OCD Artesia

Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

5. Lease Serial No.
NMLC031844

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
SHINER BOCK 1 FEDERAL COM 8H

2. Name of Operator
COG OPERATING LLC
Contact: ROBYN ODOM
E-Mail: rodom@conchoresources.com

9. API Well No.
30-015-42015-00-X1

3a. Address
ONE CONCHO CENTER 600 W ILLINOIS AVENUE
MIDLAND, TX 79701

3b. Phone No. (include area code)
Ph: 432-685-4385

10. Field and Pool, or Exploratory
FREN

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 2 T17S R31E SESE 0403FSL 0020FEL
32.857419 N Lat, 103.831280 W Lon

11. County or Parish, and State
EDDY COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Change to Original APD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

COG Operating LLC respectfully requests permission to change the originally approved location of this well to:
SHL: 990' FSL & 150' FWL Sec. 1, Unit M
BHL: 330' FSL & 330' FEL Sec. 1, Unit P

This change is due to surface issues.
Attached is a revised C102, Directional Plan, and SUPO.

Accepted for record
NMOCD 5.20.14

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

RECEIVED
MAY 19 2014
NMOCD ARTESIA

Surface rev by TN 5/13/14
Eng rev by JAM & CRW 5/13/14

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #234472 verified by the BLM Well Information System
For COG OPERATING LLC, sent to the Carlsbad
Committed to AFMSS for processing by JENNIFER MASON on 03/26/2014 (14JAM0339SE)

Name *(Printed/Typed)* ROBYN ODOM — Title PERSON RESPONSIBLE

Signature (Electronic Submission) — Date 02/04/2014

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By Jonathon J Coffey — Title FOR FIELD MANAGER — Date 5/15/14

Conditions of approval, if any, are attached. Approval of this notice 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.

Office CARLSBAD FIELD OFFICE

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.

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

District I
625 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

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-015-	97213	FREN; GLORIETA-YESO, EAST

4 Property Code	5 Property Name	6 Well Number
	SHINER BOCK 1 FED COM	8H

7 OGRID No.	8 Operator Name	9 Elevation
229137	COG OPERATING, LLC	3997'

10 Surface Location

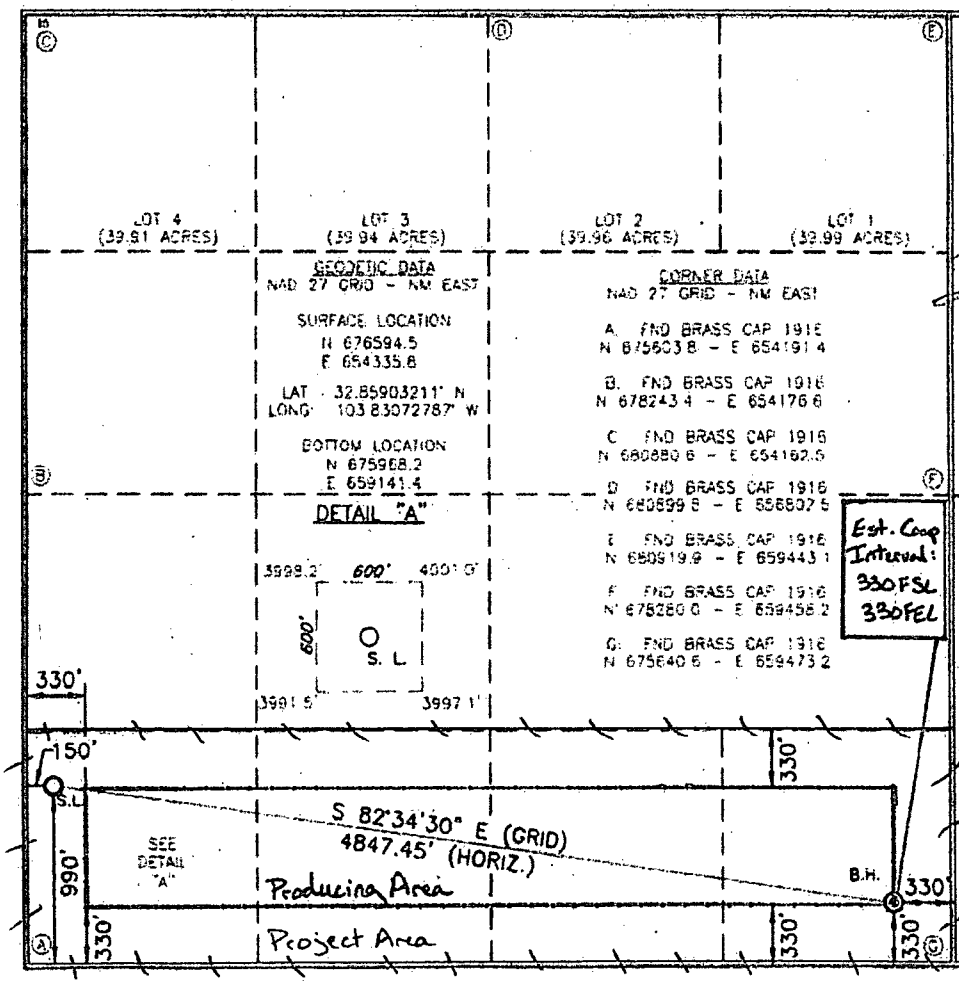
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	1	17-S	31-E		990	SOUTH	150	WEST	EDDY

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
P	1	17-S	31-E		330	SOUTH	330	EAST	EDDY

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
160			

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 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: 1/21/2014

Robyn M. Odom
Printed Name

Rodom@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.

12/9/13
Date of Survey

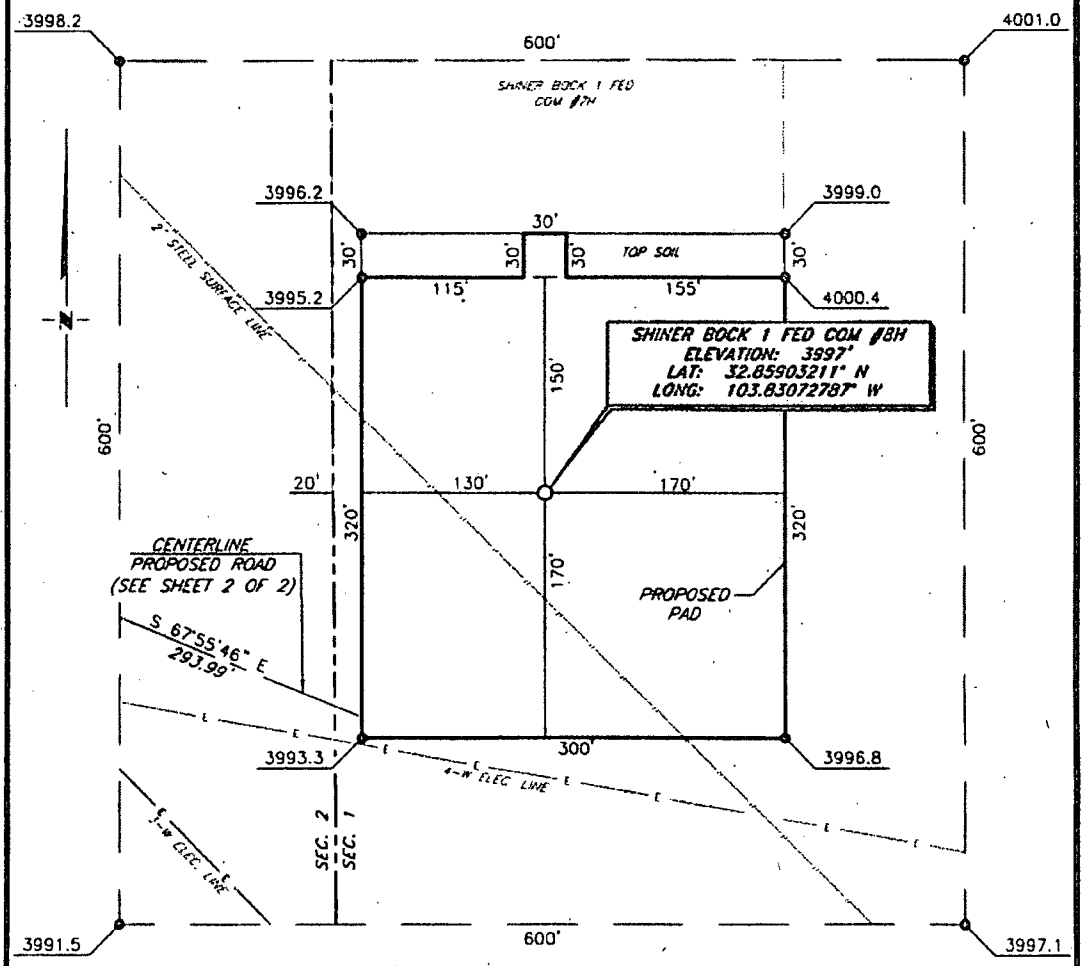
Signature and Seal of Professional Surveyor:

ROBERT M. HOWETT
NEW MEXICO
19680
PROFESSIONAL SURVEYOR

19680
Certificate Number

COG OPERATING, LLC

Shiner Bock 1 Fed Com #8H
(990' FSL & 150' FWL)
Section 1, T-17-S, R-31-E,
N. M. P. M., Eddy Co., New Mexico



DIRECTIONS TO LOCATION

From the intersection of U.S. Hwy. #82 and CR-223 (Sweet Gum).

Go Northeast on U.S. Hwy. #82 approx. 1.5 miles.

Turn left on a lease road and go Northwest approx. 0.3 mile.

Turn right and go North approx. 0.2 mile.

Turn right and go Northeast approx. 0.5 mile.

Turn left and go North approx. 2.0 miles.

Turn right and go East approx. 0.4 mile.

Turn right and go South approx. 0.1 mile.

Turn left on a two tract road go Southwest 0.1 mile to the Alamo State BGK #4;

The location is 480' East of the existing Alamo Resources Pumping Unit.

NO.	REVISION	DATE

JOB NO.: LS130525

DWG. NO.: 130525PAD

PROSPERITY CONSULTANTS, LLC

2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664 o (512) 992-2087 f (512) 251-2518

SCALE: 1" = 100'

DATE: 12/9/13

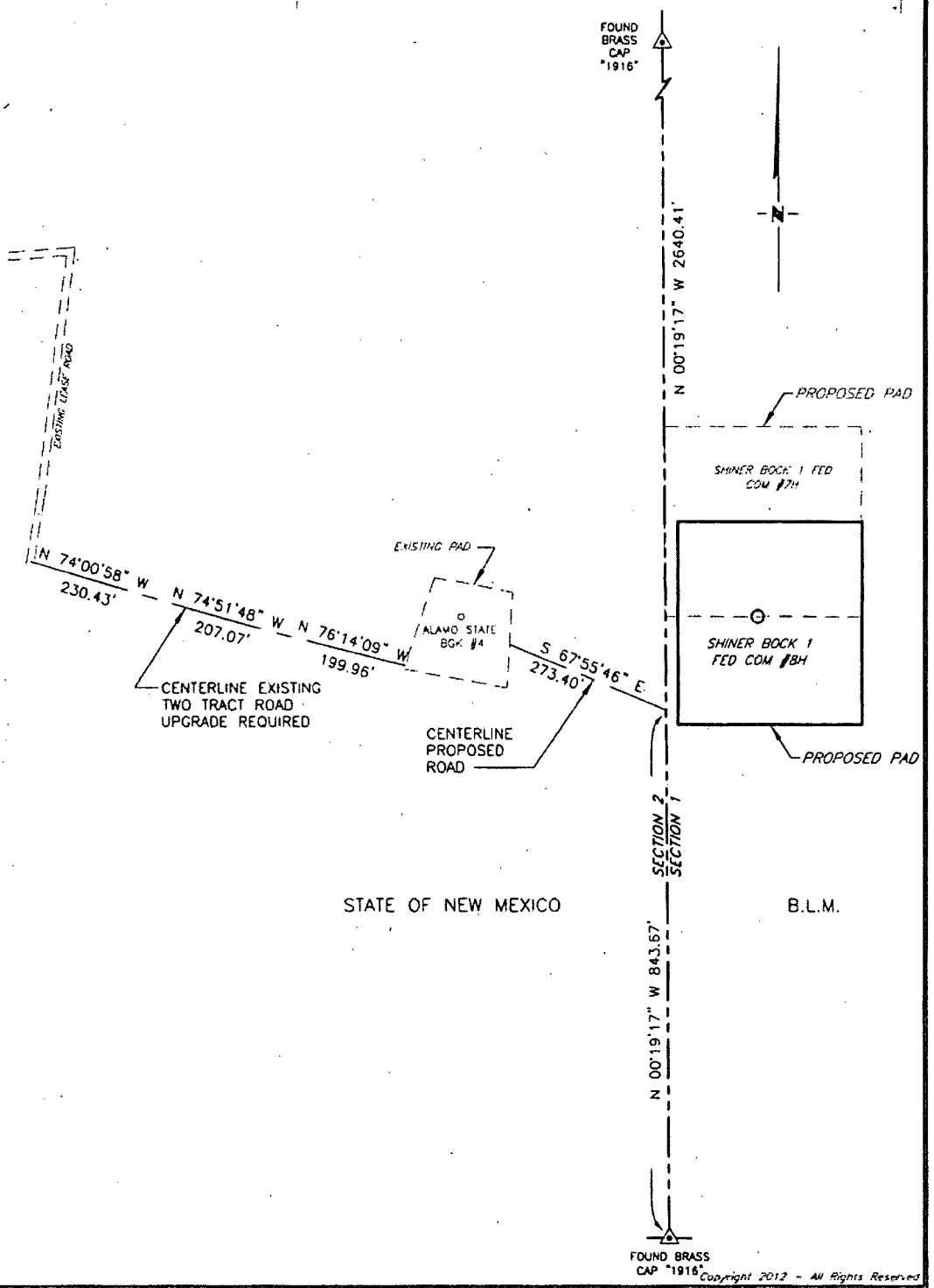
SURVEYED BY: GB/JW

DRAWN BY: JC

APPROVED BY: LWB

SHEET : 1 OF 2

COG OPERATING, LLC
Access Road
Shiner Bock 1 Fed Com #8H
(990' FSL & 150' FEL)
Section 1, T-17-S, R-31-E,
N. M. P. M., Eddy Co., New Mexico



NO.	REVISION	DATE
1	STATE R.O.W.	1-20-14

JOB NO.: LS130525
DWG. NO.: 130525RD

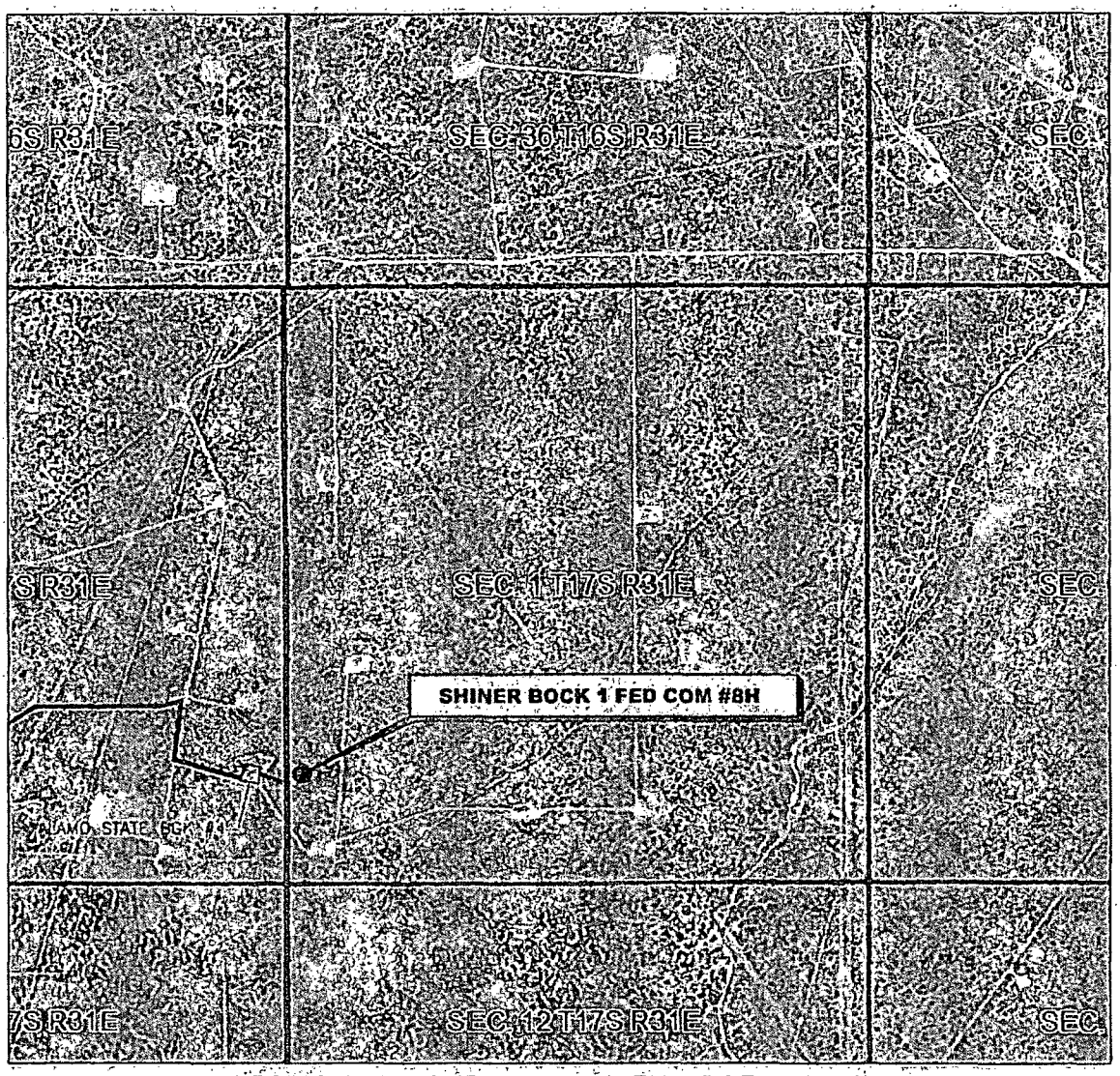
PROSPERITY CONSULTANTS, LLC

2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664 o (512) 992-2087 f (512) 251-2518

SCALE: 1" = 200'
DATE: 12/9/13
SURVEYED BY: GB/JW
DRAWN BY: JC
APPROVED BY: LWB
SHEET : 2 OF 2

VICINITY MAP

NOT TO SCALE



SECTION 1, TWP. 17 SOUTH, RGE. 31 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Shiner Bock 1 Fed Com
WELL NO.: 8H

LOCATION: 990' FSL & 150' FWL
ELEVATION: 3997'

NO.	REVISION	DATE

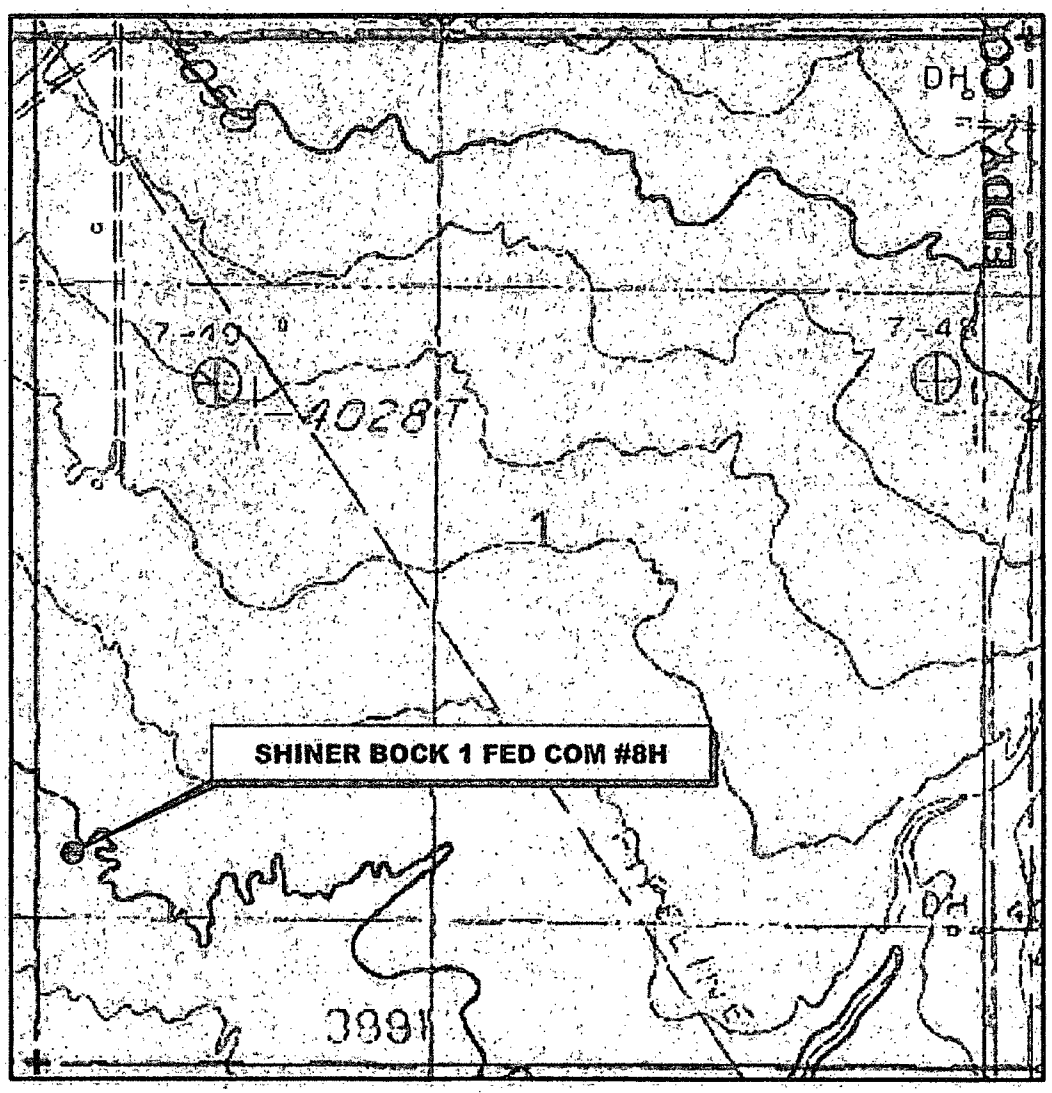
JOB NO.: LS130525
DWG. NO.: 130525VM

PROSPERITY CONSULTANTS, LLC

2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664 p (512) 992-2087 f (512) 251-2518

SCALE: NONE
DATE: 12/9/13
SURVEYED BY: GB/JW
DRAWN BY: JC
APPROVED BY: LWB
SHEET : 1 OF 1

LOCATION VERIFICATION MAP



SECTION 1, TWP. 17 SOUTH, RGE. 31 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Shiner Bock 1 Fed Com
WELL NO.: 8H
ELEVATION: 3997'

LOCATION: 990' FSL & 150' FWL
CONTOUR INTERVAL: 10'
USGS TOPO. SOURCE MAP:
Maljamar, NM (Prov. Ed. 1985)

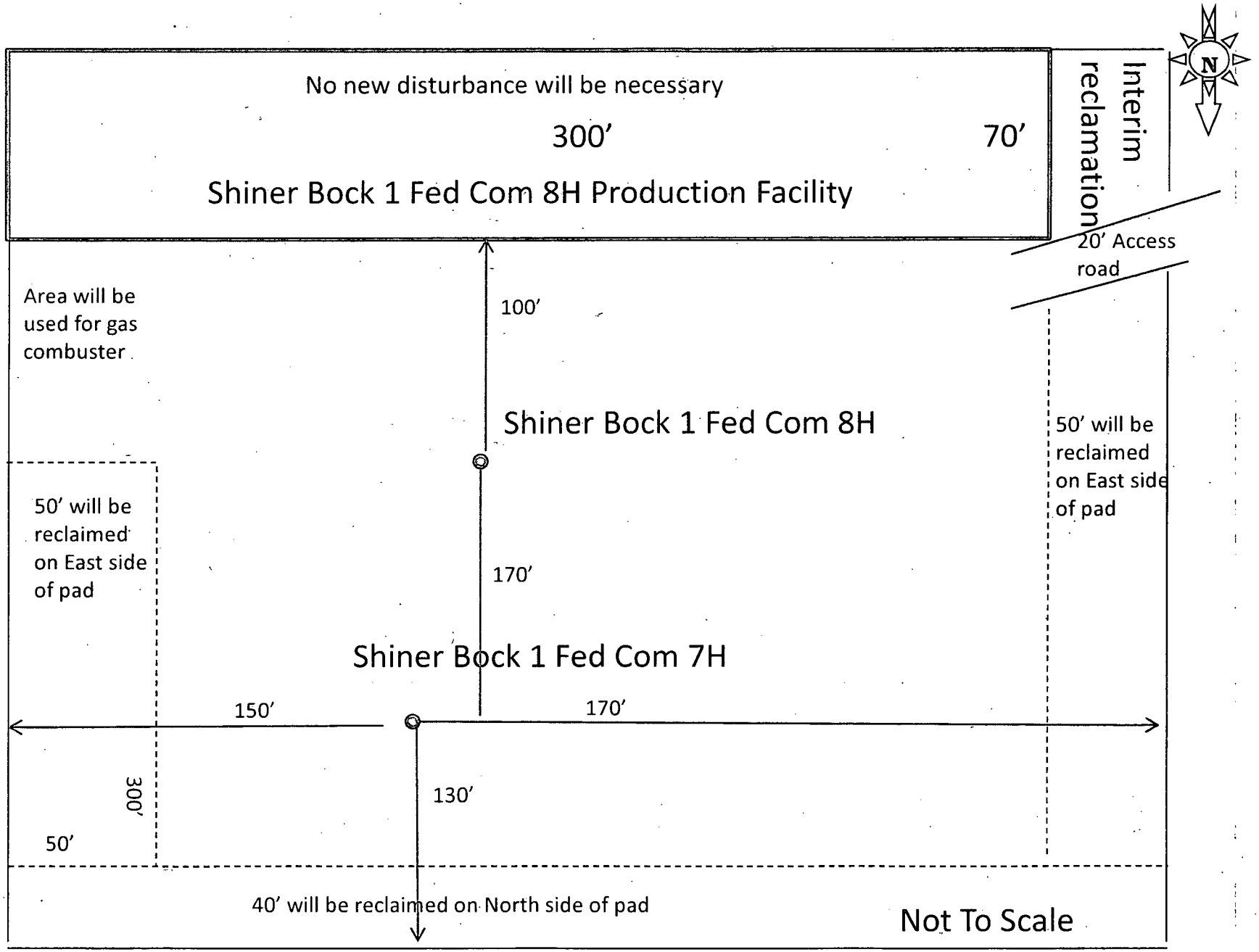
NO.	REVISION	DATE

JOB NO.: LS130525
DWG. NO.: 130525LVM

PROSPERITY CONSULTANTS, LLC

2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664 o (512) 992-2087 f (512) 251-2518

SCALE: 1" = 1000'
DATE: 12/9/13
SURVEYED BY: GB/JW
DRAWN BY: JC
APPROVED BY: LWB
SHEET : 1 OF 1


No new disturbance will be necessary
300'
70'
Shiner Bock 1 Fed Com 8H Production Facility
Interim reclamation
N
20' Access road
Area will be used for gas combuster
100'
Shiner Bock 1 Fed Com 8H
50' will be reclaimed on East side of pad
50' will be reclaimed on East side of pad
170'
Shiner Bock 1 Fed Com 7H
150'
170'
300'
130'
50'
40' will be reclaimed on North side of pad
Not To Scale

ATTACHMENT TO FORM 3160-3 **Revised 3/27/14 GEG**

COG Operating, LLC
SHINER BOCK FEDERAL COM #8H
SHL: 403' FSL & 20' FEL, Unit P
Sec 2, T17S, R31E
BHL: 330' FSL & 330' FEL, Unit P
Sec 1, T17S, R31E
Eddy County, NM

1. Proration Unit Spacing: 160 Acres

2. Ground Elevation: 3989'

3. Proposed Depths: Horizontal **KOP: (Kick off Point) TVD=4979' MD=4979':**
EOC (end of curve) TVD=5525' MD=5806'
Toe (end of lateral) TVD=5447' MD=10123'

4. Estimated tops or geological markers:

Fresh Water	200'
Rustler	690'
Top of Salt	870'
BOS/Top of Tansill	1865'
Yates	2020'
Seven Rivers	2965'
Queen	2970'
Grayburg	3390'
San Andres	3690'
Glorieta	5205'
Paddock	5285'
Blinebry	5680'
Tubb	6595'

5. Possible mineral bearing formations:

Yates	2020'	Oil/Gas
Seven Rivers	2965'	Oil/Gas
Queen	2970'	Oil/Gas
Grayburg	3390'	Oil/Gas
San Andres	3690'	Oil/Gas
Glorieta	5205'	Oil/Gas
Paddock	5285'	Oil/Gas
Blinebry	5680'	Oil/Gas
Tubb	6595'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to ~~715'~~ 775' (25' into Rustler) and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be isolated by setting 9 5/8" casing at ~~1940~~ 2075' (20' into Tansill) and circulating cement back to surface in a single or multi-stage job. Multi-stage job will consist of installing 9 5/8" DV Tool and possibly ECP 50' below 13 3/8" casing shoe. Any shallower zones above TD which contain commercial quantities of oil and/or gas, will have cement circulated across them as described in the following paragraph.

A 8 ¾" open hole will be drilled from 9 5/8" casing shoe to KOP,and thru curve. At end of curve (EOC) the open hole will be reduced to 7 7/8" and drilled to TD. A 5 ½" casing string will be run from surface to TD. The 5 ½" casing string will be cemented from the TD to surface in single or multi-stage jobs. The multi-stage job will consist of two stages with DV Tool and possibly ECP set at KOP. First stage will be from TD to KOP and second stage will be from KOP to surface. If wellbore conditions arise that require immediate action and/or a change to this program, COG Operating LLC personnel will always react to protect the wellbore and/or environment. See COA

See COA

6. Proposed Mud System

The well will be drilled to TD with a combination of fresh water, brine, cut brine mud systems. The applicable depths and properties of these systems are as follows:

DEPTH (MD)	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-715' 775'	Fresh Water	8.3-8.5	28-40	N.C.
715'-1940' 2075'	Brine	9.8-10.1	28-32	N.C.
1940'-4979'	FW/Cut Brine	8.3-9.2	28-32	N.C.
4979'-5806' Curve	Cut Brine	8.5-9.2	28-32	N.C.
5806'-10123' Lateral	Cut Brine	8.5-9.2	28-32	N.C.

Sufficient mud materials will be kept at the well site to maintain mud properties and meet minimum lost circulation and weight increase requirements at all times.

Visual or electronic mud monitoring equipment shall be in place to detect volume changes indicating loss or gain of circulating fluid volume.

The mud program has been designed to minimize the volume of H_2S circulated to surface. Proper mud weights, safe drilling practices and the use of H_2S scavengers will minimize hazards when penetrating H_2S bearing zones.

See COA

6. Proposed Casing Program

Hole Size	Interval MD	OD Casing	Weight	Grade	Condition	Jt.	brst/clps/ten
17 ½"	0-715' 775'	13 3/8" 0-715'	48#	H-40/J-55 Hybrid	New	ST&C	2.42/2.44/10.78
12 ¼"	715'-1940' 2075'	9 5/8" 0-1940'	40#	J/K-55	New	LT&C	2.14/2.61/8.12
8 ¾"	1940'-5806'	5 1/2" 0-5806'	17#	P110	New	LT&C	1.33/2.82/5.51
7 7/8"	5806'-10123'	5806'-10123'	17#	P110	New	LT&C	1.33/2.82/5.51

7. Proposed Cement Program

13 3/8" SURFACE: (Circulate to Surface)

		Description	Yield	Density	Water Requirements
Lead: 0'-400' Excess 168%	425 sks	Class "C" w/4% gel + 2% CaCl2 + 0.25 pps CF	1.75 cf/sk	13.5 ppg	9.2 gal/sk.
Tail: 400'-715' Excess 56%	300 sks	Class C w/2% CaCl2 + 0.25 pps CF	1.32 cf/sk	14.8 ppg	6.3 gal/sk.

Combined Excess 114%

9 5/8" INTERMEDIATE:

Option #1: Single Stage (Circulate to Surface)

Lead: 0'-1500' Excess 90%	400 sks	50:50:10 C:Poz:Gel+ 5% Salt+ 0.25% CF+ 5 pps LCM	2.45 cf/sk	11.8 ppg	14.4 gal/sk.
Tail: 1500'-1940' Excess 71%	200 sks	Class C w/2% CaCl2	1.32 cf/sk	14.8 ppg	6.3 gal/sk.

Combined Excess 86%

See COA

Option #2: Multi-stage w/ DV Tool @ +/-765 (DV Tool 50' below 13 3/8" csg. Shoe) (Circulate to Surface)

Stage #1:

Lead: 765'-1500' Excess 86%	175 sks	50:50:10 C:Poz:Gel w/5% Salt+0.25% CF+5 pps LCM	2.45 cf/sk	11.8 ppg	14.4 gal/sk.
Tail: 1500'-1940' Excess 90%	200 sks	Class "C" w/2% CaCl2	1.32 cf/sk	14.8 ppg	6.3 gal/sk.

		Description	Yield	Density	Water Requirements
Stage #2					
0'-765'	200 sks	50:50:10 C:Poz:Gel +5 % salt+ 0.25% CF + 5 pps LCM	2.45 cf/sk	11.8 ppg	14.4 gal/sk.
Excess 72%					

Combined Excess Stage#1 & Stage #2 81%

Note: Multi-stage tool to be set depending on hole conditions at approximately 765' (50' below the surface casing shoe). Cement volumes will be adjusted proportionately for depth changes of multi-stage tool.

5 ½" PRODUCTION CASING:

Option #1: Single Stage (Cement cal to Surface)

1st Lead:					
0'-3000' (Minimum tie-back 200' above 9 5/8"shoe) Excess 43%	550 sks	35:65:6 C:Poz Gel w/5% salt+ 5 pps LCM+ 0.2 % SMS+ 0.3% FL-52A+ 0.125 pps CF+1 % BA-58+ 1% FL-25	2.01 cf/sk	12.5 ppg	11.4 gal/sk
2nd Lead:					
3000'-4979' Excess 37%	500 sks	50:50:2 C:Poz Gel w/5% salt+ 3 pps LCM+ 0.6 % SMS+ 0.3% FL-52A+ 0.125 pps CF+1% FL-25+ 1% BA-58	1.37 cf/sk	14.0 ppg	14.4 gal/sk
3rd Lead:					
4979'-5255' Excess 97%	100 sks	50:50:2 C:Poz Gelw/5% salt+3 pps LCM+ 0.6% SMS+0.3% FL-52A+ 0.125 pps CF+ 1% FL-25+ 1% BA-58	1.37 cf/sk	14.0 ppg	14.4 gal/sk
**5255'-10123' Excess -1%	320 sks	Class "H" SOLUCEM-H W/0.7% HR-601	2.62 cf/sk	15.0 ppg	11.2 gal/sk

** Note: Top of Glorieta 5205' TVD
Top of ASC is 50' below Top of Glorieta

Combined Lead & Tail Excess 26%

Option #2:Multi-stage

Stage #1: TD to KOP w/DV Tool and/or ECP @ +/-4979'

		Description	Yield	Density	Water Requirements
1st Lead:					
4979'-5255' Excess 97%	100 sks	50:50:2 C:Poz Gel w/5% salt+ 3 pps LCM+ 0.6 % SMS+ 0.3% FL-52A+ 0.125 pps CF+1% FL-25+ 1% BA-58	1.37 cf/sk	14.0 ppg	11.4 gal/sk.
Tail:					
5255'-10123' Excess -1%	320 sks	Class "H" SOLUCEM-H W/0.7% HR-601	2.62 cf/sk	15.0 ppg	11.2 gal/sk.

Stage #2:
Cement Cal to surface
DV Tool and/or ECP @ +/- 4979'

Lead:					
0'-3000' Excess 56%	600 sks	35:65:2 C:Poz Gel w/5% salt+ 5 pps LCM+ 0.2 % SMS+ 0.3% FL-52A+ 0.125 pps CF+1% BA-58+ 1% FL-25	2.01 cf/sk	12.5 ppg	11.4 gal/sk.
Tail: 3000'-4979' Excess 10%	400 sks	50:50:2 C:Poz Gel w/5% salt+ 3 pps LCM+ 0.6 % SMS+ 0.3% FL-52A+ 0.125 pps CF+1% FL-25+ 1% BA-58	1.37 cf/sk	14.0 ppg	11.4 gal/sk.

Combined Excess 71%

Pressure Control Equipment:

See COA

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a 13 5/8" double ram-type (2000 psi WP) preventer, and in some cases possibly a 13 5/8' 2000 psi Hydril type annular preventer as provided for in Onshore Order #2. These units will be hydraulically operated and the ram type preventer will be equipped with blind rams on top and 4 1/2" drill pipe rams on the bottom. A 13 5/8" 2M x 13 3/8" 2M SOW permanent casing head will be installed on the 13 3/8" casing. The BOP will be nipped up on the 13 5/8" permanent casing head and tested by independent tester. Test plug will be used and BOP tested to 250 psig/300 psig low pressure and 2000 psig high pressure for 10 minutes. After setting 9-5/8", a permanent "B section" well head 13 5/8" 2000 psi X 13 5/8" 3000 psig will be installed and the BOP will then be nipped up on the permanent B section. BOP and well head will be tested by again by a third party. Test plug will be used and BOP tested to 250 psig/300 psig low pressure and 2000 psig high pressure for 10 minutes. BOP stack will be used continuously until total depth is reached. 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. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve, choke lines and a choke manifold with a 2000 psi WP rating all of which will also be tested to 250 psig/300 psig low and 2000 psig high pressure by independent tester also. Any time a component of the BOP stack or choke manifold is changed or installed BOPE will be re-tested as required.

All casing strings below the conductor shall be pressure tested to 0.22 psi per foot of casing string depth or 1500 psig, whichever is greater, but not to exceed 70 percent of casing's minimum internal yield. If pressure declines more than 10 percent in 30 minutes, corrective action will be taken.

9. Production Hole Drilling Summary:

Drill 8 3/4" hole to 4979'. Kick off at +/- 4979', building curve at 11°/100' to 91° inclination, Az 97.43 ° at 5806' MD/ 5500' TVD . AT 5806' reduce hole to 7 7/8". Continue this azmith and inclination for +/-5144' lateral to TD at +/-10123' MD, 5424' TVD. 5½" casing will be run from surface thru kickoff point thru curve and lateral to TD. 5 ½" casing string will be cemented in single stage. Cement volumes will be calculated to surface. Minimum tie-back is 200' above 9 5/8" casing shoe.

10. Auxiliary Well Control and Monitoring Equipment

A. Kelly cock will be kept in the drill string at all times.

B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

11. Logging, Testing and Coring Program:

A. The following logs will be run in the vertical portion of the hole to KOP: SLB-PEX/HRLA,HNGS.

B. The mud logging program will consist of lagged 10' samples from KOP to TD in Horizontal hole

C. Drill Stem test is not anticipated.

D. No conventional coring is anticipated.

E. Further testing procedures will be determined after the 5 ½" production casing has been cemented at TD based on drill shows and log evaluation.

12. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:

SEE COA

No abnormal pressures or temperatures are anticipated. The estimated bottom hole temperature at TD is 93° Fahrenheit and estimated maximum bottom hole pressure is 2392 psi. Wells in the Fren area will penetrate formations that are known or could reasonably be expected to contain hydrogen sulfide. Measurable gas volumes or hydrogen sulfide levels have not been encountered during drilling operations in this area; however, a H2S drilling operations plan is included with this APD. If H2S concentrations exceed 100 ppm the well will be shut-in and a remote operated choke will be installed (see diagram #8 & #9) and COG will comply with the specifics of Onshore Order #6. All BOPE testing companies used by COG have H2S certified employees and will work on H2S locations. No major loss circulation zones have been reported in offsetting wells.

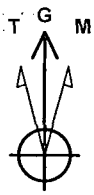
13. Anticipated Starting Date

Drilling operations will commence approximately on **May 24, 2014** with drilling and completion operations lasting approximately ***90*** days.

GEG/12.01.13

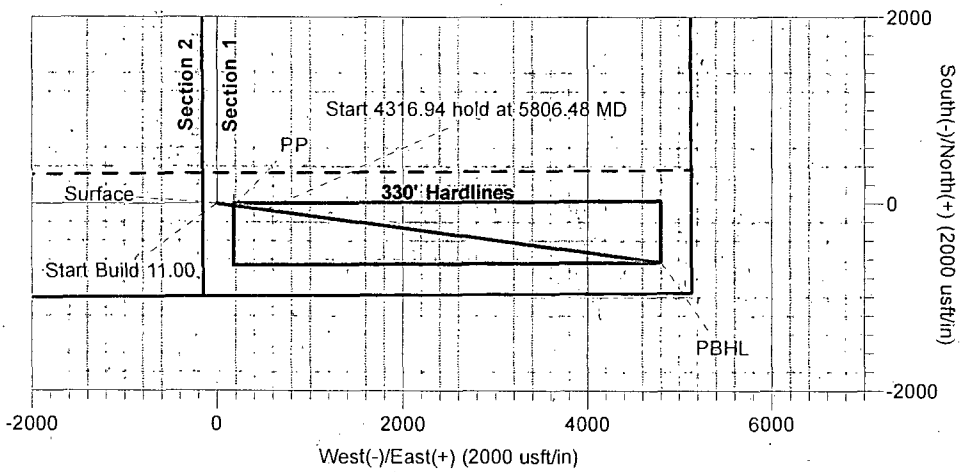
COG OPERATING, LLC

Field: Eddy County, NM
Site: Shiner Bock 1 Federal Com 8H
Well: 8H
Wellbore: Lateral
Plan: Plan #4



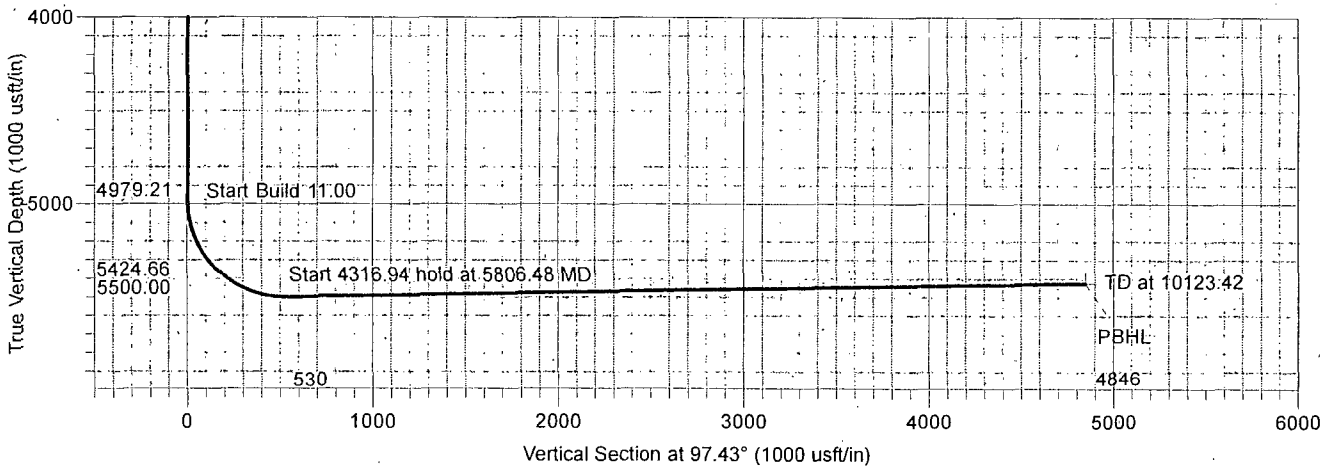
Azimuths to Grid North
True North: -0.27°
Magnetic North: 7.16°

Magnetic Field
Strength: 48734.2snT
Dip Angle: 60.66°
Date: 1/23/2014
Model: IGRF2010



Section Distances

Sec1,T17S,R31E
SHL - Unit M
989.7'FSL, 149.9'FWL
PP
965.0'FSL, 330.0'FWL
PBHL - Unit P
329.9'FSL, 329.9'FEL



TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
8H PP	0.00	-23.49	180.22	676571.01	654516.02	32° 51' 32.28 N	103° 49' 48.51 W	Point
8H Surface	0.00	0.00	0.00	676594.50	654335.80	32° 51' 32.52 N	103° 49' 50.62 W	Point
8H PBHL	5424.66	-626.30	4805.60	675968.20	659141.40	32° 51' 26.09 N	103° 48' 54.32 W	Point

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	4979.21	0.00	0.00	4979.21	0.00	0.00	0.00	0.00	0.00	
3	5806.48	91.00	97.43	5500.00	-68.49	525.52	11.00	97.43	529.96	
4	10123.42	91.00	97.43	5424.66	-626.30	4805.60	0.00	0.00	4846.24	8H PBHL

Archer

ARCHER DIRECTIONAL DRILLING SERVICES
12101 Cutten Rd. Houston, Texas 77066
Phone: 281-301-2600 Fax: 281-301-2795

Design: Plan #4 (8H/Lateral)
Created By: Ivonne Gonzalez
Date: 9:08, January 23 2014

COG OPERATING, LLC

Eddy County, NM
Shiner Bock 1 Federal Com 8H
8H

Lateral

Plan: Plan #4

Standard Planning Report

23 January, 2014

Section Distances

Sec1,T17S,R31E

SHL - Unit M
989.7'FSL, 149.9'FWL
PP
965.0'FSL, 330.0'FWL
PBHL - Unit P
329.9'FSL, 329.9'FEL

Database:	EDM R5000.1 MULTI	Local Co-ordinate Reference:	Well 8H
Company:	COG OPERATING, LLC	TVD Reference:	WELL @ 0.00usft (Original Well Elev)
Project:	Eddy County, NM	MD Reference:	WELL @ 0.00usft (Original Well Elev)
Site:	Shiner Bock 1 Federal Com 8H	North Reference:	Grid
Well:	8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #4		

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 Shiner Bock 1 Federal Com 8H

Site Position:		Northing:	676,594.50 usft	Latitude:	32° 51' 32.52 N
From:	Map	Easting:	654,335.80 usft	Longitude:	103° 49' 50.62 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.27 °

Well 8H

Well Position	+N/-S	0.00 usft	Northing:	676,594.50 usft	Latitude:	32° 51' 32.52 N
	+E/-W	0.00 usft	Easting:	654,335.80 usft	Longitude:	103° 49' 50.62 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	0.00 usft

Wellbore Lateral

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/23/2014	7.43	60.66	48,734

Design Plan #4

Audit Notes:	p4 for SL				
Version:		Phase:	PROTOTYPE	Tie On Depth:	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	97.43

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,979.21	0.00	0.00	4,979.21	0.00	0.00	0.00	0.00	0.00	0.00	
5,806.48	91.00	97.43	5,500.00	-68.49	525.52	11.00	11.00	0.00	97.43	
10,123.42	91.00	97.43	5,424.66	-626.30	4,805.60	0.00	0.00	0.00	0.00	8H PBHL

Database:	EDM R5000.1 MULTI	**Local Co-ordinate Reference:**	Well 8H
Company:	COG OPERATING, LLC	**TVD Reference:**	WELL @ 0.00usft (Original Well Elev)
Project:	Eddy County, NM	**MD Reference:**	WELL @ 0.00usft (Original Well Elev)
Site:	Shiner Bock 1 Federal Com 8H	**North Reference:**	Grid
Well:	8H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #4		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,979.21	0.00	0.00	4,979.21	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 11.00									
5,000.00	2.29	97.43	4,999.99	-0.05	0.41	0.41	11.00	11.00	0.00
5,050.00	7.79	97.43	5,049.78	-0.62	4.76	4.80	11.00	11.00	0.00

Database:	EDM R5000.1 MULTI	Local Co-ordinate Reference:	Well 8H
Company:	COG OPERATING, LLC	TVD Reference:	WELL @ 0.00usft (Original Well Elev)
Project:	Eddy County, NM	MD Reference:	WELL @ 0.00usft (Original Well Elev)
Site:	Shiner Bock 1 Federal Com 8H	North Reference:	Grid
Well:	8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #4		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,100.00	13.29	97.43	5,098.92	-1.80	13.83	13.94	11.00	11.00	0.00
5,150.00	18.79	97.43	5,146.96	-3.59	27.52	27.75	11.00	11.00	0.00
5,200.00	24.29	97.43	5,193.45	-5.96	45.71	46.10	11.00	11.00	0.00
5,250.00	29.79	97.43	5,237.97	-8.89	68.24	68.82	11.00	11.00	0.00
5,300.00	35.29	97.43	5,280.10	-12.37	94.90	95.70	11.00	11.00	0.00
5,350.00	40.79	97.43	5,319.47	-16.35	125.44	126.50	11.00	11.00	0.00
5,400.00	46.29	97.43	5,355.70	-20.80	159.58	160.92	11.00	11.00	0.00
5,450.00	51.79	97.43	5,388.47	-25.67	197.00	198.67	11.00	11.00	0.00
5,500.00	57.29	97.43	5,417.46	-30.94	237.37	239.38	11.00	11.00	0.00
5,550.00	62.79	97.43	5,442.43	-36.53	280.31	282.68	11.00	11.00	0.00
5,600.00	68.29	97.43	5,463.12	-42.41	325.42	328.17	11.00	11.00	0.00
5,650.00	73.79	97.43	5,479.37	-48.52	372.29	375.44	11.00	11.00	0.00
5,700.00	79.29	97.43	5,491.00	-54.80	420.49	424.05	11.00	11.00	0.00
5,750.00	84.79	97.43	5,497.93	-61.20	469.57	473.54	11.00	11.00	0.00
5,800.00	90.29	97.43	5,500.07	-67.65	519.09	523.48	11.00	11.00	0.00
5,806.48	91.00	97.43	5,500.00	-68.49	525.52	529.96	11.00	11.00	0.00
Start 4316.94 hold at 5806.48 MD									
5,900.00	91.00	97.43	5,498.37	-80.57	618.24	623.46	0.00	0.00	0.00
6,000.00	91.00	97.43	5,496.62	-93.49	717.38	723.45	0.00	0.00	0.00
6,100.00	91.00	97.43	5,494.88	-106.42	816.53	823.43	0.00	0.00	0.00
6,200.00	91.00	97.43	5,493.13	-119.34	915.68	923.42	0.00	0.00	0.00
6,300.00	91.00	97.43	5,491.39	-132.26	1,014.82	1,023.40	0.00	0.00	0.00
6,400.00	91.00	97.43	5,489.64	-145.18	1,113.97	1,123.39	0.00	0.00	0.00
6,500.00	91.00	97.43	5,487.90	-158.10	1,213.11	1,223.37	0.00	0.00	0.00
6,600.00	91.00	97.43	5,486.15	-171.02	1,312.26	1,323.36	0.00	0.00	0.00
6,700.00	91.00	97.43	5,484.41	-183.94	1,411.41	1,423.34	0.00	0.00	0.00
6,800.00	91.00	97.43	5,482.66	-196.87	1,510.55	1,523.33	0.00	0.00	0.00
6,900.00	91.00	97.43	5,480.92	-209.79	1,609.70	1,623.31	0.00	0.00	0.00
7,000.00	91.00	97.43	5,479.17	-222.71	1,708.85	1,723.30	0.00	0.00	0.00
7,100.00	91.00	97.43	5,477.43	-235.63	1,807.99	1,823.28	0.00	0.00	0.00
7,200.00	91.00	97.43	5,475.68	-248.55	1,907.14	1,923.27	0.00	0.00	0.00
7,300.00	91.00	97.43	5,473.94	-261.47	2,006.28	2,023.25	0.00	0.00	0.00
7,400.00	91.00	97.43	5,472.19	-274.39	2,105.43	2,123.24	0.00	0.00	0.00
7,500.00	91.00	97.43	5,470.45	-287.32	2,204.58	2,223.22	0.00	0.00	0.00
7,600.00	91.00	97.43	5,468.70	-300.24	2,303.72	2,323.21	0.00	0.00	0.00
7,700.00	91.00	97.43	5,466.95	-313.16	2,402.87	2,423.19	0.00	0.00	0.00
7,800.00	91.00	97.43	5,465.21	-326.08	2,502.02	2,523.18	0.00	0.00	0.00
7,900.00	91.00	97.43	5,463.46	-339.00	2,601.16	2,623.16	0.00	0.00	0.00
8,000.00	91.00	97.43	5,461.72	-351.92	2,700.31	2,723.14	0.00	0.00	0.00
8,100.00	91.00	97.43	5,459.97	-364.84	2,799.46	2,823.13	0.00	0.00	0.00
8,200.00	91.00	97.43	5,458.23	-377.77	2,898.60	2,923.11	0.00	0.00	0.00
8,300.00	91.00	97.43	5,456.48	-390.69	2,997.75	3,023.10	0.00	0.00	0.00
8,400.00	91.00	97.43	5,454.74	-403.61	3,096.89	3,123.08	0.00	0.00	0.00
8,500.00	91.00	97.43	5,452.99	-416.53	3,196.04	3,223.07	0.00	0.00	0.00
8,600.00	91.00	97.43	5,451.25	-429.45	3,295.19	3,323.05	0.00	0.00	0.00
8,700.00	91.00	97.43	5,449.50	-442.37	3,394.33	3,423.04	0.00	0.00	0.00
8,800.00	91.00	97.43	5,447.76	-455.30	3,493.48	3,523.02	0.00	0.00	0.00
8,900.00	91.00	97.43	5,446.01	-468.22	3,592.63	3,623.01	0.00	0.00	0.00
9,000.00	91.00	97.43	5,444.27	-481.14	3,691.77	3,722.99	0.00	0.00	0.00
9,100.00	91.00	97.43	5,442.52	-494.06	3,790.92	3,822.98	0.00	0.00	0.00
9,200.00	91.00	97.43	5,440.78	-506.98	3,890.06	3,922.96	0.00	0.00	0.00
9,300.00	91.00	97.43	5,439.03	-519.90	3,989.21	4,022.95	0.00	0.00	0.00
9,400.00	91.00	97.43	5,437.29	-532.82	4,088.36	4,122.93	0.00	0.00	0.00

Database:	EDM R5000.1 MULTI	Local Co-ordinate Reference:	Well 8H
Company:	COG OPERATING, LLC	TVD Reference:	WELL @ 0.00usft (Original Well Elev)
Project:	Eddy County, NM	MD Reference:	WELL @ 0.00usft (Original Well Elev)
Site:	Shiner Bock 1 Federal Com 8H	North Reference:	Grid
Well:	8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #4		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,500.00	91.00	97.43	5,435.54	-545.75	4,187.50	4,222.92	0.00	0.00	0.00
9,600.00	91.00	97.43	5,433.80	-558.67	4,286.65	4,322.90	0.00	0.00	0.00
9,700.00	91.00	97.43	5,432.05	-571.59	4,385.80	4,422.89	0.00	0.00	0.00
9,800.00	91.00	97.43	5,430.30	-584.51	4,484.94	4,522.87	0.00	0.00	0.00
9,900.00	91.00	97.43	5,428.56	-597.43	4,584.09	4,622.86	0.00	0.00	0.00
10,000.00	91.00	97.43	5,426.81	-610.35	4,683.24	4,722.84	0.00	0.00	0.00
10,100.00	91.00	97.43	5,425.07	-623.27	4,782.38	4,822.83	0.00	0.00	0.00
10,123.42	91.00	97.43	5,424.66	-626.30	4,805.60	4,846.24	0.00	0.00	0.00
TD at 10123.42									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
8H Surface - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	676,594.50	654,335.80	32° 51' 32.52 N	103° 49' 50.62 W
8H PP - plan misses target center by 181.74usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Point	0.00	0.00	0.00	-23.49	180.22	676,571.01	654,516.02	32° 51' 32.28 N	103° 49' 48.51 W
8H PBHL - plan hits target center - Point	0.00	0.00	5,424.66	-626.30	4,805.60	675,968.20	659,141.40	32° 51' 26.09 N	103° 48' 54.32 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
4,979.21	4,979.21	0.00	0.00	Start Build 11.00
5,806.48	5,500.00	-68.49	525.52	Start 4316.94 hold at 5806.48 MD
10,123.42	5,424.66	-626.30	4,805.60	TD at 10123.42

COG Operating LLC respectfully requests permission to change the production string as follows: Drill 8 ¾" hole and kick off at +/-4979', building curve at 11 degrees/100' over +/- 828' to 91 degree inclination at 5806'MD/5500'TVD AZ 97.43 degrees. Reduce hole size to 7 7/8", continue lateral at 91 degrees inclination and 97.43 degree AZ for 5144' to TD of 10123' MD/ 5425' TVD. Run 5 ½" production casing. 5 ½" will be run from surface to TD and will be isolated with a single stage cement job. Cement will be calculated to surface (minimum tie-back is 200' into 9 5/8" intermediate). Attached is the revised directional plan.

taking 7" out
need drlg plan
now. cement will
have to change etc. etc.
e-mail Robin.
3/27/14

APD Extension

CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating, LLC
LEASE NO.:	NMLC31844
WELL NAME & NO.:	Shiner Bock 1 Federal Com #8H
SURFACE HOLE FOOTAGE:	990' FSL & 150' FWL
BOTTOM HOLE FOOTAGE	330' FSL & 330' FEL
LOCATION:	Section 1, T. 17 S., R 31 E., NMPM
COUNTY:	Eddy County, New Mexico

The Pecos District Conditions of Approval (COA) that were approved with the APD on 01/27/2014 apply to this sundry notice to relocate the well location received on 03/26/2014. The following conditions amend and apply to the sundry notice as well.

☒ **Special Requirements**

Lesser Prairie-Chicken Timing Stipulations
Ground-level Abandoned Well Marker

I. SPECIAL REQUIREMENT(S)

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

The following Conservation Measures are to be accomplished in addition to those described in the CCA and Pecos District Special Status Species Resource Management Plan Amendment (RMPA):

1. To the extent determined by the BLM representative at the Plan of Development stage, all infrastructures supporting the development of a well (including roads, power lines, and pipelines) will be constructed within the same corridor.

2. On enrolled parcels that contain inactive wells, roads and/or facilities that are not reclaimed to current standards, the Participating Cooperator shall remediate and reclaim their facilities within three years of executing this CP, unless the Cooperator can demonstrate they will put the facilities back to beneficial use for the enrolled parcel(s). If an extension is requested by the Cooperator, they shall submit a detailed plan (including dates) and receive BLM approval prior to the three year deadline. All remediation and reclamation shall be performed in accordance with BLM requirements and be approved in advance by the Authorized Officer.

3. Utilize alternative techniques to minimize new surface disturbance when required and as determined by the BLM representative at the Plan of Development stage.

4. Install fence markings along fences owned, controlled, or constructed by the Participating Cooperator that cross through occupied habitat within two miles of an active LPC lek.

5. Bury new powerlines that are within two (2) miles of LPC lek sites active at least once within the past five years (measured from the lek). The avoidance distance is subject to change based on new information received from peer reviewed science.

6. Bury new powerlines that are within one (1) mile of historic LPC lek sites where at least one LPC has been observed within the past three years (measured from the historic lek). The avoidance distance is subject to change based on new information received from peer reviewed science.

7. Management recommendations may be developed based on new information received from peer reviewed science to mitigate impacts from H2S and/or the accumulation of sulfates in the soil related to production of gas containing H2S on the LPC. Such management recommendations will be applied by the Participating Cooperator as Conservation Measures under this CI/CP in suitable and occupied SDL/LPC habitat where peer-reviewed science has shown that H2S levels threaten the LPC.

APD Extention

CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**COG Operating, LLC**
LEASE NO.:	**NMLC-031844**
WELL NAME & NO.:	**Shiner Bock 1 Federal Com 8H**
SURFACE HOLE FOOTAGE:	**0990' FSL & 0150' FWL**
BOTTOM HOLE FOOTAGE	**0330' FSL & 0330' FEL**
LOCATION:	**Section 01, T. 17 S., R 31 E., NMPM**
COUNTY:	**Eddy County, New Mexico**

I. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Grayburg** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Possibility for water flows in the Red Beds, Artesia Group, and Salado.
Possible lost circulation in the Red beds, Rustler, Artesia Group, San Andres, and Grayburg.

1. The **13-3/8** inch surface casing shall be set at approximately **775** feet (**in a competent bed <u>below the Magenta Dolomite</u>, which is a <u>Member of the Rustler</u>, and if salt is encountered, set casing at least 25 feet above the salt**) and cemented to the surface. **<u>Fresh water mud to be used to setting depth.</u>**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

Cement Option #1:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Cement Option #2:

Operator has proposed DV tool at depth of 765', but with the change in casing depth this is no longer acceptable. DV tool shall be at least 50' below previous casing shoe. Operator shall adjust cement proportionately according to the depth change.

a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

Cement Option #1:

☒ Cement to surface. Operator shall provide method of verification. **Excess calculates to 23% - Additional cement may be required.**

Cement Option #2:

Operator has proposed DV tool at depth of 4979', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage. **Excess calculates to negative 11% - Additional cement will be required.**

b. Second stage above DV tool:

☒ Cement to surface. Operator shall provide method of verification.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. **In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

   a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

   b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

   c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

   d. The results of the test shall be reported to the appropriate BLM office.

   e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

   f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

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