6300.00	7.27	276.22	6294.07	19.67	-119.89	19.67	121.49	279.32	0.84
6400.00	7.95	281.28	6393.19	21.71	-132.96	21.71	134.72	279.27	0.95
6500.00	7.66	274.96	6492.27	23.64	-146.37	23.64	148.27	279.17	0.90
6600.00	7.59	271.50	6591.39	24.39	-159.61	24.39	161.46	278.69	0.46
6700.00	7.51	268.22	6690.52	24.36	-172.75	24.36	174.46	278.03	0.44
6800.00	8.91	271.36	6789.49	24.34	-187.02	24.34	188.60	277.41	1.47
6900.00	7.85	268.39	6888.42	24.33	-201.59	24.33	203.06	276.88	1.15
7000.00	7.80	274.99	6987.50	24.73	-215.18	24.73	216.60	276.56	0.90
7100.00	7.57	272.47	7086.60	25.60	-228.52	25.60	229.95	276.39	0.41
7200.00	7.80	274.93	7185.70	26.47	-241.86	26.47	243.31	276.25	0.40
7300.00	7.33	273.35	7284.83	27.43	-254.99	27.43	256.46	276.14	0.51
7400.00	8.26	272.42	7383.90	28.10	-268.54	28.10	270.01	275.97	0.94
7500.00	7.07	272.08	7483.01	28.63	-281.87	28.63	283.32	275.80	1.19
7550.00	7.02	268.43	7532.63	28.66	-288.00	28.66	289.42	275.68	0.90

VES Survey International
Midland, Texas
432-563-5444
Surveyor: Adam Askew
Cookie Tosser State Com No 002H / API 30-015-42440





COG Operating LLC.

Eddy County, NM

Cookie Tosser State Com

#2H

OH

Survey: MWD #1

Standard Survey Report

01 September, 2015



Wellplanning Survey Report

Company:	COG Operating LLC.	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3494.0usft (Original Well Elev)
Site:	Cookie Tosser State Com	MD Reference:	WELL @ 3494.0usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Eddy County, NM		
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	Cookie Tosser State Com		
Site Position:		Northing:	638,116.90 usft
From:	Map	Easting:	611,365.40 usft
Position Uncertainty:	2.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 45' 13.512 N
		Longitude:	103° 58' 15.925 W
		Grid Convergence:	0.20 °

Well	#2H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	3.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 45' 13.514 N
		Longitude:	103° 58' 18.147 W
		Ground Level:	3,476.0 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	7/29/2015	7.30
			Dip Angle
			(°)
			60.50
			Field Strength
			(nT)
			48,478

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			192.92

Survey Program	Date 9/1/2015		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	12,809.0	MWD #1 (OH)	MWD
			Description
			MWD - Standard

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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.09	202.01	100.0	-0.1	0.0	0.1	0.09	0.09	0.00	
200.0	0.62	291.75	200.0	0.1	-0.6	0.1	0.63	0.53	89.74	
300.0	1.49	277.97	300.0	0.4	-2.4	0.1	0.90	0.87	-13.78	
400.0	1.82	272.02	399.9	0.7	-5.2	0.5	0.37	0.33	-5.95	
500.0	1.17	266.60	499.9	0.7	-7.8	1.1	0.66	-0.65	-5.42	
600.0	1.17	262.83	599.9	0.5	-9.9	1.7	0.08	0.00	-3.77	
700.0	1.09	224.11	699.9	-0.3	-11.5	2.9	0.75	-0.08	-38.72	
800.0	1.10	175.43	799.8	-2.0	-12.1	4.6	0.90	0.01	-48.68	
900.0	1.26	224.13	899.8	-3.7	-12.8	6.5	0.98	0.16	48.70	



Wellplanning Survey Report

Company:	COG Operating LLC.	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3494.0usft (Original Well Elev)
Site:	Cookie Tosser State Com	MD Reference:	WELL @ 3494.0usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	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)	
1,000.0	1.24	244.52	999.8	-5.0	-14.6	8.1	0.44	-0.02	20.39	
1,100.0	1.49	233.60	1,099.8	-6.2	-16.6	9.8	0.36	0.25	-10.92	
1,200.0	0.87	195.02	1,199.8	-7.7	-17.8	11.5	0.97	-0.62	-38.58	
1,300.0	0.34	95.15	1,299.8	-8.5	-17.7	12.2	0.99	-0.53	-99.87	
1,400.0	0.19	225.21	1,399.8	-8.6	-17.5	12.3	0.48	-0.15	130.06	
1,500.0	0.16	208.29	1,499.8	-8.9	-17.7	12.6	0.06	-0.03	-16.92	
1,600.0	0.08	104.92	1,599.8	-9.0	-17.7	12.7	0.19	-0.08	-103.37	
1,700.0	0.13	148.31	1,699.8	-9.1	-17.6	12.8	0.09	0.05	43.39	
1,800.0	0.36	35.93	1,799.8	-9.0	-17.4	12.6	0.43	0.23	-112.38	
1,900.0	0.39	43.63	1,899.7	-8.5	-16.9	12.0	0.06	0.03	7.70	
2,000.0	0.41	28.97	1,999.7	-7.9	-16.5	11.4	0.10	0.02	-14.66	
2,100.0	0.55	52.49	2,099.7	-7.3	-16.0	10.7	0.24	0.14	23.52	
2,200.0	0.69	53.09	2,199.7	-6.6	-15.1	9.8	0.14	0.14	0.60	
2,300.0	0.54	38.82	2,299.7	-5.9	-14.3	9.0	0.21	-0.15	-14.27	
2,400.0	0.80	38.33	2,399.7	-5.0	-13.6	7.9	0.26	0.26	-0.49	
2,500.0	0.83	41.40	2,499.7	-3.9	-12.7	6.6	0.05	0.03	3.07	
2,600.0	0.80	26.84	2,599.7	-2.7	-11.9	5.3	0.21	-0.03	-14.56	
2,700.0	0.79	55.81	2,699.7	-1.7	-11.0	4.1	0.40	-0.01	28.97	
2,800.0	0.81	56.87	2,799.7	-1.0	-9.9	3.1	0.02	0.02	1.06	
2,900.0	1.05	48.62	2,899.7	0.0	-8.6	1.9	0.27	0.24	-8.25	
3,000.0	0.78	44.37	2,999.7	1.1	-7.4	0.6	0.28	-0.27	-4.25	
3,100.0	0.59	42.78	3,099.7	2.0	-6.6	-0.5	0.19	-0.19	-1.59	
3,200.0	0.36	55.72	3,199.6	2.6	-6.0	-1.2	0.25	-0.23	12.94	
3,300.0	0.53	38.25	3,299.6	3.1	-5.4	-1.8	0.22	0.17	-17.47	
3,400.0	0.51	38.42	3,399.6	3.8	-4.9	-2.6	0.02	-0.02	0.17	
3,500.0	0.46	25.42	3,499.6	4.5	-4.4	-3.4	0.12	-0.05	-13.00	
3,600.0	0.22	53.02	3,599.6	5.0	-4.1	-4.0	0.28	-0.24	27.60	
3,700.0	0.32	41.09	3,699.6	5.3	-3.8	-4.3	0.11	0.10	-11.93	
3,800.0	0.24	349.58	3,799.6	5.7	-3.6	-4.8	0.25	-0.08	-51.51	
3,900.0	0.36	23.86	3,899.6	6.2	-3.5	-5.3	0.21	0.12	34.28	
4,000.0	0.37	10.33	3,999.6	6.8	-3.3	-5.9	0.09	0.01	-13.53	
4,100.0	0.82	352.04	4,099.6	7.9	-3.4	-6.9	0.48	0.45	-18.29	
4,200.0	0.44	7.99	4,199.6	9.0	-3.4	-8.0	0.41	-0.38	15.95	
4,300.0	1.00	0.12	4,299.6	10.2	-3.4	-9.2	0.57	0.56	-7.87	
4,400.0	1.63	0.25	4,399.6	12.5	-3.4	-11.4	0.63	0.63	0.13	
4,500.0	0.86	348.21	4,499.6	14.7	-3.5	-13.5	0.81	-0.77	-12.04	
4,600.0	1.17	335.37	4,599.5	16.3	-4.1	-15.0	0.38	0.31	-12.84	
4,700.0	1.23	336.92	4,699.5	18.2	-4.9	-16.7	0.07	0.06	1.55	
4,800.0	1.07	287.25	4,799.5	19.5	-6.2	-17.6	0.98	-0.16	-49.67	
4,900.0	1.22	260.41	4,899.5	19.6	-8.2	-17.3	0.55	0.15	-26.84	
5,000.0	1.56	261.71	4,999.5	19.2	-10.6	-16.4	0.34	0.34	1.30	
5,100.0	1.68	266.07	5,099.4	18.9	-13.4	-15.5	0.17	0.12	4.36	
5,200.0	2.06	268.40	5,199.4	18.8	-16.7	-14.6	0.39	0.38	2.33	
5,300.0	2.39	256.51	5,299.3	18.2	-20.5	-13.2	0.57	0.33	-11.89	



Wellplanning Survey Report

Company:	COG Operating LLC.	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3494.0usft (Original Well Elev)
Site:	Cookie Tosser State Com	MD Reference:	WELL @ 3494.0usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	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)	
5,400.0	3.89	278.34	5,399.1	18.2	-25.9	-12.0	1.89	1.50	21.83	
5,500.0	4.91	279.89	5,498.8	19.5	-33.4	-11.5	1.03	1.02	1.55	
5,600.0	5.27	275.51	5,598.4	20.6	-42.2	-10.7	0.53	0.36	-4.38	
5,700.0	5.84	268.00	5,698.0	20.9	-51.9	-8.8	0.92	0.57	-7.51	
5,800.0	6.16	268.16	5,797.4	20.6	-62.3	-6.1	0.32	0.32	0.16	
5,900.0	6.06	266.14	5,896.9	20.0	-73.0	-3.2	0.24	-0.10	-2.02	
6,000.0	6.01	266.14	5,996.3	19.3	-83.4	-0.2	0.05	-0.05	0.00	
6,100.0	6.88	270.36	6,095.7	19.0	-94.7	2.6	0.99	0.87	4.22	
6,200.0	7.45	269.85	6,194.9	19.0	-107.1	5.4	0.57	0.57	-0.51	
6,300.0	7.27	276.22	6,294.1	19.7	-119.9	7.6	0.84	-0.18	6.37	
6,400.0	7.95	281.28	6,393.2	21.7	-133.0	8.5	0.95	0.68	5.06	
6,500.0	7.66	274.96	6,492.3	23.7	-146.4	9.7	0.91	-0.29	-6.32	
6,600.0	7.59	271.50	6,591.4	24.4	-159.6	11.9	0.46	-0.07	-3.46	
6,700.0	7.51	268.22	6,690.5	24.4	-172.8	14.9	0.44	-0.08	-3.28	
6,800.0	8.91	271.36	6,789.5	24.4	-187.0	18.1	1.47	1.40	3.14	
6,900.0	7.85	268.39	6,888.4	24.4	-201.6	21.3	1.14	-1.06	-2.97	
7,000.0	7.80	274.99	6,987.5	24.8	-215.2	24.0	0.90	-0.05	6.60	
7,100.0	7.57	272.47	7,086.6	25.6	-228.5	26.1	0.41	-0.23	-2.52	
7,200.0	7.80	274.93	7,185.7	26.5	-241.9	28.3	0.40	0.23	2.46	
7,300.0	7.33	273.35	7,284.8	27.5	-255.0	30.3	0.51	-0.47	-1.58	
7,400.0	8.26	272.42	7,383.9	28.1	-268.6	32.6	0.94	0.93	-0.93	
7,500.0	7.07	272.08	7,483.0	28.7	-281.9	35.1	1.19	-1.19	-0.34	
7,550.0	7.02	268.43	7,532.6	28.7	-288.0	36.4	0.90	-0.10	-7.30	
7,663.0	7.90	270.40	7,644.7	28.6	-302.7	39.8	0.81	0.78	1.74	
7,694.0	7.80	269.50	7,675.4	28.5	-306.9	40.8	0.51	-0.32	-2.90	
7,726.0	10.20	263.10	7,707.0	28.2	-311.9	42.3	8.12	7.50	-20.00	
7,757.0	14.00	258.70	7,737.3	27.1	-318.3	44.7	12.61	12.26	-14.19	
7,789.0	16.60	259.70	7,768.2	25.5	-326.6	48.1	8.17	8.13	3.13	
7,821.0	19.00	260.10	7,798.6	23.8	-336.2	51.9	7.51	7.50	1.25	
7,852.0	21.70	257.30	7,827.7	21.7	-346.8	56.4	9.26	8.71	-9.03	
7,884.0	24.80	253.10	7,857.1	18.5	-359.0	62.3	10.98	9.69	-13.13	
7,916.0	28.10	248.50	7,885.7	13.7	-372.4	69.9	12.13	10.31	-14.38	
7,947.0	30.70	245.10	7,912.7	7.7	-386.4	78.9	9.96	8.39	-10.97	
7,979.0	32.60	241.30	7,940.0	0.1	-401.4	89.6	8.60	5.94	-11.88	
8,011.0	35.20	235.30	7,966.5	-9.2	-416.5	102.1	13.24	8.13	-18.75	
8,042.0	37.80	231.30	7,991.5	-20.3	-431.3	116.2	11.37	8.39	-12.90	
8,074.0	40.60	230.20	8,016.3	-33.1	-446.9	132.2	9.02	8.75	-3.44	
8,106.0	42.90	227.00	8,040.1	-47.2	-462.9	149.5	9.80	7.19	-10.00	
8,138.0	46.50	223.50	8,062.9	-63.0	-478.9	168.5	13.63	11.25	-10.94	
8,169.0	49.90	220.50	8,083.5	-80.2	-494.3	188.7	13.13	10.97	-9.68	
8,201.0	54.20	216.70	8,103.2	-99.9	-510.0	211.4	16.37	13.44	-11.88	
8,232.0	57.40	212.70	8,120.7	-121.0	-524.6	235.2	14.84	10.32	-12.90	
8,261.0	61.80	207.80	8,135.3	-142.6	-537.2	259.1	21.03	15.17	-16.90	



Wellplanning Survey Report

Company:	COG Operating LLC.	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3494.0usft (Original Well Elev)
Site:	Cookie Tosser State Com	MD Reference:	WELL @ 3494.0usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	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)
8,293.0	66.20	205.10	8,149.4	-168.4	-550.0	287.1	15.70	13.75	-8.44
8,324.0	68.90	203.80	8,161.2	-194.4	-561.8	315.1	9.53	8.71	-4.19
8,356.0	71.80	202.70	8,172.0	-222.1	-573.7	344.8	9.62	9.06	-3.44
8,387.0	74.30	201.60	8,181.0	-249.6	-584.9	374.0	8.75	8.06	-3.55
8,419.0	76.70	200.10	8,189.0	-278.5	-595.9	404.7	8.77	7.50	-4.69
8,451.0	80.20	198.60	8,195.4	-308.1	-606.3	435.9	11.86	10.94	-4.69
8,482.0	84.80	197.10	8,199.5	-337.4	-615.7	466.5	15.59	14.84	-4.84
8,514.0	89.30	195.90	8,201.1	-368.0	-624.8	498.4	14.55	14.06	-3.75
8,546.0	90.20	194.70	8,201.2	-398.9	-633.2	530.3	4.69	2.81	-3.75
8,611.0	91.60	193.60	8,200.2	-461.9	-649.1	595.3	2.74	2.15	-1.69
8,705.0	89.00	194.70	8,199.7	-553.0	-672.1	689.3	3.00	-2.77	1.17
8,802.0	87.30	194.60	8,202.9	-646.8	-696.6	786.2	1.76	-1.75	-0.10
8,897.0	85.90	193.90	8,208.5	-738.7	-720.0	881.0	1.65	-1.47	-0.74
8,991.0	85.80	191.80	8,215.3	-830.1	-740.8	974.7	2.23	-0.11	-2.23
9,087.0	84.70	188.80	8,223.3	-924.2	-757.9	1,070.3	3.32	-1.15	-3.13
9,181.0	85.10	188.30	8,231.6	-1,016.8	-771.8	1,163.7	0.68	0.43	-0.53
9,271.0	86.60	188.20	8,238.1	-1,105.7	-784.7	1,253.1	1.67	1.67	-0.11
9,366.0	89.80	184.80	8,241.1	-1,200.0	-795.5	1,347.5	4.91	3.37	-3.58
9,461.0	88.10	183.90	8,242.8	-1,294.7	-802.7	1,441.4	2.02	-1.79	-0.95
9,556.0	89.10	183.60	8,245.2	-1,389.4	-808.9	1,535.1	1.10	1.05	-0.32
9,651.0	88.50	183.90	8,247.2	-1,484.2	-815.1	1,628.9	0.71	-0.63	0.32
9,746.0	87.20	184.30	8,250.7	-1,578.9	-821.9	1,722.7	1.43	-1.37	0.42
9,841.0	87.80	184.50	8,254.9	-1,673.5	-829.2	1,816.6	0.67	0.63	0.21
9,936.0	87.80	184.20	8,258.5	-1,768.2	-836.4	1,910.4	0.32	0.00	-0.32
10,031.0	87.90	184.10	8,262.1	-1,862.9	-843.2	2,004.3	0.15	0.11	-0.11
10,126.0	87.50	184.30	8,265.9	-1,957.5	-850.2	2,098.1	0.47	-0.42	0.21
10,221.0	89.40	184.70	8,268.5	-2,052.2	-857.6	2,192.0	2.04	2.00	0.42
10,316.0	88.60	184.00	8,270.1	-2,146.9	-864.8	2,285.9	1.12	-0.84	-0.74
10,410.0	88.90	183.90	8,272.2	-2,240.7	-871.3	2,378.8	0.34	0.32	-0.11
10,505.0	89.00	183.20	8,273.9	-2,335.5	-877.2	2,472.5	0.74	0.11	-0.74
10,600.0	88.90	183.00	8,275.6	-2,430.3	-882.3	2,566.1	0.24	-0.11	-0.21
10,695.0	88.40	182.80	8,277.9	-2,525.2	-887.1	2,659.6	0.57	-0.53	-0.21
10,790.0	88.30	182.70	8,280.6	-2,620.0	-891.7	2,753.1	0.15	-0.11	-0.11
10,917.0	90.00	183.10	8,282.5	-2,746.8	-898.1	2,878.1	1.38	1.34	0.31
11,043.0	91.10	183.00	8,281.3	-2,872.7	-904.8	3,002.2	0.88	0.87	-0.08
11,138.0	92.00	182.70	8,278.7	-2,967.5	-909.5	3,095.7	1.00	0.95	-0.32
11,233.0	90.80	182.10	8,276.4	-3,062.4	-913.5	3,189.1	1.41	-1.26	-0.63
11,328.0	90.80	181.70	8,275.1	-3,157.3	-916.7	3,282.4	0.42	0.00	-0.42
11,423.0	89.30	182.80	8,275.0	-3,252.3	-920.4	3,375.7	1.96	-1.58	1.16
11,519.0	89.50	184.20	8,276.0	-3,348.1	-926.3	3,470.4	1.47	0.21	1.46
11,645.0	88.70	185.40	8,278.0	-3,473.6	-936.8	3,595.1	1.14	-0.63	0.95
11,740.0	90.10	185.30	8,279.0	-3,568.2	-945.7	3,689.3	1.48	1.47	-0.11
11,835.0	88.10	186.10	8,280.5	-3,662.7	-955.1	3,783.5	2.27	-2.11	0.84



Wellplanning Survey Report

Company:	COG Operating LLC.	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3494.0usft (Original Well Elev)
Site:	Cookie Tosses State Com	MD Reference:	WELL @ 3494.0usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	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)
11,899.0	88.80	185.80	8,282.2	-3,726.3	-961.7	3,847.0	1.19	1.09	-0.47
11,994.0	90.70	184.70	8,282.6	-3,820.9	-970.4	3,941.2	2.31	2.00	-1.16
12,121.0	93.20	184.40	8,278.3	-3,947.4	-980.5	4,066.7	1.98	1.97	-0.24
12,215.0	92.80	183.90	8,273.4	-4,041.1	-987.3	4,159.5	0.68	-0.43	-0.53
12,311.0	92.30	184.10	8,269.1	-4,136.7	-994.0	4,254.2	0.56	-0.52	0.21
12,406.0	90.90	184.30	8,266.4	-4,231.4	-1,000.9	4,348.1	1.49	-1.47	0.21
12,504.0	91.90	184.10	8,264.1	-4,329.1	-1,008.1	4,444.9	1.04	1.02	-0.20
12,631.0	91.30	183.00	8,260.5	-4,455.9	-1,016.0	4,570.2	0.99	-0.47	-0.87
12,809.0	91.30	183.00	8,256.5	-4,633.6	-1,025.3	4,745.5	0.00	0.00	0.00
PBHL(CTS#2H)									

Checked By: _____	Approved By: _____	Date: _____
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COG Operating LLC.
Project: Eddy County, NM
Site: Cookie Tossar State Com
Well: #2H

Wellbore: OH
Plan: Plan #6 (#2H/OH)

Section Details

Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dieg	TFace	Vsect
1	7550.0	7.02	268.43	7532.6	28.7	-288.0	0.00	0.00	36.4
2	7766.0	7.02	268.43	7747.0	28.0	-314.4	0.00	0.00	43.1
3	8485.5	88.93	200.00	8200.0	-394.4	-522.3	12.00	-68.70	501.2
4	9176.5	88.93	186.18	8212.9	-1065.7	-678.4	2.00	-90.12	1190.4
5	12778.8	88.93	186.18	8280.0	-4646.4	-1066.0	0.00	0.00	4767.1

WELL DETAILS: #2H

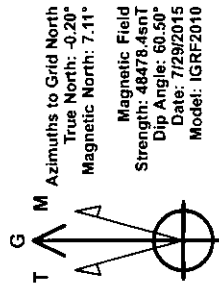
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RKB Elevation: WELL @ 3494.0usft (Original Well Elev)
Rig Name: Original Well Elev

Northing
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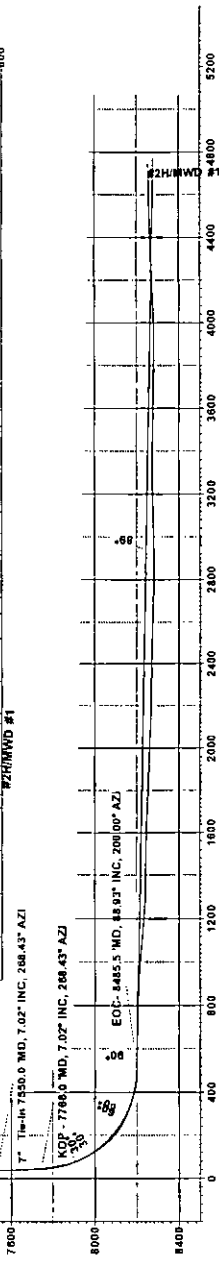
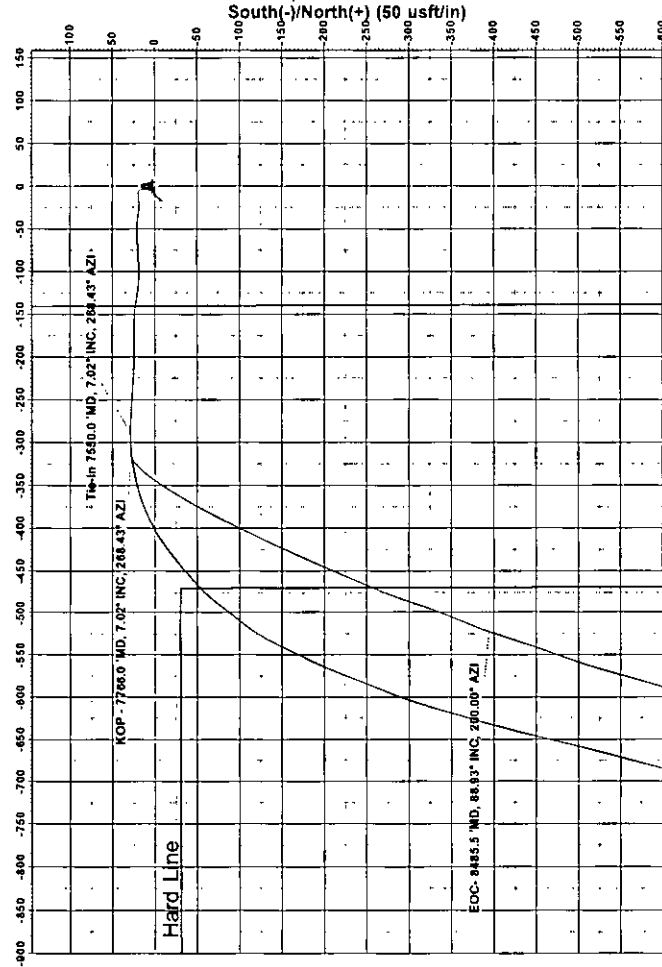
Easting
611175.70

Latitude
32° 45' 13.514 N

Longitude
103° 58' 18.147 W



West(-)/East(+) (50 usft/in)

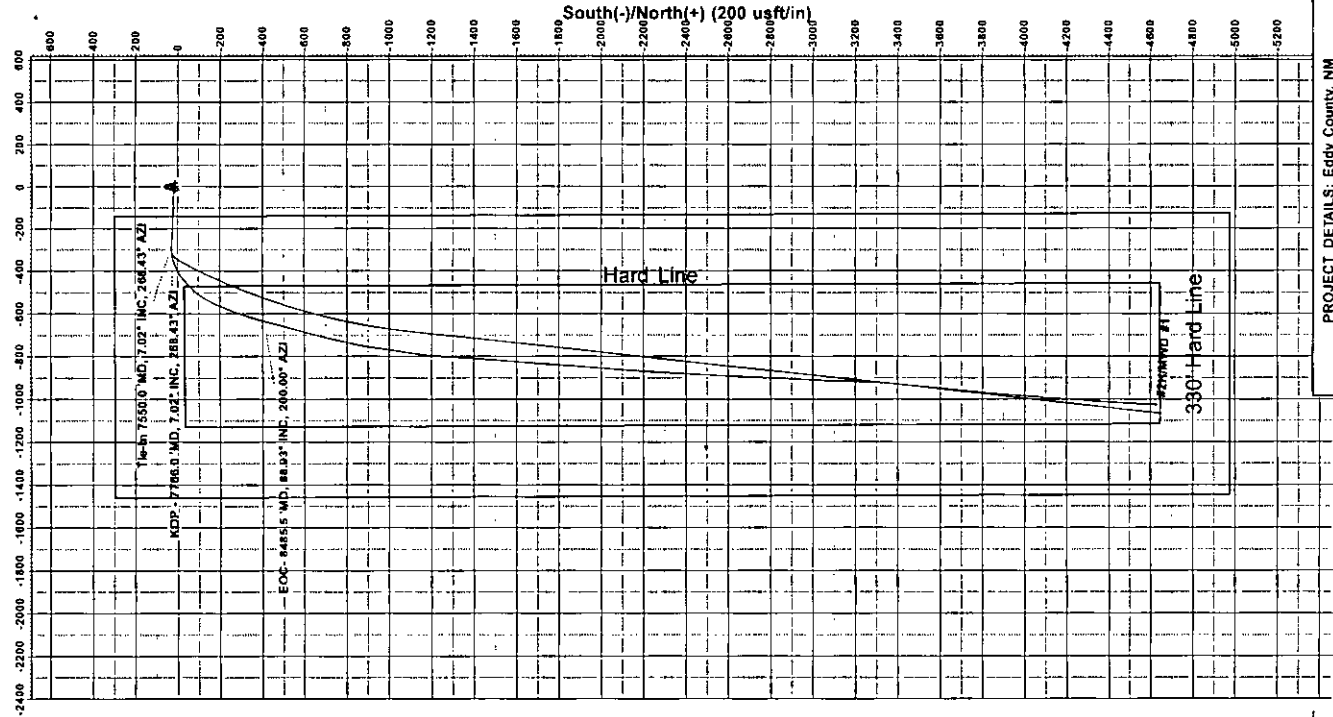


Vertical Section at 192.92° (200 usft/in)

Nexus Directional Solutions



West(-)/East(+) (200 usft/in)



PROJECT DETAILS: Eddy County, NM
Geodetic System: US State Plane 1927 (East solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: GRID