

OCD-ARTESIA

ATS-11-493
FA-11-1096Form 3160-3
(April 2004)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

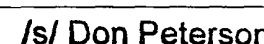
FORM APPROVED
OMB No. 1004-0137
Expires March 31, 2007

1a Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. SHL:LC028784B BHL:LC028793C
1b Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone		6 If Indian, Allottee or Tribe Name N/A
2 Name of Operator COG Operating LLC		7 If Unit or CA Agreement, Name and No. NMNM - 88525X; Burch Keely Unit [308086]
3a Address 550 W. Texas Ave., Suite 1300 Midland, TX 79701		8 Lease Name and Well No. BURCH KEELY UNIT #818H
3b Phone No. (include area code) [229137] 432-685-4384		9 API Well No. 30-015- 39575
4 Location of Well (Report location clearly and in accordance with any State requirements *) At surface 1650' FSL & 330' FWL, Unit 3 At proposed prod zone 1650' FSL & 330' FEL, Unit I		10 Field and Pool, or Exploratory Grayburg Jackson; SR-Q-Grbg-SA [28509]
14 Distance in miles and direction from nearest town or post office* 2 miles from Loco Hills, NM		11 Sec, T R M or Blk and Survey or Area Sec 18 T17S R30E
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drg unit line, if any) 330'		12 County or Parish EDDY
16 No of acres in lease SL:1264.52 BL:1115.22		13 State NM
17 Spacing Unit dedicated to this well 160		
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft 100'		19 Proposed Depth TVD: 4850' MD: 9181'
20 BLM/BIA Bond No on file NMB000740 /215		
21 Elevations (Show whether DF, KDB, RT, GL, etc.) 3633' 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 | 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) Kelly J. Holly	Date 07/08/2011
Title Permitting Tech		
Approved by (Signature) 	Name (Printed/Typed) Is/ Don Peterson	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 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

*(Instructions on page 2)

Roswell Controlled Water Basin

Approval Subject to General Requirements
& Special Stipulations AttachedSEE 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
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised October 12, 2005
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number 30-015 - 39575	Pool Code 28509	Pool Name Grayburg Jackson; SR-Q-G-SA
Property Code 308086	Property Name BURCH KEELY UNIT	Well Number 818H ✓
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3633'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	18	17-S	30-E		1650	SOUTH	330	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
I	18	17-S	30-E		1650	SOUTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	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

GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION Y=666427.6 N X=596834.4 E LAT.=32.831699° N LONG =104.018081° W BOTTOM HOLE LOCATION Y=666444.7 N X=601369.8 E DETAIL 3632.8' 3634.4' 600' 600' 3633.8' 3635.0' Project Area Producing Area S.L. SEE DETAIL 330' GRID AZ. -89°47'05" HORZ. DIST. -4536.6' B.H. 330' N.667417.1 E.596503.2 N.666096.9 E.596505.0 N.666116.7 E.601700.9 N.667437.0 E.601696.3	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. Signature 4-26-11 Date Kelly J. Holly Printed Name
	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. MARCH 11, 2011 Date Surveyed Signature & Seal of Professional Surveyor Professional Surveyor NEW MEXICO 41111.052 Certificate No. GARY C. EIDSON 12641 RONALD F. EIDSON 3239

ATTACHMENT TO FORM 3160-3
 COG Operating, LLC
 Burch Keely Unit #818H
 SHL: 1650' FSL & 330' FWL, Unit L
 BHL: 1650' FSL & 330' FEL, Unit I
 Sec 18, T17S, R30E
 Eddy County, NM

1. Proration Unit Spacing: 160' Acres
2. Ground Elevation: 3633'
3. Proposed Depths: Horizontal TVD = 4,850', MD = 9,181'
4. Estimated tops of geological markers:

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

See COA

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*

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COG Operating, LLC
Burch Keely Unit #818H
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' ³²⁰	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' ¹¹²⁵	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' - 9181'	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 +/- 9,181'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: 600 sx Class "H" SOLUCEM-H w/ .7% HR-601, 2.62 yield 21% excess in open hole, calculated to surface.

See
COA **Multi Stage:** Stage 1: (Assumed TD of 9181'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: 600 sx Class "H" SOLUCEM-H w/ .7% HR-601, 2.62 yield; 10% 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. 30% excess calculated back to surface (no need for excess in casing overlap).

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 #818H
Page 3 of 4

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' ³²⁰	8.5	28	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH.
450' - 1350' ¹¹²⁵	10	30	NC	Brine mud, lime for PH and paper for seepage and sweeps.
1350' - 9181'	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 +/-4058' lateral to TD at +/-9181' 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 #818H
Page 4 of 4

12. Logging, Testing and Coring Program: *See COA*

- A. No electric logging to be performed on this well.
- 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 #818H

Burch Keely Unit #818H

OH

Plan: Plan #2 - 7-7/8" Hole

SHL = 1650' FSL & 330' FWL

BHL = 1650' FSL & 330' FEL

Standard Planning Report

05 July, 2011



Scientific Drilling
Directional Drilling Operations



Scientific Drilling
Planning Report



Database: EDM-Julio
Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Burch Keely Unit #818H
Well: Burch Keely Unit #818H
Wellbore: OH
Design: Plan #2 - 7-7/8" Hole

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

Site Burch Keely Unit #818H
GL Elev @ 3633 00usft
GL Elev @ 3633 00usft
Grid
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 #818H		
Site Position:		Northing:	666,427 60 usft
From:	Map	Easting:	596,834 40 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 49' 54 116 N
		Longitude:	104° 1' 5 091 W
		Grid Convergence:	0 17 °

Well:	Burch Keely Unit #818H		
Well Position	+N/-S	0 00 usft	Northing:
	+E/-W	0 00 usft	Easting:
Position Uncertainty	0 00 usft	Wellhead Elevation:	Ground Level:
			3,633 00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	2011/07/05	7 83
			Dip Angle
			60 67
			Field Strength
			48,926

Design	Plan #2 - 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
			89 78

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/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	
5,122 54	90 00	89 78	4,850.00	1 80	477 46	12 00	12 00	0 00	89 78	
9,180 50	90 00	89 78	4,850 00	17 10	4,535 40	0 00	0 00	0 00	0 00	PBHL-BKU #818H



Scientific Drilling
Planning Report



Database: EDM-Julio
Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Burch Keely Unit #818H
Well: Burch Keely Unit #818H
Wellbore: OH
Design: Plan #2 - 7-7/8" Hole

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

Site Burch Keely Unit #818H
GL Elev @ 3633 00usft
GL Elev @ 3633 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	89 78	4,399 98	0 00	0 79	0 79	12 00	12 00	0 00
4,500 00	15 30	89 78	4,498 49	0 06	16 91	16 91	12 00	12 00	0 00
4,600 00	27 30	89 78	4,591 49	0 20	53 16	53 17	12 00	12 00	0 00
4,700 00	39 30	89 78	4,674 93	0 41	107 96	107 96	12 00	12 00	0 00
4,800 00	51 30	89 78	4,745 14	0 67	178 90	178 91	12 00	12 00	0 00
4,900 00	63 30	89 78	4,799 07	0 99	262 90	262 90	12 00	12 00	0 00
5,000 00	75 30	89 78	4,834 36	1 34	356 27	356 27	12 00	12 00	0 00
5,100 00	87 30	89 78	4,849 47	1 72	454 93	454 94	12 00	12 00	0 00
5,122 54	90 00	89 78	4,850 00	1 80	477 47	477 47	12 00	12 00	0 00
EOC hold 90.00°									
5,200 00	90 00	89 78	4,850 00	2 09	554 93	554 93	0 00	0 00	0 00
5,300 00	90 00	89 78	4,850 00	2 47	654 93	654 93	0 00	0 00	0 00
5,400 00	90 00	89 78	4,850 00	2 85	754 92	754 93	0 00	0 00	0 00
5,500 00	90 00	89 78	4,850 00	3 22	854 92	854 93	0 00	0 00	0 00
5,600 00	90 00	89 78	4,850 00	3 60	954 92	954 93	0 00	0 00	0 00
5,700 00	90 00	89 78	4,850 00	3 98	1,054 92	1,054 93	0 00	0 00	0 00
5,800 00	90 00	89 78	4,850 00	4 35	1,154 92	1,154 93	0 00	0 00	0 00
5,900 00	90 00	89 78	4,850 00	4 73	1,254 92	1,254 93	0 00	0 00	0 00
6,000 00	90 00	89 78	4,850 00	5 11	1,354 92	1,354 93	0 00	0 00	0 00
6,100 00	90 00	89 78	4,850 00	5 49	1,454 92	1,454 93	0 00	0 00	0 00
6,200 00	90 00	89 78	4,850 00	5 86	1,554 92	1,554 93	0 00	0 00	0 00
6,300 00	90 00	89 78	4,850 00	6 24	1,654 92	1,654 93	0 00	0 00	0 00
6,400 00	90 00	89 78	4,850 00	6 62	1,754 92	1,754 93	0 00	0 00	0 00
6,500 00	90 00	89 78	4,850 00	6 99	1,854 92	1,854 93	0 00	0 00	0 00
6,600 00	90 00	89 78	4,850 00	7 37	1,954 92	1,954 93	0 00	0 00	0 00
6,700 00	90 00	89 78	4,850 00	7 75	2,054 92	2,054 93	0 00	0 00	0 00
6,800 00	90 00	89 78	4,850 00	8 12	2,154 91	2,154 93	0 00	0 00	0 00
6,900 00	90 00	89 78	4,850 00	8 50	2,254 91	2,254 93	0 00	0 00	0 00
7,000 00	90 00	89 78	4,850 00	8 88	2,354 91	2,354 93	0 00	0 00	0 00
7,100 00	90 00	89 78	4,850 00	9 26	2,454 91	2,454 93	0 00	0 00	0 00
7,200 00	90 00	89 78	4,850 00	9 63	2,554 91	2,554 93	0 00	0 00	0 00
7,300 00	90 00	89 78	4,850 00	10 01	2,654 91	2,654 93	0 00	0 00	0 00
7,400 00	90 00	89 78	4,850 00	10 39	2,754 91	2,754 93	0 00	0 00	0 00
7,500 00	90 00	89 78	4,850 00	10 76	2,854 91	2,854 93	0 00	0 00	0 00
7,600 00	90 00	89 78	4,850 00	11 14	2,954 91	2,954 93	0 00	0 00	0 00
7,700 00	90 00	89 78	4,850 00	11 52	3,054 91	3,054 93	0 00	0 00	0 00
7,800 00	90 00	89 78	4,850 00	11 90	3,154 91	3,154 93	0 00	0 00	0 00
7,900 00	90 00	89 78	4,850 00	12 27	3,254 91	3,254 93	0 00	0 00	0 00
8,000 00	90 00	89 78	4,850 00	12 65	3,354 91	3,354 93	0 00	0 00	0 00
8,100 00	90 00	89 78	4,850 00	13 03	3,454 91	3,454 93	0 00	0 00	0 00
8,200 00	90 00	89 78	4,850 00	13 40	3,554 90	3,554 93	0 00	0 00	0 00
8,300 00	90 00	89 78	4,850 00	13 78	3,654 90	3,654 93	0 00	0 00	0 00
8,400 00	90 00	89 78	4,850 00	14 16	3,754 90	3,754 93	0 00	0 00	0 00
8,500 00	90 00	89 78	4,850 00	14 53	3,854 90	3,854 93	0 00	0 00	0 00
8,600 00	90 00	89 78	4,850 00	14 91	3,954 90	3,954 93	0 00	0 00	0 00
8,700 00	90 00	89 78	4,850 00	15 29	4,054 90	4,054 93	0 00	0 00	0 00
8,800 00	90 00	89 78	4,850 00	15 67	4,154 90	4,154 93	0 00	0 00	0 00
8,900 00	90 00	89 78	4,850 00	16 04	4,254 90	4,254 93	0 00	0 00	0 00
9,000 00	90 00	89 78	4,850 00	16 42	4,354 90	4,354 93	0 00	0 00	0 00
9,100 00	90 00	89 78	4,850 00	16 80	4,454 90	4,454 93	0 00	0 00	0 00
9,180 50	90 00	89 78	4,850 00	17 10	4,535 40	4,535 43	0 00	0 00	0 00



Scientific Drilling
Planning Report



Database: EDM-Julio
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Well: Burch Keely Unit #818H
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GL Elev @ 3633 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)
PBHL-BKU #818H									

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-BKU #818H - plan hits target center - Point	0 00	0 01	4,850 00	17 10	4,535 40	666,444 70	601,369 80	32° 49' 54 148 N	104° 0' 11 936 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,372 54	4,372 54	0 00	0 00	KOP Start Build 12 00°/100'
5,122 54	4,850 00	1.80	477 47	EOC hold 90 00°



Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Burch Keely Unit #818H
Wellbore: OH
Design: Plan #2 - 7-7/8" Hole



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeal	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	89.78	4850.00	1.80	477.46	12.00	89.78	477.46	
4	9180.50	90.00	89.78	4850.00	17.10	4535.40	0.00	0 00	4535.43	PBHL-BKU #818H

Plan: Plan #2 - 7-7/8" Hole (Burch Keely Unit #818H/OH)

Created By: Julio Pina Date: 05-Jul-11
Checked: _____ Date: _____
Reviewed: _____ Date: _____

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL-BKU #818H	4850.00	17 10	4535.40	666444 70	601369 80	32°49' 54.148 N	104°0' 11 936 W	Point

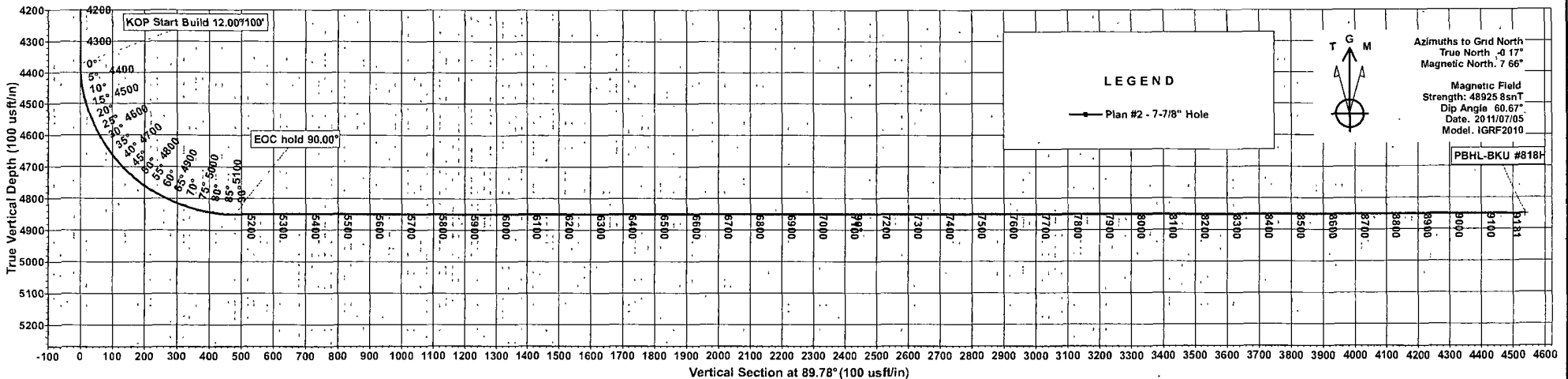
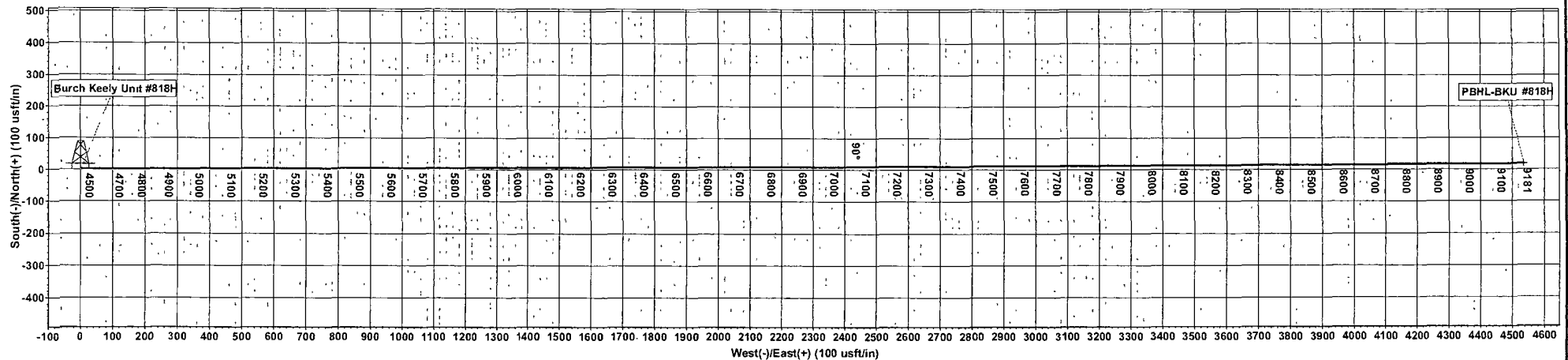
WELL DETAILS: Burch Keely Unit #818H

+N/-S	+E/-W	Ground Level:	3633.00	Northing	Easting	Latitude	Longitude	Slot
0 00	0 00			666427.60	596834.40	32°49' 54.116 N	104°1' 5.091 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

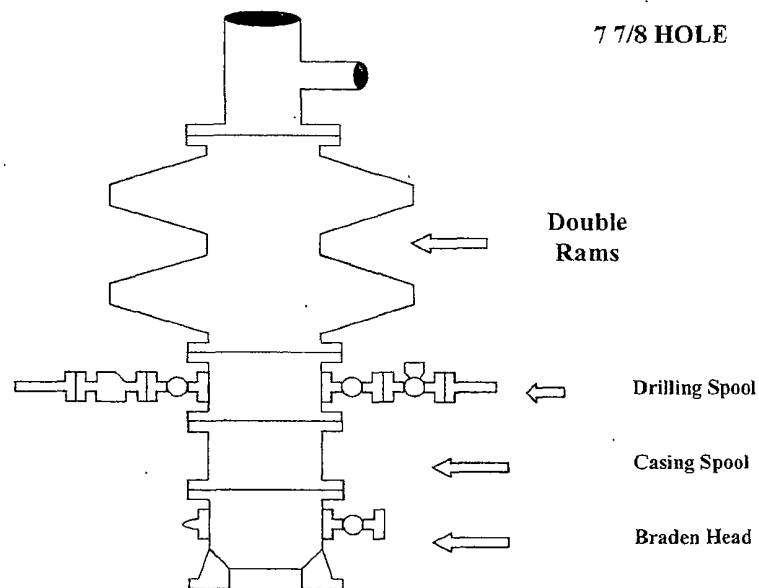
AZIMUTH CORRECTIONS
ALL AZIMUTHS MUST BE CORRECTED TO GRID
GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTTING
To convert a Magnetic Direction to a Grid Direction, Add 7.66°
To convert a True Direction to a Grid Direction, Subtract 0.17°



COG Operating LLC

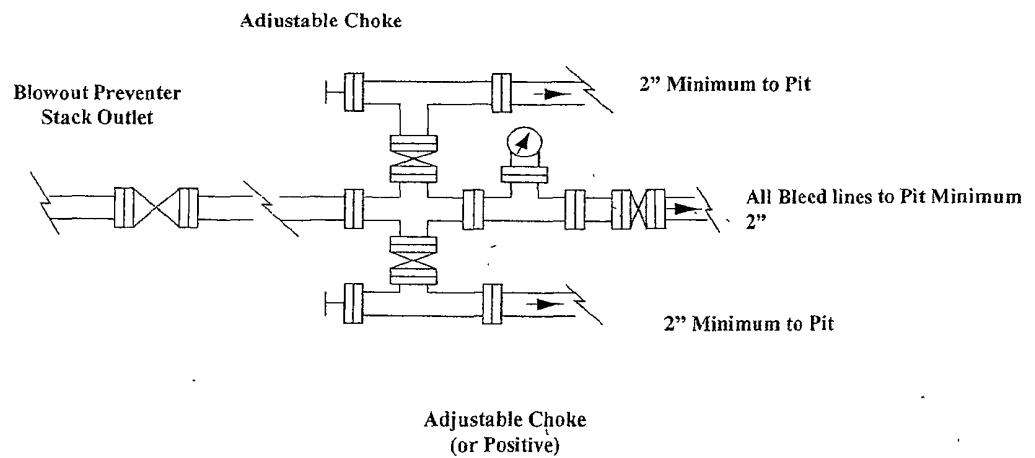
Exhibit #9

BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required

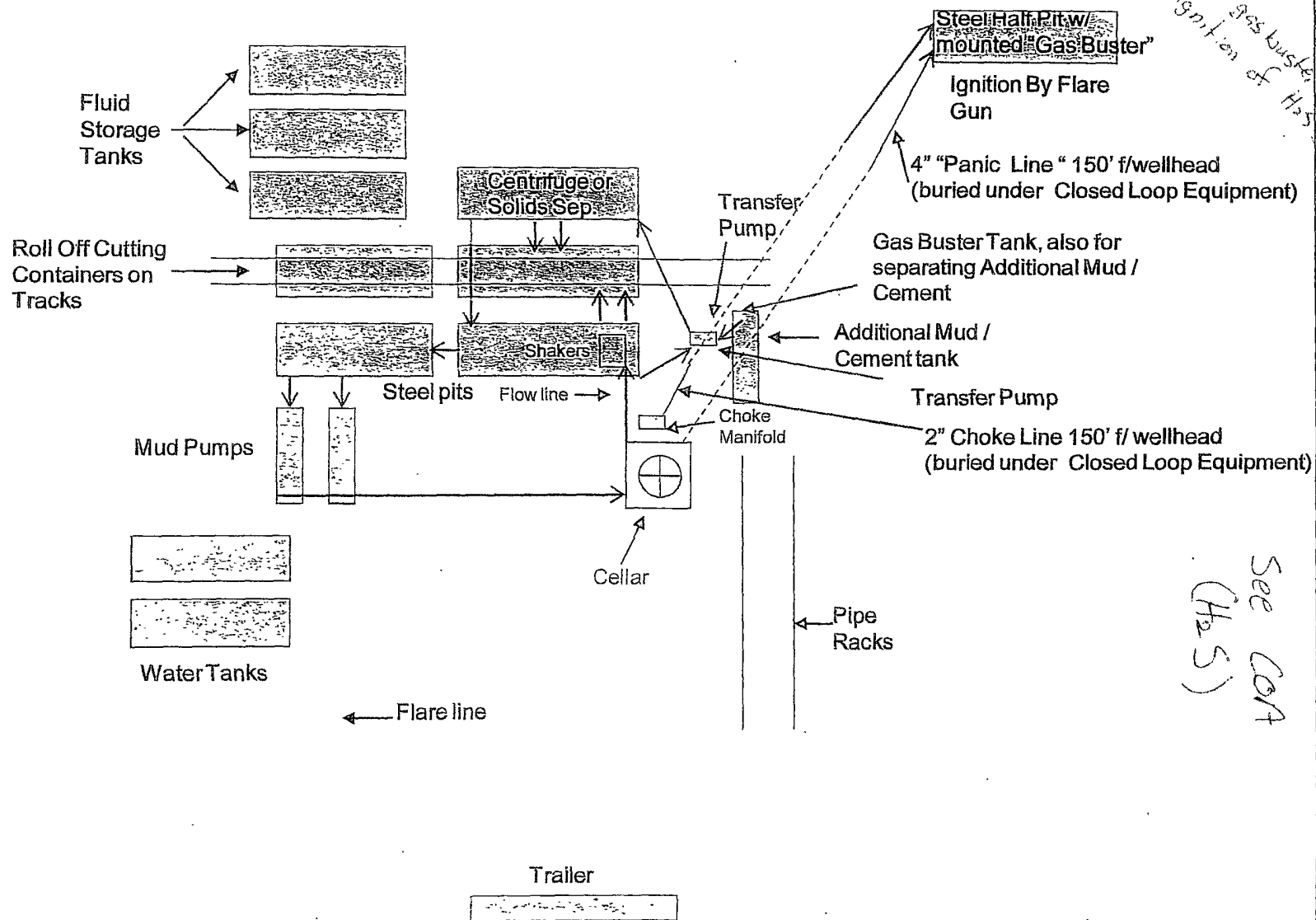


NOTES REGARDING THE BLOWOUT PREVENTERS
Master Drilling Plan
Eddy County, New Mexico

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.

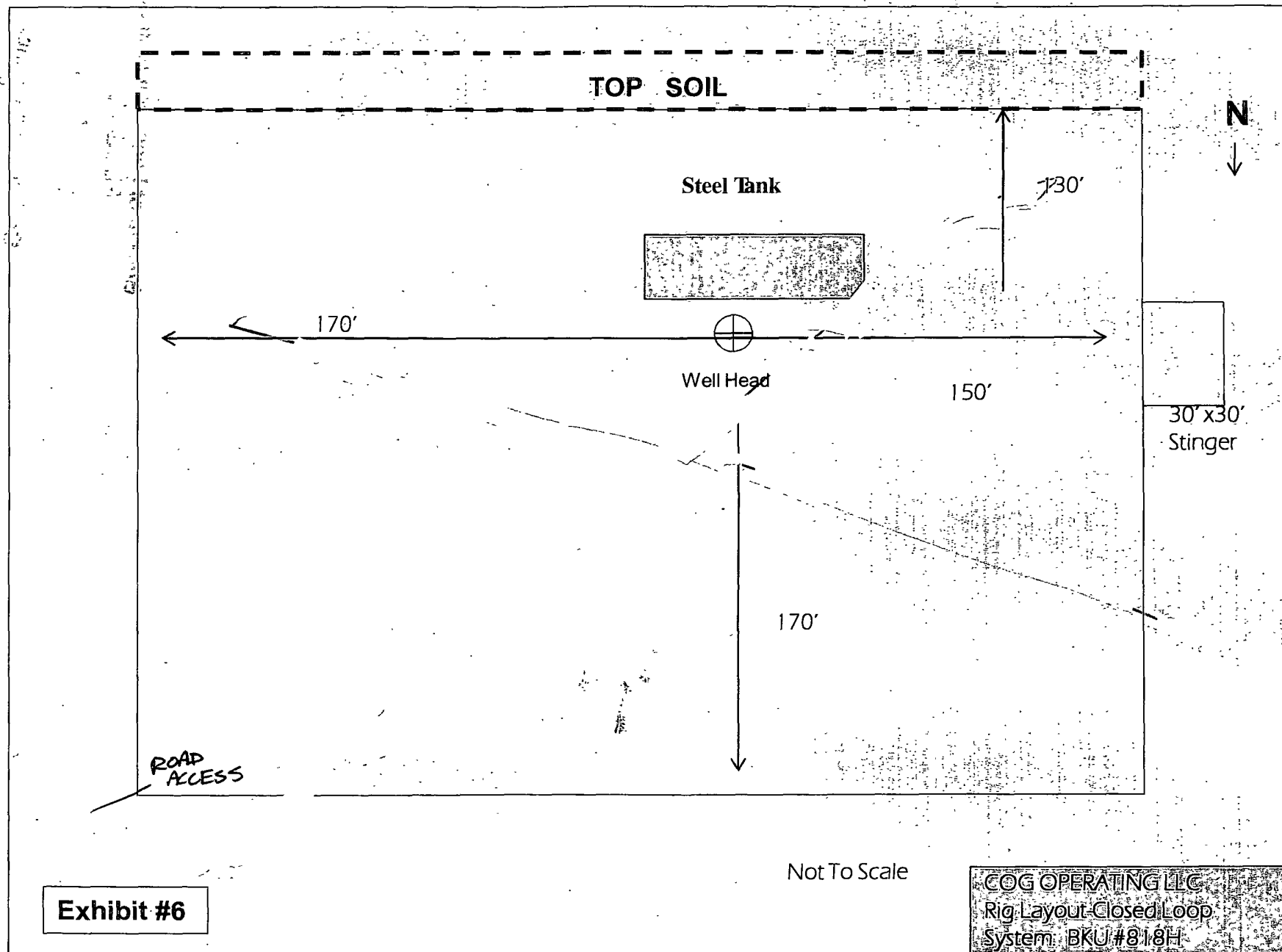


Exhibit #6

Not To Scale

COG OPERATING LLC
Rig Layout Closed Loop
System BKU #818H