

Results of Directional Survey

API number:	30-025-41539		
OGRID:		Operator:	COG OPERATING LLC
		Property:	STRATOJET 31 STATE COM # 4H

surface	ULSTR:	M	31	T	20S	R	35E
				540	FSL	660	FWL

BH Loc	ULSTR:	D	31	T	20S	R	35E
14998	MD	10778.6	TVD	332	FNL	502.4471	FWL
				4948	FSL		

Top Perf/OH	ULSTR:	M	31	T	20S	R	35E
10989	MD	10767.5	TVD	945	FSL	430	FWL

Bot Perf/OH	ULSTR:	D	31	T	20S	R	35E
14925	MD	10781.0	TVD	405	FNL	507	FWL
				4875	FSL		

	MD	N/S	E/W	VD
	10957	373.80	-229.80	10759.1
TOP PERFS/OH	10989	404.70	-229.80	10767.50
	10989	404.70	-229.80	10767.50
	14836	4246.70	-147.40	10783.50
BOT PERFS/OH	14925	4335.45	-153.00	10781.03
	14944	4354.40	-154.20	10780.50

NEXT TO LAST	14991.4	4401.70	-157.40	10778.90
LAST READING	14998	4408.30	-157.90	10778.60
TD	14998	4408.30	-157.90	10778.60

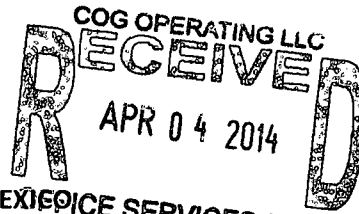
Surface Location	540	FS	660	FW
Projected BHL	4948	FS	502	FW
Location of				
Top Perfs/OH	945	FS	430	FW
Bottom Perfs/OH	4875	FS	507	FW

SUMMARY of Subsurface Locations

Surface Location	M-31-20S-35E	540	FS	660	FW	Vert. Depth
Top Perfs/OH	M-31-20S-35E	945	FS	430	FW	10767.50
Bottom Perfs/OH	D-31-20S-35E	4875	FS	507	FW	10781.03
Projected TD	D-31-20S-35E	4948	FS	502	FW	10778.60

JUN 09 2014

Operator: COG Operating
Well/Lease: Stratojet 31 State Com 4H
County: Lea



STATE OF NEW MEXICO OFFICE SERVICES / MAIL
DEVIATION REPORT

<u>Footage</u>	<u>Degree</u>
250	0.50
551	0.07
860	1.10
1176	1.80
1426	2.90
1451	2.60
1671	2.90
1764	3.00
1883	2.90
1978	1.20
2230	1.00
2510	0.40
2790	0.30
3067	1.40
3347	2.20
3536	2.10
3762	1.80
4333	1.50
4833	1.70
5062	1.70
5581	2.00
5827	1.10
6081	0.90
6531	0.60
6975	0.20
7411	1.10
7862	1.40
8312	1.00
8741	1.50
9181	1.80
9628	1.10
10102	3.70

HOBBS OCD

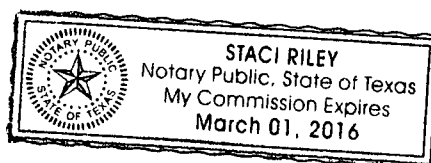
JUN 03 2014

RECEIVED

Signed By: Charles Walsh
Charles Walsh, Division Manager
Pioneer Drilling Company

Appeared before me on April 3, 2014.

Staci Riley
Notary Public





A GYRO TECHNOLOGIES INC. COMPANY

P.O. Box 261021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

April 1, 2014

COG Operating LLC (Concho)
One Concho Center
600 W. Illinois Avenue
Midland, TX 79701

HOBBS OCD

JUN 03 2014

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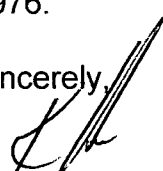
Attn: Kanicia Castillo

Re: **Stratojet 31 State Com No 004H**

Please find enclosed a copy of the survey from 0' to 10,119' ran on the above referenced well.

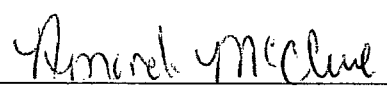
If I can be of any further service, please do not hesitate to call me at 800-606-4976.

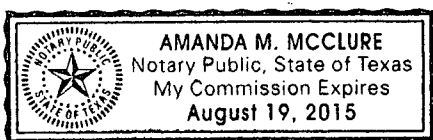
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 1 day of April,
A.D., 2014, by Keith Havelka.


Amanda McClure
Notary Public, State of Texas





Company: COG Operating-Concho
Lease/Well: Stratojet 31 State Com/No 004H
Location: S31 T20s R35e
Rig Name: Pioneer #20
State/County: New Mexico/Lea
Latitude: 32.52, Longitude: -103.50
GRID North is 0.45 Degrees East of True North
VS-Azi: 0.00 Degrees



HOBBS OGD

RKB : 17 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: ... state com #4h gyro survey.ut

Minimum Curvature Method

Report Date/Time: 4/1/2014 / 13:01

Vaughn Energy Services

(432) 563-5444

Gardendale, TX

Surveyor: Dustin Wedel

Stratojet 31 State Com No 004H / API 30-025-41539

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Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W 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	****
100.00	0.42	296.08	100.00	0.16	-0.33	0.36	296.08	0.42
200.00	0.22	332.71	200.00	0.49	-0.74	0.89	303.56	0.27
300.00	0.37	297.01	300.00	0.81	-1.12	1.38	305.94	0.23
400.00	0.71	304.71	399.99	1.31	-1.91	2.32	304.36	0.34
500.00	0.59	306.87	499.99	1.97	-2.83	3.45	304.80	0.12
600.00	1.13	291.47	599.97	2.63	-4.15	4.92	302.37	0.58
700.00	0.86	279.96	699.96	3.12	-5.80	6.59	298.27	0.33
800.00	1.18	296.45	799.94	3.71	-7.47	8.34	296.43	0.44
900.00	1.20	279.98	899.92	4.35	-9.42	10.38	294.80	0.34
1000.00	1.37	295.12	999.90	5.04	-11.53	12.58	293.61	0.38
1100.00	1.64	284.43	1099.86	5.90	-13.99	15.19	292.86	0.39
1200.00	1.67	284.94	1199.82	6.63	-16.79	18.05	291.56	0.03
1300.00	2.12	268.93	1299.77	6.97	-20.04	21.22	289.19	0.69
1400.00	1.94	268.78	1399.70	6.90	-23.57	24.56	286.32	0.18
1500.00	2.50	265.40	1499.63	6.69	-27.43	28.24	283.71	0.58
1600.00	2.69	263.67	1599.53	6.26	-31.94	32.54	281.09	0.20
1700.00	2.80	258.23	1699.41	5.50	-36.66	37.07	278.54	0.29
1800.00	2.86	254.81	1799.29	4.35	-41.46	41.69	275.99	0.18

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	2.53	251.70	1899.18	3.00	-45.96	46.06	273.74	0.36
2000.00	1.11	236.86	1999.13	1.78	-48.86	48.90	272.09	1.49
2100.00	0.93	218.28	2099.11	0.62	-50.17	50.18	270.71	0.37
2200.00	0.88	237.72	2199.10	-0.43	-51.32	51.33	269.53	0.31
2300.00	0.80	230.57	2299.09	-1.28	-52.51	52.53	268.60	0.13
2400.00	0.52	251.67	2399.08	-1.87	-53.49	53.52	268.00	0.37
2500.00	0.32	259.36	2499.08	-2.06	-54.19	54.23	267.82	0.21
2600.00	0.21	262.78	2599.08	-2.14	-54.65	54.69	267.76	0.11
2700.00	0.12	41.74	2699.08	-2.08	-54.76	54.80	267.82	0.31
2800.00	0.42	77.78	2799.08	-1.92	-54.33	54.36	267.97	0.33
2900.00	0.67	72.51	2899.07	-1.67	-53.42	53.44	268.21	0.26
3000.00	1.04	63.48	2999.06	-1.09	-52.05	52.06	268.80	0.39
3100.00	1.48	57.99	3099.04	0.00	-50.14	50.14	270.00	0.45
3200.00	2.06	58.93	3198.99	1.61	-47.51	47.54	271.94	0.58
3300.00	2.15	57.75	3298.92	3.53	-44.39	44.53	274.55	0.10
3400.00	2.22	57.02	3398.85	5.59	-41.18	41.56	277.73	0.08
3500.00	2.27	56.60	3498.77	7.73	-37.91	38.69	281.52	0.05
3600.00	1.95	58.53	3598.70	9.70	-34.81	36.14	285.58	0.32
3700.00	1.55	50.40	3698.66	11.46	-32.31	34.28	289.52	0.47
3800.00	1.60	48.48	3798.62	13.24	-30.22	33.00	293.66	0.07
3900.00	1.65	47.94	3898.58	15.14	-28.11	31.92	298.30	0.05
4000.00	1.70	54.44	3998.54	16.96	-25.84	30.91	303.29	0.19
4100.00	1.68	51.59	4098.49	18.73	-23.48	30.04	308.58	0.09
4200.00	1.79	56.99	4198.45	20.49	-21.03	29.36	314.26	0.20
4300.00	1.99	65.43	4298.39	22.06	-18.14	28.56	320.56	0.34
4400.00	1.89	75.01	4398.34	23.21	-14.97	27.62	327.18	0.34
4500.00	1.90	62.35	4498.28	24.41	-11.91	27.16	334.00	0.42
4600.00	1.93	68.64	4598.23	25.79	-8.87	27.27	341.02	0.21
4700.00	2.09	57.24	4698.17	27.39	-5.77	27.99	348.10	0.43
4800.00	2.27	50.54	4798.09	29.63	-2.71	29.76	354.78	0.31
4900.00	2.37	55.99	4898.01	32.05	0.53	32.05	0.95	0.24
5000.00	2.19	51.47	4997.93	34.39	3.74	34.59	6.20	0.26
5100.00	2.11	57.18	5097.86	36.58	6.77	37.20	10.49	0.23
5200.00	2.09	61.77	5197.80	38.44	9.93	39.70	14.49	0.17
5300.00	1.77	63.38	5297.74	40.00	12.92	42.03	17.91	0.33
5400.00	2.01	56.67	5397.68	41.65	15.77	44.54	20.74	0.32
5500.00	1.57	69.21	5497.64	43.10	18.51	46.91	23.25	0.58
5600.00	1.38	63.72	5597.60	44.12	20.87	48.81	25.32	0.24
5700.00	1.28	68.83	5697.58	45.05	22.99	50.58	27.04	0.15

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	1.00	70.49	5797.56	45.75	24.86	52.07	28.52	0.28
5900.00	0.92	48.07	5897.54	46.58	26.28	53.48	29.43	0.38
6000.00	1.02	37.06	5997.53	47.83	27.42	55.14	29.82	0.21
6100.00	0.90	29.40	6097.51	49.23	28.34	56.81	29.93	0.18
6200.00	0.79	51.27	6197.50	50.35	29.27	58.23	30.17	0.34
6300.00	0.58	21.46	6297.50	51.25	29.99	59.38	30.34	0.41
6400.00	0.69	45.65	6397.49	52.14	30.61	60.46	30.41	0.29
6500.00	0.64	11.81	6497.48	53.11	31.15	61.57	30.40	0.39
6600.00	0.37	350.79	6597.48	53.97	31.22	62.35	30.04	0.33
6700.00	0.39	21.01	6697.48	54.61	31.29	62.94	29.81	0.20
6800.00	0.48	160.89	6797.48	54.53	31.55	63.00	30.05	0.82
6900.00	0.76	224.20	6897.47	53.67	31.22	62.09	30.19	0.69
7000.00	0.99	261.51	6997.46	53.06	29.90	60.91	29.40	0.60
7100.00	1.19	258.38	7097.44	52.73	28.03	59.71	27.99	0.20
7200.00	1.08	260.22	7197.42	52.36	26.08	58.49	26.48	0.11
7300.00	0.90	246.05	7297.41	51.88	24.43	57.34	25.22	0.31
7400.00	1.23	241.87	7397.39	51.05	22.77	55.90	24.04	0.34
7500.00	1.06	229.65	7497.37	49.95	21.12	54.23	22.92	0.29
7600.00	1.46	218.65	7597.35	48.35	19.61	52.18	22.08	0.47
7700.00	1.57	220.24	7697.31	46.31	17.93	49.66	21.17	0.11
7800.00	1.19	224.20	7797.28	44.52	16.33	47.42	20.14	0.39
7900.00	1.12	219.39	7897.26	43.02	14.99	45.56	19.20	0.12
8000.00	1.33	220.15	7997.24	41.38	13.62	43.57	18.22	0.21
8100.00	1.35	230.42	8097.21	39.75	11.96	41.51	16.75	0.24
8200.00	1.38	226.99	8197.18	38.18	10.18	39.51	14.93	0.09
8300.00	1.16	236.12	8297.16	36.80	8.46	37.76	12.95	0.30
8400.00	1.48	243.05	8397.13	35.65	6.47	36.23	10.29	0.36
8500.00	1.43	245.23	8497.10	34.54	4.19	34.79	6.91	0.07
8600.00	1.61	241.62	8597.07	33.35	1.82	33.40	3.12	0.20
8700.00	1.91	245.29	8697.02	31.98	-0.93	32.00	358.33	0.32
8800.00	1.65	251.79	8796.97	30.84	-3.81	31.07	352.95	0.33
8900.00	1.79	236.82	8896.93	29.53	-6.49	30.24	347.61	0.47
9000.00	1.90	244.78	8996.87	27.97	-9.29	29.48	341.62	0.28
9100.00	1.64	249.21	9096.83	26.76	-12.13	29.38	335.62	0.29
9200.00	1.60	248.63	9196.79	25.74	-14.77	29.68	330.15	0.04
9300.00	1.59	244.62	9296.75	24.64	-17.32	30.12	324.89	0.11
9400.00	1.47	213.66	9396.71	22.98	-19.28	30.00	320.01	0.82
9500.00	1.66	223.03	9496.68	20.86	-20.98	29.58	314.84	0.32
9600.00	1.96	236.67	9596.63	18.86	-23.39	30.05	308.88	0.52

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
9700.00	1.87	242.46	9696.57	17.17	-26.27	31.38	303.16	0.21
9800.00	2.42	242.27	9796.50	15.43	-29.59	33.37	297.54	0.55
9900.00	3.41	241.72	9896.37	13.03	-34.08	36.49	290.93	0.99
10000.00	3.44	248.00	9996.19	10.50	-39.48	40.86	284.89	0.38
10100.00	3.68	249.50	10096.00	8.25	-45.27	46.02	280.33	0.25
10119.00	3.93	246.13	10114.96	7.78	-46.44	47.08	279.51	1.76



Vaughn Energy Services

(432) 563-5444

Gardendale, TX

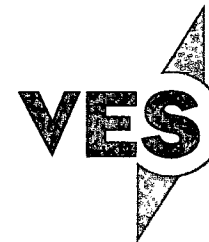
Surveyor: Dustin Wedel

Stratojet 31 State Com No 004H / API 30-025-41539

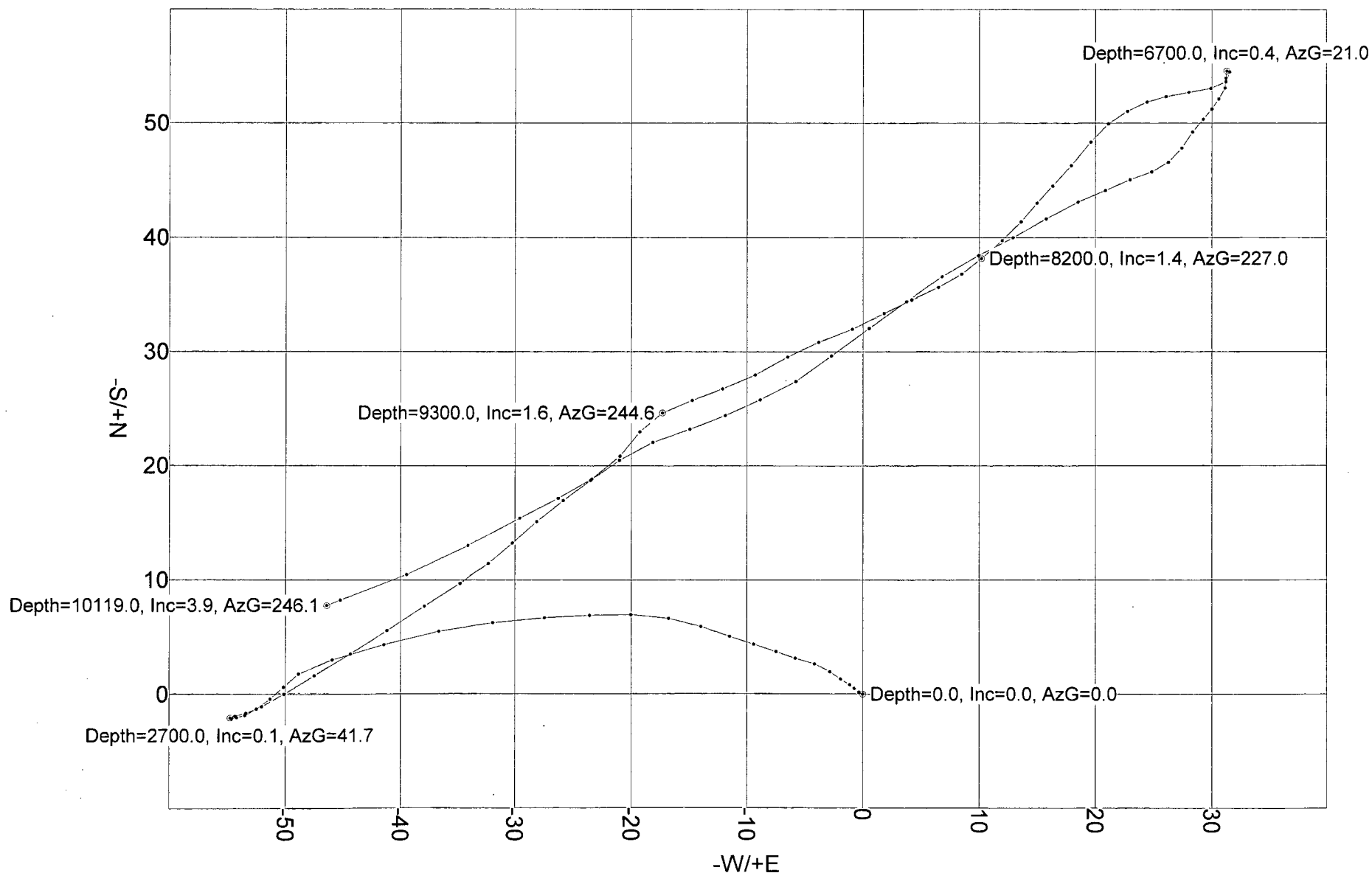
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JUN 03 2014

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SURVEY
INTERNATIONAL



VES Survey Date: 03/17/2014



COG Operating LLC

Lea County, NM

Stratojet 31 State Com

#4H

OH

Survey: MWD #1

Standard Survey Report

27 March, 2014

HOBBS OCD

JUN 03 2014

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Wellplanning Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Lea County, NM	TVD Reference:	WELL @ 3759.8usft (Original Well Elev)
Site:	Stratojet 31 State Com	MD Reference:	WELL @ 3759.8usft (Original Well Elev)
Well:	#4H	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	Stratojet 31 State Com		
Site Position:		Northing:	555,232.30 usft
From:	Map	Easting:	756,058.50 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 31' 25.317 N
		Longitude:	103° 30' 9.288 W
		Grid Convergence:	0.45 °

Well	#4H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 31' 25.317 N
		Longitude:	103° 30' 9.288 W
		Ground Level:	3,742.8 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	2/17/2014	7.25
			Dip Angle
			(°)
			60.41
			Field Strength
			(nT)
			48,534

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
			(°)
			359.71

Survey Program	Date 3/27/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	10,119.0	GYRO (OH)	MWD
10,161.0	14,998.0	MWD #1 (OH)	MWD
			Description
			MWD - Standard
			MWD - Standard

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn	
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate	
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)	
10,119.0	3.93	246.13	10,115.0	7.8	-46.5	8.0	0.00	0.00	0.00	
10,161.0	4.00	250.90	10,156.9	6.7	-49.2	7.0	0.80	0.17	11.36	
10,192.0	5.30	256.30	10,187.8	6.0	-51.6	6.3	4.42	4.19	17.42	
10,224.0	6.90	283.20	10,219.6	6.1	-54.9	6.4	10.10	5.00	84.06	
10,256.0	9.20	292.90	10,251.3	7.5	-59.1	7.8	8.32	7.19	30.31	
10,287.0	12.00	289.00	10,281.7	9.6	-64.5	9.9	9.32	9.03	-12.58	
10,319.0	15.80	287.30	10,312.8	11.9	-71.8	12.3	11.94	11.88	-5.31	
10,351.0	19.50	286.40	10,343.3	14.7	-81.1	15.2	11.59	11.56	-2.81	
10,382.0	22.10	291.80	10,372.3	18.4	-91.4	18.8	10.41	8.39	17.42	
10,414.0	24.60	299.00	10,401.6	23.8	-102.9	24.4	11.84	7.81	22.50	



Wellplanning Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Lea County, NM	TVD Reference:	WELL @ 3759.8usft (Original Well Elev)
Site:	Stratojet 31 State Com	MD Reference:	WELL @ 3759.8usft (Original Well Elev)
Well:	#4H	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)
10,446.0	27.50	305.40	10,430.4	31.3	-114.7	31.9	12.61	9.06	20.00
10,478.0	30.10	311.90	10,458.4	41.0	-126.7	41.6	12.71	8.13	20.31
10,509.0	32.70	316.60	10,484.9	52.3	-138.3	53.0	11.52	8.39	15.16
10,541.0	35.30	320.70	10,511.4	65.7	-150.0	66.5	10.83	8.13	12.81
10,573.0	37.80	323.80	10,537.1	80.8	-161.7	81.6	9.71	7.81	9.69
10,605.0	41.00	326.60	10,561.9	97.5	-173.3	98.3	11.44	10.00	8.75
10,636.0	44.50	329.60	10,584.6	115.3	-184.4	116.3	13.06	11.29	9.68
10,668.0	47.60	333.30	10,606.8	135.6	-195.4	136.6	12.77	9.69	11.56
10,700.0	49.80	338.20	10,628.0	157.5	-205.2	158.5	13.40	6.88	15.31
10,732.0	51.50	343.50	10,648.3	180.8	-213.3	181.9	13.86	5.31	16.56
10,764.0	53.60	348.60	10,667.7	205.5	-219.4	206.6	14.25	6.56	15.94
10,796.0	55.40	353.70	10,686.3	231.2	-223.4	232.3	14.14	5.63	15.94
10,828.0	57.40	356.20	10,704.0	257.8	-225.7	258.9	9.02	6.25	7.81
10,859.0	60.20	356.70	10,720.1	284.2	-227.4	285.4	9.14	9.03	1.61
10,891.0	63.70	357.90	10,735.1	312.4	-228.7	313.6	11.43	10.94	3.75
10,925.0	68.90	359.10	10,748.8	343.5	-229.5	344.7	15.63	15.29	3.53
10,957.0	73.30	359.90	10,759.1	373.8	-229.8	375.0	13.95	13.75	2.50
10,989.0	76.50	0.00	10,767.5	404.7	-229.8	405.9	10.00	10.00	0.31
11,021.0	79.90	359.40	10,774.0	436.0	-230.0	437.2	10.78	10.63	-1.88
11,053.0	81.40	0.90	10,779.2	467.6	-229.9	468.7	6.59	4.69	4.69
11,085.0	82.70	1.20	10,783.7	499.3	-229.3	500.4	4.17	4.06	0.94
11,116.0	85.20	1.40	10,786.9	530.1	-228.6	531.2	8.09	8.06	0.65
11,148.0	87.40	2.10	10,789.0	562.0	-227.6	563.2	7.21	6.88	2.19
11,179.0	88.70	2.20	10,790.0	593.0	-226.5	594.1	4.21	4.19	0.32
11,211.0	89.30	2.20	10,790.6	624.9	-225.2	626.1	1.88	1.88	0.00
11,306.0	90.70	2.20	10,790.6	719.9	-221.6	721.0	1.47	1.47	0.00
11,401.0	90.20	2.30	10,789.9	814.8	-217.9	815.9	0.54	-0.53	0.11
11,497.0	89.20	2.10	10,790.4	910.7	-214.2	911.8	1.06	-1.04	-0.21
11,593.0	90.40	1.10	10,790.7	1,006.7	-211.5	1,007.7	1.63	1.25	-1.04
11,689.0	88.70	0.70	10,791.4	1,102.7	-210.0	1,103.7	1.82	-1.77	-0.42
11,784.0	89.30	359.70	10,793.1	1,197.6	-209.7	1,198.7	1.23	0.63	-1.05
11,879.0	88.80	2.40	10,794.7	1,292.6	-207.9	1,293.6	2.89	-0.53	2.84
11,974.0	89.00	3.60	10,796.5	1,387.5	-203.0	1,388.5	1.28	0.21	1.26
12,069.0	90.40	3.00	10,797.0	1,482.3	-197.5	1,483.3	1.60	1.47	-0.63
12,165.0	90.80	4.10	10,796.0	1,578.1	-191.5	1,579.0	1.22	0.42	1.15
12,260.0	92.10	4.30	10,793.6	1,672.8	-184.6	1,673.7	1.38	-1.37	0.21
12,356.0	91.50	3.60	10,790.6	1,768.5	-178.0	1,769.4	0.96	-0.63	-0.73
12,452.0	89.00	3.70	10,790.2	1,864.3	-171.9	1,865.2	2.61	-2.60	0.10
12,547.0	87.00	3.50	10,793.5	1,959.1	-165.9	1,959.9	2.12	-2.11	-0.21
12,642.0	87.80	3.10	10,797.8	2,053.8	-160.4	2,054.6	0.94	0.84	-0.42
12,739.0	89.20	2.50	10,800.3	2,150.7	-155.7	2,151.4	1.57	1.44	-0.62
12,834.0	89.50	1.40	10,801.4	2,245.6	-152.5	2,246.4	1.20	0.32	-1.16
12,929.0	89.80	0.40	10,802.0	2,340.6	-151.0	2,341.3	1.10	0.32	-1.05



Wellplanning Survey Report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Lea County, NM	TVD Reference:	WELL @ 3759.8usft (Original Well Elev)
Site:	Stratojet 31 State Com	MD Reference:	WELL @ 3759.8usft (Original Well Elev)
Well:	#4H	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)
13,024.0	90.50	1.60	10,801.7	2,435.6	-149.3	2,436.3	1.46	0.74	1.26
13,119.0	91.90	0.20	10,799.7	2,530.5	-147.8	2,531.3	2.08	1.47	-1.47
13,215.0	91.80	1.00	10,796.6	2,626.5	-146.8	2,627.2	0.84	-0.10	0.83
13,310.0	92.90	0.00	10,792.7	2,721.4	-146.0	2,722.1	1.56	1.16	-1.05
13,405.0	91.00	0.90	10,789.5	2,816.3	-145.3	2,817.0	2.21	-2.00	0.95
13,501.0	90.70	1.60	10,788.1	2,912.3	-143.2	2,913.0	0.79	-0.31	0.73
13,596.0	91.80	0.20	10,786.0	3,007.3	-141.7	3,007.9	1.87	1.16	-1.47
13,691.0	90.10	0.40	10,784.4	3,102.2	-141.2	3,102.9	1.80	-1.79	0.21
13,787.0	90.20	2.20	10,784.2	3,198.2	-139.0	3,198.9	1.88	0.10	1.88
13,882.0	90.60	1.50	10,783.5	3,293.2	-135.9	3,293.8	0.85	0.42	-0.74
13,977.0	91.60	0.40	10,781.7	3,388.1	-134.3	3,388.8	1.56	1.05	-1.16
14,073.0	89.90	1.30	10,780.4	3,484.1	-132.9	3,484.7	2.00	-1.77	0.94
14,168.0	89.60	0.80	10,780.9	3,579.1	-131.2	3,579.7	0.61	-0.32	-0.53
14,263.0	88.80	0.30	10,782.2	3,674.1	-130.3	3,674.7	0.99	-0.84	-0.53
14,359.0	88.70	358.50	10,784.3	3,770.0	-131.3	3,770.7	1.88	-0.10	-1.88
14,454.0	88.70	358.20	10,786.4	3,865.0	-134.0	3,865.6	0.32	0.00	-0.32
14,550.0	90.20	358.40	10,787.4	3,960.9	-136.9	3,961.6	1.58	1.56	0.21
14,645.0	90.70	358.50	10,786.6	4,055.9	-139.4	4,056.5	0.54	0.53	0.11
14,740.0	90.90	357.70	10,785.3	4,150.8	-142.6	4,151.5	0.87	0.21	-0.84
14,836.0	91.20	356.60	10,783.5	4,246.7	-147.4	4,247.4	1.19	0.31	-1.15
14,944.0	92.00	356.10	10,780.5	4,354.4	-154.2	4,355.2	0.87	0.74	-0.46
14,991.4	92.00	356.10	10,778.9	4,401.7	-157.4	4,402.5	0.00	0.00	0.00
PBHL(SJ#4H)									
14,998.0	92.00	356.10	10,778.6	4,408.3	-157.9	4,409.0	0.00	0.00	0.00

Checked By: _____	Approved By: _____	Date: _____
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COG Operating LLC
Project: Lea County, NM
Site: Stratojet 31 State Com
Well: #4H
Wellbore: OH
Plan: Plan #2 (#4H/OH)

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
1	10119.0	3.93	246.13	10115.0	7.8	-46.5	0.00	0.00	8.0
2	10314.5	3.93	246.13	10310.0	2.4	-58.7	0.00	0.00	2.7
3	11080.9	90.36	0.87	10800.0	482.9	-82.2	12.00	114.67	483.3
4	15009.4	90.36	0.87	10775.3	4410.8	-22.6	0.00	0.00	4410.9

PBHL(SJ#4H)

WELL DETAILS: #4H

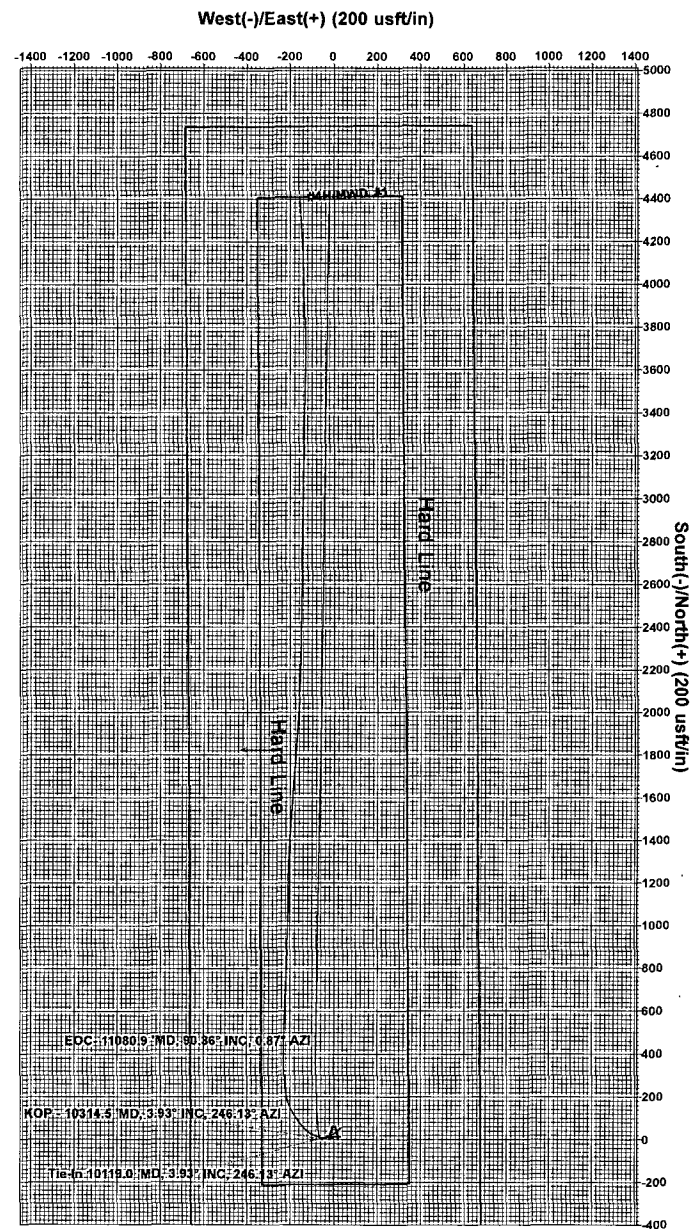
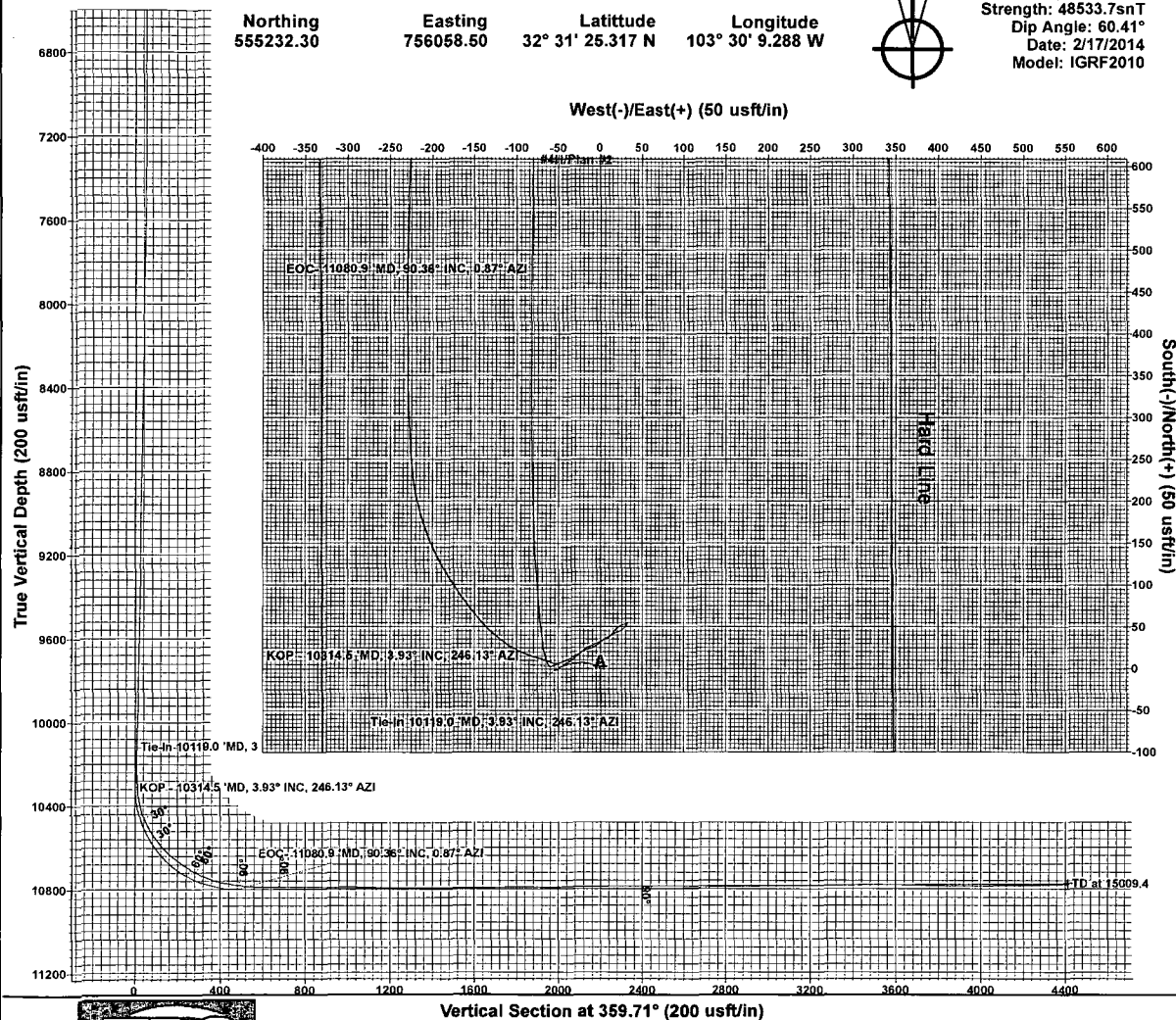
Ground Elevation:: 3742.8
RKB Elevation: WELL @ 3759.8usft (Original Well Elev)
Rig Name: Original Well Elev

Northing 555232.30 Easting 756058.60 Latitude 32° 31' 25.317 N Longitude 103° 30' 9.288 W



Azimuths to Grid North
True North: -0.45°
Magnetic North: 6.80°

Magnetic Field
Strength: 48533.7snT
Dip Angle: 60.41°
Date: 2/17/2014
Model: IGRF2010



Plan: Plan #2 (#4H/OH)
Created By: Well Planner Date: 7:19, March 27 2014

Terra Directional Services
322 Spring Hill Drive, Suite A100. Spring, Texas 77386
432.425.7532

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