

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL CONSERVATION
ARTESIA DISTRICT
OCD Artesia
JUN 11 2015

FORM APPROVED
OMB No. 1004-0137
Expires: July 31, 2010

WELL COMPLETION OR RECOMPLETION REPORT AND LOG RECEIVED

1a. Type of Well ☒ Oil Well ☐ Gas Well ☐ Dry ☐ Other		6. If Indian, Allottee or Tribe Name	
b. Type of Completion ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr. Other _____		7. Unit or CA Agreement Name and No.	
2. Name of Operator COG PRODUCTION LLC		8. Lease Name and Well No. BRUTUS 12 FEDERAL 1H	
3. Address 2208 W MAIN ST ARTESIA, NM 88210		9. API Well No. 30-015-42609	
4. Location of Well (Report location clearly and in accordance with Federal requirements)* At surface SESE 300FSL 500FEL At top prod interval reported below Sec 12 T26S R28E Mer NMP At total depth NENE 331FNL 673FEL		10. Field and Pool, or Exploratory RED BLUFF; BONE SPRING S	
14. Date Spudded 10/26/2014		15. Date T.D. Reached 11/13/2014	
16. Date Completed ☐ D & A ☒ Ready to Prod. 12/15/2014		17. Elevations (DF, KB, RT, GL)* 2936 GL	
18. Total Depth: MD 12718 TVD 8414		19. Plug Back T.D.: MD 12670 TVD 8414	
20. Depth Bridge Plug Set: MD 12670 TVD 8414		21. Type Electric & Other Mechanical Logs Run (Submit copy of each) CNL, LATEROLOG	
22. Was well cored? ☒ No ☐ Yes (Submit analysis) Was DST run? ☒ No ☐ Yes (Submit analysis) Directional Survey? ☐ No ☒ Yes (Submit analysis)			

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sk. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17.500	13.375 J55	54.5	0	442		450		0	
12.250	9.625 J55	36.0	0	2705		900		0	
8.250 L875	5.500 P110	17.0	0	12718		2500		0	

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
2.875	8572	7799						

25. Producing Intervals

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) BONE SPRING	8591	12630	8591 TO 12570	0.430	504	OPEN
B)			12620 TO 12630		60	OPEN
C)						
D)						

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
8591 TO 12570	SEE IN REMARKS

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
12/21/2014	01/25/2015	24	→	703.0	1566.0	1957.0			
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
36/64	700		→	703	1566	1957		POW	

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
			→						

ACCEPTED FOR RECORD
FLOWS FROM WELL
MAY 29 2015
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

(See Instructions and spaces for additional data on reverse side)

ELECTRONIC SUBMISSION #289491 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED **

Reclamation
Date: 7/25/15

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Thg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
			→						

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Thg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
			→						

29. Disposition of Gas(Sold, used for fuel, vented, etc.)
FLARED

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth
LAMAR	2680	2722		TOS	744
BELL CANYON	2723	3572		BOS	2489
CHERRY CANYON	3573	4819		LAMAR	2680 ✓
BRUSHY CANYON	4820	6429		BELL CANYON	2723 ✓
BONE SPRING LM	6430	7340		CHERRY CANYON	3573 ✓
1ST BONE SPRING	7341	8223		BRUSHY CANYON	4820 ✓
2ND BONE SPRING	8224	9184		BONE SPRING LM	6430 ✓
3RD BONE SPRING	9185	9546		1ST BONE SPRING	7341 ✓

32. Additional remarks (include plugging procedure):

Perfs 7 1/2" Sand (#) Fluid (gal)
 12376-12570' 6990 454060 501330
 12085-12279' 5999 453846 370978
 11794-11988' 5999 469940 386267
 11498-11697' 5999 457260 371987
 11211-11405' 5982 451002 371466
 10924-11114' 5999 451688 369215
 10629-10823' 5982 453239 369077

33. Circle enclosed attachments:

1. Electrical/Mechanical Logs (1 full set req'd.) 2. Geologic Report 3. DST Report 4. Directional Survey
 5. Sundry Notice for plugging and cement verification 6. Core Analysis 7. Other:

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions):

Electronic Submission #289491 Verified by the BLM Well Information System.
 For COG PRODUCTION LLC, sent to the Carlsbad
 Committed to AFMSS for processing by DEBORAH HAM on 05/14/2015 ()

Name (please print) STORMI DAVIS

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 01/27/2015

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL **

Additional data for transaction #289491 that would not fit on the form

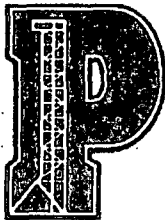
32. Additional remarks, continued

10341-10532' 5999 458421 370055
10047-10241' 5999 456080 372953
9756-9950' 5999 457475 364805
9464-9653' 5999 451908 369383
9173-9367' 5999 447855 381437
8882-9076' 5999 437788 364197
8591-8785' 5999 443515 354143
Totals 84945 6344077 5317294

Additional Tops:

2nd Bone Spring 8224
3rd Bone Spring 9185
Wolfcamp 9547

Surveys are attached. Logs mailed to Carlsbad BLM.



PATRIOT DRILLING, LLC

OPERATOR: COG Operating, LLC
WELL/LEASE: Brutus 12 Federal #1H
COUNTY: Eddy Co., New Mexico
Sec. 12, T 26S, R 28E

NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 11 2015

RECEIVED

STATE OF NEW MEXICO
DEVIATION REPORT

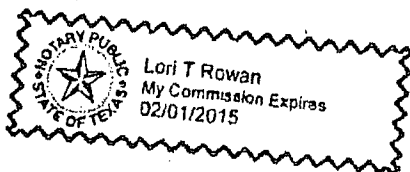
<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
547	1 3/4	2,592	1
606	1 1/2	2,654	1 1/2
700	1 1/2	2,845	2 1/4
789	1 1/2	3,283	2 1/2
883	2	3,714	2
979	1 1/4	4,185	2
1,074	1	4,627	2
1,168	1 1/4	5,100	1 1/4
1,263	1 1/4	5,570	1
1,454	1 1/2	6,047	3/4
1,548	1 3/4	6,525	3/4
1,643	2	7,061	1/4
1,739	3/4	7,508	3/4
1,833	3/4	7,985	1/2
1,928	1	8,428	1/2
2,127	1 1/4	8,871	1 1/2
2,212	3/4	9,411	1 1/4
2,307	1	9,810	1 1/4
2,402	1 3/4	7,800	1 3/4
2,497	1/2	7,732	5

Patriot Drilling, LLC

M. Leroy Peterson, Executive Vice-President

The foregoing instrument was acknowledged before me on this 24th day of November, 2014 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling, LLC.

My Commission Expires: 02/01/2015



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



NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 11 2015

RECEIVED

November 17, 2014

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

Attn: Kanicia Castillo

RE: Brutus 12 Federal 1H

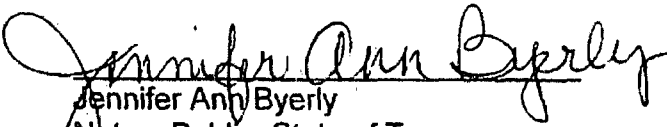
Please find enclosed a copy of the survey from 0.00' to 8000.00' ran on the above referenced well.

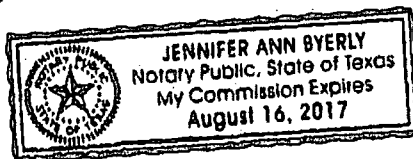
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 17 day of November A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





Company: Concho Oil & Gas
Lease/Well: Brutus 12 Federal/1H

Location: S:12 T:26S R:28E

Rig Name: Patriot 2

State/County: New Mexico/Eddy

Latitude: 32.05, Longitude: -104.03

GRID North is 0.16 Degrees East of True North

VS-Azi: 0.00 Degrees



Depth Reference : RKB: 17 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 11/17/2014 / 13:59

VES Survey International

West Texas

Surveyor: Nell Bates

(432) 563-5444

Brutus 12 Federal 1H / API 30-015-42609

NM OIL CONSERVATION

ARTESIA DISTRICT

JUN 11 2015

RECEIVED

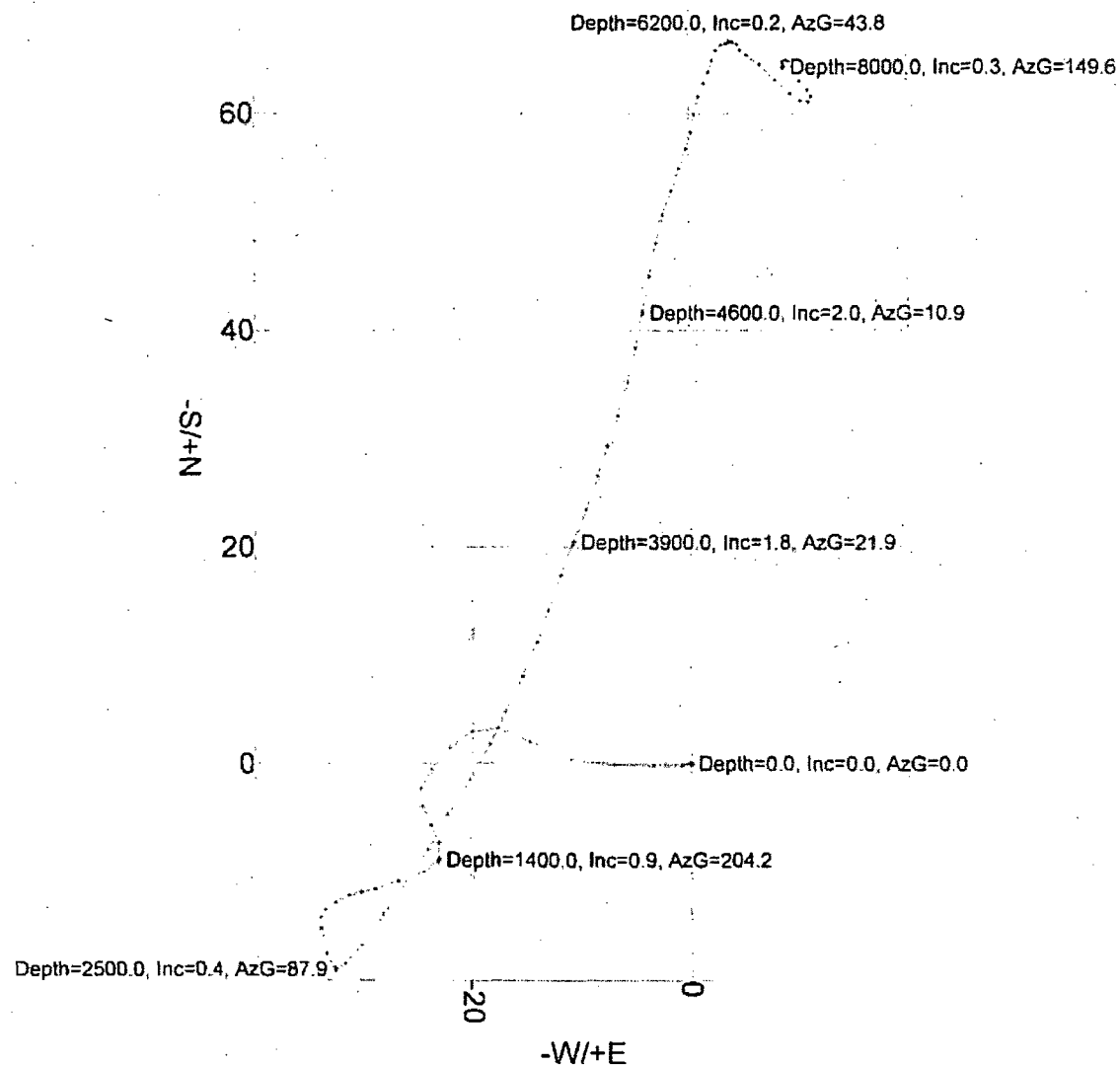
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	----
100.00	0.98	257.54	100.00	-0.18	-0.84	-0.18	0.86	257.54	0.98
200.00	2.02	276.08	199.96	-0.18	-3.43	-0.18	3.43	266.94	1.13
300.00	2.17	267.26	299.89	-0.09	-7.07	-0.09	7.07	269.30	0.35
400.00	2.45	285.23	399.81	0.38	-11.02	0.38	11.02	272.00	0.77
500.00	2.32	301.36	499.73	2.00	-14.81	2.00	14.95	277.69	0.68
600.00	1.37	280.49	599.68	3.27	-17.72	3.27	18.02	280.47	1.15
700.00	1.50	245.67	699.65	2.95	-20.09	2.95	20.31	278.36	0.87
800.00	1.48	220.64	799.61	1.43	-22.13	1.43	22.18	273.70	0.65
900.00	1.49	221.61	899.58	-0.52	-23.83	-0.52	23.84	268.74	0.03
1000.00	0.92	189.01	999.56	-2.29	-24.82	-2.29	24.93	264.73	0.87
1100.00	1.03	161.66	1099.54	-3.94	-24.66	-3.94	24.98	260.92	0.47
1200.00	1.06	151.22	1199.53	-5.61	-23.94	-5.61	24.58	256.81	0.19
1300.00	1.05	159.91	1299.51	-7.28	-23.18	-7.28	24.29	252.57	0.16
1400.00	0.91	204.20	1399.50	-8.86	-23.19	-8.86	24.82	249.08	0.75
1500.00	1.30	251.75	1499.48	-9.94	-24.59	-9.94	26.52	247.99	0.96
1600.00	1.58	247.75	1599.45	-10.82	-26.95	-10.82	29.04	248.12	0.30
1700.00	0.98	256.59	1699.42	-11.54	-29.05	-11.54	31.26	248.34	0.63
1800.00	0.57	260.93	1799.41	-11.81	-30.37	-11.81	32.59	248.74	0.41

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.81	248.74	1899.41	-12.15	-31.52	-12.15	33.78	248.92	0.28
2000.00	0.74	239.13	1999.40	-12.74	-32.73	-12.74	35.12	248.74	0.15
2100.00	0.60	225.13	2099.39	-13.44	-33.65	-13.44	36.24	248.24	0.21
2200.00	0.36	201.88	2199.39	-14.10	-34.14	-14.10	36.94	247.56	0.30
2300.00	0.92	169.78	2299.38	-15.18	-34.12	-15.18	37.34	246.02	0.64
2400.00	1.78	165.21	2399.35	-17.47	-33.58	-17.47	37.85	242.52	0.87
2500.00	0.41	87.88	2499.33	-18.96	-32.82	-18.96	37.90	239.99	1.74
2600.00	0.93	51.66	2599.33	-18.44	-31.83	-18.44	36.78	239.92	0.65
2700.00	1.78	34.16	2699.30	-16.65	-30.31	-16.65	34.58	241.23	0.93
2800.00	2.14	36.84	2799.24	-13.87	-28.32	-13.87	31.54	243.91	0.37
2900.00	2.06	36.21	2899.17	-10.92	-26.14	-10.92	28.33	247.32	0.08
3000.00	2.06	29.31	2999.11	-7.90	-24.20	-7.90	25.46	251.91	0.25
3100.00	2.13	31.07	3099.04	-4.75	-22.36	-4.75	22.86	258.02	0.09
3200.00	2.27	31.99	3198.97	-1.48	-20.35	-1.48	20.41	265.85	0.14
3300.00	2.04	27.73	3298.90	1.77	-18.48	1.77	18.57	275.47	0.28
3400.00	1.85	24.33	3398.84	4.82	-16.99	4.82	17.66	285.83	0.22
3500.00	2.27	25.19	3498.78	8.08	-15.48	8.08	17.46	297.57	0.42
3600.00	1.64	20.95	3598.72	11.21	-14.13	11.21	18.03	308.43	0.65
3700.00	1.96	19.19	3698.67	14.16	-13.05	14.16	19.26	317.34	0.33
3800.00	1.95	19.49	3798.61	17.38	-11.92	17.38	21.08	325.55	0.02
3900.00	1.81	21.92	3898.56	20.44	-10.77	20.44	23.11	332.23	0.16
4000.00	1.94	22.40	3998.50	23.47	-9.53	23.47	25.33	337.89	0.13
4100.00	1.86	15.45	4098.45	26.60	-8.46	26.60	27.91	342.36	0.24
4200.00	1.54	18.73	4198.40	29.43	-7.60	29.43	30.39	345.53	0.34
4300.00	1.83	19.32	4298.36	32.20	-6.64	32.20	32.88	348.35	0.29
4400.00	1.80	13.23	4398.31	35.23	-5.75	35.23	35.70	350.73	0.19
4500.00	1.88	12.99	4498.28	38.36	-5.02	38.36	38.69	352.54	0.08
4600.00	1.98	10.86	4598.20	41.65	-4.33	41.65	41.88	354.06	0.12
4700.00	1.96	10.84	4698.14	45.02	-3.68	45.02	45.17	355.32	0.02
4800.00	1.65	10.29	4798.09	48.11	-3.11	48.11	48.21	356.31	0.31
4900.00	1.49	18.83	4898.06	50.76	-2.43	50.76	50.82	357.26	0.28
5000.00	1.20	21.69	4998.03	52.96	-1.62	52.96	52.99	358.24	0.30
5100.00	1.23	17.43	5098.01	54.95	-0.92	54.95	54.96	359.04	0.09
5200.00	1.01	22.19	5197.99	56.79	-0.26	56.79	56.79	359.73	0.24
5300.00	0.85	11.86	5297.97	58.33	0.22	58.33	58.33	0.22	0.23
5400.00	1.03	7.28	5397.96	59.95	0.49	59.95	59.96	0.47	0.20
5500.00	0.87	23.31	5497.95	61.54	0.90	61.54	61.55	0.84	0.31
5600.00	0.68	23.29	5597.94	62.78	1.43	62.78	62.80	1.31	0.19
5700.00	0.66	18.07	5697.93	63.87	1.85	63.87	63.89	1.66	0.06

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	0.64	17.95	5797.93	64.94	2.19	64.94	64.98	1.94	0.02
5900.00	0.52	23.97	5897.92	65.89	2.55	65.89	65.94	2.22	0.13
6000.00	0.30	72.96	5997.92	66.38	2.99	66.38	66.45	2.58	0.40
6100.00	0.20	88.32	6097.92	66.46	3.42	66.46	66.55	2.94	0.12
6200.00	0.22	43.85	6197.92	66.61	3.72	66.61	66.71	3.20	0.16
6300.00	0.27	123.36	6297.92	66.62	4.06	66.62	66.74	3.48	0.32
6400.00	0.27	111.63	6397.91	66.40	4.47	66.40	66.55	3.85	0.06
6500.00	0.47	171.92	6497.91	65.91	4.75	65.91	66.08	4.12	0.41
6600.00	0.64	98.10	6597.91	65.42	5.36	65.42	65.64	4.69	0.68
6700.00	1.14	138.95	6697.90	64.59	6.57	64.59	64.92	5.81	0.78
6800.00	1.24	132.81	6797.88	63.10	8.02	63.10	63.61	7.24	0.16
6900.00	0.81	133.84	6897.86	61.88	9.32	61.88	62.58	8.57	0.43
7000.00	0.57	112.25	6997.85	61.20	10.29	61.20	62.06	9.55	0.35
7100.00	0.30	62.42	7097.85	61.13	10.99	61.13	62.11	10.19	0.44
7200.00	0.40	8.71	7197.85	61.60	11.28	61.60	62.62	10.37	0.33
7300.00	0.58	307.62	7297.84	62.25	10.93	62.25	63.20	9.96	0.52
7400.00	0.61	328.02	7397.84	63.01	10.24	63.01	63.84	9.23	0.21
7500.00	0.41	334.13	7497.84	63.79	9.80	63.79	64.54	8.74	0.21
7600.00	0.35	326.67	7597.83	64.37	9.48	64.37	65.06	8.38	0.08
7700.00	0.24	341.07	7697.83	64.82	9.24	64.82	65.48	8.12	0.13
7800.00	0.22	258.17	7797.83	64.98	8.99	64.98	65.60	7.87	0.31
7900.00	0.24	214.66	7897.83	64.77	8.68	64.77	65.35	7.63	0.17
8000.00	0.35	149.57	7997.83	64.34	8.71	64.34	64.92	7.71	0.33



VES Survey International
West Texas
Surveyor: Neil Bates
(432) 563-5444
Brutus 12 Federal 1H / API 30-015-42609



V.E.S. Survey Date: 11/4/2014



NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 11 2015

RECEIVED

COG Operating LLC

Eddy County, NM
Brutus 12 Federal
#1H

OH

Survey: MWD #1

Survey Report - Geographic

13 November, 2014



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM	TVD Reference:	WELL @ 2953.4usft (Original Well Elev)
Site:	Brutus 12 Federal	MD Reference:	WELL @ 2953.4usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project: Eddy County, NM			
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:		Brutus 12 Federal			
Site Position:		Northing:	382,260.60 usft	Latitude:	32° 3' 2.139 N
From:	Map	Easting:	592,989.00 usft	Longitude:	104° 1' 59.750 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.16 "

Well:	#1H					
Well Position	+N/-S	0.0 usft	Northing:	382,260.60 usft	Latitude:	32° 3' 2.139 N
	+E/-W	0.0 usft	Easting:	592,989.00 usft	Longitude:	104° 1' 59.750 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	2,938.4 usft

Wellbore		OH			
Magnetic	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	10/21/2014	($^{\circ}$) 7.37	($^{\circ}$) 59.86	(μ T) 48.131

Design:		OH			
Audit Notes:					
Version:		1.0		Phase: ACTUAL	
				Tie On Depth: 0.0	
Vertical Section:		Depth From (TVD)		+N/-S	
		(usft)		(usft)	
		0.0		0.0	
				+E/-W	
				(usft)	
				0.0	
				Direction	
				(°)	
				357.62	

Survey Program		Date: 11/13/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	7,800.0	GYRO (OH)	NS-GYRO-SS	NS Gyro single shots
7,832.0	12,718.0	MWD #1 (OH)	MWD	MWD - Standard

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
7,800.0	0.22	258.17	7,797.8	65.0	9.0	382,325.65	592,978.00	32° 3' 2.783 N	104° 1' 59.643 W
7,832.0	4.80	355.01	7,829.8	68.4	8.8	382,328.97	592,977.82	32° 3' 2.796 N	104° 1' 59.645 W
7,864.0	8.80	358.21	7,861.6	70.2	8.6	382,330.75	592,977.83	32° 3' 2.833 N	104° 1' 59.648 W
7,895.0	11.80	0.31	7,892.1	75.7	8.6	382,336.29	592,977.57	32° 3' 2.888 N	104° 1' 59.648 W
7,927.0	15.00	359.91	7,923.2	83.1	8.6	382,343.71	592,977.58	32° 3' 2.981 N	104° 1' 59.648 W
7,958.0	17.80	0.31	7,952.9	91.9	8.6	382,352.48	592,977.60	32° 3' 3.048 N	104° 1' 59.647 W
7,990.0	21.10	358.91	7,983.1	102.5	8.5	382,363.11	592,977.52	32° 3' 3.153 N	104° 1' 59.848 W
8,022.0	23.90	358.61	8,012.6	114.8	8.4	382,375.35	592,977.37	32° 3' 3.275 N	104° 1' 59.849 W
8,053.0	25.70	358.91	8,040.8	127.8	8.2	382,386.38	592,977.20	32° 3' 3.403 N	104° 1' 59.851 W
8,085.0	29.40	359.21	8,069.2	142.6	8.0	382,403.15	592,976.98	32° 3' 3.550 N	104° 1' 59.853 W
8,117.0	32.70	359.91	8,098.6	159.1	7.8	382,419.65	592,976.83	32° 3' 3.713 N	104° 1' 59.854 W



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM	TVD Reference:	WELL @ 2953.4usft (Original Well Elev)
Site:	Brutus 12 Federal	MD Reference:	WELL @ 2953.4usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	N-S (usft)	E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
8,149.0	35.40	1.01	8,123.1	177.0	8.0	382,437.57	592,976.98	32° 3' 3.890 N	104° 1' 59.652 W	
8,180.0	37.10	0.61	8,148.1	195.3	8.2	382,455.90	592,977.24	32° 3' 4.072 N	104° 1' 59.648 W	
8,212.0	38.70	359.91	8,173.3	215.0	8.3	382,475.55	592,977.33	32° 3' 4.266 N	104° 1' 59.648 W	
8,244.0	40.60	358.91	8,198.0	235.4	8.1	382,495.97	592,977.11	32° 3' 4.468 N	104° 1' 59.648 W	
8,278.0	43.30	357.81	8,221.8	256.7	7.5	382,517.35	592,976.50	32° 3' 4.680 N	104° 1' 59.655 W	
8,308.0	47.00	357.51	8,244.3	279.4	6.6	382,540.01	592,975.57	32° 3' 4.904 N	104° 1' 59.665 W	
8,339.0	49.80	357.51	8,264.9	302.6	5.6	382,563.17	592,974.56	32° 3' 5.133 N	104° 1' 59.676 W	
8,371.0	51.40	357.81	8,285.2	327.3	4.6	382,587.88	592,973.55	32° 3' 5.378 N	104° 1' 59.687 W	
8,403.0	54.40	357.81	8,304.5	352.8	3.6	382,613.38	592,972.58	32° 3' 5.630 N	104° 1' 59.697 W	
8,434.0	57.90	357.51	8,321.8	378.5	2.5	382,639.10	592,971.53	32° 3' 5.885 N	104° 1' 59.709 W	
8,468.0	61.60	357.51	8,337.9	406.1	1.3	382,666.71	592,970.33	32° 3' 6.158 N	104° 1' 59.722 W	
8,498.0	64.60	357.51	8,352.4	434.6	0.1	382,695.22	592,969.09	32° 3' 6.440 N	104° 1' 59.735 W	
8,529.0	68.30	357.11	8,364.8	463.0	-1.3	382,723.60	592,967.75	32° 3' 6.721 N	104° 1' 59.750 W	
8,561.0	72.30	357.11	8,375.5	493.1	-2.8	382,753.68	592,966.23	32° 3' 7.019 N	104° 1' 59.766 W	
8,591.0	74.80	357.81	8,384.0	521.8	-4.0	382,782.42	592,964.86	32° 3' 7.304 N	104° 1' 59.780 W	
8,623.0	76.00	358.20	8,392.1	552.8	-5.1	382,813.37	592,963.88	32° 3' 7.610 N	104° 1' 59.792 W	
8,655.0	77.60	359.30	8,399.4	583.9	-5.8	382,844.51	592,963.20	32° 3' 7.918 N	104° 1' 59.799 W	
8,688.0	80.10	359.60	8,405.4	614.3	-6.1	382,874.93	592,962.91	32° 3' 8.219 N	104° 1' 59.801 W	
8,718.0	82.90	0.70	8,410.1	646.0	-8.0	382,906.57	592,962.99	32° 3' 8.532 N	104° 1' 59.799 W	
8,750.0	86.00	1.40	8,413.2	677.8	-5.4	382,938.41	592,963.58	32° 3' 8.847 N	104° 1' 59.791 W	
8,782.0	89.40	1.00	8,414.5	709.8	-4.8	382,970.37	592,964.25	32° 3' 9.164 N	104° 1' 59.782 W	
8,813.0	90.40	1.40	8,414.6	740.6	-4.1	383,001.37	592,964.80	32° 3' 9.470 N	104° 1' 59.774 W	
8,809.0	92.20	1.70	8,412.4	838.7	-1.5	383,097.30	592,967.49	32° 3' 10.420 N	104° 1' 59.741 W	
9,004.0	91.50	1.00	8,409.3	931.6	0.7	383,192.22	592,969.73	32° 3' 11.359 N	104° 1' 59.712 W	
9,099.0	89.70	359.60	8,408.3	1,026.6	1.2	383,287.21	592,970.23	32° 3' 12.289 N	104° 1' 59.703 W	
9,193.0	88.90	357.20	8,408.5	1,120.6	-1.4	383,381.18	592,967.60	32° 3' 13.229 N	104° 1' 59.730 W	
9,288.0	89.70	356.80	8,410.6	1,215.4	-6.4	383,478.02	592,962.83	32° 3' 14.168 N	104° 1' 59.785 W	
9,384.0	91.30	357.50	8,409.8	1,311.3	-11.1	383,571.90	592,957.86	32° 3' 15.117 N	104° 1' 59.837 W	
9,479.0	90.10	356.80	8,408.6	1,406.2	-15.9	383,666.77	592,953.14	32° 3' 16.056 N	104° 1' 59.889 W	
9,574.0	88.20	356.80	8,410.1	1,501.0	-21.2	383,761.61	592,947.83	32° 3' 16.985 N	104° 1' 59.948 W	
9,669.0	88.50	356.50	8,412.8	1,595.8	-26.7	383,856.40	592,942.28	32° 3' 17.933 N	104° 2' 0.009 W	
9,764.0	89.20	356.50	8,414.7	1,680.6	-32.5	383,951.21	592,938.49	32° 3' 18.871 N	104° 2' 0.073 W	
9,860.0	90.40	356.80	8,415.0	1,766.4	-38.1	384,047.04	592,930.88	32° 3' 19.820 N	104° 2' 0.135 W	
9,955.0	91.50	357.20	8,413.5	1,881.3	-43.1	384,141.80	592,925.90	32° 3' 20.759 N	104° 2' 0.190 W	
10,050.0	90.30	356.80	8,412.0	1,976.2	-48.1	384,236.75	592,920.93	32° 3' 21.699 N	104° 2' 0.245 W	
10,145.0	88.00	357.50	8,413.4	2,071.0	-52.8	384,331.62	592,916.21	32° 3' 22.637 N	104° 2' 0.297 W	
10,240.0	88.20	357.20	8,416.5	2,165.9	-57.2	384,426.46	592,911.82	32° 3' 23.575 N	104° 2' 0.345 W	
10,336.0	89.60	357.50	8,418.4	2,261.7	-61.6	384,522.34	592,907.38	32° 3' 24.524 N	104° 2' 0.393 W	
10,431.0	90.10	357.50	8,418.6	2,356.7	-65.8	384,617.25	592,903.24	32° 3' 25.464 N	104° 2' 0.438 W	
10,526.0	90.40	357.50	8,418.2	2,451.6	-69.9	384,712.16	592,899.10	32° 3' 26.403 N	104° 2' 0.483 W	
10,621.0	92.40	357.90	8,415.9	2,546.4	-73.7	384,807.05	592,895.28	32° 3' 27.342 N	104° 2' 0.524 W	
10,717.0	91.00	358.20	8,413.0	2,642.3	-77.0	384,902.95	592,892.02	32° 3' 28.281 N	104° 2' 0.559 W	
10,812.0	89.60	358.20	8,412.5	2,737.3	-80.0	384,997.90	592,889.04	32° 3' 29.231 N	104° 2' 0.591 W	
10,907.9	88.90	357.50	8,413.8	2,832.2	-83.5	385,092.82	592,885.47	32° 3' 30.171 N	104° 2' 0.629 W	
11,002.0	89.90	357.90	8,414.8	2,927.1	-87.3	385,187.74	592,881.66	32° 3' 31.110 N	104° 2' 0.670 W	
11,097.0	87.40	357.90	8,417.0	3,022.0	-90.8	385,282.84	592,878.18	32° 3' 32.049 N	104° 2' 0.708 W	
11,192.0	88.00	357.90	8,420.8	3,116.9	-94.3	385,377.50	592,874.70	32° 3' 32.988 N	104° 2' 0.745 W	
11,287.0	89.20	357.90	8,423.1	3,211.8	-97.8	385,472.41	592,871.22	32° 3' 33.928 N	104° 2' 0.783 W	
11,382.0	90.40	357.50	8,423.5	3,306.7	-101.6	385,567.33	592,867.41	32° 3' 34.867 N	104° 2' 0.824 W	
11,477.0	91.70	357.20	8,421.7	3,401.6	-106.0	385,662.21	592,863.02	32° 3' 35.806 N	104° 2' 0.872 W	
11,573.0	89.70	356.50	8,420.6	3,497.5	-111.3	385,758.05	592,857.74	32° 3' 36.755 N	104° 2' 0.930 W	
11,668.0	91.00	356.50	8,420.0	3,592.3	-117.1	385,852.87	592,851.94	32° 3' 37.693 N	104° 2' 0.994 W	
11,763.0	90.30	355.80	8,418.9	3,687.0	-123.4	385,947.65	592,845.56	32° 3' 38.631 N	104° 2' 1.065 W	
11,858.0	91.30	355.80	8,417.6	3,781.8	-130.4	386,042.38	592,838.61	32° 3' 39.569 N	104° 2' 1.143 W	
11,953.0	89.70	355.80	8,416.7	3,878.5	-137.4	386,137.12	592,831.65	32° 3' 40.507 N	104° 2' 1.221 W	



Wellplanning Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County - NM	TVD Reference:	WELL @ 2953.4usft (Original Well Elev)
Site:	Brutus 12 Federal	MD Reference:	WELL @ 2953.4usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
12,048.0	90.40	355.80	8,418.7	3,971.3	-144.3	388,231.88	592,824.89	32° 3' 41.445 N	104° 2' 1.299 W	
12,143.0	91.80	355.00	8,414.8	4,065.9	-151.9	388,328.54	592,817.08	32° 3' 42.382 N	104° 2' 1.384 W	
12,239.0	91.00	354.40	8,412.5	4,181.5	-180.8	388,422.10	592,808.21	32° 3' 43.328 N	104° 2' 1.484 W	
12,334.0	89.20	355.50	8,412.3	4,258.1	-169.2	388,518.72	592,799.85	32° 3' 44.285 N	104° 2' 1.578 W	
12,428.0	88.30	357.10	8,414.4	4,350.9	-175.3	388,611.50	592,793.72	32° 3' 45.203 N	104° 2' 1.646 W	
12,525.0	89.20	357.10	8,416.5	4,448.8	-180.1	388,707.35	592,788.86	32° 3' 46.151 N	104° 2' 1.700 W	
12,619.0	91.40	357.20	8,418.0	4,540.6	-184.8	388,801.23	592,784.19	32° 3' 47.081 N	104° 2' 1.751 W	
12,718.0	91.40	357.20	8,413.6	4,639.5	-189.6	388,900.08	592,779.36	32° 3' 48.059 N	104° 2' 1.804 W	
PBHL(B12#1H)										

Checked By: _____ Approved By: _____ Date: _____