

Results of Directional Survey

API number:	30-025-41299		
OGRID:		Operator:	COG OPERATING LLC
		Property:	BECKNELL STATE COM # 3H

surface	ULSTR:	S(K)	5	T 21S	R 33E
				2350 FSL	1980 FWL

BH Loc	ULSTR:	F	17	T 21S	R 33E
20410 MD	MD	11648.4	TVD	1454 FNL	2059 FWL

Top Perf/OH	ULSTR:	S(K)	5	T 21S	R 33E
11685 MD	MD	11528.9	TVD	1983 FSL	1871 FWL

Bot Perf/OH	ULSTR:	F	8	T 21S	R 33E
16135 MD	MD	11600.9	TVD	2463 FNL	1949 FWL

	MD	N/S	E/W	VD
	11653	-336.84	-109.12	11518.22
TOP PERFS/OH	11685	-367.00	-108.82	11528.87
	11685	-367.00	-108.82	11528.87
	16116	-4793.89	-30.84	11600.97
BOT PERFS/OH	16135	-4812.89	-31.07	11600.94
	16211	-4888.88	-32.00	11600.80

NEXT TO LAST	20205	-8879.32	72.07	11639.47
LAST READING	20405	-9079.01	79.04	11648.19
TD	20410	-9084.00	79.21	11648.41

Surface Location	2350	FS	1980	FW
Projected BHL	6734	FN	2059	FW
Location of				
Top Perfs/OH	1983	FS	1871	FW
Bottom Perfs/OH	2463	FN	1949	FW

SUMMARY of Subsurface Locations

Surface Location	S-05-21S-33E	2350	FS	1980	FW	Vert. Depth
Top Perfs/OH	S-05-21S-33E	1983	FS	1871	FW	11528.87
Bottom Perfs/OH	F-17-21S-33E	2463	FN	1949	FW	11600.94
Projected TD	F-17-21S-33E	6734	FN	2059	FW	11648.41

MAY 21 2014



RYAN DIRECTIONAL SERVICES, INC.
A HARRIS COMPANY

Ryan Directional Services, Inc.
19510 Oil Center Blvd.
Houston, Texas 77073
Bus: 281.443.1414
Fax: 281.443.1676

Friday, February 28, 2014

State of New Mexico
County of Lea

HOBBS OCD

MAY 05 2014

RECEIVED

Subject: **Survey Certification Letter**

Survey Company: Ryan Directional Services, Inc.
Job Number: 7008 & 7202
Survey Job Type: Ryan MWD
Customer: COG Operating LLC
Well Name: Becknell State Com 3H ST2
Rig Name: Precision 108

Surface:
A.P.I. No:
Location: Lea, NM
RKB Height:
Distance to Bit:

Surveyor Name	Surveyor Title	Borehole Number	Start Depth	End Depth	Start Date	End Date	Type of	TD Straight Line Projection
Demond Norris	MWD Supervisor	OH	10700'	11661'	12/14/13	12/18/13	MWD	11740'
Demond Norris	MWD Supervisor	ST1	10700'	12234'	12/21/13	12/30/13	MWD	12294'
Demond Norris	MWD Supervisor	ST2	10700'	20205'	01/03/14	02/03/14	MWD	20405'

The data and calculations for this survey have been checked by me and conform to the calibration standards and operational procedures set forth by Ryan Directional Services, Inc. I am authorized and qualified to review the data, calculations and these reports; the reports represents true and correct Directional Surveys of this well based on the original data, the minimum curvature method, corrected to Grid North and obtained at the well site.

State of Texas, County of Harris

Before me, Colleen Austin, on this day personally appeared Demond Norris, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed.
Given under my hand and seal of office this 3rd day of March, 2014.

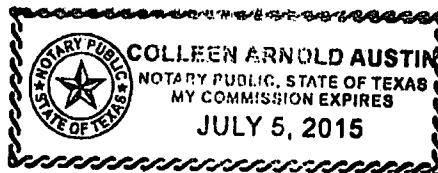


Notary Public's Signature

(Personalized Seal)



Demond Norris
MWD Supervisor
Ryan Directional Services, Inc.





Ryan Directional Services



COMPLETION REPORT

HOBBS OCEAN

Company: COG Operating LLC
Field: Lea Co, NM
Site: Becknell State Com 3H
Well: 3H
Wellpath: OH

MAY 05 2014

Date: 2/4/2014 Time: 15:42:08 Page: 1
Co-ordinate(NE) Reference: Site: Becknell State Com 3H, Grid North
Vertical (TVD) Reference: SITE 3827.0
Section (VS) Reference: Well (0.00N,0.00E,179.59Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

RECEIVED

Field: Lea Co, NM
New Mexico
U.S.A.

Map System: US State Plane Coordinate System 1927

Geo Datum: NAD27 (Clarke 1866)

Sys Datum: Mean Sea Level

Map Zone: New Mexico, Eastern Zone

Coordinate System: Site Centre

Geomagnetic Model: IGRF2010

Site: Becknell State Com 3H

Lea Co., NM

Site Position: Northing: 548935.00 ft Latitude: 32 30 25.104 N
From: Map Easting: 727219.70 ft Longitude: 103 35 46.602 W
Position Uncertainty: 2.00 ft North Reference: Grid
Ground Level: 3801.90 ft Grid Convergence: 0.40 deg

Well: 3H

Slot Name:

Well Position: +N/-S 0.00 ft Northing: 548935.00 ft Latitude: 32 30 25.104 N
+E/-W 0.00 ft Easting: 727219.70 ft Longitude: 103 35 46.602 W
Position Uncertainty: 0.00 ft

Wellpath: OH

Current Datum: SITE Height 3827.00 ft
Magnetic Data: 12/12/2013
Field Strength: 48560 nT
Vertical Section: Depth From (TVD) +N/-S
ft ft
0.00 0.00 0.00 179.59

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	ClsD ft	ClsA deg	DLS deg/100ft	Tool
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
100.00	0.19	100.00	-0.14	31.56	0.14	0.09	0.17	31.56	0.19	Gyro
200.00	0.72	200.00	-0.60	299.83	0.60	-0.37	0.70	328.03	0.75	Gyro
300.00	0.78	299.99	-1.43	318.83	1.42	-1.36	1.97	316.14	0.25	Gyro
400.00	0.71	399.98	-2.36	311.54	2.34	-2.28	3.27	315.83	0.12	Gyro
500.00	0.66	499.97	-3.09	302.73	3.07	-3.22	4.45	313.55	0.12	Gyro
600.00	0.68	599.97	-3.72	301.35	3.69	-4.22	5.60	311.16	0.03	Gyro
700.00	0.67	699.96	-4.37	305.34	4.33	-5.20	6.77	309.80	0.05	Gyro
800.00	0.63	799.95	-5.04	306.79	5.00	-6.12	7.90	309.26	0.04	Gyro
900.00	0.73	899.95	-5.75	306.09	5.70	-7.07	9.09	308.89	0.10	Gyro
1000.00	0.77	999.94	-6.21	276.22	6.15	-8.25	10.30	306.70	0.39	Gyro
1100.00	0.93	1099.93	-6.49	284.16	6.42	-9.71	11.64	303.49	0.20	Gyro
1200.00	0.67	1199.92	-6.85	284.74	6.77	-11.06	12.97	301.47	0.26	Gyro
1300.00	0.52	1299.91	-6.97	265.14	6.88	-12.08	13.90	299.67	0.25	Gyro
1400.00	0.53	1399.91	-6.70	239.58	6.61	-12.93	14.52	297.07	0.23	Gyro
1500.00	0.65	1499.90	-6.38	260.47	6.28	-13.89	15.24	294.33	0.24	Gyro
1600.00	0.78	1599.89	-6.08	251.20	5.97	-15.09	16.23	291.57	0.17	Gyro
1700.00	0.99	1699.88	-5.55	248.54	5.43	-16.54	17.41	288.18	0.21	Gyro
1800.00	0.78	1799.87	-4.92	241.82	4.79	-17.94	18.57	284.96	0.23	Gyro
1900.00	0.88	1899.86	-3.95	147.74	3.82	-18.13	18.53	281.91	1.22	Gyro
2000.00	0.94	1999.85	-3.23	94.85	3.10	-16.91	17.19	280.41	0.81	Gyro
2100.00	1.08	2099.84	-4.03	20.22	3.92	-15.76	16.24	283.96	1.23	Gyro
2200.00	1.04	2199.83	-5.44	305.18	5.33	-16.18	17.03	288.22	1.29	Gyro
2300.00	0.86	2299.82	-5.85	260.56	5.73	-17.66	18.57	287.97	0.74	Gyro
2400.00	0.94	2399.81	-4.93	170.13	4.80	-18.26	18.88	284.71	1.28	Gyro
2500.00	0.94	2499.80	-4.18	85.08	4.06	-17.30	17.77	283.20	1.27	Gyro
2600.00	0.87	2599.79	-4.71	51.68	4.60	-15.89	16.54	286.14	0.52	Gyro
2700.00	0.58	2699.78	-5.66	341.62	5.55	-15.46	16.42	289.75	0.87	Gyro



Ryan Directional Services COMPLETION REPORT



Company: COG Operating LLC
Field: Lea Co, NM
Site: Becknell State Com 3H
Well: 3H
Wellpath: OH

Date: 2/4/2014 Time: 15:42:08 Page: 2
Co-ordinate(NE) Reference: Site: Becknell State Com 3H, Grid North
Vertical (TVD) Reference: SITE 3827.0
Section (VS) Reference: Well (0.00N,0.00E,179.59Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	ClsD ft	ClsA deg	DLS deg/100ft	Tool
2800.00	0.84	2799.77	-6.13	268.85	6.02	-16.35	17.42	290.20	0.87	Gyro
2900.00	0.92	2899.77	-5.33	187.55	5.21	-17.19	17.96	286.85	1.15	Gyro
3000.00	0.84	2999.75	-3.80	178.96	3.68	-17.28	17.67	282.01	0.15	Gyro
3100.00	1.16	3099.74	-3.30	76.23	3.18	-16.28	16.59	281.07	1.57	Gyro
3200.00	0.82	3199.73	-4.11	36.00	4.00	-14.88	15.41	285.06	0.75	Gyro
3300.00	0.92	3299.72	-5.47	345.53	5.36	-14.66	15.61	290.09	0.75	Gyro
3400.00	0.72	3399.71	-6.77	325.91	6.66	-15.21	16.60	293.64	0.34	Gyro
3500.00	0.84	3499.70	-7.11	255.58	7.00	-16.27	17.71	293.26	0.90	Gyro
3600.00	0.69	3599.70	-6.35	164.51	6.23	-16.82	17.94	290.33	1.10	Gyro
3700.00	0.84	3699.69	-5.53	109.22	5.41	-15.97	16.86	288.72	0.72	Gyro
3800.00	0.96	3799.68	-5.72	57.66	5.62	-14.57	15.62	291.09	0.79	Gyro
3900.00	1.06	3899.67	-7.05	343.39	6.95	-14.13	15.74	296.21	1.22	Gyro
4000.00	1.09	3999.65	-8.41	298.96	8.30	-15.22	17.34	298.60	0.81	Gyro
4100.00	0.68	4099.64	-8.85	267.63	8.74	-16.65	18.80	297.69	0.62	Gyro
4200.00	0.89	4199.63	-8.07	189.63	7.95	-17.37	19.10	294.58	1.00	Gyro
4300.00	1.01	4299.62	-6.68	134.50	6.56	-16.87	18.10	291.25	0.89	Gyro
4400.00	0.99	4399.61	-6.61	49.80	6.50	-15.58	16.89	292.65	1.35	Gyro
4500.00	0.89	4499.60	-7.79	323.52	7.68	-15.39	17.20	296.54	1.29	Gyro
4600.00	1.06	4599.59	-8.11	250.19	8.00	-16.72	18.53	295.56	1.17	Gyro
4700.00	0.98	4699.58	-6.95	181.04	6.83	-17.60	18.88	291.20	1.16	Gyro
4800.00	1.11	4799.56	-5.39	136.19	5.27	-16.95	17.75	287.28	0.81	Gyro
4900.00	0.89	4899.55	-5.12	55.80	5.01	-15.64	16.42	287.77	1.30	Gyro
5000.00	0.99	4999.54	-6.40	348.89	6.29	-15.16	16.41	292.55	1.04	Gyro
5100.00	0.84	5099.53	-7.54	292.69	7.43	-16.00	17.64	294.89	0.87	Gyro
5200.00	0.86	5199.52	-7.25	218.78	7.12	-17.15	18.57	292.56	1.02	Gyro
5300.00	1.07	5299.51	-5.74	170.98	5.62	-17.47	18.35	287.82	0.81	Gyro
5400.00	0.91	5399.50	-4.61	104.79	4.49	-16.56	17.16	285.17	1.09	Gyro
5500.00	0.62	5499.49	-4.89	24.40	4.78	-15.57	16.28	287.07	1.01	Gyro
5600.00	0.60	5599.48	-5.89	345.07	5.78	-15.48	16.52	290.48	0.41	Gyro
5700.00	0.32	5699.48	-6.66	338.49	6.54	-15.72	17.02	292.61	0.28	Gyro
5800.00	0.38	5799.48	-7.20	329.43	7.09	-15.99	17.49	293.92	0.08	Gyro
5900.00	0.61	5899.48	-7.94	327.87	7.83	-16.44	18.21	295.46	0.23	Gyro
6000.00	0.55	5999.47	-8.79	324.53	8.67	-17.00	19.08	297.02	0.07	Gyro
6100.00	0.65	6099.46	-9.72	342.04	9.60	-17.45	19.92	298.81	0.21	Gyro
6200.00	0.56	6199.46	-10.64	320.41	10.51	-17.94	20.79	300.38	0.24	Gyro
6300.00	0.44	6299.46	-11.23	302.43	11.10	-18.57	21.64	300.86	0.20	Gyro
6400.00	0.40	6399.45	-11.73	325.84	11.59	-19.09	22.34	301.26	0.17	Gyro
6500.00	0.39	6499.45	-12.26	315.34	12.12	-19.53	22.99	301.83	0.07	Gyro
6600.00	0.67	6599.45	-12.87	308.39	12.73	-20.23	23.90	302.18	0.29	Gyro
6700.00	0.76	6699.44	-13.70	314.01	13.55	-21.16	25.13	302.63	0.11	Gyro
6800.00	0.60	6799.43	-14.65	336.16	14.49	-21.85	26.22	303.55	0.30	Gyro
6900.00	0.78	6899.42	-15.72	330.24	15.56	-22.40	27.28	304.79	0.19	Gyro
7000.00	0.78	6999.41	-16.86	322.71	16.69	-23.15	28.54	305.79	0.10	Gyro
7100.00	0.88	7099.40	-17.71	292.79	17.53	-24.27	29.94	305.84	0.44	Gyro
7200.00	0.73	7199.39	-18.07	274.98	17.89	-25.61	31.24	304.93	0.29	Gyro
7300.00	0.78	7299.39	-18.08	265.45	17.89	-26.93	32.33	303.60	0.13	Gyro
7400.00	0.76	7399.38	-18.22	286.17	18.02	-28.24	33.50	302.54	0.28	Gyro
7500.00	0.67	7499.37	-18.53	281.36	18.32	-29.45	34.68	301.88	0.11	Gyro
7600.00	0.70	7599.36	-18.71	275.06	18.49	-30.63	35.78	301.11	0.08	Gyro
7700.00	0.87	7699.35	-18.68	263.35	18.45	-32.00	36.94	299.97	0.23	Gyro
7800.00	0.56	7799.35	-18.58	267.71	18.35	-33.24	37.97	298.89	0.31	Gyro
7900.00	0.44	7899.34	-18.55	266.77	18.30	-34.11	38.71	298.22	0.12	Gyro



Ryan Directional Services COMPLETION REPORT



Company: COG Operating LLC
Field: Lea Co, NM
Site: Becknell State Com 3H
Well: 3H
Wellpath: OH

Date: 2/4/2014 Time: 15:42:08 Page: 3
Co-ordinate(NE) Reference: Site: Becknell State Com 3H, Grid North
Vertical (TVD) Reference: SITE 3827.0
Section (VS) Reference: Well (0.00N,0.00E,179.59Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	ClsD ft	ClsA deg	DLS deg/100ft	Tool
8000.00	0.64	7999.34	-18.37	252.54	18.11	-35.03	39.43	297.35	0.24	Gyro
8100.00	0.80	8099.33	-17.87	241.18	17.61	-36.17	40.23	295.96	0.21	Gyro
8200.00	0.84	8199.32	-17.39	258.34	17.13	-37.50	41.23	294.55	0.25	Gyro
8300.00	0.67	8299.31	-17.19	263.44	16.91	-38.80	42.33	293.55	0.18	Gyro
8400.00	0.77	8399.30	-16.89	248.63	16.60	-40.01	43.31	292.53	0.21	Gyro
8500.00	0.85	8499.29	-16.37	248.07	16.08	-41.32	44.34	291.26	0.08	Gyro
8600.00	1.01	8599.28	-16.02	264.53	15.72	-42.89	45.68	290.13	0.31	Gyro
8700.00	1.12	8699.26	-15.82	262.05	15.50	-44.73	47.34	289.11	0.12	Gyro
8800.00	1.29	8799.24	-15.65	267.38	15.31	-46.82	49.26	288.11	0.20	Gyro
8900.00	1.07	8899.22	-15.44	259.34	15.09	-48.87	51.14	287.16	0.27	Gyro
9000.00	1.24	8999.20	-15.35	273.60	14.98	-50.86	53.02	286.41	0.33	Gyro
9100.00	1.10	9099.18	-15.57	278.39	15.19	-52.89	55.03	286.02	0.17	Gyro
9200.00	1.07	9199.16	-15.86	278.49	15.47	-54.77	56.91	285.77	0.03	Gyro
9300.00	1.27	9299.14	-15.96	267.17	15.55	-56.80	58.89	285.31	0.30	Gyro
9400.00	1.69	9399.11	-16.11	277.41	15.69	-59.37	61.40	284.80	0.49	Gyro
9500.00	1.92	9499.06	-16.88	289.45	16.43	-62.41	64.53	284.75	0.44	Gyro
9600.00	1.86	9599.00	-18.18	296.44	17.71	-65.44	67.79	285.15	0.24	Gyro
9700.00	1.47	9698.96	-19.57	300.13	19.08	-68.00	70.63	285.67	0.40	Gyro
9800.00	1.48	9798.93	-20.93	303.01	20.43	-70.19	73.11	286.23	0.07	Gyro
9900.00	1.43	9898.89	-22.37	305.18	21.85	-72.30	75.53	286.82	0.07	Gyro
10000.00	1.26	9998.87	-23.64	299.63	23.11	-74.27	77.79	287.29	0.21	Gyro
10100.00	1.17	10098.84	-24.52	287.91	23.97	-76.20	79.88	287.46	0.26	Gyro
10200.00	2.17	10198.80	-25.32	284.35	24.75	-79.01	82.79	287.40	1.00	Gyro
10300.00	2.00	10298.74	-26.76	303.09	26.18	-82.30	86.36	287.64	0.70	Gyro
10400.00	1.90	10398.68	-28.79	309.29	28.18	-85.05	89.59	288.33	0.23	Gyro
10500.00	1.95	10498.62	-30.70	299.64	30.07	-87.81	92.81	288.90	0.33	Gyro
10600.00	1.59	10598.57	-32.11	293.21	31.46	-90.56	95.87	289.16	0.41	Gyro
10700.00	1.39	10698.54	-33.47	311.48	32.81	-92.75	98.38	289.48	0.51	Gyro
10900.00	2.20	10898.50	-32.18	138.90	31.52	-92.04	97.29	288.91	1.79	Ryan MWD
10965.00	2.60	10963.45	-30.11	139.40	29.46	-90.26	94.95	288.08	0.62	Ryan MWD
10997.00	8.00	10995.30	-27.59	151.30	26.96	-88.72	92.72	286.90	17.13	Ryan MWD
11029.00	15.30	11026.62	-21.69	158.10	21.08	-86.07	88.61	283.76	23.17	Ryan MWD
11061.00	22.10	11056.91	-11.96	163.70	11.37	-82.80	83.58	277.82	21.95	Ryan MWD
11093.00	26.50	11086.07	0.72	164.30	-1.29	-79.18	79.19	269.07	13.77	Ryan MWD
11124.00	28.50	11113.57	14.66	168.70	-15.20	-75.86	77.36	258.67	9.19	Ryan MWD
11156.00	30.60	11141.41	30.22	171.30	-30.74	-73.13	79.33	247.20	7.69	Ryan MWD
11188.00	31.80	11168.78	46.69	175.30	-47.20	-71.21	85.43	236.46	7.48	Ryan MWD
11219.00	32.40	11195.05	63.14	179.40	-63.64	-70.45	94.94	227.91	7.29	Ryan MWD
11251.00	33.60	11221.88	80.57	180.30	-81.07	-70.41	107.38	220.97	4.05	Ryan MWD
11283.00	36.60	11248.06	98.96	180.10	-99.47	-70.47	121.90	215.32	9.38	Ryan MWD
11314.00	39.20	11272.52	118.00	178.50	-118.51	-70.23	137.75	210.65	8.97	Ryan MWD
11346.00	41.10	11296.98	138.63	179.80	-139.14	-69.93	155.72	206.68	6.49	Ryan MWD
11378.00	43.60	11320.63	160.19	179.30	-160.69	-69.76	175.18	203.47	7.88	Ryan MWD
11408.00	45.50	11342.01	181.23	178.20	-181.73	-69.29	194.49	200.87	6.84	Ryan MWD
11440.00	45.70	11364.40	204.08	176.80	-204.57	-68.30	215.67	198.46	3.19	Ryan MWD
11472.00	46.20	11386.64	227.04	176.10	-227.53	-66.87	237.15	196.38	2.22	Ryan MWD
11504.00	47.50	11408.53	250.33	175.40	-250.81	-65.14	259.13	194.56	4.36	Ryan MWD
11536.00	47.70	11430.11	273.89	174.90	-274.35	-63.14	281.52	192.96	1.31	Ryan MWD
11565.00	47.70	11449.63	295.23	172.50	-295.67	-60.79	301.85	191.62	6.12	Ryan MWD
11597.00	49.80	11470.72	319.12	173.50	-319.55	-57.86	324.74	190.26	6.97	Ryan MWD
11629.00	51.20	11491.08	343.70	174.40	-344.10	-55.26	348.51	189.12	4.88	Ryan MWD
11661.00	55.40	11510.20	369.25	174.60	-369.63	-52.80	373.39	188.13	13.13	Ryan MWD
11693.00	55.60	11528.32	395.52	174.90	-395.90	-50.39	399.09	187.25	0.99	Ryan MWD



Ryan Directional Services COMPLETION REPORT



Company: COG Operating LLC	Date: 2/4/2014	Time: 15:42:57	Page: 1
Field: Lea Co, NM	Co-ordinate(NE) Reference:	Site: Becknell State Com 3H, Grid North	
Site: Becknell State Com 3H	Vertical (TVD) Reference:	SITE 3827.0	
Well: 3H	Section (VS) Reference:	Well (0.00N,0.00E,179.59Azi)	
Wellpath: ST 1	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Field: Lea Co, NM New Mexico U.S.A.	Map Zone: New Mexico, Eastern Zone
Map System: US State Plane Coordinate System 1927	Coordinate System: Site Centre
Geo Datum: NAD27 (Clarke 1866)	Geomagnetic Model: IGRF2010
Sys Datum: Mean Sea Level	

Site: Becknell State Com 3H

Lea Co., NM

Site Position:	Northing: 548935.00 ft	Latitude: 32 30 25.104 N
From: Map	Easting: 727219.70 ft	Longitude: 103 35 46.602 W
Position Uncertainty: 2.00 ft		North Reference: Grid
Ground Level: 3801.90 ft		Grid Convergence: 0.40 deg

Well: 3H

Slot Name:

Well Position: +N/-S 0.00 ft	Northing: 548935.00 ft	Latitude: 32 30 25.104 N
+E/-W 0.00 ft	Easting: 727219.70 ft	Longitude: 103 35 46.602 W
Position Uncertainty: 0.00 ft		

Wellpath: ST 1

Current Datum: SITE	Height 3827.00 ft	Drilled From: Surface
Magnetic Data: 12/19/2013		Tie-on Depth: 0.00 ft
Field Strength: 48558 nT		Above System Datum: Mean Sea Level
Vertical Section: Depth From (TVD)	+N/-S ft	Declination: 7.31 deg
		Mag Dip Angle: 60.38 deg
		+E/-W ft
		Direction deg
0.00	0.00	0.00 179.59

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	ClsD ft	ClsA deg	DLS deg/100ft	Tool
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
100.00	0.19	100.00	-0.14	31.56	0.14	0.09	0.17	31.56	0.19	Gyro
200.00	0.72	200.00	-0.60	299.83	0.60	-0.37	0.70	328.03	0.75	Gyro
300.00	0.78	299.99	-1.43	318.83	1.42	-1.36	1.97	316.14	0.25	Gyro
400.00	0.71	399.98	-2.36	311.54	2.34	-2.28	3.27	315.83	0.12	Gyro
500.00	0.66	499.97	-3.09	302.73	3.07	-3.22	4.45	313.55	0.12	Gyro
600.00	0.68	599.97	-3.72	301.35	3.69	-4.22	5.60	311.16	0.03	Gyro
700.00	0.67	699.96	-4.37	305.34	4.33	-5.20	6.77	309.80	0.05	Gyro
800.00	0.63	799.95	-5.04	306.79	5.00	-6.12	7.90	309.26	0.04	Gyro
900.00	0.73	899.95	-5.75	306.09	5.70	-7.07	9.09	308.89	0.10	Gyro
1000.00	0.77	999.94	-6.21	276.22	6.15	-8.25	10.30	306.70	0.39	Gyro
1100.00	0.93	1099.93	-6.49	284.16	6.42	-9.71	11.64	303.49	0.20	Gyro
1200.00	0.67	1199.92	-6.85	284.74	6.77	-11.06	12.97	301.47	0.26	Gyro
1300.00	0.52	1299.91	-6.97	265.14	6.88	-12.08	13.90	299.67	0.25	Gyro
1400.00	0.53	1399.91	-6.70	239.58	6.61	-12.93	14.52	297.07	0.23	Gyro
1500.00	0.65	1499.90	-6.38	260.47	6.28	-13.89	15.24	294.33	0.24	Gyro
1600.00	0.78	1599.89	-6.08	251.20	5.97	-15.09	16.23	291.57	0.17	Gyro
1700.00	0.99	1699.88	-5.55	248.54	5.43	-16.54	17.41	288.18	0.21	Gyro
1800.00	0.78	1799.87	-4.92	241.82	4.79	-17.94	18.57	284.96	0.23	Gyro
1900.00	0.88	1899.86	-3.95	147.74	3.82	-18.13	18.53	281.91	1.22	Gyro
2000.00	0.94	1999.85	-3.23	94.85	3.10	-16.91	17.19	280.41	0.81	Gyro
2100.00	1.08	2099.84	-4.03	20.22	3.92	-15.76	16.24	283.96	1.23	Gyro
2200.00	1.04	2199.83	-5.44	305.18	5.33	-16.18	17.03	288.22	1.29	Gyro
2300.00	0.86	2299.82	-5.85	260.56	5.73	-17.66	18.57	287.97	0.74	Gyro
2400.00	0.94	2399.81	-4.93	170.13	4.80	-18.26	18.88	284.71	1.28	Gyro
2500.00	0.94	2499.80	-4.18	85.08	4.06	-17.30	17.77	283.20	1.27	Gyro
2600.00	0.87	2599.79	-4.71	51.68	4.60	-15.89	16.54	286.14	0.52	Gyro
2700.00	0.58	2699.78	-5.66	341.62	5.55	-15.46	16.42	289.75	0.87	Gyro



Ryan Directional Services COMPLETION REPORT



Company: COG Operating LLC
Field: Lea Co, NM
Site: Becknell State Com 3H
Well: 3H
Wellpath: ST 1

Date: 2/4/2014
Co-ordinate(NE) Reference:
Vertical (TVD) Reference:
Section (VS) Reference:
Survey Calculation Method:
Time: 15:42:57
Site: Becknell State Com 3H, Grid North
SITE 3827.0
Well (0.00N,0.00E,179.59Azi)
Minimum Curvature
Page: 2
Db: Sybase

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	ClsD ft	ClsA deg	DLS deg/100ft	Tool
2800.00	0.84	2799.77	-6.13	268.85	6.02	-16.35	17.42	290.20	0.87	Gyro
2900.00	0.92	2899.77	-5.33	187.55	5.21	-17.19	17.96	286.85	1.15	Gyro
3000.00	0.84	2999.75	-3.80	178.96	3.68	-17.28	17.67	282.01	0.15	Gyro
3100.00	1.16	3099.74	-3.30	76.23	3.18	-16.28	16.59	281.07	1.57	Gyro
3200.00	0.82	3199.73	-4.11	36.00	4.00	-14.88	15.41	285.06	0.75	Gyro
3300.00	0.92	3299.72	-5.47	345.53	5.36	-14.66	15.61	290.09	0.75	Gyro
3400.00	0.72	3399.71	-6.77	325.91	6.66	-15.21	16.60	293.64	0.34	Gyro
3500.00	0.84	3499.70	-7.11	255.58	7.00	-16.27	17.71	293.26	0.90	Gyro
3600.00	0.69	3599.70	-6.35	164.51	6.23	-16.82	17.94	290.33	1.10	Gyro
3700.00	0.84	3699.69	-5.53	109.22	5.41	-15.97	16.86	288.72	0.72	Gyro
3800.00	0.96	3799.68	-5.72	57.66	5.62	-14.57	15.62	291.09	0.79	Gyro
3900.00	1.06	3899.67	-7.05	343.39	6.95	-14.13	15.74	296.21	1.22	Gyro
4000.00	1.09	3999.65	-8.41	298.96	8.30	-15.22	17.34	298.60	0.81	Gyro
4100.00	0.68	4099.64	-8.85	267.63	8.74	-16.65	18.80	297.69	0.62	Gyro
4200.00	0.89	4199.63	-8.07	189.63	7.95	-17.37	19.10	294.58	1.00	Gyro
4300.00	1.01	4299.62	-6.68	134.50	6.56	-16.87	18.10	291.25	0.89	Gyro
4400.00	0.99	4399.61	-6.61	49.80	6.50	-15.58	16.89	292.65	1.35	Gyro
4500.00	0.89	4499.60	-7.79	323.52	7.68	-15.39	17.20	296.54	1.29	Gyro
4600.00	1.06	4599.59	-8.11	250.19	8.00	-16.72	18.53	295.56	1.17	Gyro
4700.00	0.98	4699.58	-6.95	181.04	6.83	-17.60	18.88	291.20	1.16	Gyro
4800.00	1.11	4799.56	-5.39	136.19	5.27	-16.95	17.75	287.28	0.81	Gyro
4900.00	0.89	4899.55	-5.12	55.80	5.01	-15.64	16.42	287.77	1.30	Gyro
5000.00	0.99	4999.54	-6.40	348.89	6.29	-15.16	16.41	292.55	1.04	Gyro
5100.00	0.84	5099.53	-7.54	292.69	7.43	-16.00	17.64	294.89	0.87	Gyro
5200.00	0.86	5199.52	-7.25	218.78	7.12	-17.15	18.57	292.56	1.02	Gyro
5300.00	1.07	5299.51	-5.74	170.98	5.62	-17.47	18.35	287.82	0.81	Gyro
5400.00	0.91	5399.50	-4.61	104.79	4.49	-16.56	17.16	285.17	1.09	Gyro
5500.00	0.62	5499.49	-4.89	24.40	4.78	-15.57	16.28	287.07	1.01	Gyro
5600.00	0.60	5599.48	-5.89	345.07	5.78	-15.48	16.52	290.48	0.41	Gyro
5700.00	0.32	5699.48	-6.66	338.49	6.54	-15.72	17.02	292.61	0.28	Gyro
5800.00	0.38	5799.48	-7.20	329.43	7.09	-15.99	17.49	293.92	0.08	Gyro
5900.00	0.61	5899.48	-7.94	327.87	7.83	-16.44	18.21	295.46	0.23	Gyro
6000.00	0.55	5999.47	-8.79	324.53	8.67	-17.00	19.08	297.02	0.07	Gyro
6100.00	0.65	6099.46	-9.72	342.04	9.60	-17.45	19.92	298.81	0.21	Gyro
6200.00	0.56	6199.46	-10.64	320.41	10.51	-17.94	20.79	300.38	0.24	Gyro
6300.00	0.44	6299.46	-11.23	302.43	11.10	-18.57	21.64	300.86	0.20	Gyro
6400.00	0.40	6399.45	-11.73	325.84	11.59	-19.09	22.34	301.26	0.17	Gyro
6500.00	0.39	6499.45	-12.26	315.34	12.12	-19.53	22.99	301.83	0.07	Gyro
6600.00	0.67	6599.45	-12.87	308.39	12.73	-20.23	23.90	302.18	0.29	Gyro
6700.00	0.76	6699.44	-13.70	314.01	13.55	-21.16	25.13	302.63	0.11	Gyro
6800.00	0.60	6799.43	-14.65	336.16	14.49	-21.85	26.22	303.55	0.30	Gyro
6900.00	0.78	6899.42	-15.72	330.24	15.56	-22.40	27.28	304.79	0.19	Gyro
7000.00	0.78	6999.41	-16.86	322.71	16.69	-23.15	28.54	305.79	0.10	Gyro
7100.00	0.88	7099.40	-17.71	292.79	17.53	-24.27	29.94	305.84	0.44	Gyro
7200.00	0.73	7199.39	-18.07	274.98	17.89	-25.61	31.24	304.93	0.29	Gyro
7300.00	0.78	7299.39	-18.08	265.45	17.89	-26.93	32.33	303.60	0.13	Gyro
7400.00	0.76	7399.38	-18.22	286.17	18.02	-28.24	33.50	302.54	0.28	Gyro
7500.00	0.67	7499.37	-18.53	281.36	18.32	-29.45	34.68	301.88	0.11	Gyro
7600.00	0.70	7599.36	-18.71	275.06	18.49	-30.63	35.78	301.11	0.08	Gyro
7700.00	0.87	7699.35	-18.68	263.35	18.45	-32.00	36.94	299.97	0.23	Gyro
7800.00	0.56	7799.35	-18.58	267.71	18.35	-33.24	37.97	298.89	0.31	Gyro
7900.00	0.44	7899.34	-18.55	266.77	18.30	-34.11	38.71	298.22	0.12	Gyro



Ryan Directional Services COMPLETION REPORT



Company: COG Operating LLC
Field: Lea Co, NM
Site: Becknell State Com 3H
Well: 3H
Wellpath: ST 1

Date: 2/4/2014 Time: 15:42:57 Page: 3
Co-ordinate(N/E) Reference: Site: Becknell State Com 3H, Grid North
Vertical (TVD) Reference: SITE 3827.0
Section (VS) Reference: Well (0.00N,0.00E,179.59Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	ClsD ft	ClsA deg	DLS deg/100ft	Tool
8000.00	0.64	7999.34	-18.37	252.54	18.11	-35.03	39.43	297.35	0.24	Gyro
8100.00	0.80	8099.33	-17.87	241.18	17.61	-36.17	40.23	295.96	0.21	Gyro
8200.00	0.84	8199.32	-17.39	258.34	17.13	-37.50	41.23	294.55	0.25	Gyro
8300.00	0.67	8299.31	-17.19	263.44	16.91	-38.80	42.33	293.55	0.18	Gyro
8400.00	0.77	8399.30	-16.89	248.63	16.60	-40.01	43.31	292.53	0.21	Gyro
8500.00	0.85	8499.29	-16.37	248.07	16.08	-41.32	44.34	291.26	0.08	Gyro
8600.00	1.01	8599.28	-16.02	264.53	15.72	-42.89	45.68	290.13	0.31	Gyro
8700.00	1.12	8699.26	-15.82	262.05	15.50	-44.73	47.34	289.11	0.12	Gyro
8800.00	1.29	8799.24	-15.65	267.38	15.31	-46.82	49.26	288.11	0.20	Gyro
8900.00	1.07	8899.22	-15.44	259.34	15.09	-48.87	51.14	287.16	0.27	Gyro
9000.00	1.24	8999.20	-15.35	273.60	14.98	-50.86	53.02	286.41	0.33	Gyro
9100.00	1.10	9099.18	-15.57	278.39	15.19	-52.89	55.03	286.02	0.17	Gyro
9200.00	1.07	9199.16	-15.86	278.49	15.47	-54.77	56.91	285.77	0.03	Gyro
9300.00	1.27	9299.14	-15.96	267.17	15.55	-56.80	58.89	285.31	0.30	Gyro
9400.00	1.69	9399.11	-16.11	277.41	15.69	-59.37	61.40	284.80	0.49	Gyro
9500.00	1.92	9499.06	-16.88	289.45	16.43	-62.41	64.53	284.75	0.44	Gyro
9600.00	1.86	9599.00	-18.18	296.44	17.71	-65.44	67.79	285.15	0.24	Gyro
9700.00	1.47	9698.96	-19.57	300.13	19.08	-68.00	70.63	285.67	0.40	Gyro
9800.00	1.48	9798.93	-20.93	303.01	20.43	-70.19	73.11	286.23	0.07	Gyro
9900.00	1.43	9898.89	-22.37	305.18	21.85	-72.30	75.53	286.82	0.07	Gyro
10000.00	1.26	9998.87	-23.64	299.63	23.11	-74.27	77.79	287.29	0.21	Gyro
10100.00	1.17	10098.84	-24.52	287.91	23.97	-76.20	79.88	287.46	0.26	Gyro
10200.00	2.17	10198.80	-25.32	284.35	24.75	-79.01	82.79	287.40	1.00	Gyro
10300.00	2.00	10298.74	-26.76	303.09	26.18	-82.30	86.36	287.64	0.70	Gyro
10400.00	1.90	10398.68	-28.79	309.29	28.18	-85.05	89.59	288.33	0.23	Gyro
10500.00	1.95	10498.62	-30.70	299.64	30.07	-87.81	92.81	288.90	0.33	Gyro
10600.00	1.59	10598.57	-32.11	293.21	31.46	-90.56	95.87	289.16	0.41	Gyro
10700.00	1.39	10698.54	-33.47	311.48	32.81	-92.75	98.38	289.48	0.51	Gyro
10839.00	3.00	10837.49	-31.49	148.20	30.83	-92.09	97.12	288.51	3.13	Ryan MWD
10870.00	7.90	10868.34	-29.03	145.60	28.38	-90.46	94.81	287.42	15.82	Ryan MWD
10902.00	13.10	10899.80	-24.02	151.10	23.39	-87.46	90.54	284.97	16.53	Ryan MWD
10934.00	16.40	10930.74	-16.66	157.00	16.06	-83.94	85.47	280.83	11.32	Ryan MWD
10965.00	19.10	10960.26	-7.80	161.30	7.22	-80.61	80.93	275.12	9.68	Ryan MWD
10997.00	22.80	10990.14	2.94	157.80	-3.48	-76.58	76.66	267.40	12.20	Ryan MWD
11029.00	25.60	11019.33	15.12	157.90	-15.63	-71.64	73.33	257.69	8.75	Ryan MWD
11061.00	27.70	11047.93	28.48	158.40	-28.95	-66.30	72.35	246.41	6.60	Ryan MWD
11093.00	29.10	11076.07	42.73	159.60	-43.16	-60.85	74.60	234.65	4.72	Ryan MWD
11124.00	32.60	11102.69	57.76	161.60	-58.16	-55.58	80.45	223.70	11.76	Ryan MWD
11156.00	34.20	11129.40	74.66	164.90	-75.02	-50.52	90.45	213.96	7.56	Ryan MWD
11188.00	35.10	11155.73	92.27	165.30	-92.60	-45.84	103.33	206.34	2.90	Ryan MWD
11219.00	38.20	11180.59	110.27	167.10	-110.57	-41.44	118.08	200.54	10.58	Ryan MWD
11251.00	42.20	11205.03	130.42	166.80	-130.69	-36.77	135.77	195.72	12.51	Ryan MWD
11282.00	44.70	11227.54	151.35	170.60	-151.59	-32.61	155.06	192.14	11.66	Ryan MWD
11314.00	47.30	11249.78	174.22	176.50	-174.44	-30.06	177.01	189.78	15.55	Ryan MWD
11346.00	49.20	11271.09	198.08	179.70	-198.30	-29.28	200.45	188.40	9.53	Ryan MWD
11378.00	52.80	11291.22	222.94	181.60	-223.16	-29.57	225.11	187.55	12.16	Ryan MWD
11410.00	56.90	11309.64	249.08	182.60	-249.30	-30.53	251.16	186.98	13.06	Ryan MWD
11442.00	60.60	11326.24	276.39	182.90	-276.62	-31.85	278.45	186.57	11.59	Ryan MWD
11474.00	64.70	11340.94	304.77	181.90	-305.01	-33.03	306.80	186.18	13.11	Ryan MWD
11504.00	67.80	11353.02	332.21	181.40	-332.46	-33.82	334.17	185.81	10.45	Ryan MWD
11536.00	69.30	11364.72	361.98	180.50	-362.24	-34.31	363.86	185.41	5.37	Ryan MWD
11568.00	71.80	11375.38	392.15	181.00	-392.40	-34.71	393.94	185.05	7.95	Ryan MWD
11600.00	75.50	11384.38	422.83	181.80	-423.10	-35.46	424.58	184.79	11.81	Ryan MWD



Ryan Directional Services COMPLETION REPORT



Company: COG Operating LLC
Field: Lea Co, NM
Site: Becknell State Com 3H
Well: 3H
Wellpath: ST 1

Date: 2/4/2014 Time: 15:42:57 Page: 4
Co-ordinate(NE) Reference: Site: Becknell State Com 3H, Grid North
Vertical (TVD) Reference: SITE 3827.0
Section (VS) Reference: Well (0.00N,0.00E,179.59Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	ClsD ft	ClsA deg	DLS deg/100ft	Tool
11631.00	77.50	11391.62	452.94	182.30	-453.22	-36.54	454.69	184.61	6.64	Ryan MWD
11663.00	78.50	11398.27	484.21	182.40	-484.49	-37.82	485.97	184.46	3.14	Ryan MWD
11758.00	77.50	11418.02	577.04	181.90	-577.35	-41.31	578.82	184.09	1.17	Ryan MWD
11854.00	77.00	11439.21	670.59	181.90	-670.93	-44.42	672.40	183.79	0.52	Ryan MWD
11949.00	76.80	11460.74	763.05	181.80	-763.41	-47.40	764.88	183.55	0.23	Ryan MWD
12043.00	75.20	11483.48	854.21	181.00	-854.59	-49.63	856.03	183.32	1.89	Ryan MWD
12139.00	78.20	11505.57	947.61	180.00	-948.00	-50.44	949.34	183.05	3.29	Ryan MWD
12234.00	79.80	11523.69	1040.86	179.20	-1041.24	-49.79	1042.43	182.74	1.88	Ryan MWD



Ryan Directional Services COMPLETION REPORT



Company: COG Operating LLC	Date: 2/4/2014	Time: 15:43:25	Page: 1
Field: Lea Co, NM	Co-ordinate(NE) Reference:	Site: Becknell State Com 3H, Grid North	
Site: Becknell State Com 3H	Vertical (TVD) Reference:	SITE 3827.0	
Well: 3H	Section (VS) Reference:	Well (0.00N,0.00E,179.59Azi)	
Wellpath: ST 2	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Field: Lea Co, NM
New Mexico
U.S.A.

Map System: US State Plane Coordinate System 1927

Geo Datum: NAD27 (Clarke 1866)

Sys Datum: Mean Sea Level

Map Zone:

New Mexico, Eastern Zone

Coordinate System:

Site Centre

Geomagnetic Model:

IGRF2010

Site: Becknell State Com 3H

Lea Co., NM

Site Position:

From: Map

Position Uncertainty: 2.00 ft

Ground Level: 3801.90 ft

Northing: 548935.00 ft

Easting: 727219.70 ft

Latitude: 32 30 25.104 N

Longitude: 103 35 46.602 W

North Reference: Grid

Grid Convergence: 0.40 deg

Well: 3H

Slot Name:

Well Position: +N/-S 0.00 ft

+E/-W 0.00 ft

Position Uncertainty: 0.00 ft

Northing: 548935.00 ft

Easting: 727219.70 ft

Latitude: 32 30 25.104 N

Longitude: 103 35 46.602 W

Wellpath: ST 2

Current Datum: SITE

Magnetic Data: 1/6/2014

Field Strength: 48553 nT

Vertical Section: Depth From (TVD)

Height 3827.00 ft

+N/-S

ft

Drilled From:

Surface

Tie-on Depth:

0.00 ft

Above System Datum:

Mean Sea Level

Declination:

7.30 deg

Mag Dip Angle:

60.38 deg

+E/-W

ft

Direction

deg

0.00

0.00

0.00

179.59

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	ClsD ft	ClsA deg	DLS deg/100ft	Tool
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
100.00	0.19	100.00	-0.14	31.56	0.14	0.09	0.17	31.56	0.19	Gyro
200.00	0.72	200.00	-0.60	299.83	0.60	-0.37	0.70	328.03	0.75	Gyro
300.00	0.78	299.99	-1.43	318.83	1.42	-1.36	1.97	316.14	0.25	Gyro
400.00	0.71	399.98	-2.36	311.54	2.34	-2.28	3.27	315.83	0.12	Gyro
500.00	0.66	499.97	-3.09	302.73	3.07	-3.22	4.45	313.55	0.12	Gyro
600.00	0.68	599.97	-3.72	301.35	3.69	-4.22	5.60	311.16	0.03	Gyro
700.00	0.67	699.96	-4.37	305.34	4.33	-5.20	6.77	309.80	0.05	Gyro
800.00	0.63	799.95	-5.04	306.79	5.00	-6.12	7.90	309.26	0.04	Gyro
900.00	0.73	899.95	-5.75	306.09	5.70	-7.07	9.09	308.89	0.10	Gyro
1000.00	0.77	999.94	-6.21	276.22	6.15	-8.25	10.30	306.70	0.39	Gyro
1100.00	0.93	1099.93	-6.49	284.16	6.42	-9.71	11.64	303.49	0.20	Gyro
1200.00	0.67	1199.92	-6.85	284.74	6.77	-11.06	12.97	301.47	0.26	Gyro
1300.00	0.52	1299.91	-6.97	265.14	6.88	-12.08	13.90	299.67	0.25	Gyro
1400.00	0.53	1399.91	-6.70	239.58	6.61	-12.93	14.52	297.07	0.23	Gyro
1500.00	0.65	1499.90	-6.38	260.47	6.28	-13.89	15.24	294.33	0.24	Gyro
1600.00	0.78	1599.89	-6.08	251.20	5.97	-15.09	16.23	291.57	0.17	Gyro
1700.00	0.99	1699.88	-5.55	248.54	5.43	-16.54	17.41	288.18	0.21	Gyro
1800.00	0.78	1799.87	-4.92	241.82	4.79	-17.94	18.57	284.96	0.23	Gyro
1900.00	0.88	1899.86	-3.95	147.74	3.82	-18.13	18.53	281.91	1.22	Gyro
2000.00	0.94	1999.85	-3.23	94.85	3.10	-16.91	17.19	280.41	0.81	Gyro
2100.00	1.08	2099.84	-4.03	20.22	3.92	-15.76	16.24	283.96	1.23	Gyro
2200.00	1.04	2199.83	-5.44	305.18	5.33	-16.18	17.03	288.22	1.29	Gyro
2300.00	0.86	2299.82	-5.85	260.56	5.73	-17.66	18.57	287.97	0.74	Gyro
2400.00	0.94	2399.81	-4.93	170.13	4.80	-18.26	18.88	284.71	1.28	Gyro
2500.00	0.94	2499.80	-4.18	85.08	4.06	-17.30	17.77	283.20	1.27	Gyro
2600.00	0.87	2599.79	-4.71	51.68	4.60	-15.89	16.54	286.14	0.52	Gyro
2700.00	0.58	2699.78	-5.66	341.62	5.55	-15.46	16.42	289.75	0.87	Gyro



Ryan Directional Services COMPLETION REPORT



Company: COG Operating LLC
Field: Lea Co, NM
Site: Becknell State Com 3H
Well: 3H
Wellpath: ST 2

Date: 2/4/2014 Time: 15:43:25 Page: 2
Co-ordinate(NE) Reference: Site: Becknell State Com 3H, Grid North
Vertical (TVD) Reference: SITE 3827.0
Section (VS) Reference: Well (0.00N,0.00E,179.59Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	ClsD ft	ClsA deg	DLS deg/100ft	Tool
2800.00	0.84	2799.77	-6.13	268.85	6.02	-16.35	17.42	290.20	0.87	Gyro
2900.00	0.92	2899.77	-5.33	187.55	5.21	-17.19	17.96	286.85	1.15	Gyro
3000.00	0.84	2999.75	-3.80	178.96	3.68	-17.28	17.67	282.01	0.15	Gyro
3100.00	1.16	3099.74	-3.30	76.23	3.18	-16.28	16.59	281.07	1.57	Gyro
3200.00	0.82	3199.73	-4.11	36.00	4.00	-14.88	15.41	285.06	0.75	Gyro
3300.00	0.92	3299.72	-5.47	345.53	5.36	-14.66	15.61	290.09	0.75	Gyro
3400.00	0.72	3399.71	-6.77	325.91	6.66	-15.21	16.60	293.64	0.34	Gyro
3500.00	0.84	3499.70	-7.11	255.58	7.00	-16.27	17.71	293.26	0.90	Gyro
3600.00	0.69	3599.70	-6.35	164.51	6.23	-16.82	17.94	290.33	1.10	Gyro
3700.00	0.84	3699.69	-5.53	109.22	5.41	-15.97	16.86	288.72	0.72	Gyro
3800.00	0.96	3799.68	-5.72	57.66	5.62	-14.57	15.62	291.09	0.79	Gyro
3900.00	1.06	3899.67	-7.05	343.39	6.95	-14.13	15.74	296.21	1.22	Gyro
4000.00	1.09	3999.65	-8.41	298.96	8.30	-15.22	17.34	298.60	0.81	Gyro
4100.00	0.68	4099.64	-8.85	267.63	8.74	-16.65	18.80	297.69	0.62	Gyro
4200.00	0.89	4199.63	-8.07	189.63	7.95	-17.37	19.10	294.58	1.00	Gyro
4300.00	1.01	4299.62	-6.68	134.50	6.56	-16.87	18.10	291.25	0.89	Gyro
4400.00	0.99	4399.61	-6.61	49.80	6.50	-15.58	16.89	292.65	1.35	Gyro
4500.00	0.89	4499.60	-7.79	323.52	7.68	-15.39	17.20	296.54	1.29	Gyro
4600.00	1.06	4599.59	-8.11	250.19	8.00	-16.72	18.53	295.56	1.17	Gyro
4700.00	0.98	4699.58	-6.95	181.04	6.83	-17.60	18.88	291.20	1.16	Gyro
4800.00	1.11	4799.56	-5.39	136.19	5.27	-16.95	17.75	287.28	0.81	Gyro
4900.00	0.89	4899.55	-5.12	55.80	5.01	-15.64	16.42	287.77	1.30	Gyro
5000.00	0.99	4999.54	-6.40	348.89	6.29	-15.16	16.41	292.55	1.04	Gyro
5100.00	0.84	5099.53	-7.54	292.69	7.43	-16.00	17.64	294.89	0.87	Gyro
5200.00	0.86	5199.52	-7.25	218.78	7.12	-17.15	18.57	292.56	1.02	Gyro
5300.00	1.07	5299.51	-5.74	170.98	5.62	-17.47	18.35	287.82	0.81	Gyro
5400.00	0.91	5399.50	-4.61	104.79	4.49	-16.56	17.16	285.17	1.09	Gyro
5500.00	0.62	5499.49	-4.89	24.40	4.78	-15.57	16.28	287.07	1.01	Gyro
5600.00	0.60	5599.48	-5.89	345.07	5.78	-15.48	16.52	290.48	0.41	Gyro
5700.00	0.32	5699.48	-6.66	338.49	6.54	-15.72	17.02	292.61	0.28	Gyro
5800.00	0.38	5799.48	-7.20	329.43	7.09	-15.99	17.49	293.92	0.08	Gyro
5900.00	0.61	5899.48	-7.94	327.87	7.83	-16.44	18.21	295.46	0.23	Gyro
6000.00	0.55	5999.47	-8.79	324.53	8.67	-17.00	19.08	297.02	0.07	Gyro
6100.00	0.65	6099.46	-9.72	342.04	9.60	-17.45	19.92	298.81	0.21	Gyro
6200.00	0.56	6199.46	-10.64	320.41	10.51	-17.94	20.79	300.38	0.24	Gyro
6300.00	0.44	6299.46	-11.23	302.43	11.10	-18.57	21.64	300.86	0.20	Gyro
6400.00	0.40	6399.45	-11.73	325.84	11.59	-19.09	22.34	301.26	0.17	Gyro
6500.00	0.39	6499.45	-12.26	315.34	12.12	-19.53	22.99	301.83	0.07	Gyro
6600.00	0.67	6599.45	-12.87	308.39	12.73	-20.23	23.90	302.18	0.29	Gyro
6700.00	0.76	6699.44	-13.70	314.01	13.55	-21.16	25.13	302.63	0.11	Gyro
6800.00	0.60	6799.43	-14.65	336.16	14.49	-21.85	26.22	303.55	0.30	Gyro
6900.00	0.78	6899.42	-15.72	330.24	15.56	-22.40	27.28	304.79	0.19	Gyro
7000.00	0.78	6999.41	-16.86	322.71	16.69	-23.15	28.54	305.79	0.10	Gyro
7100.00	0.88	7099.40	-17.71	292.79	17.53	-24.27	29.94	305.84	0.44	Gyro
7200.00	0.73	7199.39	-18.07	274.98	17.89	-25.61	31.24	304.93	0.29	Gyro
7300.00	0.78	7299.39	-18.08	265.45	17.89	-26.93	32.33	303.60	0.13	Gyro
7400.00	0.76	7399.38	-18.22	286.17	18.02	-28.24	33.50	302.54	0.28	Gyro
7500.00	0.67	7499.37	-18.53	281.36	18.32	-29.45	34.68	301.88	0.11	Gyro
7600.00	0.70	7599.36	-18.71	275.06	18.49	-30.63	35.78	301.11	0.08	Gyro
7700.00	0.87	7699.35	-18.68	263.35	18.45	-32.00	36.94	299.97	0.23	Gyro
7800.00	0.56	7799.35	-18.58	267.71	18.35	-33.24	37.97	298.89	0.31	Gyro
7900.00	0.44	7899.34	-18.55	266.77	18.30	-34.11	38.71	298.22	0.12	Gyro



Ryan Directional Services COMPLETION REPORT



Company: COG Operating LLC
Field: Lea Co, NM
Site: Becknell State Com 3H
Well: 3H
Wellpath: ST 2

Date: 2/4/2014 Time: 15:43:25 Page: 3
Co-ordinate(NE) Reference: Site: Becknell State Com 3H, Grid North
Vertical (TVD) Reference: SITE 3827.0
Section (VS) Reference: Well (0.00N,0.00E,179.59Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	ClsD ft	ClsA deg	DLS deg/100ft	Tool
8000.00	0.64	7999.34	-18.37	252.54	18.11	-35.03	39.43	297.35	0.24	Gyro
8100.00	0.80	8099.33	-17.87	241.18	17.61	-36.17	40.23	295.96	0.21	Gyro
8200.00	0.84	8199.32	-17.39	258.34	17.13	-37.50	41.23	294.55	0.25	Gyro
8300.00	0.67	8299.31	-17.19	263.44	16.91	-38.80	42.33	293.55	0.18	Gyro
8400.00	0.77	8399.30	-16.89	248.63	16.60	-40.01	43.31	292.53	0.21	Gyro
8500.00	0.85	8499.29	-16.37	248.07	16.08	-41.32	44.34	291.26	0.08	Gyro
8600.00	1.01	8599.28	-16.02	264.53	15.72	-42.89	45.68	290.13	0.31	Gyro
8700.00	1.12	8699.26	-15.82	262.05	15.50	-44.73	47.34	289.11	0.12	Gyro
8800.00	1.29	8799.24	-15.65	267.38	15.31	-46.82	49.26	288.11	0.20	Gyro
8900.00	1.07	8899.22	-15.44	259.34	15.09	-48.87	51.14	287.16	0.27	Gyro
9000.00	1.24	8999.20	-15.35	273.60	14.98	-50.86	53.02	286.41	0.33	Gyro
9100.00	1.10	9099.18	-15.57	278.39	15.19	-52.89	55.03	286.02	0.17	Gyro
9200.00	1.07	9199.16	-15.86	278.49	15.47	-54.77	56.91	285.77	0.03	Gyro
9300.00	1.27	9299.14	-15.96	267.17	15.55	-56.80	58.89	285.31	0.30	Gyro
9400.00	1.69	9399.11	-16.11	277.41	15.69	-59.37	61.40	284.80	0.49	Gyro
9500.00	1.92	9499.06	-16.88	289.45	16.43	-62.41	64.53	284.75	0.44	Gyro
9600.00	1.86	9599.00	-18.18	296.44	17.71	-65.44	67.79	285.15	0.24	Gyro
9700.00	1.47	9698.96	-19.57	300.13	19.08	-68.00	70.63	285.67	0.40	Gyro
9800.00	1.48	9798.93	-20.93	303.01	20.43	-70.19	73.11	286.23	0.07	Gyro
9900.00	1.43	9898.89	-22.37	305.18	21.85	-72.30	75.53	286.82	0.07	Gyro
10000.00	1.26	9998.87	-23.64	299.63	23.11	-74.27	77.79	287.29	0.21	Gyro
10100.00	1.17	10098.84	-24.52	287.91	23.97	-76.20	79.88	287.46	0.26	Gyro
10200.00	2.17	10198.80	-25.32	284.35	24.75	-79.01	82.79	287.40	1.00	Gyro
10300.00	2.00	10298.74	-26.76	303.09	26.18	-82.30	86.36	287.64	0.70	Gyro
10400.00	1.90	10398.68	-28.79	309.29	28.18	-85.05	89.59	288.33	0.23	Gyro
10500.00	1.95	10498.62	-30.70	299.64	30.07	-87.81	92.81	288.90	0.33	Gyro
10600.00	1.59	10598.57	-32.11	293.21	31.46	-90.56	95.87	289.16	0.41	Gyro
10700.00	1.39	10698.54	-33.47	311.48	32.81	-92.75	98.38	289.48	0.51	Gyro
10900.00	2.20	10898.50	-32.18	138.90	31.52	-92.04	97.29	288.91	1.79	Ryan MWD
10953.00	2.60	10951.46	-30.53	136.50	29.88	-90.54	95.35	288.27	0.78	Ryan MWD
10989.00	6.60	10987.34	-27.86	180.10	27.22	-89.98	94.01	286.83	14.01	Ryan MWD
11021.00	13.30	11018.84	-22.35	184.70	21.71	-90.29	92.86	283.52	21.07	Ryan MWD
11053.00	18.70	11049.59	-13.66	191.80	13.01	-91.64	92.56	278.08	17.92	Ryan MWD
11084.00	24.70	11078.39	-2.53	194.20	1.86	-94.25	94.27	271.13	19.56	Ryan MWD
11116.00	26.60	11107.23	10.91	193.00	-11.61	-97.50	98.19	263.21	6.16	Ryan MWD
11148.00	27.40	11135.74	25.09	191.30	-25.81	-100.56	103.82	255.60	3.47	Ryan MWD
11180.00	28.40	11164.03	39.84	187.60	-40.57	-103.01	110.71	248.50	6.25	Ryan MWD
11211.00	32.40	11190.76	55.41	184.90	-56.16	-104.69	118.80	241.79	13.63	Ryan MWD
11243.00	35.40	11217.32	73.20	183.50	-73.96	-105.99	129.24	235.09	9.69	Ryan MWD
11273.00	32.00	11242.27	89.82	180.20	-90.59	-106.55	139.85	229.63	12.87	Ryan MWD
11305.00	24.10	11270.49	104.86	177.20	-105.62	-106.26	149.82	225.17	25.07	Ryan MWD
11336.00	24.40	11298.76	117.58	179.30	-118.34	-105.87	158.79	221.82	2.95	Ryan MWD
11368.00	28.30	11327.43	131.78	179.90	-132.54	-105.78	169.58	218.59	12.22	Ryan MWD
11399.00	32.30	11354.19	147.42	181.00	-148.18	-105.91	182.14	215.55	13.03	Ryan MWD
11431.00	36.00	11380.67	165.37	181.60	-166.13	-106.32	197.24	212.62	11.61	Ryan MWD
11463.00	40.40	11405.81	185.14	181.70	-185.91	-106.89	214.45	209.90	13.75	Ryan MWD
11495.00	44.60	11429.40	206.74	181.00	-207.52	-107.39	233.66	207.36	13.21	Ryan MWD
11527.00	48.30	11451.44	229.92	181.50	-230.70	-107.90	254.69	205.07	11.62	Ryan MWD
11557.00	52.90	11470.48	253.09	180.80	-253.87	-108.36	276.03	203.11	15.44	Ryan MWD
11589.00	57.50	11488.73	279.35	180.90	-280.14	-108.75	300.51	201.22	14.38	Ryan MWD
11621.00	62.40	11504.75	307.04	180.20	-307.83	-109.02	326.56	199.50	15.43	Ryan MWD
11653.00	67.80	11518.22	336.05	180.20	-336.84	-109.12	354.08	197.95	16.87	Ryan MWD
11685.00	73.30	11528.87	366.21	178.70	-367.00	-108.82	382.80	196.52	17.75	Ryan MWD



Ryan Directional Services COMPLETION REPORT



Company: COG Operating LLC
Field: Lea Co, NM
Site: Becknell State Com 3H
Well: 3H
Wellpath: ST 2

Date: 2/4/2014 Time: 15:43:25 Page: 4
Co-ordinate(NE) Reference: Site: Becknell State Com 3H, Grid North
Vertical (TVD) Reference: SITE 3827.0
Section (VS) Reference: Well (0.00N,0.00E,179.59Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	ClsD ft	ClsA deg	DLS deg/100ft	Tool
11716.00	78.90	11536.32	396.28	177.40	-397.06	-107.79	411.44	195.19	18.52	Ryan MWD
11738.00	83.00	11539.78	417.98	176.00	-418.75	-106.54	432.09	194.27	19.67	Ryan MWD
11834.00	89.30	11546.22	513.55	176.50	-514.28	-100.28	523.96	191.03	6.58	Ryan MWD
11929.00	90.20	11546.64	608.39	176.20	-609.08	-94.23	616.33	188.79	1.00	Ryan MWD
12024.00	89.00	11547.30	703.28	177.50	-703.93	-89.01	709.54	187.21	1.86	Ryan MWD
12119.00	88.30	11549.54	798.17	177.00	-798.80	-84.46	803.25	186.04	0.91	Ryan MWD
12214.00	88.80	11551.94	893.08	178.20	-893.68	-80.48	897.30	185.15	1.37	Ryan MWD
12308.00	89.10	11553.66	987.04	178.00	-987.61	-77.36	990.64	184.48	0.38	Ryan MWD
12403.00	88.40	11555.74	1081.99	178.70	-1082.55	-74.63	1085.12	183.94	1.04	Ryan MWD
12497.00	88.00	11558.69	1175.93	178.40	-1176.47	-72.25	1178.69	183.51	0.53	Ryan MWD
12592.00	89.80	11560.51	1270.89	178.90	-1271.43	-70.01	1273.35	183.15	1.97	Ryan MWD
12687.00	89.20	11561.34	1365.86	177.40	-1366.37	-66.95	1368.01	182.81	1.70	Ryan MWD
12782.00	88.00	11563.66	1460.78	178.30	-1461.27	-63.38	1462.65	182.48	1.58	Ryan MWD
12877.00	88.50	11566.56	1555.72	179.10	-1556.20	-61.23	1557.41	182.25	0.99	Ryan MWD
12972.00	89.10	11568.55	1650.70	179.20	-1651.17	-59.82	1652.25	182.07	0.64	Ryan MWD
13067.00	87.60	11571.29	1745.64	177.70	-1746.09	-57.25	1747.03	181.88	2.23	Ryan MWD
13162.00	88.60	11574.44	1840.55	178.50	-1840.98	-54.11	1841.78	181.68	1.35	Ryan MWD
13258.00	89.60	11575.95	1936.53	179.90	-1936.96	-52.77	1937.68	181.56	1.79	Ryan MWD
13351.00	89.30	11576.84	2029.52	178.30	-2029.94	-51.31	2030.59	181.45	1.75	Ryan MWD
13447.00	88.50	11578.68	2125.49	179.20	-2125.90	-49.21	2126.47	181.33	1.25	Ryan MWD
13541.00	90.40	11579.58	2219.48	179.50	-2219.88	-48.14	2220.41	181.24	2.05	Ryan MWD
13637.00	88.40	11580.59	2315.47	179.10	-2315.87	-46.97	2316.34	181.16	2.12	Ryan MWD
13732.00	89.20	11582.58	2410.45	180.00	-2410.84	-46.23	2411.28	181.10	1.27	Ryan MWD
13828.00	88.60	11584.42	2506.43	179.40	-2506.82	-45.72	2507.24	181.04	0.88	Ryan MWD
13923.00	89.80	11585.75	2601.42	180.20	-2601.81	-45.39	2602.20	181.00	1.52	Ryan MWD
14019.00	90.50	11585.50	2697.41	180.60	-2697.81	-46.06	2698.20	180.98	0.84	Ryan MWD
14114.00	91.60	11583.76	2792.38	180.40	-2792.78	-46.89	2793.18	180.96	1.18	Ryan MWD
14209.00	90.90	11581.68	2887.35	179.10	-2887.76	-46.48	2888.13	180.92	1.55	Ryan MWD
14305.00	88.20	11582.44	2983.33	178.60	-2983.73	-44.55	2984.06	180.86	2.86	Ryan MWD
14401.00	90.00	11583.95	3079.31	179.70	-3079.70	-43.13	3080.00	180.80	2.20	Ryan MWD
14496.00	90.40	11583.61	3174.31	179.00	-3174.69	-42.05	3174.97	180.76	0.85	Ryan MWD
14591.00	88.30	11584.69	3269.27	177.40	-3269.63	-39.07	3269.86	180.68	2.78	Ryan MWD
14687.00	90.40	11585.78	3365.15	176.50	-3365.48	-33.96	3365.65	180.58	2.38	Ryan MWD
14782.00	90.80	11584.79	3460.04	177.20	-3460.33	-28.74	3460.45	180.48	0.85	Ryan MWD
14878.00	90.70	11583.53	3555.97	178.10	-3556.24	-24.80	3556.33	180.40	0.94	Ryan MWD
14974.00	90.90	11582.19	3651.95	179.00	-3652.20	-22.37	3652.27	180.35	0.96	Ryan MWD
15069.00	89.50	11581.86	3746.94	180.60	-3747.19	-22.04	3747.26	180.34	2.24	Ryan MWD
15164.00	89.30	11582.85	3841.91	181.10	-3842.18	-23.45	3842.25	180.35	0.57	Ryan MWD
15259.00	89.30	11584.01	3936.86	181.60	-3937.14	-25.69	3937.23	180.37	0.53	Ryan MWD
15354.00	88.00	11586.25	4031.80	180.70	-4032.10	-27.60	4032.19	180.39	1.66	Ryan MWD
15449.00	88.10	11589.48	4126.72	180.70	-4127.03	-28.76	4127.13	180.40	0.11	Ryan MWD
15545.00	89.00	11591.91	4222.68	180.30	-4223.00	-29.59	4223.10	180.40	1.03	Ryan MWD
15639.00	88.90	11593.64	4316.66	179.70	-4316.98	-29.59	4317.08	180.39	0.65	Ryan MWD
15734.00	89.80	11594.71	4411.65	180.00	-4411.97	-29.34	4412.07	180.38	1.00	Ryan MWD
15829.00	88.90	11595.79	4506.63	180.80	-4506.96	-30.01	4507.06	180.38	1.27	Ryan MWD
15924.00	89.30	11597.28	4601.62	179.50	-4601.95	-30.26	4602.05	180.38	1.43	Ryan MWD
16020.00	87.80	11599.71	4697.58	180.00	-4697.92	-29.84	4698.01	180.36	1.65	Ryan MWD
16116.00	90.70	11600.97	4793.55	181.20	-4793.89	-30.84	4793.99	180.37	3.27	Ryan MWD
16211.00	89.50	11600.80	4888.53	180.20	-4888.88	-32.00	4888.98	180.38	1.64	Ryan MWD
16307.00	89.10	11601.98	4984.52	179.40	-4984.87	-31.67	4984.97	180.36	0.93	Ryan MWD
16403.00	89.40	11603.23	5080.51	179.50	-5080.86	-30.75	5080.95	180.35	0.33	Ryan MWD
16497.00	89.60	11604.05	5174.50	180.20	-5174.85	-30.50	5174.94	180.34	0.77	Ryan MWD



Ryan Directional Services COMPLETION REPORT



Company: COG Operating LLC
Field: Lea Co, NM
Site: Becknell State Com 3H
Well: 3H
Wellpath: ST 2

Date: 2/4/2014 Time: 15:43:25 Page: 5
Co-ordinate(N/E) Reference: Site: Becknell State Com 3H, Grid North
Vertical (TVD) Reference: SITE 3827.0
Section (VS) Reference: Well (0.00N,0.00E,179.59Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	ClsD ft	ClsA deg	DLS deg/100ft	Tool
16592.00	89.20	11605.05	5269.49	180.70	-5269.84	-31.25	5269.94	180.34	0.67	Ryan MWD
16687.00	87.30	11607.95	5364.41	181.20	-5364.78	-32.82	5364.88	180.35	2.07	Ryan MWD
16782.00	86.30	11613.25	5459.24	180.10	-5459.63	-33.90	5459.73	180.36	1.56	Ryan MWD
16877.00	86.30	11619.38	5554.03	177.90	-5554.41	-32.24	5554.50	180.33	2.31	Ryan MWD
16973.00	87.30	11624.74	5649.83	177.60	-5650.18	-28.48	5650.25	180.29	1.09	Ryan MWD
17068.00	88.30	11628.39	5744.68	176.80	-5745.00	-23.84	5745.05	180.24	1.35	Ryan MWD
17163.00	88.90	11630.71	5839.58	178.10	-5839.87	-19.62	5839.91	180.19	1.51	Ryan MWD
17258.00	89.20	11632.28	5934.52	177.40	-5934.79	-15.89	5934.81	180.15	0.80	Ryan MWD
17353.00	89.80	11633.11	6029.45	177.60	-6029.69	-11.74	6029.70	180.11	0.67	Ryan MWD
17447.00	90.50	11632.87	6123.39	177.40	-6123.60	-7.64	6123.61	180.07	0.77	Ryan MWD
17542.00	89.50	11632.87	6218.32	177.50	-6218.51	-3.42	6218.51	180.03	1.06	Ryan MWD
17636.00	90.40	11632.95	6312.27	178.00	-6312.43	0.27	6312.43	180.00	1.10	Ryan MWD
17731.00	89.60	11632.95	6407.22	177.30	-6407.35	4.17	6407.35	179.96	1.12	Ryan MWD
17825.00	89.30	11633.85	6501.09	176.10	-6501.19	9.58	6501.20	179.92	1.32	Ryan MWD
17920.00	89.00	11635.26	6595.88	175.70	-6595.93	16.37	6595.95	179.86	0.53	Ryan MWD
18014.00	89.20	11636.74	6689.68	176.20	-6689.69	23.01	6689.73	179.80	0.57	Ryan MWD
18110.00	89.30	11637.99	6785.53	176.80	-6785.50	28.87	6785.56	179.76	0.63	Ryan MWD
18205.00	89.70	11638.82	6880.42	176.80	-6880.35	34.17	6880.43	179.72	0.42	Ryan MWD
18310.00	89.70	11639.37	6985.30	177.10	-6985.20	39.76	6985.31	179.67	0.29	Ryan MWD
18405.00	89.90	11639.71	7080.19	176.60	-7080.05	44.98	7080.20	179.64	0.57	Ryan MWD
18499.00	90.10	11639.71	7174.07	176.60	-7173.89	50.55	7174.07	179.60	0.21	Ryan MWD
18594.00	90.30	11639.37	7268.99	178.10	-7268.78	54.95	7268.99	179.57	1.59	Ryan MWD
18688.00	90.20	11638.96	7362.98	179.20	-7362.75	57.16	7362.98	179.56	1.18	Ryan MWD
18783.00	90.90	11638.05	7457.97	179.30	-7457.74	58.40	7457.97	179.55	0.74	Ryan MWD
18877.00	89.50	11637.72	7551.96	179.40	-7551.73	59.47	7551.97	179.55	1.49	Ryan MWD
18972.00	90.70	11637.56	7646.96	179.40	-7646.73	60.46	7646.96	179.55	1.26	Ryan MWD
19066.00	91.00	11636.16	7740.95	180.50	-7740.71	60.55	7740.95	179.55	1.21	Ryan MWD
19161.00	89.60	11635.67	7835.94	180.00	-7835.71	60.13	7835.94	179.56	1.56	Ryan MWD
19255.00	90.10	11635.91	7929.94	179.90	-7929.71	60.21	7929.94	179.56	0.54	Ryan MWD
19350.00	90.60	11635.33	8024.93	179.70	-8024.71	60.55	8024.93	179.57	0.57	Ryan MWD
19445.00	91.50	11633.59	8119.92	179.40	-8119.69	61.29	8119.92	179.57	1.00	Ryan MWD
19539.00	90.40	11632.03	8213.90	178.80	-8213.66	62.77	8213.90	179.56	1.33	Ryan MWD
19634.00	91.00	11630.87	8308.88	178.70	-8308.63	64.84	8308.88	179.55	0.64	Ryan MWD
19729.00	91.10	11629.13	8403.86	179.40	-8403.60	66.42	8403.86	179.55	0.74	Ryan MWD
19823.00	90.50	11627.82	8497.85	180.20	-8497.59	66.74	8497.85	179.55	1.06	Ryan MWD
19919.00	88.00	11629.07	8593.83	179.80	-8593.57	66.74	8593.83	179.56	2.64	Ryan MWD
20014.00	87.50	11632.80	8688.75	178.80	-8688.49	67.90	8688.76	179.55	1.18	Ryan MWD
20109.00	88.50	11636.12	8783.69	179.10	-8783.42	69.64	8783.69	179.55	1.10	Ryan MWD
20205.00	87.50	11639.47	8879.61	178.00	-8879.32	72.07	8879.62	179.53	1.55	Ryan MWD
20405.00	87.50	11648.19	9079.34	178.00	-9079.01	79.04	9079.36	179.50	0.00	Projection