

11-509

OCD Artesia

Form 3160-3
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No. 1004-0137
Expires March 31, 2007

5 Lease Serial No.
SHL:LC028784B BHL:LC028793C

6 If Indian, Allottee or Tribe Name
N/A

1a. Type of work ☒ DRILL ☐ REENTER

7 If Unit or CA Agreement, Name and No
NMNM - 88525X; Burch Keely Unit [30806]

1b. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone

8 Lease Name and Well No.
BURCH KEELY UNIT #814H

2 Name of Operator
COG Operating LLC

9 API Well No.
30-015- 39573

3a. Address 550 W. Texas Ave., Suite 1300
Midland, TX 79701

3b. Phone No. (include area code)
432-685-4384 [229137]

10 Field and Pool, or Exploratory
Grayburg Jackson; SR-Q-Grbg-SA [2809]

4. Location of Well (Report location clearly and in accordance with any State requirements *)

At surface 1152' FNL & 497' FWL, Unit D, Lot 1

At proposed prod zone 990' FNL & 330' FEL, Unit A

11 Sec, T R M or Blk and Survey or Area

Sec 18 T17S R30E

14 Distance in miles and direction from nearest town or post office*

2 miles from Loco Hills, NM

12 County or Parish

EDDY

13. State

NM

15 Distance from proposed*
location to nearest
property or lease line, ft
(Also to nearest drig unit line, if any) 420'

16 No. of acres in lease

SL:1264.52 BL:1115.22

17 Spacing Unit dedicated to this well

160

18 Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft 50'

19 Proposed Depth
TVD: 4850' MD: 9015'

20 BLM/BIA Bond No on file
NMB000740; NMB000215

21 Elevations (Show whether DF, KDB, RT, GL, etc)
3642' GL

22 Approximate date work will start*
09/30/2011

23 Estimated duration
15 days

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

2 A Drilling Plan

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)

4 Bond to cover the operations unless covered by an existing bond on file (see
Item 20 above)

5. Operator certification

6 Such other site specific information and/or plans as may be required by the
authorized officer

25. Signature

[Signature]

Name (Printed/Typed)

Kelly J. Holly

Date

07/08/2011

Title

Permitting Tech

Approved by (Signature)

/s/ Don Peterson

Name (Printed/Typed)

Date

OCT 26 2011

Title

FIELD MANAGER

Office

CARLSBAD FIELD OFFICE

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 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.

*(Instructions on page 2)

Approval Subject to General Requirements
& Special Stipulations Attached

Roswell Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240

DISTRICT II
1301 W. GRAND AVENUE, ARTESIA, NM 88210

DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410

DISTRICT IV
11885 S. ST. FRANCIS DR., SANTA FE, NM 87505

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

Form C-102
Revised July 16, 2010
Submit to Appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015- 39573	Pool Code 28509	Pool Name GRAYBURG JACKSON; SR-Q-G-SA
Property Code 308086	Property Name BURCH KEELY UNIT	Well Number 814H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3639'

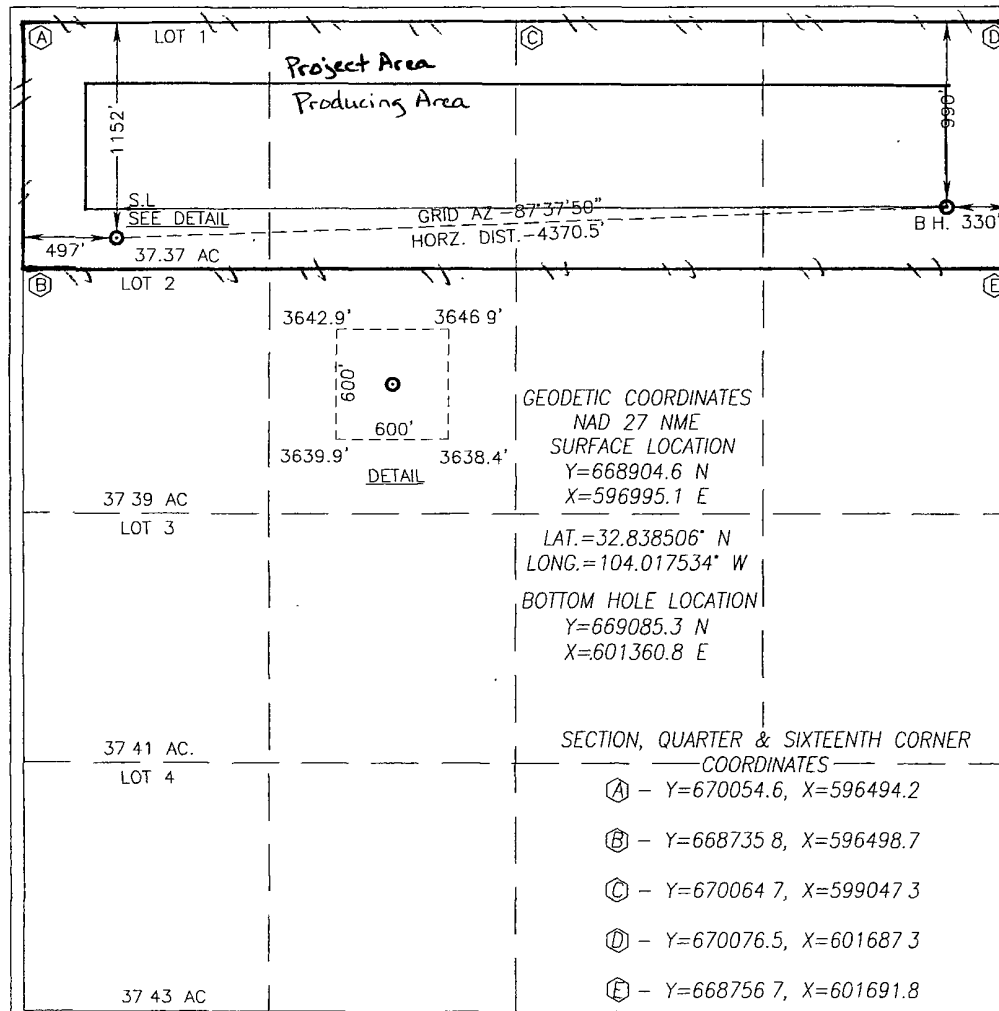
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
1	18	17-S	30-E		1152	NORTH	497	WEST	EDDY

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
A	18	17-S	30-E		990	NORTH	330	EAST	EDDY
Dedicated Acres 160	Joint or Infill	Consolidation Code	Order No.						

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



OPERATOR CERTIFICATION

I hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Robyn Odom 8/19/2011
Signature Date

Robyn Odom

Printed Name

Rodom@concho.com

E-mail Address

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.

JULY 13, 2011

Date of Survey

Signature & Seal of Professional Surveyor:

Ronald J. Eidson 7/28/2011
Certificate Number 3239
Gary G. Eidson 12641
Ronald J. Eidson 3239
LA WSC WO 11 11 1487

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
Burch Keely Unit Federal #814H
SHL: 1152' FNL & 497' FWL, Unit 1
BHL: 990' FNL & 330' FEL, Unit A
Sec 18, T17S, R30E
Eddy County, NM

1. Proration Unit Spacing: 160 Acres
2. Ground Elevation: 3639'
3. Proposed Depths: Horizontal TVD = 4,850', MD = 9,015'
4. Estimated tops of geological markers:

Quaternary	Surface
Rustler	284'
Top of Salt	500'
Base of Salt	1000'
Yates	1250'
Seven Rivers	1475'
Queen	2150'
Grayburg	2550'
San Andres	2875'
Glorieta	4300'
Paddock	4400'
Blaine	4800'
Tubb	5900'

5. Possible mineral bearing formations:

Water Sand	150'	Fresh Water
Grayburg	2550'	Oil/Gas
San Andres	2875'	Oil/Gas
Glorieta	4300'	Oil/Gas
Paddock	4400'	Oil/Gas
Blaine	4800'	Oil/Gas
Tubb	5900'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 450' and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be protected by setting 9 5/8" casing to 1350' and circulating cement, in a single or multi-stage job and/or with an ECP, back to the surface. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them. This will be achieved by cementing, with a single or multi-stage job, the 5 1/2" production casing back 200' into the intermediate casing (although cement volume is actually calculated to surface), to be run at TD. 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

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
Burch Keely Unit Federal #814H
Page 2 of 4

6. Casing Program - Proposed

	<u>Hole size</u>	<u>Interval</u>	<u>OD of Casing</u>	<u>Weight</u>	<u>Cond.</u>	<u>Collar</u>	<u>Grade</u>
See COA	17-1/2"	0' - +/- 450' ³¹⁰	13-3/8"	48#	New	STC	H-40 or J/K-55
	Collapse sf - 3.87, Burst sf - 8.70, Tension sf - 14.91						
	12-1/4"	0' - +/- 1350' ¹¹⁷⁰	9-5/8"	36#	New	STC	J/K-55
	Collapse sf - 2.88, Burst sf - 5.01, Tension sf - 8.11						
	8-3/4"	0' - 9015'	5-1/2"	17#	New	LTC	L-80
	Collapse sf - 2.74, Burst sf - 3.37, Tension sf - 4.22						

7. Cement Program

13 3/8" Surface Csg: Set at +/- 450'MD, Lead Slurry: 450sx Class "C" w/ 2% CaCl₂ & .25 pps CF, 1.32 yield. 90% excess, calculated to surface.

9 5/8" Intrmd. Csg: Set at +/- 1350'MD. **Single Stage:** Lead Slurry: 300 sx 50:50:10:C:Poz:Gel w/ 5% salt, 5 pps LCM-1 .25 pps CF, 2.45 yield. Tail Slurry: 200 sx Class "C" w/ 2% CaCl₂, 1.32 yield. 194% excess, calculated to surface.

See
COA **Multi Stage:** **Stage 1:** 200 sx Class "C" w/ 2% CaCl₂, 1.32 yield. 194% excess. **Stage 2:** 300 sx 50:50:10:C:Poz:Gel w/ 5% salt, 5 pps LCM-1 .25 pps CF, 2.45 yield, back to surface, 176% excess; assumption for tool is lost circulation. Multi stage tool to be set at approximately, depending on hole conditions, 500' (50' below the surface casing). Cement volumes will be adjusted proportionately for depth changes of multi stage tool.

5 1/2" Production Csg: Set at +/- 9,015'MD. **Single Stage:** Lead Slurry: 500 sx 35:65:6:C:Poz:Gel w/ 5% salt, 5 pps LCM, .2% SMS, .3% FL-52A, .125 pps CF, 2.01 yd. Inter. Slurry: 400 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, .6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, .3% FL-52A; 1.37 yield Tail Slurry: 450 sx Class "H" SOLUCEM-H w/ .7% HR-601, 2.62 yield 22% excess in open hole, calculated to surface. **This is a minimum volume and will be adjusted up after caliper is run.**

See
COA **Multi Stage:** **Stage 1:** (Assumed TD of 9015'MD to DV at 2900') Lead Slurry: 400 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, .6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, .3% FL-52A; 1.37 yield Tail Slurry: 450 sx Class "H" SOLUCEM-H w/ .7% HR-601, 2.62 yield; 12% excess. **This is a minimum volume and will be adjusted up after caliper is run.** **Stage 2:** Lead Slurry: 400 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, .6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, .3% FL-52A; 1.37 yield. Tail Slurry: 250 sx Class C w/ 0.3% R-3 + 1.5% CD-32, 1.02 yield. 12% excess calculated back to surface (no need for excess in casing overlap). **This is a minimum volume and will be adjusted up after caliper is run.**

Multi stage tool to be set at approximately, depending on hole conditions, 2900'. Cement volumes will be adjusted proportionately for depth changes of multi stage tool; assumption for use of tool is water flow.

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
Burch Keely Unit Federal #814H
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8. Pressure Control Equipment:

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (2000 psi WP) preventer, and in some cases possibly a 2000 psi Hydril type annular preventer as provided for in Onshore Order #2. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on the bottom. A 13-5/8" will be used during the drilling of the well. The BOP will be nipped up on the 13 3/8" surface casing with BOP equipment and tested to 2000 psi. After setting 9-5/8" the BOP will then be nipped up on the 9-5/8" intermediate casing and tested by a third party to 2000 psi and 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 (Exhibit #10) will include a Kelly cock and floor safety valve, choke lines and a choke manifold (Exhibit #11) with a 2000 psi WP rating.

9. Proposed Mud Circulating System

Interval	Mud Wt.	Visc.	FL	Type Mud System
0' - 450' 310	8.5	28	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH.
450' - 1350' 1170	10	30	NC	Brine mud, lime for PH and paper for seepage and sweeps.
1350' - 9015'	9.1	29	NC	Drill section with fresh water/cut brine circulating the reserve utilizing periodic sweeps of paper as needed for seepage control and solids removal.

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

10. Production Hole Drilling Summary:

Drill 8 3/4" hole and kick off at +/- 4373', building curve over +/- 750' to horizontal at 4850' TVD.
Drill horizontal section in a Easterly direction for +/-3892' lateral to TD at +/-9015' MD, 4850' TVD.
Run 5-1/2" production casing in Open hole lateral and cement to surface.

11. 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.

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
Burch Keely Unit Federal #814H
Page 4 of 4

12. Logging, Testing and Coring Program:

- A. No electric logging to be performed on this well. *See COA*
- B. The mud logging program will consist of lagged 10' samples from intermediate casing point to T.D. in vertical pilot hole and from Kick off point 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 1/2" production casing has been cemented at TD based on drill shows and log evaluation.

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

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 90 degrees and estimated maximum bottom hole pressure is 1800 psig. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, however an H2S plan is attached to the Drilling Program. No major loss of circulation zones has been reported in offsetting wells.

14. Anticipated Starting Date

Drilling operations will commence approximately on October 30, 2011 with drilling and completion operations lasting approximately 90 days.



COG Operating LLC

Eddy County, NM (NAN27 NME)

Burch Keely Unit #814H

Burch Keely Unit #814H

OH

Plan: Plan #3 - 7-7/8" Hole

SHL = 1152' FNL & 497' FWL

BHL = 990' FNL & 330' FEL

Standard Planning Report

24 August, 2011





Scientific Drilling
Planning Report



Database: EDM-Julio
Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Burch Keely Unit #814H
Well: Burch Keely Unit #814H
Wellbore: OH
Design: Plan #3 - 7-7/8" Hole

Local Co-ordinate Reference: Site Burch Keely Unit #814H
TVD Reference: GL Elev @ 3639 00usft
MD Reference: GL Elev @ 3639 00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project:	Eddy County, NM (NAN27 NME)		
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:	Burch Keely Unit #814H		
Site Position:	Northings:	668,904 60 usft	Latitude: 32° 50' 18 622 N
From: Map	Easting:	596,995.10 usft	Longitude: 104° 1' 3 121 W
Position Uncertainty:	0 00 usft	Slot Radius: 13-3/16 "	Grid Convergence: 0 17 °

Well:	Burch Keely Unit #814H		
Well Position	+N/-S	0 00 usft	Northings: 668,904 60 usft
	+E/-W	0 00 usft	Easting: 596,995 10 usft
Position Uncertainty	0 00 usft	Wellhead Elevation:	Ground Level: 3,639 00 usft

Wellbore:	OH		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	2011/08/24	7 82
			Dip Angle
			60.67
			Field Strength
			48,916

Design:	Plan #3 - 7-7/8" Hole		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0 00	0 00	0.00
			Direction
			(°)
			87 63

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	
4,372 54	0 00	0 00	4,372 54	0 00	0 00	0 00	0 00	0 00	0 00	
5,122 54	90 00	87 63	4,850 00	19 75	477 06	12 00	12 00	0 00	87 63	
9,014 51	90 00	87 63	4,850 00	180 70	4,365 70	0 00	0 00	0 00	0 00	PBHL-BK #2H



Scientific Drilling
Planning Report



Database: EDM-Julio
Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Burch Keely Unit #814H
Well: Burch Keely Unit #814H
Wellbore: OH
Design: Plan #3 - 7-7/8" Hole

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Site Burch Keely Unit #814H
GL Elev @ 3639 00usft
GL Elev @ 3639 00usft
Grid
Minimum Curvature

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
4,372 54	0 00	0 00	4,372 54	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start Build 12.00°/100'									
4,400 00	3 30	87 63	4,399 98	0 03	0 79	0 79	12 00	12 00	0 00
4,500 00	15 30	87 63	4,498 49	0 70	16 90	16 91	12 00	12 00	0 00
4,600 00	27 30	87 63	4,591 49	2 20	53 12	53 17	12 00	12 00	0 00
4,700 00	39 30	87 63	4,674 93	4 46	107 87	107 96	12 00	12 00	0 00
4,800 00	51 30	87 63	4,745 14	7 40	178 75	178 91	12 00	12 00	0 00
4,900 00	63 30	87 63	4,799 07	10 87	262 67	262 90	12 00	12 00	0 00
5,000 00	75 30	87 63	4,834 36	14 73	355 97	356 27	12 00	12 00	0 00
5,100 00	87 30	87 63	4,849 47	18 81	454 55	454 94	12 00	12 00	0 00
5,122 54	90 00	87 63	4,850 00	19 75	477 06	477 47	12 00	12 00	0 00
EOC hold 90.00°									
5,200 00	90 00	87 63	4,850 00	22 95	554 45	554 93	0 00	0 00	0 00
5,300 00	90 00	87 63	4,850 00	27 08	654 37	654 93	0 00	0 00	0 00
5,400 00	90 00	87 63	4,850 00	31 22	754 28	754 93	0 00	0 00	0 00
5,500 00	90 00	87 63	4,850 00	35 36	854 20	854 93	0 00	0 00	0 00
5,600 00	90 00	87 63	4,850 00	39 49	954 11	954 93	0 00	0 00	0 00
5,700 00	90 00	87 63	4,850 00	43 63	1,054 03	1,054 93	0 00	0 00	0 00
5,800 00	90 00	87 63	4,850 00	47 76	1,153 94	1,154 93	0 00	0 00	0 00
5,900 00	90 00	87 63	4,850 00	51 90	1,253 86	1,254 93	0 00	0 00	0 00
6,000 00	90 00	87 63	4,850 00	56 03	1,353 77	1,354 93	0 00	0 00	0 00
6,100 00	90 00	87 63	4,850 00	60 17	1,453 68	1,454 93	0 00	0 00	0 00
6,200 00	90 00	87 63	4,850 00	64 30	1,553 60	1,554 93	0 00	0 00	0 00
6,300 00	90 00	87 63	4,850 00	68 44	1,653 51	1,654 93	0 00	0 00	0 00
6,400 00	90 00	87 63	4,850 00	72 58	1,753 43	1,754 93	0 00	0 00	0 00
6,500 00	90 00	87 63	4,850 00	76 71	1,853 34	1,854 93	0 00	0 00	0 00
6,600 00	90 00	87 63	4,850 00	80 85	1,953 26	1,954 93	0 00	0 00	0 00
6,700 00	90 00	87 63	4,850 00	84 98	2,053 17	2,054 93	0 00	0 00	0 00
6,800 00	90 00	87 63	4,850 00	89 12	2,153 09	2,154 93	0 00	0 00	0 00
6,900 00	90 00	87 63	4,850 00	93 25	2,253 00	2,254 93	0 00	0 00	0 00
7,000 00	90 00	87 63	4,850 00	97 39	2,352 92	2,354 93	0 00	0 00	0 00
7,100 00	90 00	87 63	4,850 00	101 52	2,452 83	2,454 93	0 00	0 00	0 00
7,200 00	90 00	87 63	4,850 00	105 66	2,552 74	2,554 93	0 00	0 00	0 00
7,300 00	90 00	87 63	4,850 00	109 80	2,652 66	2,654 93	0 00	0 00	0 00
7,400 00	90 00	87 63	4,850 00	113 93	2,752 57	2,754 93	0 00	0 00	0 00
7,500 00	90 00	87 63	4,850 00	118 07	2,852 49	2,854 93	0 00	0 00	0 00
7,600 00	90 00	87 63	4,850 00	122 20	2,952 40	2,954 93	0 00	0 00	0 00
7,700 00	90 00	87 63	4,850 00	126 34	3,052 32	3,054 93	0 00	0 00	0 00
7,800 00	90 00	87 63	4,850 00	130 47	3,152 23	3,154 93	0 00	0 00	0 00
7,900 00	90 00	87 63	4,850 00	134 61	3,252 15	3,254 93	0 00	0 00	0 00
8,000 00	90 00	87 63	4,850 00	138 74	3,352 06	3,354 93	0 00	0 00	0 00
8,100 00	90 00	87 63	4,850 00	142 88	3,451 97	3,454 93	0 00	0 00	0 00
8,200 00	90 00	87 63	4,850 00	147 02	3,551 89	3,554 93	0 00	0 00	0 00
8,300 00	90 00	87 63	4,850 00	151 15	3,651 80	3,654 93	0 00	0 00	0 00
8,400 00	90 00	87 63	4,850 00	155 29	3,751 72	3,754 93	0 00	0 00	0 00
8,500 00	90 00	87 63	4,850 00	159 42	3,851 63	3,854 93	0 00	0 00	0 00
8,600 00	90 00	87 63	4,850 00	163 56	3,951 55	3,954 93	0 00	0 00	0 00
8,700 00	90 00	87 63	4,850 00	167 69	4,051 46	4,054 93	0 00	0 00	0 00
8,800 00	90 00	87 63	4,850 00	171 83	4,151 38	4,154 93	0 00	0 00	0 00
8,900 00	90 00	87 63	4,850 00	175 96	4,251 29	4,254 93	0 00	0 00	0 00
9,000 00	90 00	87 63	4,850 00	180 10	4,351 20	4,354 93	0 00	0 00	0 00
9,014 51	90 00	87 63	4,850 00	180 70	4,365 70	4,369 44	0 00	0 00	0 00



Scientific Drilling
Planning Report



Database: EDM-Julio
Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Burch Keely Unit #814H
Well: Burch Keely Unit #814H
Wellbore: OH
Design: Plan #3 - 7-7/8" Hole

Local Co-ordinate Reference: Site Burch Keely Unit #814H
TVD Reference: GL Elev @ 3639 00usft
MD Reference: GL Elev @ 3639 00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
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PBHL-BK #2H

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
PBHL-BK #2H - plan hits target center - Point	0 00	0 01	4,850 00	180 70	4,365 70	669,085 30	601,360 80	32° 50' 20 278 N	104° 0' 11 945 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
4,372 54	4,372 54	0 00	0 00	KOP Start Build 12 00°/100'
5,122 54	4,850 00	19 75	477 06	EOC hold 90 00°



Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Burch Keely Unit #814H
Wellbore: OH
Design: Plan #3 - 7-7/8" Hole



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	4372.54	0.00	0.00	4372.54	0.00	0.00	0.00	0.00	0.00	
3	5122.54	90.00	87.63	4850.00	19.75	477.06	12.00	87.63	477.46	
4	49014.51	90.00	87.63	4850.00	180.70	4365.70	0.00	0.00	4369.44	PBHL-BK #2H

Plan Plan #3 - 7-7/8" Hole (Burch Keely Unit #814H/OH)

Created By: Julio Pina

Date: 24-Aug-11

Checked: _____

Date: _____

Reviewed: _____

Date: _____

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL-BK #2H	4850.00	180.70	4365.70	669085.30	601360.80	32° 50' 20.278 N	104° 0' 11.945 W	Point

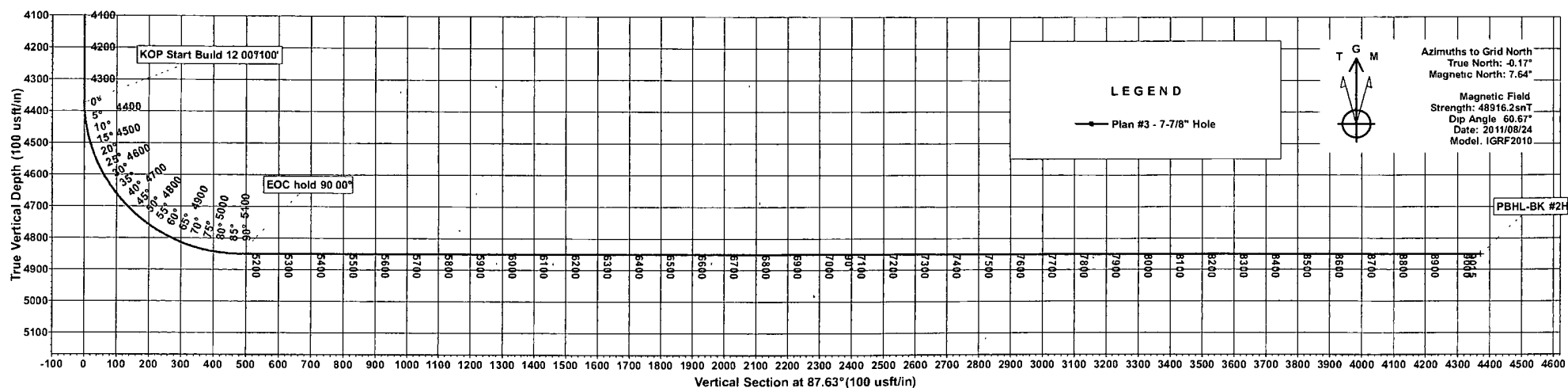
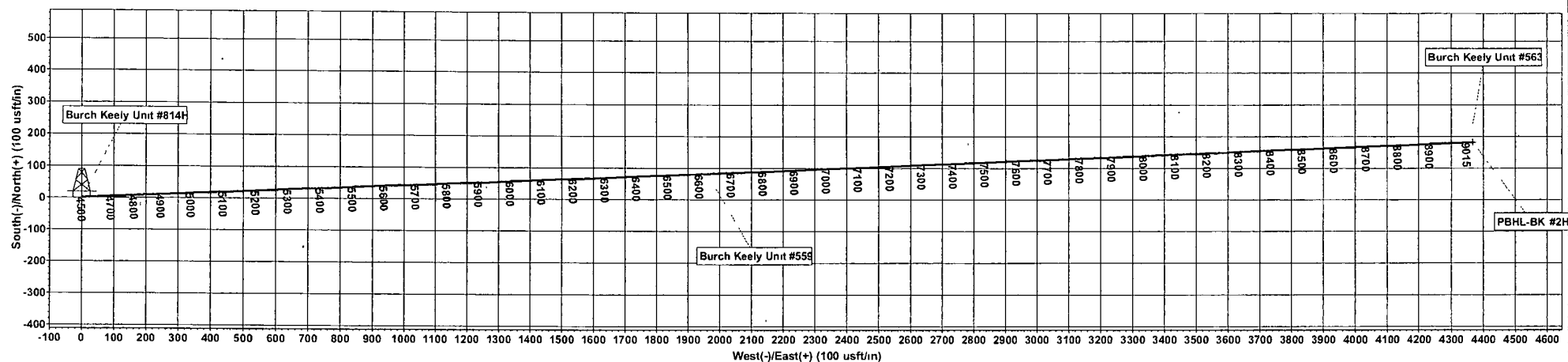
WELL DETAILS: Burch Keely Unit #814H

+N/-S	+E/-W	Ground Level	3639.00	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	668904.60	596995.10	32° 50' 18.622 N	104° 1' 3.121 W			

PROJECT DETAILS: Eddy County, NM (NAN27 NME)

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

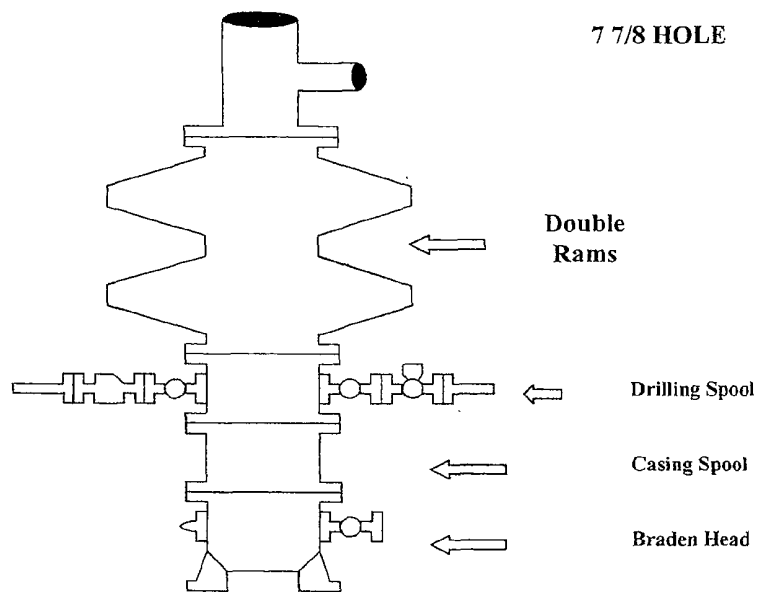
AZIMUTH CORRECTIONS
ALL AZIMUTHS MUST BE CORRECTED TO GRID
GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTING
To convert a Magnetic Direction to a Grid Direction, Add 7.64°
To convert a True Direction to a Grid Direction, Subtract 0.17°



COG Operating LLC

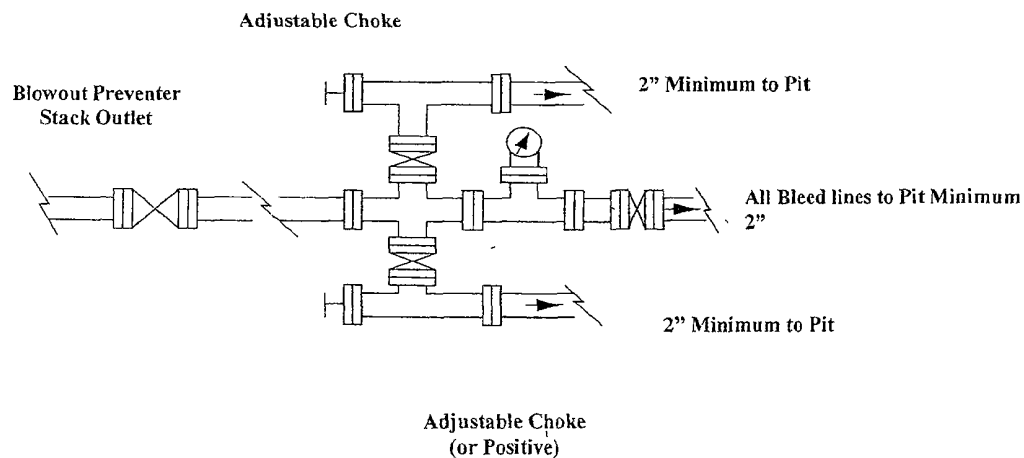
Exhibit #9

BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required

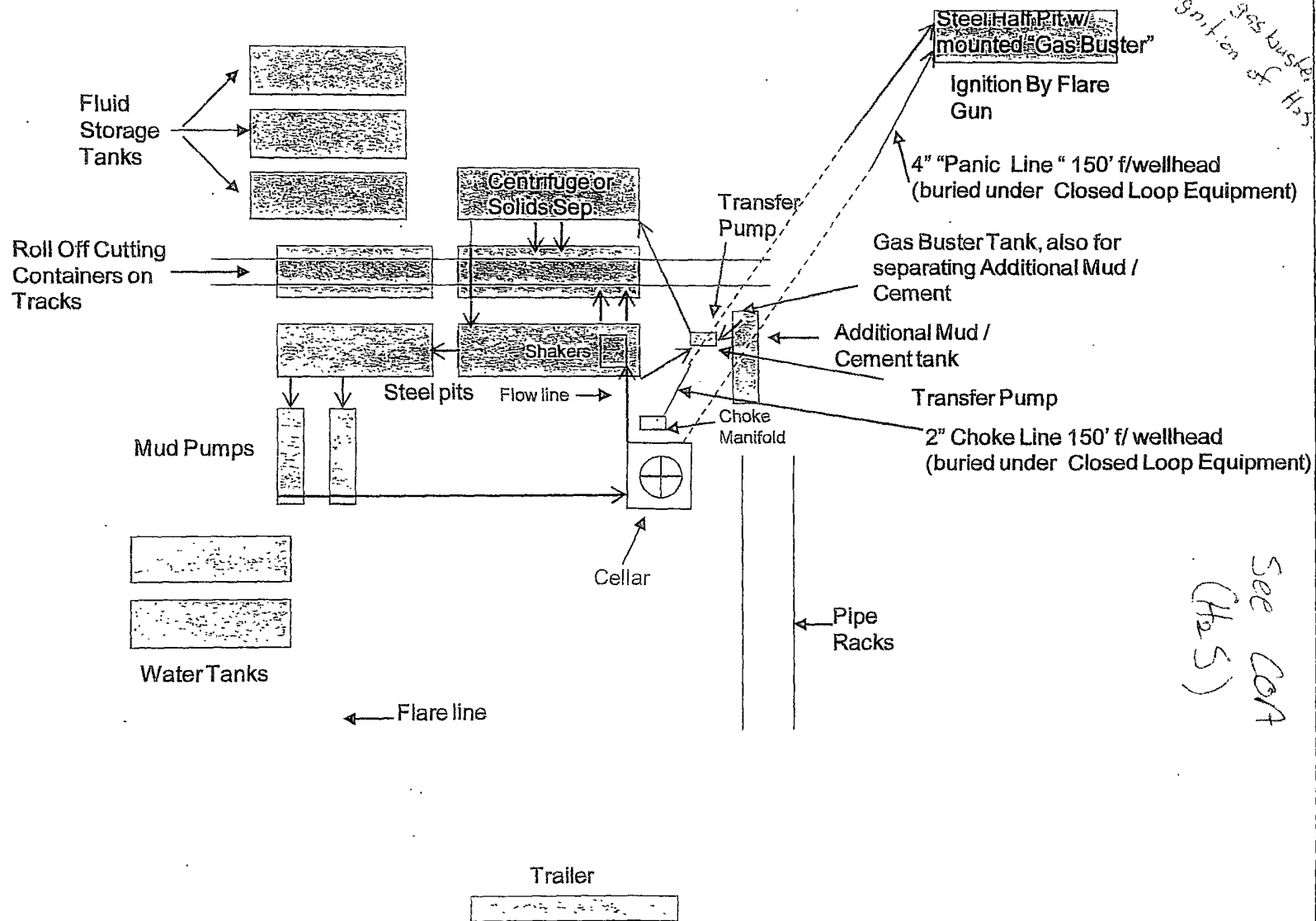


NOTES REGARDING THE BLOWOUT PREVENTERS
Master Drilling Plan
Eddy County, New Mexico

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All fittings to be flanged.
5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.
6. All choke and fill lines to be securely anchored especially ends of choke lines.
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
8. Kelly cock on Kelly.
9. Extension wrenches and hands wheels to be properly installed.
10. Blow out preventer control to be located as close to driller's position as feasible.
11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.

COG Operating LLC

Closed Loop Equipment Diagram



Closed Loop Operation & Maintenance Procedure

All drilling fluid circulated over shaker(s) with cuttings discharged into roll off container.

Fluid and fines below shaker(s) are circulated with transfer pump through centrifuge(s) or solids separator with cuttings and fines discharged into roll off container.

Fluid is continuously re-circulated through equipment with polymer added to aid separation of cutting fines.

Roll off containers are lined and de-watered with fluids re-circulated into system.

Additional tank is used to capture unused drilling fluid or cement returns from casing jobs.

This equipment will be maintained 24 hrs./day by solids control personnel and or rig crews that stay on location.

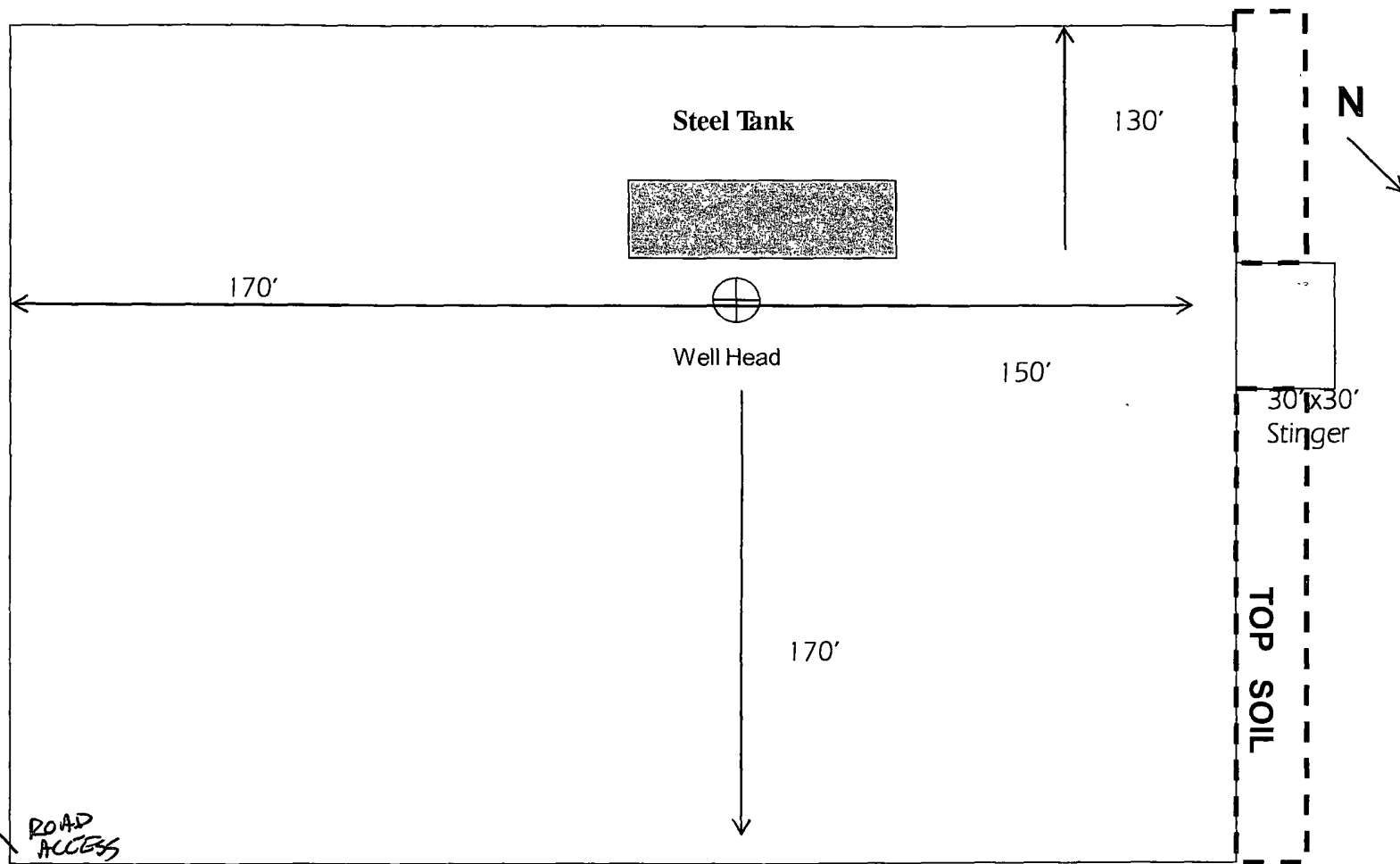
Cuttings will be hauled to either:

CRI (permit number R9166)

or

GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.



Not To Scale

TOP SOIL

Exhibit #6

COG OPERATING LLC
Rig Layout Closed Loop
System BKU #814 H