

OCD Artesia

Form 3160-3
(April 2004)

Split Estate

FORM APPROVED
OMB No 1004-0137
Expires March 31, 2007UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

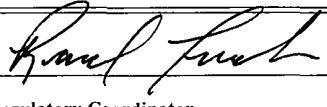
APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM 120344
1b. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator COG Operating LLC		7. If Unit or CA Agreement, Name and No
3a. Address 2208 West Main Street Artesia, NM 88210		8. Lease Name and Well No. Bawh State Com #1H
3b. Phone No. (include area code) 575-748-6940		9. API Well No. 30-015-36287
4. Location of Well (Report location clearly and in accordance with any State requirements *) At surface 1930 FSL & 810 FEL UL I At proposed prod zone 660 FNL & 660 FEL UL A		10. Field and Pool, or Exploratory Penn Shale
14. Distance in miles and direction from nearest town or post office* .5 Miles south of White City, NM		11. Sec, T, R, M or Blk and Survey or Area Sec 34, T.24S. R.25E
15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line, if any) 660FEL	16. No of acres in lease 280 ac	17. Spacing Unit dedicated to this well 120 ac
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft This is the first well	19. Proposed Depth 12160' 9774' 9754 MD MAY TUD TUD C BHL	20. BLM/BIA Bond No. on file NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc) GL - 3625	22. Approximate date work will start*	23. Estimated duration

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No 1, shall be attached to this form

- | | |
|--|--|
| 1. Well plat certified by a registered surveyor | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above) |
| 2. A Drilling Plan | 5. Operator certification |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office) | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

25. Signature 	Name (Printed/Typed) Rand French	Date 02/14/2011
Title Regulatory Coordinator		

Approved by (Signature) /s/ Don Peterson	Name (Printed/Typed) Office CARLSBAD FIELD OFFICE	Date JUL 19 2011
Title FIELD MANAGER		

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

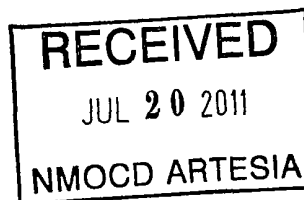
Conditions of approval, if any, are attached

APPROVAL FOR TWO YEARS

Title 18 USC Section 1001 and Title 43 USC 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

*(Instructions on page 2)

Carlsbad Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVALApproval Subject to General Requirements
& Special Stipulations Attached

COG Operating LLC
DRILLING AND OPERATIONS PROGRAM

BAWH State Com #1H
SHL: 1930' FSL & 810' FEL
BHL: 726' FNL & 988' FEL
Section 34 T24S R25E
Eddy County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill subject well, COG Operating LLC (Concho) submits the following ten items of pertinent information in accordance with BLM requirements.

1. Geological surface formation: Permian
2. The estimated tops of geologic markers & estimated depths at which anticipated water, oil or gas formations are expected to be encountered are as follows:

Top of Salt	500'	
Base of Salt	1300'	
Delaware	1500'	Oil
Bone Spring	5100'	Oil
TMD	12160'	
TD TVD	9760'	

No other formations are expected to give up oil, gas, or fresh water in measurable quantities. The surface fresh water sands will be protected by setting 13-3/8" casing at 404' and circulating cement back to surface. All intervals will be isolated by setting 4 1/2" casing to total depth and tying back cement into 7" casing.

3. **Proposed Casing Program:** **See COA*

Hole Size	Interval	OD Casing	New or Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 1/2"	0' - 404'	13-3/8"	New	54.5#	STC	J-55	1.125	1.125	1.6
12 1/4"	404' - 1391'	9 5/8"	New	36#	STC	J-55	1.125	1.125	1.6
8-3/4"	1391' - 9148'	7"	New	23#	LTC	P-110	1.125	1.125	1.6
6 1/8"	9148' - 12160'	4 1/2"	New	11.6#	LTC	P-110	1.125	1.125	1.6

5. Proposed Cement Program: **See COA*

- a. 13-3/8" Surface Cement to surface with 450 sx Class C wt 14.8 yield 1.34
- b. 9 5/8" Intermediate Cement to surface with 375 sx Class C wt 12.7 yield 1.89
Tail in with 250 sx Class C wt 14.8 yield 1.34.
- c. 7" Intermediate Cement to surface in 2 stages. 1st stg: lead with 300 sx Class C wt 12.7 yield 1.89 Tail in with 200 sx Class C wt 14.8 yield 1.34. 2nd stg: lead with 700 sx Class C wt 12.7 yield 1.89 Tail in with 100 sx Class C wt 14.8 yield 1.34.
DVT/ECP set @ 5084'
- d. 4 1/2" Production Cement 1st stage with 150 sx "H" acid soluble cement wt 15.0 yield 2.6. DV Tool @ 8796' & TOC @ 8796'.

The above cement volumes could be revised pending the caliper measurement from the open hole logs. **All casing is new and API approved.**

6. Minimum Specifications for Pressure Control:

Nipple up on 13 3/8 with 2M system (Hydril) tested to 2000# by independent tester, nipple up on 9 5/8 with 3m system tested to 3000# by independent tester

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. A 2" kill line and a 3" choke line will be included in the drilling spool located below the ram-type BOP. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold with 3000 psi WP rating.

7. Estimated BHP: 2100 psi

8. Mud Program: The applicable depths and properties of this system are as follows:

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' – 404'	Fresh Water	8.4	29	N.C.
404' – 1391'	Brine	10	29	N.C.
1391' – 12160'	Cut Brine	8.9-9.2	29	N.C.

The necessary mud products for weight addition and fluid loss control will be on location at all times.

9. Auxiliary Well Control and Monitoring Equipment:

- a. A Kelly cock will be in the drill string at all times.
- b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
- c. Hydrogen Sulfide detection equipment will be in operation after drilling out the 13 3/8" casing shoe until the 5 1/2" casing is cemented. Breathing equipment will be on location upon drilling the 13 3/8" shoe until total depth is reached.

10. Testing, Logging and Coring Program:

*
see
COA

- a. Drill stem tests will be based on geological sample shows.
- b. The open hole electrical logging program will be:
 - i. Total Depth to Intermediate Casing: Dual Laterolog-Micro Laterolog and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.
 - ii. Total Depth to Surface: Compensated Neutron with Gamma Ray
 - iii. No coring program is planned
 - iv. Additional testing will be initiated subsequent to setting the 5 ½" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

11. Potential Hazards:

- a. No abnormal pressures or temperatures are expected. There is no known presence of H₂S in this area. If H₂S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP: 2100 psi. No H₂S is anticipated to be encountered.

12. Anticipated starting date and Duration of Operations:

- | | |
|------------------------|--|
| a. Road and location | Have been built and drilling operations completed. |
| Waiting on completion. | |



Marbob

**Eddy County
Bawh State Com
#1
OH**

Plan: Plan #2

Pathfinder X & Y Planning Report

12 July, 2010

PATHFINDER



Pathfinder

Pathfinder X & Y Planning Report



Company:	Marbob	Local Co-ordinate Reference:	Well #1
Project:	Eddy County	TVD Reference:	Patriot #2 @ 3661.00ft (17' KB Correction)
Site:	Bawh State Com	MD Reference:	Patriot #2 @ 3661.00ft (17' KB Correction)
Well:	#1	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	Midland Database

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

Site		Bawh State Com			
Site Position:		Northing:	426,223.300 ft	Latitude:	32° 10' 18.471 N
From:	Map	Easting:	486,588.300 ft	Longitude:	104° 22' 36.043 W
Position Uncertainty: 0.00 ft		Slot Radius:	"	Grid Convergence:	-0.02 °

Well	#1					
Well Position	+N/-S	0.00 ft	Northing:	426,223.300 ft	Latitude:	32° 10' 18.471 N
	+E/-W	0.00 ft	Easting:	486,588.300 ft	Longitude:	104° 22' 36.043 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,644.00 ft

Wellbore		OH			
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF200510	07/11/2010	8.05	60.04	48.644

Design:	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	9,289.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0 00	0.00	0 00	358.36



Pathfinder

Pathfinder X & Y Planning Report



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Local Co-ordinate Reference: Well #1
 TVD Reference: Patriot #2 @ 3661.00ft (17' KB Correction)
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 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland Database

Survey Tool Program Date 07/12/2010

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	9,289.00	GYRO (OH)	CB-GYRO-MS	Camera based gyro multishot
9,289.00	12,208.57	Plan #2 (OH)	MWD	MWD - Standard

Planned Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
0.00	0.00	0.00	0.00	-3,661.00	0.00	0.00	0.00	0.00	426,223.30	486,588.30	
100.00	0.23	123.14	100.00	-3,561.00	-0.11	0.17	-0.11	0.23	426,223.19	486,588.47	
200.00	0.26	78.34	200.00	-3,461.00	-0.17	0.56	-0.19	0.19	426,223.13	486,588.86	
300.00	0.54	77.53	300.00	-3,361.00	-0.03	1.24	-0.06	0.28	426,223.27	486,589.54	
400.00	0.70	71.89	399.99	-3,261.01	0.27	2.28	0.20	0.17	426,223.57	486,590.58	
500.00	0.93	51.31	499.98	-3,161.02	0.96	3.50	0.86	0.37	426,224.26	486,591.80	
600.00	2.08	37.95	599.94	-3,061.06	2.90	5.24	2.75	1.19	426,226.20	486,593.54	
700.00	2.84	36.76	699.85	-2,961.15	6.32	7.84	6.09	0.76	426,229.62	486,596.14	
800.00	2.08	27.06	799.76	-2,861.24	9.92	10.15	9.62	0.86	426,233.22	486,598.45	
900.00	1.71	4.04	899.71	-2,761.29	13.02	11.08	12.70	0.84	426,236.32	486,599.38	
1,000.00	2.49	17.21	999.64	-2,661.36	16.59	11.83	16.24	0.91	426,239.89	486,600.13	
1,100.00	2.75	19.85	1,099.53	-2,561.47	20.92	13.29	20.53	0.29	426,244.22	486,601.59	
1,200.00	1.35	340.04	1,199.47	-2,461.53	24.28	13.70	23.88	1.92	426,247.58	486,602.00	
1,300.00	2.03	342.50	1,299.43	-2,361.57	27.08	12.77	26.70	0.68	426,250.38	486,601.07	
1,400.00	2.11	336.20	1,399.36	-2,261.64	30.45	11.49	30.11	0.24	426,253.75	486,599.79	
1,500.00	2.13	335.22	1,499.29	-2,161.71	33.82	9.97	33.52	0.04	426,257.12	486,598.27	
1,600.00	1.89	328.06	1,599.23	-2,061.77	36.91	8.32	36.66	0.35	426,260.21	486,596.62	
1,700.00	1.33	311.63	1,699.19	-1,961.81	39.08	6.58	38.88	0.72	426,262.38	486,594.88	
1,800.00	1.40	307.72	1,799.16	-1,861.84	40.60	4.74	40.45	0.12	426,263.90	486,593.04	
1,900.00	1.45	317.17	1,899.13	-1,761.87	42.27	2.92	42.17	0.24	426,265.57	486,591.22	
2,000.00	1.11	290.66	1,999.11	-1,661.89	43.54	1.15	43.49	0.67	426,266.84	486,589.45	



Pathfinder

Pathfinder X & Y Planning Report



Company: Marbob
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 Site: Bawh State Com
 Well: #1
 Wellbore: OH
 Design: Plan #2

Local Co-ordinate Reference: Well #1
 TVD Reference: Patriot #2 @ 3661.00ft (17' KB Correction)
 MD Reference: Patriot #2 @ 3661.00ft (17' KB Correction)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Nothing (ft)	Easting (ft)
2,100.00	0.70	256.15	2,099.10	-1,561.90	43.74	-0.35	43.73	0.66	426,267.04	486,587.95
2,200.00	0.74	258.29	2,199.09	-1,461.91	43.46	-1.57	43.49	0.05	426,266.76	486,586.73
2,300.00	0.81	266.47	2,299.08	-1,361.92	43.29	-2.91	43.35	0.13	426,266.59	486,585.39
2,400.00	0.87	270.23	2,399.07	-1,261.93	43.25	-4.38	43.35	0.08	426,266.55	486,583.92
2,500.00	0.96	273.46	2,499.06	-1,161.94	43.30	-5.97	43.45	0.10	426,266.60	486,582.33
2,600.00	0.97	274.48	2,599.04	-1,061.96	43.42	-7.65	43.62	0.02	426,266.72	486,580.65
2,700.00	1.00	275.86	2,699.03	-961.97	43.57	-9.36	43.82	0.04	426,266.87	486,578.94
2,800.00	0.96	296.42	2,799.01	-861.99	44.03	-10.98	44.33	0.35	426,267.33	486,577.32
2,900.00	1.07	293.35	2,899.00	-762.00	44.78	-12.59	45.12	0.12	426,268.08	486,575.71
3,000.00	1.00	291.17	2,998.98	-662.02	45.46	-14.26	45.85	0.08	426,268.76	486,574.04
3,100.00	0.98	295.37	3,098.97	-562.03	46.14	-15.85	46.58	0.08	426,269.44	486,572.45
3,200.00	1.01	292.70	3,198.95	-462.05	46.85	-17.43	47.33	0.06	426,270.15	486,570.87
3,300.00	1.13	286.57	3,298.93	-362.07	47.47	-19.19	48.00	0.17	426,270.77	486,569.11
3,400.00	1.28	278.91	3,398.91	-262.09	47.92	-21.24	48.51	0.22	426,271.22	486,567.06
3,500.00	1.15	279.54	3,498.89	-162.11	48.26	-23.33	48.91	0.13	426,271.56	486,564.97
3,600.00	1.05	236.42	3,598.87	-62.13	47.92	-25.09	48.62	0.81	426,271.22	486,563.21
3,700.00	1.12	205.96	3,698.86	37.86	46.54	-26.28	47.27	0.57	426,269.84	486,562.02
3,800.00	1.19	201.11	3,798.84	137.84	44.69	-27.08	45.45	0.12	426,267.99	486,561.22
3,900.00	1.29	201.95	3,898.81	237.81	42.68	-27.87	43.46	0.10	426,265.98	486,560.43
4,000.00	1.38	199.95	3,998.79	337.79	40.50	-28.71	41.31	0.10	426,263.80	486,559.59
4,100.00	0.81	153.78	4,098.77	437.77	38.74	-28.80	39.55	1.01	426,262.04	486,559.50
4,200.00	0.86	139.59	4,198.76	537.76	37.53	-28.01	38.32	0.21	426,260.83	486,560.29
4,300.00	0.87	142.75	4,298.75	637.75	36.35	-27.06	37.11	0.05	426,259.65	486,561.24
4,400.00	0.84	135.81	4,398.74	737.74	35.22	-26.09	35.96	0.11	426,258.52	486,562.21
4,500.00	0.90	134.85	4,498.72	837.72	34.15	-25.02	34.85	0.06	426,257.45	486,563.28
4,600.00	1.04	128.02	4,598.71	937.71	33.03	-23.75	33.70	0.18	426,256.33	486,564.55
4,700.00	1.03	133.69	4,698.69	1,037.69	31.85	-22.38	32.48	0.10	426,255.15	486,565.92



Pathfinder

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Wellbore: OH
Design: Plan #2

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Planned Survey

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4,800.00	1.01	130.32	4,798.68	1,137.68	30.66	-21.06	31.25	0.06	426,253.96	486,567.24
4,900.00	0.95	130.28	4,898.66	1,237.66	29.56	-19.76	30.11	0.06	426,252.86	486,568.54
5,000.00	0.97	127.77	4,998.65	1,337.65	28.50	-18.46	29.02	0.05	426,251.80	486,569.84
5,100.00	0.99	124.90	5,098.63	1,437.63	27.49	-17.08	27.97	0.05	426,250.79	486,571.22
5,200.00	0.51	136.18	5,198.63	1,537.63	26.67	-16.06	27.12	0.50	426,249.97	486,572.24
5,300.00	0.44	132.67	5,298.62	1,637.62	26.09	-15.47	26.52	0.08	426,249.39	486,572.83
5,400.00	0.41	202.44	5,398.62	1,737.62	25.50	-15.33	25.93	0.49	426,248.80	486,572.97
5,500.00	1.48	261.64	5,498.61	1,837.61	24.98	-16.74	25.45	1.32	426,248.28	486,571.56
5,600.00	2.80	269.72	5,598.53	1,937.53	24.78	-20.46	25.36	1.35	426,248.08	486,567.84
5,700.00	2.12	254.59	5,698.44	2,037.44	24.28	-24.69	24.98	0.93	426,247.58	486,563.61
5,800.00	0.70	293.88	5,798.41	2,137.41	24.03	-27.03	24.80	1.64	426,247.33	486,561.27
5,900.00	0.86	279.79	5,898.40	2,237.40	24.41	-28.33	25.21	0.25	426,247.71	486,559.97
6,000.00	0.90	235.15	5,998.39	2,337.39	24.09	-29.71	24.93	0.67	426,247.39	486,558.59
6,100.00	1.44	217.38	6,098.37	2,437.37	22.64	-31.12	23.52	0.64	426,245.94	486,557.18
6,200.00	1.54	213.13	6,198.34	2,537.34	20.52	-32.61	21.44	0.15	426,243.82	486,555.69
6,300.00	1.40	215.36	6,298.30	2,637.30	18.40	-34.06	19.36	0.15	426,241.70	486,554.24
6,400.00	1.20	193.22	6,398.28	2,737.28	16.38	-35.00	17.38	0.54	426,239.68	486,553.30
6,500.00	1.25	192.21	6,498.26	2,837.26	14.29	-35.47	15.30	0.05	426,237.59	486,552.83
6,600.00	1.13	198.77	6,598.23	2,937.23	12.30	-36.02	13.32	0.18	426,235.60	486,552.28
6,700.00	0.43	203.70	6,698.22	3,037.22	11.02	-36.49	12.06	0.70	426,234.32	486,551.81
6,800.00	0.39	235.68	6,798.22	3,137.22	10.48	-36.92	11.54	0.23	426,233.78	486,551.38
6,900.00	0.37	279.42	6,898.22	3,237.22	10.34	-37.52	11.41	0.28	426,233.64	486,550.78
7,000.00	0.44	266.96	6,998.22	3,337.22	10.38	-38.22	11.47	0.11	426,233.68	486,550.08
7,100.00	0.47	305.27	7,098.21	3,437.21	10.59	-38.94	11.70	0.30	426,233.89	486,549.36
7,200.00	0.85	279.40	7,198.21	3,537.21	10.95	-40.01	12.09	0.47	426,234.25	486,548.29
7,300.00	0.71	289.73	7,298.20	3,637.20	11.28	-41.32	12.46	0.20	426,234.58	486,546.98
7,400.00	0.80	307.71	7,398.19	3,737.19	11.92	-42.46	13.13	0.25	426,235.22	486,545.84



Pathfinder

Pathfinder X & Y Planning Report



Company:	Marbob	Local Co-ordinate Reference:	Well #1
Project:	Eddy County	TVD Reference:	Patriot #2 @ 3661.00ft (17' KB Correction)
Site:	Bawh State Com	MD Reference:	Patriot #2 @ 3661.00ft (17' KB Correction)
Well:	#1	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	Midland Database

Planned Survey											
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)	
7,500.00	0.94	311.96	7,498.18	3,837.18	12.89	-43.62	14.14	0.15	426,236.19	486,544.68	
7,600.00	1.61	324.23	7,598.15	3,937.15	14.58	-45.05	15.86	0.72	426,237.88	486,543.25	
7,700.00	1.91	321.55	7,698.11	4,037.11	17.03	-46.91	18.36	0.31	426,240.33	486,541.39	
7,800.00	1.08	251.72	7,798.08	4,137.08	18.04	-48.84	19.43	1.84	426,241.34	486,539.46	
7,900.00	1.20	230.27	7,898.06	4,237.06	17.07	-50.54	18.51	0.44	426,240.37	486,537.76	
8,000.00	1.30	233.32	7,998.04	4,337.04	15.72	-52.26	17.21	0.12	426,239.02	486,536.04	
8,100.00	1.41	239.79	8,098.01	4,437.01	14.43	-54.23	15.97	0.19	426,237.73	486,534.07	
8,200.00	1.77	221.30	8,197.97	4,536.97	12.65	-56.31	14.25	0.62	426,235.95	486,531.99	
8,300.00	1.63	219.94	8,297.93	4,636.93	10.40	-58.24	12.06	0.15	426,233.70	486,530.06	
8,400.00	0.82	227.46	8,397.90	4,736.90	8.82	-59.68	10.53	0.82	426,232.12	486,528.62	
8,500.00	0.88	231.84	8,497.89	4,836.89	7.86	-60.81	9.60	0.09	426,231.16	486,527.49	
8,600.00	1.06	221.90	8,597.88	4,936.88	6.70	-62.04	8.48	0.25	426,230.00	486,526.26	
8,700.00	1.37	225.55	8,697.85	5,036.85	5.18	-63.51	6.99	0.32	426,228.48	486,524.79	
8,800.00	1.42	225.38	8,797.82	5,136.82	3.47	-65.24	5.34	0.05	426,226.77	486,523.06	
8,900.00	1.18	229.90	8,897.80	5,236.80	1.93	-66.91	3.85	0.26	426,225.23	486,521.39	
9,000.00	1.07	226.89	8,997.78	5,336.78	0.63	-68.38	2.59	0.12	426,223.93	486,519.92	
9,100.00	1.02	222.59	9,097.76	5,436.76	-0.66	-69.67	1.34	0.09	426,222.64	486,518.63	
9,200.00	1.04	213.68	9,197.75	5,536.75	-2.07	-70.77	-0.04	0.16	426,221.23	486,517.53	
9,289.00	0.76	218.72	9,286.74	5,625.74	-3.21	-71.59	-1.15	0.32	426,220.09	486,516.71	
9,300.00	0.87	326.61	9,297.73	5,636.73	-3.19	-71.68	-1.14	12.00	426,220.11	486,516.62	
9,325.00	3.76	352.70	9,322.71	5,661.71	-2.22	-71.89	-0.16	12.00	426,221.08	486,516.41	
9,350.00	6.74	355.96	9,347.60	5,686.60	0.05	-72.10	2.12	12.00	426,223.35	486,516.20	
9,375.00	9.74	357.22	9,372.34	5,711.34	3.63	-72.30	5.70	12.00	426,226.93	486,516.00	
9,400.00	12.74	357.89	9,396.86	5,735.86	8.50	-72.51	10.57	12.00	426,231.80	486,515.79	
9,425.00	15.74	358.30	9,421.09	5,760.09	14.64	-72.71	16.72	12.00	426,237.94	486,515.59	
9,450.00	18.74	358.59	9,444.97	5,783.97	22.05	-72.91	24.13	12.00	426,245.35	486,515.39	
9,475.00	21.74	358.80	9,468.42	5,807.42	30.69	-73.10	32.77	12.00	426,253.99	486,515.20	



Pathfinder

Pathfinder X & Y Planning Report



Company: Marbob
 Project: Eddy County
 Site: Bawh State Com
 Well: #1
 Wellbore: OH
 Design: Plan #2

Local Co-ordinate Reference: Well #1
 TVD Reference: Patriot #2 @ 3661.00ft (17' KB Correction)
 MD Reference: Patriot #2 @ 3661.00ft (17' KB Correction)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
9,500.00	24.74	358.96	9,491.39	5,830.39	40.55	-73.30	42.63	12.00	426,263.85	486,515.00
9,525.00	27.74	359.09	9,513.81	5,852.81	51.60	-73.48	53.68	12.00	426,274.90	486,514.82
9,550.00	30.74	359.20	9,535.62	5,874.62	63.81	-73.66	65.89	12.00	426,287.11	486,514.64
9,575.00	33.74	359.28	9,556.77	5,895.77	77.14	-73.84	79.22	12.00	426,300.44	486,514.46
9,600.00	36.74	359.36	9,577.18	5,916.18	91.56	-74.01	93.64	12.00	426,314.86	486,514.29
9,625.00	39.74	359.43	9,596.82	5,935.82	107.03	-74.17	109.11	12.00	426,330.33	486,514.13
9,650.00	42.74	359.48	9,615.61	5,954.61	123.51	-74.33	125.59	12.00	426,346.81	486,513.97
9,675.00	45.74	359.53	9,633.52	5,972.52	140.95	-74.48	143.03	12.00	426,364.25	486,513.82
9,700.00	48.74	359.58	9,650.49	5,989.49	159.30	-74.62	161.37	12.00	426,382.60	486,513.68
9,725.00	51.74	359.62	9,666.48	6,005.48	178.52	-74.76	180.59	12.00	426,401.82	486,513.54
9,750.00	54.74	359.66	9,681.44	6,020.44	198.55	-74.88	200.61	12.00	426,421.85	486,513.42
9,775.00	57.74	359.70	9,695.33	6,034.33	219.33	-75.00	221.39	12.00	426,442.63	486,513.30
9,800.00	60.74	359.73	9,708.11	6,047.11	240.81	-75.10	242.86	12.00	426,464.11	486,513.20
9,825.00	63.74	359.76	9,719.75	6,058.75	262.93	-75.20	264.98	12.00	426,486.23	486,513.10
9,850.00	66.75	359.79	9,730.22	6,069.22	285.63	-75.29	287.67	12.00	426,508.93	486,513.01
9,875.00	69.75	359.82	9,739.49	6,078.49	308.85	-75.36	310.88	12.00	426,532.15	486,512.94
9,900.00	72.75	359.85	9,747.52	6,086.52	332.52	-75.43	334.54	12.00	426,555.82	486,512.87
9,925.00	75.75	359.88	9,754.31	6,093.31	356.57	-75.49	358.59	12.00	426,579.87	486,512.81
9,950.00	78.75	359.90	9,759.83	6,098.83	380.96	-75.53	382.96	12.00	426,604.26	486,512.77
9,975.00	81.75	359.93	9,764.06	6,103.06	405.59	-75.57	407.59	12.00	426,628.89	486,512.73
10,000.00	84.75	359.96	9,767.00	6,106.00	430.42	-75.59	432.40	12.00	426,653.72	486,512.71
10,025.00	87.75	359.98	9,768.63	6,107.63	455.36	-75.61	457.34	12.00	426,678.66	486,512.69
10,043.73	90.00	360.00	9,769.00	6,108.00	474.09	-75.61	476.06	12.00	426,697.39	486,512.69
10,100.00	90.00	360.00	9,769.00	6,108.00	530.35	-75.61	532.30	0.00	426,753.65	486,512.69
10,200.00	90.00	360.00	9,769.00	6,108.00	630.35	-75.61	632.26	0.00	426,853.65	486,512.69
10,300.00	90.00	360.00	9,769.00	6,108.00	730.35	-75.61	732.22	0.00	426,953.65	486,512.69
10,400.00	90.00	360.00	9,769.00	6,108.00	830.35	-75.61	832.18	0.00	427,053.65	486,512.69



Pathfinder

Pathfinder X & Y Planning Report



Company: Marbob
Project: Eddy County
Site: Bawh State Com
Well: #1
Wellbore: OH
Design: Plan #2

Local Co-ordinate Reference: Well #1
TVD Reference: Patriot #2 @ 3661.00ft (17' KB Correction)
MD Reference: Patriot #2 @ 3661.00ft (17' KB Correction)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg. (°/100ft)	Northing (ft)	Easting (ft)
10,500.00	90.00	360.00	9,769.00	6,108.00	930.35	-75.61	932.14	0.00	427,153.65	486,512.69
10,600.00	90.00	360.00	9,769.00	6,108.00	1,030.35	-75.61	1,032.10	0.00	427,253.65	486,512.69
10,700.00	90.00	360.00	9,769.00	6,108.00	1,130.35	-75.61	1,132.06	0.00	427,353.65	486,512.69
10,800.00	90.00	360.00	9,769.00	6,108.00	1,230.35	-75.61	1,232.01	0.00	427,453.65	486,512.69
10,900.00	90.00	360.00	9,769.00	6,108.00	1,330.35	-75.61	1,331.97	0.00	427,553.65	486,512.69
11,000.00	90.00	360.00	9,769.00	6,108.00	1,430.35	-75.61	1,431.93	0.00	427,653.65	486,512.69
11,100.00	90.00	360.00	9,769.00	6,108.00	1,530.35	-75.61	1,531.89	0.00	427,753.65	486,512.69
11,200.00	90.00	360.00	9,769.00	6,108.00	1,630.35	-75.61	1,631.85	0.00	427,853.65	486,512.69
11,300.00	90.00	360.00	9,769.00	6,108.00	1,730.35	-75.61	1,731.81	0.00	427,953.65	486,512.69
11,400.00	90.00	360.00	9,769.00	6,108.00	1,830.35	-75.61	1,831.77	0.00	428,053.65	486,512.69
11,500.00	90.00	360.00	9,769.00	6,108.00	1,930.35	-75.61	1,931.73	0.00	428,153.65	486,512.69
11,600.00	90.00	360.00	9,769.00	6,108.00	2,030.35	-75.61	2,031.69	0.00	428,253.65	486,512.69
11,700.00	90.00	360.00	9,769.00	6,108.00	2,130.35	-75.61	2,131.65	0.00	428,353.65	486,512.69
11,800.00	90.00	360.00	9,769.00	6,108.00	2,230.35	-75.61	2,231.60	0.00	428,453.65	486,512.69
11,900.00	90.00	360.00	9,769.00	6,108.00	2,330.35	-75.61	2,331.56	0.00	428,553.65	486,512.69
12,000.00	90.00	360.00	9,769.00	6,108.00	2,430.35	-75.61	2,431.52	0.00	428,653.65	486,512.69
12,100.00	90.00	360.00	9,769.00	6,108.00	2,530.35	-75.61	2,531.48	0.00	428,753.65	486,512.69
12,208.57	90.00	360.00	9,769.00	6,108.00	2,638.93	-75.61	2,640.01	0.00	428,862.23	486,512.69

Checked By: _____ Approved By: _____ Date: _____



marbob
energy corporation
Artesia, N.M.

Project: Eddy County
Site: Bawh State Com
Well: #1
Wellbore: OH
Plan: Plan #2 (#1/OH)

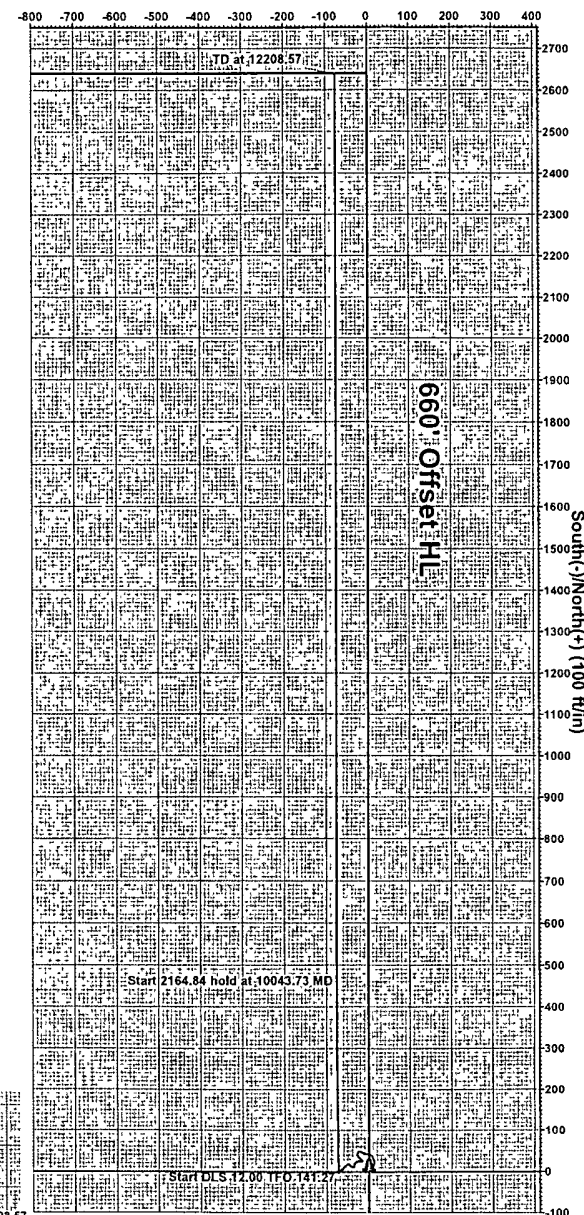


Azimuths to Grid North
True North: 0.02°
Magnetic North: 8.07°

Magnetic Field
Strength: 48644.2snT
Dip Angle: 60.04°
Date: 07/11/2010
Model: IGRF200510

PATHFINDER

West(-)/East(+) (100 ft/in)



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

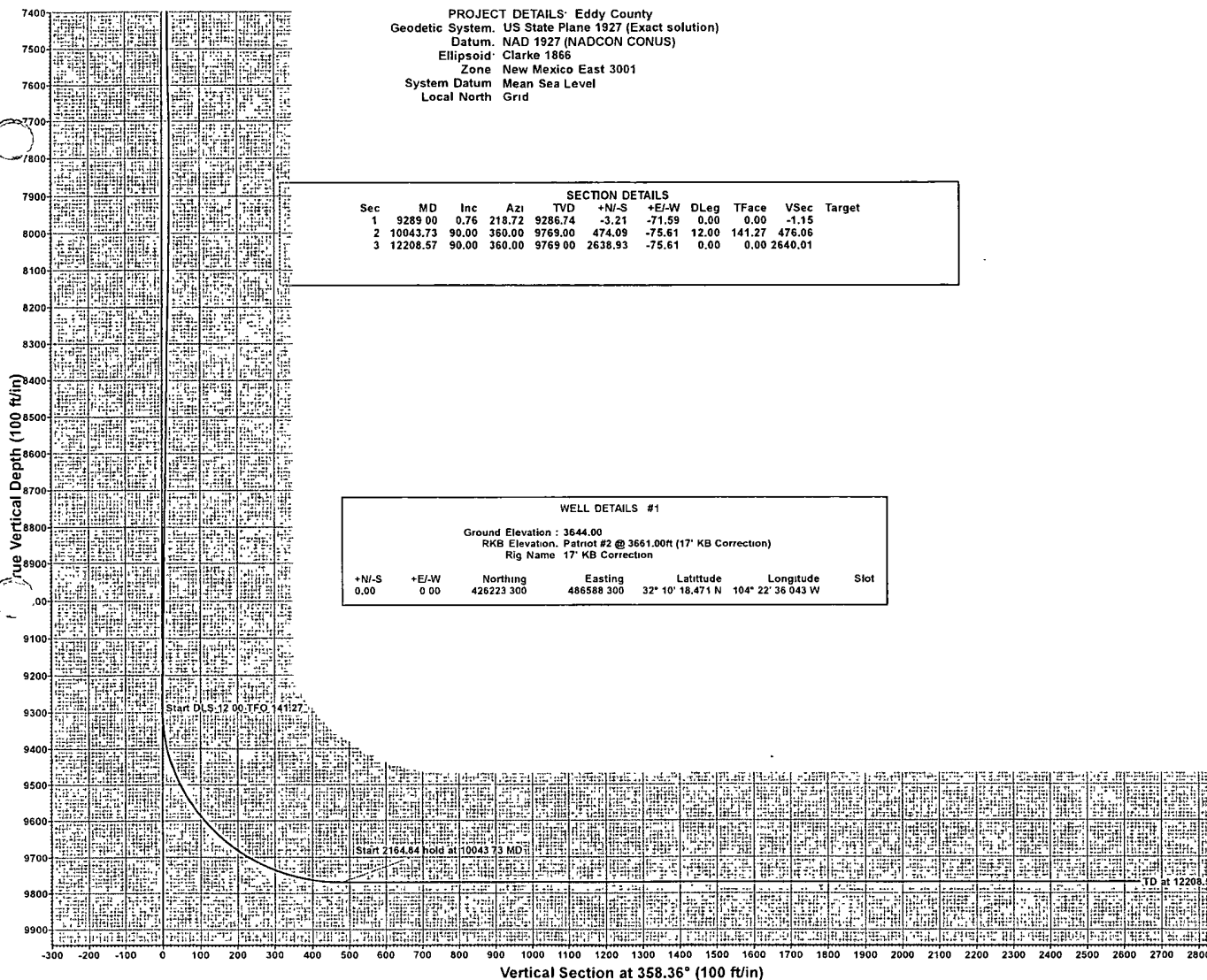
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	9289.00	0.76	218.72	9286.74	-3.21	-71.59	0.00	0.00	-1.15	
2	10043.73	90.00	360.00	9769.00	474.09	-75.61	12.00	141.27	476.06	
3	12208.57	90.00	360.00	9769.00	2638.93	-75.61	0.00	0.00	2640.01	

WELL DETAILS #1

Ground Elevation: 3644.00
RKB Elevation: Patnot #2 @ 3661.00ft (17' KB Correction)
Rig Name: 17' KB Correction

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	426223.300	486588.300	32° 10' 18.471 N	104° 22' 36.043 W	



Plan: Plan #2 (#1/OH)

Created By: Nate Bingham Date: 14 03, July 12 2010

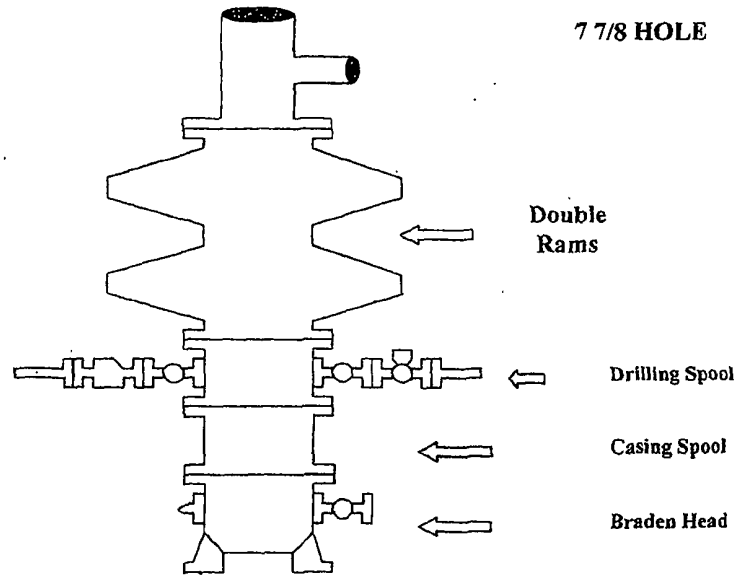
COG Operating LLC

Exhibit #9 BOPE and Choke Schematic

ZM

13 5/8 4/12/11
mm

7 7/8 HOLE



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required

