

Results of Directional Survey

API number:	30-025-41383		
OGRID:		Operator:	COG OPERATING LLC
		Property:	DECKARD FEDERAL COM # 3H

surface	ULSTR:	B	13	T 24S	R 33E
				190 FNL	1980 FEL ✓

BH Loc	ULSTR:	O	13	T 24S	R 33E
15440	MD	11161.6	TVD	340 FSL	1967 FEL ✓
4940 FNL					

Top Perf/OH	ULSTR:	B	13	T 24S	R 33E
11376	MD	11011.9	TVD	885 FNL	1868 FEL

Bot Perf/OH	ULSTR:	O	13	T 24S	R 33E
15265	MD	11153.4	TVD	514 FSL	1961 FEL
4766 FNL					

	MD	N/S	E/W	VD
	11345.00	-665.30	111.30	11003.50
TOP PERFS/OH	11376.00	-695.10	112.00	11011.90
	11376.00	-695.10	112.00	11011.90
	15174.00	-4484.80	22.60	11148.80
BOT PERFS/OH	15265.00	-4575.61	18.92	11153.35
	15268.00	-4578.60	18.80	11153.50

NEXT TO LAST	15392.00	-4702.30	14.30	11159.30
LAST READING	15440.00	-4750.30	12.70	11161.60
TD	15440.00	-4750.30	12.70	11161.60

Surface Location	190	FN	1980	FE
Projected BHL	4940	FN	1967	FE
Location of				
Top Perfs/OH	885	FN	1868	FE
Bottom Perfs/OH	4766	FN	1961	FE

SUMMARY of Subsurface Locations

Surface Location	B-13-24S-33E	190	FN	1980	FE	Vert. Depth
Top Perfs/OH	B-13-24S-33E	885	FN	1868	FE	11011.90
Bottom Perfs/OH	O-13-24S-33E	4766	FN	1961	FE	11153.35
Projected TD	O-13-24S-33E	4940	FN	1967	FE	11161.60

DEC 15 2010



September 22, 2014

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

Attn: Kanicia Castillo

RE: Deckard Federal Com No. 003H

Please find enclosed a copy of the survey from 0.00' to 10,277.00' ran on the above referenced well.

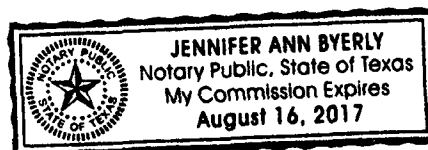
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 22 day of September A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas



Company: COG Operating, LLC (Concho)
Lease/Well: Deckard Federal Com/No. 003H



Rig Name: Silveroak 12
State/County: New Mexico/Lea
Latitude: 32.22, Longitude: -103.52
GRID North is 0.43 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB = 18 Foot

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: ...federal com 3h_gyro survey.ut

Minimum Curvature Method

Report Date/Time: 9/22/2014 / 10:01

VES Survey International

West Texas

(432) 563-5444

Surveyor: Gene Heiss

Deckard Federal Com No. 003H / API 30-025-41383

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	0.19	102.39	100.00	-0.04	0.16	-0.04	0.16	102.39	0.19
200.00	0.17	104.20	200.00	-0.11	0.46	-0.11	0.48	102.95	0.02
300.00	0.36	116.83	300.00	-0.28	0.88	-0.28	0.93	107.78	0.20
400.00	0.45	118.19	400.00	-0.61	1.51	-0.61	1.63	112.01	0.09
500.00	0.45	124.64	499.99	-1.02	2.18	-1.02	2.40	115.07	0.05
600.00	0.49	132.21	599.99	-1.53	2.81	-1.53	3.20	118.48	0.07
700.00	0.31	124.99	699.99	-1.97	3.35	-1.97	3.88	120.42	0.19
800.00	0.33	105.73	799.99	-2.20	3.84	-2.20	4.43	119.76	0.11
900.00	0.21	94.37	899.98	-2.29	4.30	-2.29	4.88	118.01	0.13
1000.00	0.10	75.95	999.98	-2.28	4.57	-2.28	5.11	116.52	0.12
1100.00	0.20	62.24	1099.98	-2.18	4.81	-2.18	5.28	114.37	0.10
1200.00	0.30	59.62	1199.98	-1.97	5.19	-1.97	5.55	110.77	0.10
1300.00	0.24	35.30	1299.98	-1.66	5.54	-1.66	5.78	106.73	0.13
1400.00	0.07	211.03	1399.98	-1.55	5.63	-1.55	5.83	105.36	0.31
1500.00	0.43	356.41	1499.98	-1.22	5.57	-1.22	5.70	102.38	0.49
1600.00	0.39	353.62	1599.98	-0.51	5.51	-0.51	5.53	95.25	0.05
1700.00	0.23	325.32	1699.98	0.00	5.36	0.00	5.36	90.03	0.22
1800.00	0.53	350.21	1799.97	0.62	5.16	0.62	5.20	83.16	0.34

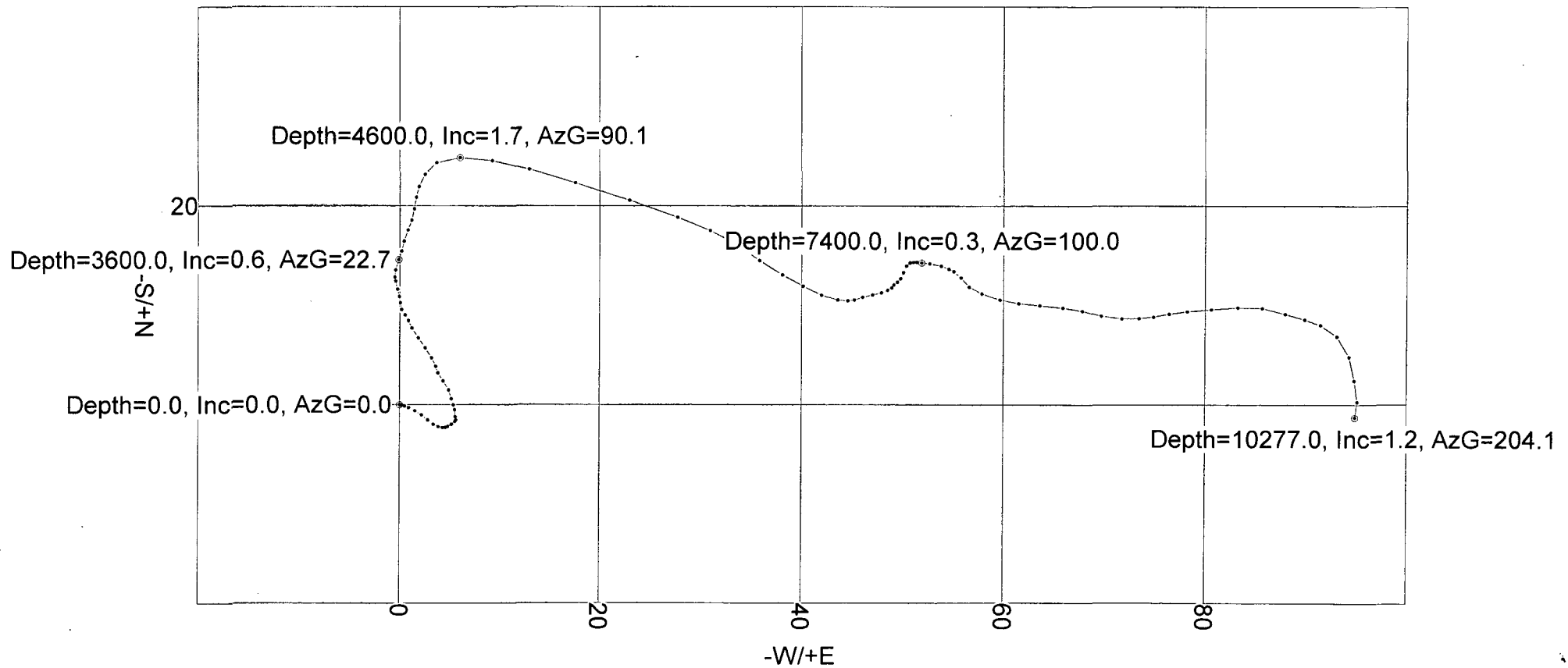
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.52	334.37	1899.97	1.49	4.89	1.49	5.11	73.04	0.15
2000.00	0.72	323.61	1999.96	2.41	4.32	2.41	4.94	60.86	0.23
2100.00	0.38	333.92	2099.96	3.21	3.80	3.21	4.97	49.85	0.35
2200.00	0.43	349.61	2199.96	3.87	3.59	3.87	5.28	42.84	0.12
2300.00	0.69	324.66	2299.95	4.73	3.18	4.73	5.70	33.89	0.35
2400.00	0.68	330.12	2399.95	5.73	2.54	5.73	6.26	23.88	0.07
2500.00	0.72	320.32	2499.94	6.72	1.84	6.72	6.97	15.32	0.13
2600.00	0.63	334.20	2599.93	7.70	1.20	7.70	7.79	8.88	0.19
2700.00	0.35	336.62	2699.93	8.47	0.84	8.47	8.51	5.68	0.28
2800.00	0.40	320.40	2799.93	9.02	0.50	9.02	9.03	3.18	0.12
2900.00	0.34	339.57	2899.92	9.56	0.18	9.56	9.56	1.05	0.13
3000.00	0.48	353.48	2999.92	10.26	0.02	10.26	10.26	0.14	0.17
3100.00	0.21	344.81	3099.92	10.86	-0.07	10.86	10.86	359.62	0.27
3200.00	0.68	347.68	3199.92	11.62	-0.25	11.62	11.62	358.78	0.47
3300.00	0.27	345.64	3299.91	12.42	-0.43	12.42	12.43	358.01	0.41
3400.00	0.21	352.04	3399.91	12.84	-0.52	12.84	12.85	357.69	0.07
3500.00	0.61	10.93	3499.91	13.55	-0.44	13.55	13.55	358.13	0.42
3600.00	0.64	22.72	3599.90	14.58	-0.13	14.58	14.58	359.51	0.13
3700.00	0.42	12.07	3699.90	15.45	0.17	15.45	15.45	0.61	0.24
3800.00	0.75	14.19	3799.89	16.44	0.40	16.44	16.45	1.40	0.33
3900.00	0.59	24.89	3899.89	17.54	0.78	17.54	17.56	2.55	0.20
4000.00	0.64	16.79	3999.88	18.55	1.16	18.55	18.59	3.58	0.10
4100.00	0.71	8.69	4099.87	19.70	1.42	19.70	19.75	4.11	0.12
4200.00	0.63	10.02	4199.87	20.85	1.60	20.85	20.91	4.40	0.08
4300.00	0.66	19.09	4299.86	21.94	1.89	21.94	22.02	4.92	0.11
4400.00	0.90	30.95	4399.85	23.16	2.48	23.16	23.30	6.12	0.29
4500.00	1.09	58.20	4499.84	24.34	3.70	24.34	24.62	8.64	0.50
4600.00	1.75	90.12	4599.81	24.84	6.03	24.84	25.56	13.65	1.00
4700.00	1.99	99.83	4699.75	24.54	9.27	24.54	26.23	20.69	0.40
4800.00	2.41	105.94	4799.68	23.67	13.01	23.67	27.01	28.79	0.48
4900.00	3.04	107.32	4899.57	22.30	17.57	22.30	28.39	38.23	0.63
5000.00	3.44	108.57	4999.40	20.55	22.95	20.55	30.80	48.15	0.40
5100.00	2.40	111.72	5099.27	18.82	27.73	18.82	33.52	55.83	1.05
5200.00	1.60	113.03	5199.21	17.50	30.96	17.50	35.57	60.52	0.79
5300.00	1.68	123.74	5299.17	16.14	33.47	16.14	37.16	64.26	0.32
5400.00	1.61	126.70	5399.13	14.48	35.82	14.48	38.64	67.98	0.12
5500.00	1.48	117.93	5499.09	13.04	38.08	13.04	40.25	71.09	0.27
5600.00	1.23	120.37	5599.07	11.90	40.14	11.90	41.87	73.49	0.26
5700.00	1.14	111.45	5699.04	10.99	41.99	10.99	43.41	75.33	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
5800.00	0.81	97.74	5799.03	10.54	43.62	10.54	44.87	76.42	0.41
5900.00	0.31	89.58	5899.03	10.44	44.59	10.44	45.80	76.82	0.50
6000.00	0.45	76.59	5999.02	10.54	45.25	10.54	46.46	76.89	0.16
6100.00	0.55	69.49	6099.02	10.80	46.08	10.80	47.33	76.81	0.11
6200.00	0.63	80.99	6199.01	11.05	47.07	11.05	48.35	76.79	0.14
6300.00	0.41	68.43	6299.01	11.26	47.94	11.26	49.24	76.78	0.24
6400.00	0.35	67.49	6399.01	11.51	48.55	11.51	49.89	76.66	0.06
6500.00	0.21	45.60	6499.01	11.76	48.96	11.76	50.35	76.50	0.17
6600.00	0.21	31.54	6599.01	12.04	49.19	12.04	50.64	76.25	0.05
6700.00	0.32	64.36	6699.00	12.32	49.54	12.32	51.04	76.04	0.19
6800.00	0.28	13.30	6799.00	12.67	49.85	12.67	51.43	75.73	0.26
6900.00	0.51	28.57	6899.00	13.30	50.12	13.30	51.85	75.14	0.25
7000.00	0.32	19.05	6999.00	13.96	50.42	13.96	52.32	74.52	0.20
7100.00	0.30	79.90	7099.00	14.27	50.77	14.27	52.74	74.30	0.32
7200.00	0.10	88.04	7199.00	14.32	51.11	14.32	53.08	74.35	0.20
7300.00	0.28	91.56	7299.00	14.32	51.44	14.32	53.40	74.45	0.18
7400.00	0.26	99.97	7398.99	14.27	51.91	14.27	53.84	74.63	0.04
7500.00	0.67	94.38	7498.99	14.19	52.72	14.19	54.60	74.94	0.41
7600.00	0.67	108.83	7598.98	13.95	53.87	13.95	55.64	75.48	0.17
7700.00	0.25	123.82	7698.98	13.64	54.60	13.64	56.28	75.97	0.44
7800.00	0.40	110.78	7798.98	13.40	55.11	13.40	56.71	76.34	0.17
7900.00	0.72	144.37	7898.97	12.76	55.80	12.76	57.24	77.12	0.44
8000.00	0.67	133.92	7998.97	11.85	56.59	11.85	57.82	78.18	0.13
8100.00	1.03	108.42	8098.96	11.15	57.87	11.15	58.93	79.09	0.52
8200.00	1.11	109.11	8198.94	10.55	59.64	10.55	60.56	79.97	0.08
8300.00	1.08	94.21	8298.92	10.17	61.49	10.17	62.33	80.61	0.29
8400.00	1.30	96.17	8398.90	9.98	63.56	9.98	64.34	81.08	0.23
8500.00	1.32	96.01	8498.87	9.73	65.84	9.73	66.55	81.59	0.01
8600.00	0.93	102.68	8598.85	9.43	67.77	9.43	68.42	82.07	0.41
8700.00	1.29	106.42	8698.84	8.94	69.63	8.94	70.21	82.68	0.37
8800.00	1.13	87.86	8798.81	8.66	71.70	8.66	72.22	83.11	0.42
8900.00	0.83	90.58	8898.80	8.69	73.41	8.69	73.92	83.25	0.31
9000.00	0.87	78.98	8998.79	8.83	74.88	8.83	75.40	83.28	0.18
9100.00	0.92	78.75	9098.78	9.13	76.41	9.13	76.96	83.19	0.04
9200.00	1.21	85.74	9198.76	9.36	78.25	9.36	78.81	83.18	0.32
9300.00	1.54	83.81	9298.73	9.59	80.63	9.59	81.20	83.22	0.33
9400.00	1.45	87.64	9398.70	9.78	83.23	9.78	83.80	83.30	0.13
9500.00	1.32	96.91	9498.67	9.70	85.63	9.70	86.18	83.54	0.26
9600.00	1.38	110.59	9598.64	9.14	87.90	9.14	88.37	84.07	0.33

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
9700.00	0.93	101.30	9698.62	8.55	89.82	8.55	90.23	84.56	0.49
9800.00	0.99	115.93	9798.60	8.02	91.39	8.02	91.74	84.99	0.25
9900.00	1.34	130.65	9898.58	6.87	93.06	6.87	93.31	85.78	0.46
10000.00	1.54	167.15	9998.55	4.80	94.25	4.80	94.37	87.08	0.92
10100.00	1.23	168.96	10098.52	2.43	94.75	2.43	94.79	88.53	0.31
10200.00	1.25	174.29	10198.50	0.29	95.07	0.29	95.07	89.83	0.12
10277.00	1.18	204.15	10275.48	-1.27	94.83	-1.27	94.84	90.77	0.82



VES Survey International
West Texas
(432) 563-5444
Surveyor: Gene Heiss
Deckard Federal Com No. 003H / API 30-025-41383





COG Operating LLC

Lea County, NM

Deckard Federal Com

#3H

OH

Survey: MWD #1

Survey Report - Geographic

21 September, 2014



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Lea County, NM	TVD Reference:	WELL @ 3612.5usft (Original Well Elev)
Site:	Deckard Federal Com	MD Reference:	WELL @ 3612.5usft (Original Well Elev)
Well:	#3H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Lea 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	Deckard Federal Com			
Site Position:		Northing:	446,229.30 usft	Latitude: 32° 13' 27.045 N
From:	Map	Easting:	751,773.80 usft	Longitude: 103° 31' 9.014 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.43 °

Well	#3H			
Well Position	+N/-S	0.0 usft	Northing:	446,222.70 usft
	+E/-W	0.0 usft	Easting:	750,454.10 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level: 3,594.5 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/20/2014	7.17	60.12	48,302

Design	OH			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	179.56

Survey Program	Date 9/21/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	10,277.0	GYRO (OH)	MWD	MWD - Standard
10,334.0	15,440.0	MWD #1 (OH)	MWD	MWD - Standard

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,277.0	1.18	204.15	10,275.5	-1.3	94.8	446,221.42	750,548.93	32° 13' 27.059 N	103° 31' 23.273 W
10,334.0	1.10	178.90	10,332.5	-2.4	94.6	446,220.34	750,548.70	32° 13' 27.048 N	103° 31' 23.276 W
10,365.0	1.70	184.10	10,363.5	-3.1	94.7	446,219.60	750,548.83	32° 13' 27.041 N	103° 31' 23.274 W
10,397.0	5.00	168.60	10,395.4	-4.9	95.1	446,217.78	750,549.24	32° 13' 27.023 N	103° 31' 23.270 W
10,428.0	8.70	174.30	10,426.2	-8.6	95.6	446,214.12	750,549.74	32° 13' 26.986 N	103° 31' 23.264 W
10,460.0	12.60	177.10	10,457.6	-14.5	96.1	446,208.22	750,550.16	32° 13' 26.928 N	103° 31' 23.260 W
10,492.0	16.80	178.10	10,488.6	-22.6	96.4	446,200.11	750,550.49	32° 13' 26.848 N	103° 31' 23.257 W
10,524.0	21.30	178.30	10,518.8	-33.0	96.7	446,189.67	750,550.81	32° 13' 26.744 N	103° 31' 23.254 W
10,555.0	26.20	177.50	10,547.2	-45.5	97.2	446,177.20	750,551.28	32° 13' 26.621 N	103° 31' 23.249 W
10,587.0	31.20	177.30	10,575.2	-60.8	97.9	446,161.85	750,551.98	32° 13' 26.469 N	103° 31' 23.243 W
10,619.0	34.80	177.10	10,602.1	-78.3	98.7	446,144.45	750,552.83	32° 13' 26.297 N	103° 31' 23.234 W



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Lea County, NM	TVD Reference:	WELL @ 3612.5usft (Original Well Elev)
Site:	Deckard Federal Com	MD Reference:	WELL @ 3612.5usft (Original Well Elev)
Well:	#3H	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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,650.0	36.80	178.30	10,627.2	-96.4	99.5	446,126.33	750,553.55	32° 13' 26.117 N	103° 31' 23.227 W
10,682.0	38.90	179.10	10,652.5	-116.0	99.9	446,106.70	750,554.00	32° 13' 25.923 N	103° 31' 23.224 W
10,714.0	40.90	179.80	10,677.0	-136.5	100.1	446,086.18	750,554.19	32° 13' 25.720 N	103° 31' 23.224 W
10,745.0	42.50	180.30	10,700.2	-157.1	100.1	446,065.56	750,554.17	32° 13' 25.516 N	103° 31' 23.226 W
10,777.0	44.00	180.80	10,723.5	-179.1	99.9	446,043.63	750,553.96	32° 13' 25.299 N	103° 31' 23.230 W
10,808.0	45.20	180.00	10,745.5	-200.8	99.7	446,021.87	750,553.81	32° 13' 25.084 N	103° 31' 23.234 W
10,840.0	46.50	180.00	10,767.8	-223.8	99.7	445,998.91	750,553.81	32° 13' 24.856 N	103° 31' 23.236 W
10,872.0	48.50	179.50	10,789.5	-247.4	99.8	445,975.32	750,553.91	32° 13' 24.623 N	103° 31' 23.236 W
10,903.0	51.30	180.10	10,809.4	-271.1	99.9	445,951.61	750,553.99	32° 13' 24.388 N	103° 31' 23.238 W
10,935.0	53.90	180.30	10,828.9	-296.5	99.8	445,926.19	750,553.90	32° 13' 24.137 N	103° 31' 23.241 W
10,966.0	55.50	178.60	10,846.8	-321.8	100.1	445,900.89	750,554.15	32° 13' 23.886 N	103° 31' 23.240 W
10,998.0	57.70	178.10	10,864.4	-348.5	100.8	445,874.19	750,554.92	32° 13' 23.622 N	103° 31' 23.234 W
11,030.0	60.20	178.00	10,880.9	-375.9	101.8	445,846.79	750,555.85	32° 13' 23.351 N	103° 31' 23.225 W
11,062.0	62.00	177.90	10,896.4	-403.9	102.8	445,818.80	750,556.86	32° 13' 23.074 N	103° 31' 23.216 W
11,097.0	63.90	177.60	10,912.3	-435.0	104.0	445,787.65	750,558.08	32° 13' 22.766 N	103° 31' 23.204 W
11,125.0	65.20	178.00	10,924.3	-460.3	105.0	445,762.39	750,559.05	32° 13' 22.516 N	103° 31' 23.195 W
11,154.0	66.40	178.30	10,936.2	-486.8	105.8	445,735.95	750,559.91	32° 13' 22.254 N	103° 31' 23.188 W
11,186.0	67.40	178.80	10,948.7	-516.2	106.6	445,706.53	750,560.65	32° 13' 21.963 N	103° 31' 23.182 W
11,218.0	68.70	177.60	10,960.7	-545.8	107.5	445,676.86	750,561.58	32° 13' 21.669 N	103° 31' 23.173 W
11,250.0	68.80	177.60	10,972.3	-575.6	108.7	445,647.06	750,562.83	32° 13' 21.374 N	103° 31' 23.162 W
11,281.0	69.70	178.40	10,983.3	-604.6	109.7	445,618.09	750,563.84	32° 13' 21.087 N	103° 31' 23.152 W
11,313.0	71.60	178.60	10,993.9	-634.8	110.5	445,587.91	750,564.63	32° 13' 20.789 N	103° 31' 23.146 W
11,345.0	73.50	178.70	11,003.5	-665.3	111.3	445,557.39	750,565.35	32° 13' 20.487 N	103° 31' 23.140 W
11,376.0	75.00	178.60	11,011.9	-695.1	112.0	445,527.57	750,566.06	32° 13' 20.191 N	103° 31' 23.134 W
11,408.0	76.40	178.60	11,019.8	-726.1	112.7	445,496.57	750,566.81	32° 13' 19.885 N	103° 31' 23.128 W
11,440.0	78.50	178.50	11,026.8	-757.4	113.5	445,465.34	750,567.60	32° 13' 19.576 N	103° 31' 23.122 W
11,471.0	80.20	178.60	11,032.5	-787.8	114.3	445,434.89	750,568.37	32° 13' 19.274 N	103° 31' 23.116 W
11,503.0	81.90	180.10	11,037.5	-819.4	114.6	445,403.28	750,568.73	32° 13' 18.961 N	103° 31' 23.114 W
11,534.0	83.50	181.20	11,041.4	-850.2	114.3	445,372.54	750,568.38	32° 13' 18.657 N	103° 31' 23.121 W
11,566.0	84.70	181.50	11,044.7	-882.0	113.5	445,340.72	750,567.63	32° 13' 18.342 N	103° 31' 23.133 W
11,597.0	85.80	181.20	11,047.3	-912.9	112.8	445,309.83	750,566.90	32° 13' 18.037 N	103° 31' 23.144 W
11,629.0	87.10	181.30	11,049.2	-944.8	112.1	445,277.90	750,566.21	32° 13' 17.721 N	103° 31' 23.155 W
11,661.0	89.00	182.20	11,050.3	-976.8	111.1	445,245.94	750,565.23	32° 13' 17.405 N	103° 31' 23.169 W
11,756.0	90.20	183.40	11,051.0	-1,071.6	106.5	445,151.06	750,560.59	32° 13' 16.466 N	103° 31' 23.231 W
11,851.0	86.10	183.30	11,054.1	-1,166.4	100.9	445,056.29	750,555.04	32° 13' 15.529 N	103° 31' 23.304 W
11,946.0	86.70	183.40	11,060.0	-1,261.1	95.4	444,961.64	750,549.50	32° 13' 14.593 N	103° 31' 23.377 W
12,040.0	86.80	183.70	11,065.4	-1,354.7	89.6	444,867.97	750,543.69	32° 13' 13.666 N	103° 31' 23.453 W
12,135.0	88.10	183.20	11,069.6	-1,449.5	83.9	444,773.24	750,537.98	32° 13' 12.729 N	103° 31' 23.527 W
12,230.0	88.20	183.00	11,072.6	-1,544.3	78.7	444,678.43	750,532.85	32° 13' 11.791 N	103° 31' 23.596 W
12,325.0	87.90	182.60	11,075.9	-1,639.1	74.1	444,583.60	750,528.21	32° 13' 10.853 N	103° 31' 23.658 W
12,420.0	87.20	182.30	11,079.9	-1,733.9	70.1	444,488.77	750,524.15	32° 13' 9.915 N	103° 31' 23.713 W
12,514.0	88.00	181.30	11,083.9	-1,827.8	67.1	444,394.90	750,521.20	32° 13' 8.987 N	103° 31' 23.756 W
12,609.0	88.40	180.10	11,086.9	-1,922.7	65.9	444,299.96	750,520.04	32° 13' 8.047 N	103° 31' 23.778 W
12,704.0	87.80	180.10	11,090.0	-2,017.7	65.8	444,205.01	750,519.88	32° 13' 7.108 N	103° 31' 23.788 W
12,799.0	87.70	180.10	11,093.7	-2,112.6	65.6	444,110.98	750,519.71	32° 13' 6.168 N	103° 31' 23.798 W
12,894.0	88.10	179.90	11,097.2	-2,207.6	65.6	444,015.15	750,519.71	32° 13' 5.229 N	103° 31' 23.807 W
12,989.0	88.50	178.90	11,100.0	-2,302.5	66.6	443,920.20	750,520.70	32° 13' 4.289 N	103° 31' 23.803 W
13,084.0	88.30	178.10	11,102.7	-2,397.4	69.1	443,825.27	750,523.19	32° 13' 3.350 N	103° 31' 23.783 W
13,179.0	88.70	177.80	11,105.2	-2,492.3	72.5	443,730.36	750,526.59	32° 13' 2.410 N	103° 31' 23.752 W
13,274.0	88.90	178.30	11,107.2	-2,587.3	75.7	443,635.44	750,529.82	32° 13' 1.471 N	103° 31' 23.722 W
13,368.0	90.20	178.80	11,107.9	-2,681.2	78.1	443,541.47	750,532.20	32° 13' 0.541 N	103° 31' 23.703 W
13,463.0	89.50	179.30	11,108.2	-2,776.2	79.7	443,446.48	750,533.77	32° 12' 59.601 N	103° 31' 23.693 W
13,558.0	90.10	179.20	11,108.5	-2,871.2	80.9	443,351.49	750,535.02	32° 12' 58.661 N	103° 31' 23.687 W
13,653.0	89.90	179.60	11,108.5	-2,966.2	81.9	443,256.50	750,536.01	32° 12' 57.720 N	103° 31' 23.683 W
13,749.0	89.30	179.30	11,109.2	-3,062.2	82.8	443,160.51	750,536.93	32° 12' 56.771 N	103° 31' 23.681 W



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Lea County, NM	TVD Reference:	WELL @ 3612.5usft (Original Well Elev)
Site:	Deckard Federal Com	MD Reference:	WELL @ 3612.5usft (Original Well Elev)
Well:	#3H	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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
13,843.0	90.40	180.40	11,109.4	-3,156.2	83.1	443,066.51	750,537.18	32° 12' 55.840 N	103° 31' 23.687 W
13,938.0	90.20	181.20	11,108.9	-3,251.2	81.8	442,971.52	750,535.85	32° 12' 54.901 N	103° 31' 23.710 W
14,033.0	89.50	183.20	11,109.2	-3,346.1	78.1	442,876.60	750,532.21	32° 12' 53.961 N	103° 31' 23.761 W
14,128.0	89.50	182.80	11,110.0	-3,441.0	73.1	442,781.73	750,527.23	32° 12' 53.023 N	103° 31' 23.827 W
14,223.0	88.50	182.70	11,111.6	-3,535.8	68.6	442,686.86	750,522.68	32° 12' 52.085 N	103° 31' 23.889 W
14,318.0	88.80	183.20	11,113.9	-3,630.7	63.7	442,592.01	750,517.79	32° 12' 51.146 N	103° 31' 23.954 W
14,413.0	86.90	184.00	11,117.4	-3,725.4	57.7	442,497.27	750,511.83	32° 12' 50.209 N	103° 31' 24.032 W
14,509.0	86.50	183.70	11,123.0	-3,821.1	51.3	442,401.64	750,505.39	32° 12' 49.264 N	103° 31' 24.115 W
14,603.0	86.70	183.40	11,128.5	-3,914.7	45.5	442,307.99	750,499.58	32° 12' 48.337 N	103° 31' 24.191 W
14,698.0	86.80	183.30	11,133.9	-4,009.4	39.9	442,213.30	750,494.04	32° 12' 47.401 N	103° 31' 24.263 W
14,793.0	88.90	182.90	11,137.5	-4,104.2	34.8	442,118.52	750,488.91	32° 12' 46.463 N	103° 31' 24.332 W
14,888.0	89.30	181.40	11,139.0	-4,199.1	31.2	442,023.60	750,485.34	32° 12' 45.524 N	103° 31' 24.381 W
14,983.0	88.90	181.10	11,140.5	-4,294.1	29.2	441,928.63	750,483.27	32° 12' 44.585 N	103° 31' 24.414 W
15,078.0	87.10	182.20	11,143.8	-4,389.0	26.4	441,833.73	750,480.54	32° 12' 43.646 N	103° 31' 24.454 W
15,174.0	86.90	182.40	11,148.8	-4,484.8	22.6	441,737.94	750,476.69	32° 12' 42.698 N	103° 31' 24.507 W
15,268.0	87.40	182.20	11,153.5	-4,578.6	18.8	441,644.14	750,472.92	32° 12' 41.770 N	103° 31' 24.559 W
15,363.0	87.30	182.00	11,157.9	-4,673.4	15.3	441,549.30	750,469.45	32° 12' 40.832 N	103° 31' 24.608 W
15,392.0	87.20	182.00	11,159.3	-4,702.3	14.3	441,520.35	750,468.44	32° 12' 40.546 N	103° 31' 24.622 W
15,440.0	87.20	182.00	11,161.6	-4,750.3	12.7	441,472.44	750,466.76	32° 12' 40.072 N	103° 31' 24.646 W

PBHL(DFC#3H)

Checked By: _____ Approved By: _____ Date: _____