

DATE IN 5/15/2014	SUSPENSE	MAm ENGINEER	5/15/2014 LOGGED IN	NSL TYPE	PMAM1412656081 APP NO.
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ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

1220 South St. Francis Drive, Santa Fe, NM 87505



ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]

[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]

[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]

[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]

[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]

[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] TYPE OF APPLICATION - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication

☒ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement

☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery

☐ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify _____

[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or ~~X~~ Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☐ Offset Operators, Leaseholders or Surface Owner

[C] ☐ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

[3] SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.

[4] CERTIFICATION: I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Melanie J. Parker

Print or Type Name

Signature

Regulatory Analyst

Title

05/02/2014

Date

mparker@concho.com
e-mail Address



May 2, 2014

Certified Mail – Return Receipt No. 7012 3460 0000 7063 4238

New Mexico Oil Conservation Division
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505

Attention: Ms. Jami Bailey
Division Director

Re: Application for Unorthodox Well Location
Becknell State Com #3H
API No. 30-025-41299
SHL: 2350' FSL & 1980' FWL (Unit K) Section 5, T21S, R33E
BHL: 1458' FNL & 2059' FWL (Unit F) Section 17, T21S, R33E
Lea County, New Mexico

Dear Ms. Bailey:

Pursuant to Division Rule 19.15.15.13, COG Operating LLC (COG) respectfully requests administrative approval of an unorthodox oil well location for its Becknell State Com #3H well. This well was proposed and drilled as a two mile lateral in the Wildcat G-08 S213304D; Bone Spring pool at a legal location. After unsuccessfully attempting to run casing to TD, the production casing was set at 16230' MD. The well was completed with perforations from 11685'-16135' MD, with the last perforation calculated at 2466' FNL of Section 8, T21S, R33E. This does not meet the 330' from the outer boundary of the producing area requirement.

The affected offset tract is the NE/4SW/4 of Section 8, T21S, R33E. COG is the designated operator of all of Section 8, T21S, R33E.

Attached is a Form C-102 showing the project area and the producing area of this well. Also attached is the directional survey and the completion report as filed.

Thank you for your consideration of this application. Should you have questions or require further information, please contact me at 575-748-6952 or by email at mparker@concho.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Melanie J. Parker".

Melanie J. Parker
Lead Regulatory Analyst

cc: OCD Hobbs

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office
☐ AMENDED REPORT
(As Drilled)

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-025-41299		² Pool Code 97895	³ Pool Name Wildcat G-08 S213304D; Bone Spring
⁴ Property Code 40030	⁵ Property Name Becknell State Com		⁶ Well Number 3H
⁷ OGRID No. 229137	⁸ Operator Name COG Operating LLC		⁹ Elevation 3801'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	5	21S	33E		2350	South	1980	West	Lea

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
F	17	21S	33E		1458	North	2059	West	Lea

¹² Dedicated Acres 160	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

¹⁶ 	¹⁷ OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. Signature Date 5/1/14 Stormi Davis Regulatory Analyst Printed Name sdavis@concho.com E-mail Address	
	¹⁸ SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.	
	Date of Survey	
	Signature and Seal of Professional Surveyor	
	REFER TO ORIGINAL PLAT	
Certificate Number		



RYAN DIRECTIONAL SERVICES, INC.
A HARRIS COUNTY 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

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 105

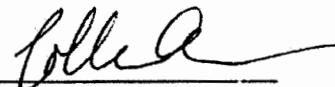
Surface:
A.P.I. No:
Location: Lea, NM
RKB Height:
Distance to Bit:

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'	11861'	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.

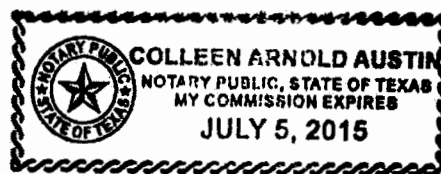
State of Texas, County of Harris

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



Company: COG Operating LLC Date: 2/4/2014 Time: 15:42:08 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: OH 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: 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 Drilled From: Surface
 Magnetic Data: 12/12/2013 Tie-on Depth: 0.00 ft
 Field Strength: 48560 nT Above System Datum: Mean Sea Level
 Vertical Section: Depth From (TVD) +N-S +E-W Declination: 7.31 deg
 ft ft ft Mag Dip Angle: 60.38 deg
 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: 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
Field: Lea Co, NM
Site: Becknell State Com 3H
Well: 3H
Wellpath: ST 1

Date: 2/4/2014
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

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: 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 +E/-W Direction
 ft ft ft 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 Time: 15:42:57 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 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	Northing: 548935.00 ft	Latitude: 32 30 25.104 N
Position Uncertainty: 2.00 ft		Easting: 727219.70 ft	Longitude: 103 35 46.602 W
Ground Level: 3801.90 ft		North Reference: Grid	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 2

Current Datum: SITE
Magnetic Data: 1/6/2014
Field Strength: 48553 nT
Vertical Section: Depth From (TVD)
ft

Height 3827.00 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 Direction
ft 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(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
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(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
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(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
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

Submit To Appropriate District Office Two Copies District I 1625 N. French Dr., Hobbs, NM 88240 District II 811 S. First St., Artesia, NM 88210 District III 1000 Rio Brazos Rd., Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505	State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505	Form C-105 Revised August 1, 2011
		1. WELL API NO. 30-025-41299
		2. Type of Lease ☒ STATE ☐ FEE ☐ FED/INDIAN
		3. State Oil & Gas Lease No.
WELL COMPLETION OR RECOMPLETION REPORT AND LOG		
4. Reason for filing: ☒ COMPLETION REPORT (Fill in boxes #1 through #31 for State and Fee wells only) ☐ C-144 CLOSURE ATTACHMENT (Fill in boxes #1 through #9, #15 Date Rig Released and #32 and/or #33; attach this and the plat to the C-144 closure report in accordance with 19.15.17.13 K NMAC)		5. Lease Name or Unit Agreement Name Becknell State Com
		6. Well Number: 3H
7. Type of Completion: ☒ NEW WELL ☐ WORKOVER ☐ DEEPENING ☐ PLUGBACK ☐ DIFFERENT RESERVOIR ☐ OTHER		
8. Name of Operator COG Operating LLC		9. OGRID 229137
10. Address of Operator 2208 W. Main Street Artesia, NM 88210		11. Pool name or Wildcat Wildcat G-08 S213304D; Bone Spring
12. Location	Unit Ltr	Section
Surface:	K	5
BH:	F	17
Township	21S	33E
Range	21S	33E
Lot		
Feet from the	2350	
N/S Line	South	1980
Feet from the	North	2059
E/W Line	West	West
County	Lea	Lea
13. Date Spudded 11/23/13	14. Date T.D. Reached 2/2/14	15. Date Rig Released 2/17/14
16. Date Completed (Ready to Produce) 3/14/14		17. Elevations (DF and RKB, RT, GR, etc.) 3801' GR
18. Total Measured Depth of Well 20410'	19. Plug Back Measured Depth 16155'	20. Was Directional Survey Made? Yes
21. Type Electric and Other Logs Run CNL, GR, Laterolog		
22. Producing Interval(s), of this completion - Top, Bottom, Name 11685-16135' Bone Spring		
23. CASING RECORD (Report all strings set in well)		
CASING SIZE	WEIGHT LB./FT.	DEPTH SET
13 3/8"	54.5#	1802'
9 5/8"	36# & 40#	5695'
5 1/2"	17#	16230'
24. LINER RECORD		
SIZE	TOP	BOTTOM
25. TUBING RECORD		
SIZE	DEPTH SET	PACKER SET
2 7/8"	10967'	
26. Perforation record (interval, size, and number) 11685-16135' (432)		
27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.		
DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED	
11685-16135'	Acidz w/74358 gal 7 1/2%; Frac w/3641934# sand & 2521848 gal fluid	
28. PRODUCTION		
Date First Production 3/16/14	Production Method (Flowing, gas lift, pumping - Size and type pump) Pumping	Well Status (Prod. or Shut-in) Producing
Date of Test 4/16/14	Hours Tested 24	Choke Size
Prod'n For Test Period	Oil - Bbl 354	Gas - MCF 677
Flow Tubing Press. 375#	Casing Pressure 120#	Calculated 24-Hour Rate
Oil - Bbl 354	Gas - MCF 677	Water - Bbl. 1592
29. Disposition of Gas (Sold, used for fuel, vented, etc.) Sold		30. Test Witnessed By Adam Olguin
31. List Attachments Directional Survey		
32. If a temporary pit was used at the well, attach a plat with the location of the temporary pit.		
33. If an on-site burial was used at the well, report the exact location of the on-site burial:		
Latitude _____ Longitude _____ NAD 1927 1983		
I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief		
Signature 	Printed Name: Stormi Davis	Title Regulatory Analyst
E-mail Address: sdavis@concho.com		Date: 5/1/14

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well and not later than 60 days after completion of closure. When submitted as a completion report, this shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, items 11, 12 and 26-31 shall be reported for each zone.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico		Northwestern New Mexico	
T. Anhy_____	T. Canyon_____	T. Ojo Alamo_____	T. Penn A"_____
T. Salt 1821'	T. Strawn_____	T. Kirtland_____	T. Penn. "B"_____
B. Salt 3663'	T. Atoka_____	T. Fruitland_____	T. Penn. "C"_____
T. Yates 4008'	T. Miss_____	T. Pictured Cliffs_____	T. Penn. "D"_____
T. 7 Rivers 4142'	T. Devonian_____	T. Cliff House_____	T. Leadville_____
T. Queen_____	T. Silurian_____	T. Menefee_____	T. Madison_____
T. Grayburg_____	T. Montoya_____	T. Point Lookout_____	T. Elbert_____
T. San Andres_____	T. Simpson_____	T. Mancos_____	T. McCracken_____
T. Glorieta_____	T. McKee_____	T. Gallup_____	T. Ignacio Otzte_____
T. Paddock_____	T. Ellenburger_____	Base Greenhorn_____	T. Granite _____
T. Blinebry_____	T. Rustler 1716'	T. Dakota_____	
T. Tubb_____	T. Capitan 4302'	T. Morrison_____	
T. Drinkard_____	T. Delaware 5668'	T. Todilto_____	
T. Abo_____	T. Bone Springs Lm 8801'	T. Entrada_____	
T. Wolfcamp_____	T. 1 st Bone Spring 9840'	T. Wingate_____	
T. Penn_____	T. 2 nd Bone Spring 10436'	T. Chinle_____	
T. Cisco (Bough C)_____	T. 3 rd Bone Spring 11306'	T. Permian_____	

OIL OR GAS SANDS OR ZONES

No. 1, from.....to.....

No. 2, from.....to.....

No. 3, from.....to.....

No. 4, from.....to.....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from.....to.....feet.....
 No. 2, from.....to.....feet.....
 No. 3, from.....to.....feet.....

LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness In Feet	Lithology

From	To	Thickness In Feet	Lithology

McMillan, Michael, EMNRD

From: Melanie Parker <MParker@concho.com>
Sent: Tuesday, May 06, 2014 3:55 PM
To: McMillan, Michael, EMNRD
Subject: RE: Becknell State Com #3H NSL application

Mr. McMillan,

The beginning of perfs is approximately 1983' FSL & 1871' FWL of Section 5.

Please let me know if you need anything further from me.

Thank you!

Melanie J. Parker
Lead Regulatory Analyst
COG Operating LLC
2208 West Main Street
Artesia NM 88210
Phone: 575-748-6952



From: McMillan, Michael, EMNRD [<mailto:Michael.McMillan@state.nm.us>]
Sent: Tuesday, May 06, 2014 3:19 PM
To: Melanie Parker
Subject: Becknell State Com #3H NSL application

Ms. Parker:

I received your application for an NSL for the Becknell State com #3H in Lea County.

I will need the following information to process your application:

Beginning of perfs:

Thank You

Michael A. McMillan

Engineering and Geological Services Bureau, Oil Conservation Division
1220 South St. Francis Dr., Santa Fe NM 87505
O: 505.476.3448 F. 505.476.3462

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May 12, 2014

New Mexico Oil Conservation Division
Attn: Michael A. McMillan (Michael.McMillan@State.NM.US)
Engineering and Geological Services Bureau
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

RE: NON-STANDARD LOCATION APPLICATION
Becknell State Com #3H
Township 21 South, Range 33 East, N.M.P.M.
Section 5: E $\frac{1}{2}$ SW $\frac{1}{4}$ (SHL - Lot K)
Section 8: E $\frac{1}{2}$ NW $\frac{1}{4}$ (BHL - Lot F)
Lea County, New Mexico

Gentlemen:

In reference to the captioned application, please be advised that VB-2059 covering S $\frac{1}{2}$ of Section 5, VB-2065 covering the N $\frac{1}{2}$ of Section 8, and VB-2100 covering the S $\frac{1}{2}$ of Section 8 are all owned as follows:

Record Title: Rubicon Oil and Gas II, LP 100%

Operating Rights: COG Operating LLC 75.0%
Rubicon Oil and Gas II, LP 25.0%

The S $\frac{1}{2}$ of Section 5, all of Section 8 and the N $\frac{1}{2}$ of Section 17 are also committed to Operating Agreement dated July 15, 2013, covering rights from the surface to the base of the Bone Spring formation, naming COG Operating LLC, as Operator and Rubicon Oil and Gas II, LP, et al, as Non-Operators.

If anything further is required in this regard, please do not hesitate to contact me at (432) 221-0371 or by email at gyoung@concho.com.

Sincerely,
COG OPERATING LLC

A handwritten signature in black ink, appearing to read "Gary Young".

Gary Young
Sr. Landman
:lr

McMillan, Michael, EMNRD

From: Melanie Parker <MParker@concho.com>
Sent: Monday, May 19, 2014 1:43 PM
To: McMillan, Michael, EMNRD
Subject: RE: Becknell State Com 3H

Good Afternoon Mr. McMillan,
I apologize for not getting back to you sooner but I was out of town late last week.
There is a plug set at 16,155' MD. So the remaining borehole is plugged off.
If you need anything further please let me know.
Thank you!

Melanie J. Parker
Lead Regulatory Analyst
COG Operating LLC
2208 West Main Street
Artesia NM 88210
Phone: 575-748-6952



From: McMillan, Michael, EMNRD [<mailto:Michael.McMillan@state.nm.us>]
Sent: Tuesday, May 13, 2014 3:36 PM
To: Melanie Parker
Subject: Becknell State Com 3H

Ms. Parker:

After the final perforation of 2466 FNL and 1949 FWL Section 8 21S 33E. Is the remaining borehole left open-hole or is it fracked?

Michael A. McMillan

Engineering and Geological Services Bureau, Oil Conservation Division
1220 South St. Francis Dr., Santa Fe NM 87505
O: 505.476.3448 F. 505.476.3462

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