

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

1a Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMLC-029418A
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 Skelly Unit; NMNM-71030C
3a Address 550 W. Texas Ave., Suite 1300 Midland, TX 79701		8. Lease Name and Well No. SKELLY UNIT #659 <i>(305607)</i>
3b. Phone No. (include area code) 432-685-4384 <i>229137</i>		9. API Well No. 30-015-39697
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 638 FSL & 588 FEL, Unit P At proposed prod zone 990 FSL & 330 FEL, Unit P		10. Field and Pool, or Exploratory Fract; Glorieta-Yeso 26770 <i>29784</i>
11 Sec., T. R. M. or Blk and Survey or Area Sec 14 T17S R31E		12 County or Parish EDDY
13. State NM		14. Distance in miles and direction from nearest town or post office* 9 miles East of Loco Hills, NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drg. unit line, if any) 588'	16. No. of acres in lease 640	17. Spacing Unit dedicated to this well 40
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 600'	19. Proposed Depth TVD: 6900' MD: 6917'	20. BLM/BIA Bond No. on file NMB000740 <i>+ 215</i>
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3906' GL	22. Approximate date work will start* 05/31/2011	23. Estimated duration 15 days <i>JA 6/5</i>

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 <i>[Signature]</i>	Name (Printed/Typed) Kelly J. Holly	Date 04/01/2011
Title Permitting Tech		

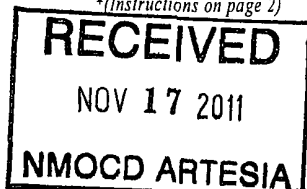
Approved by (Signature) /s/ Don Peterson	Name (Printed/Typed) /s/ Don Peterson	Date AUG - 5 2011
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

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)



Witness Surface Casing.

Roswell Controlled Water Basin

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

**APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED**

[Handwritten signature]

MASTER DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface
Rustler	628'
Top of Salt	801'
Base of Salt	1771'
Yates	1958'
Seven Rivers	2293'
Queen	2915'
Grayburg	3345'
San Andres	3697'
Glorietta	5240'
Paddock	5299'
Blinbry	5736'
Tubb	6700'

3. Estimated Depths of Anticipated Fresh Water, Oil and Gas

Water Sand	150'	Fresh Water
Grayburg	3345'	Oil/Gas
San Andres	3697'	Oil/Gas
Glorieta	5240'	Oil/Gas
Paddock	5299'	Oil/Gas
Blinbry	5736'	Oil/Gas
Tubb	6700'	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 650' and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be protected by setting 8 5/8" casing to 1800' 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, (but 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 the environment.

See
COA

4. Casing Program

917

See
COA

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	Jt.	burst/collapse/tension
17 1/2" (610)	0-650'	13 3/8"	48#	H-40orJ-55	New	ST&C	8.71/3.724/14.91
11" (375)	0-1800'	8 5/8"	24or32#	J-55	New	ST&C	2.91/1.46/5.65
7 7/8"	0-T.D.	5 1/2"	15.5 or 17#	J-55orL80	New	LT&C	1.71/1.574/2.20

5. Cement Program

13 3/8" Surface Casing:

Class C, 475 sx w/ 2% CaCl₂, 0.25 pps CF, yield-1.32, back to surface 100% excess

8 5/8" Intermediate Casing:

11" Hole:

Single Stage: LEAD 350 sx 50:50:10 C:Poz:Gel w/ 5% Salt +0.25% CF, yield-2.45 + TAIL 200 sx Class C w/2% CaCl₂, yield-1.32, back to surface. 145% excess

Multi-Stage: Stage 1: 350 sx Class C, w/2% CaCl₂, yield - 1.32. 40% excess
Stage 2: 200 sx Class C w/2% CaCl₂, yield - 1.32, back to surface, 108% excess
Multi stage tool to be set at approximately, depending on hole conditions, 700' (50' below the surface casing). Cement volumes will be adjusted proportionately for depth changes of multi stage tool.

5 1/2" Production Casing:

Single Stage: LEAD 500 sx 35:65:6 C:Poz:Gel w/ 5% Salt + 5 pps LCM + 0.2% SMS + 0.3% FL-52A + 0.125 pps CF, yield-2.05 + TAIL 400 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield-1.37, to 200' minimum tie back to intermediate casing. 44.4% open hole excess, cement calculated back to surface (no need for excess in casing overlap).

Multi-Stage: Stage 1: (Assumed TD of 6900') 550 sx 50:50:2, C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield - 1.37, 9% excess; **this is a**

minimum volume and will be adjusted up after caliper is run. Stage 2: LEAD 450-sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield - 1.37, + TAIL 250 sx Class C w/ 0.3% R-3 + 1.5% CD-32, yield - 1.02 152% open hole excess, cement calculated back to surface (no need for excess in casing overlap). Multi stage tool to be set at approximately, depending on hole conditions, 3000'. Cement volumes will be adjusted proportionately for depth changes of multi stage tool, assumption for tool is water flow.

6. Minimum Specifications for Pressure Control

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" or 11" BOP will be used, depending on the rig selected, 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. When 11" BOP is used the special drilling flange will be utilized on the 13-3/8" head to allow testing the BOP with a retrievable test plug. After setting 8-5/8" the BOP will then be nipped up on the 8 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.

The majority of the rigs currently in use have a 13-5/8" BOP, so no special provision is needed for most wells in the area for conventionally testing the BOP with a test plug. However, due to the vagaries of rig scheduling, it might be that one of the few rigs with 11" BOP's might be called upon to drill any specific well in the area. Note that intermediate hole size is always 11". Therefore, COG Operating LLC respectfully requests a variance to the requirement of 13-5/8" BOP on 13-3/8" casing. When that circumstance is encountered the special flange will be utilized to allow testing the entire BOP with a test plug, without subjecting the casing to test pressure. The special flange also allows the return to full-open capability if desired.

See 101A

7. Types and Characteristics of the Proposed Mud System

The well will be drilled to TD with a combination of brine, cut brine and polymer mud system. The applicable depths and properties of this system are as follows:

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-650' <i>610</i>	Fresh Water	8.5	28	N.C.
650-1800' <i>1675</i>	Brine	10	30	N.C.
1800'-TD	Cut Brine	8.7-9.1	29	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.

8. 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.

9. Logging, Testing and Coring Program *see COA*

- A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log and will be run from TD to 8 5/8" casing shoe.
- B. Drill Stem test is not anticipated.
- C. No conventional coring is anticipated.
- D. 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.

10. Abnormal Conditions, Pressure, Temperatures and Potential Hazards

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 110 degrees and the estimated maximum bottom hold pressure is 2300 psig. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, although a Hydrogen Sulfide Drilling Operation Plan is attached to this program. No major loss of circulation zones has been reported in offsetting wells.

11. Anticipated Starting Date and Duration of Operations

Road and location work will not begin until approval has been received from the BLM. As this is a Master Drilling plan, please refer to the Form 3160-3 for the anticipated start date. Once commenced, drilling operations should be finished in approximately 12 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities.



COG Operating LLC

Eddy County, NM (NAN27 NME)

Skelly Unit #659

Skelly Unit #659

OH

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

SHL = 638' FSL & 588' FEL

BHL = 980' FSL & 380' FEL

Top of Paddock = 258' N of Surface & 155' E of Surface @ 5220' TVD

Standard Planning Report

11 April, 2011





Scientific Drilling Planning Report



Database: EDM-Julio
Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Skelly Unit #659
Well: Skelly Unit #659
Wellbore: OH
Design: Plan #2 7-7/8" Hole

Local Co-ordinate Reference: Site Skelly Unit #659
TVD Reference: GL Elev @ 3906.00usft
MD Reference: GL Elev @ 3906 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		Skelly Unit #659			
Site Position:		Northing:	665,677 00 usft	Latitude:	32° 49' 44 519 N
From:	Map	Easting:	653,659 20 usft	Longitude:	103° 49' 59 158 W
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0 27 °

Well	Skelly Unit #659					
Well Position	+N/-S	0 00 usft	Northing:	665,677 00 usft	Latitude:	32° 49' 44 519 N
	+E/-W	0 00 usft	Easting:	653,659.20 usft	Longitude:	103° 49' 59 158 W
Position Uncertainty		0 00 usft	Wellhead Elevation:		Ground Level:	3,906 00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2011/04/11	7 77	60 71	48,967

Design	Plan #2 7-7/8" Hole			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0 00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 00	0 00	0 00	30 92

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg ^U 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	
1,950 00	0 00	0 00	1,950 00	0 00	0 00	0 00	0 00	0 00	0 00	
2,225.95	5.52	30 92	2,225 52	11 39	6 82	2 00	2 00	0 00	30 92	
5,128 57	5 52	30 92	5,114 69	250 87	150.29	0 00	0 00	0 00	0 00	
5,234 21	3 41	30 92	5,220 00	257.92	154 51	2 00	-2 00	0 00	-180 00	TG1-Skelly #659
6,917 18	3 41	30 92	6,900 00	343 70	205 90	0 00	0 00	0.00	0.00	PBHL-Skelly #659



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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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
North HL-Skelly #659 - East HL-Skelly #659									
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8-5/8" Casing									
1,950.00	0.00	0.00	1,950.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Start Build 2.00°/100'									
2,000.00	1.00	30.92	2,000.00	0.37	0.22	0.44	2.00	2.00	0.00
2,100.00	3.00	30.92	2,099.93	3.37	2.02	3.93	2.00	2.00	0.00
2,200.00	5.00	30.92	2,199.68	9.35	5.60	10.90	2.00	2.00	0.00
2,225.95	5.52	30.92	2,225.52	11.39	6.82	13.28	2.00	2.00	0.00
EOC hold 5.52°									
2,300.00	5.52	30.92	2,299.23	17.50	10.48	20.40	0.00	0.00	0.00
2,400.00	5.52	30.92	2,398.77	25.75	15.43	30.02	0.00	0.00	0.00
2,500.00	5.52	30.92	2,498.30	34.00	20.37	39.64	0.00	0.00	0.00
2,600.00	5.52	30.92	2,597.84	42.25	25.31	49.25	0.00	0.00	0.00
2,700.00	5.52	30.92	2,697.38	50.50	30.25	58.87	0.00	0.00	0.00
2,800.00	5.52	30.92	2,796.91	58.75	35.20	68.49	0.00	0.00	0.00
2,900.00	5.52	30.92	2,896.45	67.00	40.14	78.11	0.00	0.00	0.00
3,000.00	5.52	30.92	2,995.99	75.25	45.08	87.72	0.00	0.00	0.00
3,100.00	5.52	30.92	3,095.52	83.50	50.03	97.34	0.00	0.00	0.00
3,200.00	5.52	30.92	3,195.06	91.75	54.97	106.96	0.00	0.00	0.00
3,300.00	5.52	30.92	3,294.59	100.01	59.91	116.58	0.00	0.00	0.00
3,400.00	5.52	30.92	3,394.13	108.26	64.85	126.19	0.00	0.00	0.00
3,500.00	5.52	30.92	3,493.67	116.51	69.80	135.81	0.00	0.00	0.00
3,600.00	5.52	30.92	3,593.20	124.76	74.74	145.43	0.00	0.00	0.00
3,700.00	5.52	30.92	3,692.74	133.01	79.68	155.05	0.00	0.00	0.00
3,800.00	5.52	30.92	3,792.28	141.26	84.62	164.67	0.00	0.00	0.00
3,900.00	5.52	30.92	3,891.81	149.51	89.57	174.28	0.00	0.00	0.00
4,000.00	5.52	30.92	3,991.35	157.76	94.51	183.90	0.00	0.00	0.00
4,100.00	5.52	30.92	4,090.89	166.01	99.45	193.52	0.00	0.00	0.00
4,200.00	5.52	30.92	4,190.42	174.26	104.39	203.14	0.00	0.00	0.00
4,300.00	5.52	30.92	4,289.96	182.51	109.34	212.75	0.00	0.00	0.00
4,400.00	5.52	30.92	4,389.50	190.76	114.28	222.37	0.00	0.00	0.00
4,500.00	5.52	30.92	4,489.03	199.01	119.22	231.99	0.00	0.00	0.00
4,600.00	5.52	30.92	4,588.57	207.26	124.16	241.61	0.00	0.00	0.00
4,700.00	5.52	30.92	4,688.10	215.51	129.11	251.22	0.00	0.00	0.00
4,800.00	5.52	30.92	4,787.64	223.76	134.05	260.84	0.00	0.00	0.00
4,900.00	5.52	30.92	4,887.18	232.01	138.99	270.46	0.00	0.00	0.00
5,000.00	5.52	30.92	4,986.71	240.26	143.93	280.08	0.00	0.00	0.00
5,100.00	5.52	30.92	5,086.25	248.51	148.88	289.69	0.00	0.00	0.00
5,128.57	5.52	30.92	5,114.69	250.87	150.29	292.44	0.00	0.00	0.00
Start Drop 2.00°/100'									
5,200.00	4.09	30.92	5,185.87	256.00	153.36	298.42	2.00	-2.00	0.00
5,234.21	3.41	30.92	5,220.00	257.92	154.51	300.66	2.00	-2.00	0.00
EOC hold 3.41° - TG1-Skelly #659									
5,300.00	3.41	30.92	5,285.68	261.27	156.52	304.57	0.00	0.00	0.00
5,400.00	3.41	30.92	5,385.50	266.37	159.57	310.51	0.00	0.00	0.00
5,500.00	3.41	30.92	5,485.32	271.47	162.63	316.45	0.00	0.00	0.00
5,600.00	3.41	30.92	5,585.15	276.56	165.68	322.39	0.00	0.00	0.00
5,700.00	3.41	30.92	5,684.97	281.66	168.73	328.34	0.00	0.00	0.00
5,800.00	3.41	30.92	5,784.79	286.76	171.79	334.28	0.00	0.00	0.00
5,900.00	3.41	30.92	5,884.62	291.85	174.84	340.22	0.00	0.00	0.00
6,000.00	3.41	30.92	5,984.44	296.95	177.89	346.16	0.00	0.00	0.00



Scientific Drilling Planning Report



Database: EDM-Julio
Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Skelly Unit #659
Well: Skelly Unit #659
Wellbore: OH
Design: Plan #2 7-7/8" Hole

Local Co-ordinate Reference: Site Skelly Unit #659
TVD Reference: GL Elev @ 3906.00usft
MD Reference: GL Elev @ 3906.00usft
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)
6,100.00	3.41	30.92	6,084.26	302.05	180.95	352.10	0.00	0.00	0.00
6,200.00	3.41	30.92	6,184.09	307.15	184.00	358.04	0.00	0.00	0.00
6,300.00	3.41	30.92	6,283.91	312.24	187.05	363.98	0.00	0.00	0.00
6,400.00	3.41	30.92	6,383.73	317.34	190.11	369.93	0.00	0.00	0.00
6,500.00	3.41	30.92	6,483.56	322.44	193.16	375.87	0.00	0.00	0.00
6,600.00	3.41	30.92	6,583.38	327.53	196.22	381.81	0.00	0.00	0.00
6,700.00	3.41	30.92	6,683.20	332.63	199.27	387.75	0.00	0.00	0.00
6,800.00	3.41	30.92	6,783.03	337.73	202.32	393.69	0.00	0.00	0.00
6,900.00	3.41	30.92	6,882.85	342.82	205.38	399.63	0.00	0.00	0.00
6,917.18	3.41	30.92	6,900.00	343.70	205.90	400.66	0.00	0.00	0.00

PBHL-Skelly #659

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
North HL-Skelly #659	0.00	0.00	0.00	353.70	255.90	666,030.70	653,915.10	32° 49' 48.007 N	103° 49' 56.140 W
- plan misses target center by 436.56usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Rectangle (sides W150.00 H0.00 D0.00)									
East HL-Skelly #659	0.00	0.00	0.00	353.70	255.90	666,030.70	653,915.10	32° 49' 48.007 N	103° 49' 56.140 W
- plan misses target center by 436.56usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Rectangle (sides W0.00 H100.00 D0.00)									
TG1-Skelly #659	0.00	0.00	5,220.00	257.92	154.51	665,934.92	653,813.72	32° 49' 47.064 N	103° 49' 57.333 W
- plan hits target center									
- Point									
PBHL-Skelly #659	0.00	0.01	6,900.00	343.70	205.90	666,020.70	653,865.10	32° 49' 47.910 N	103° 49' 56.726 W
- plan hits target center									
- Circle (radius 50.00)									

Casing Points

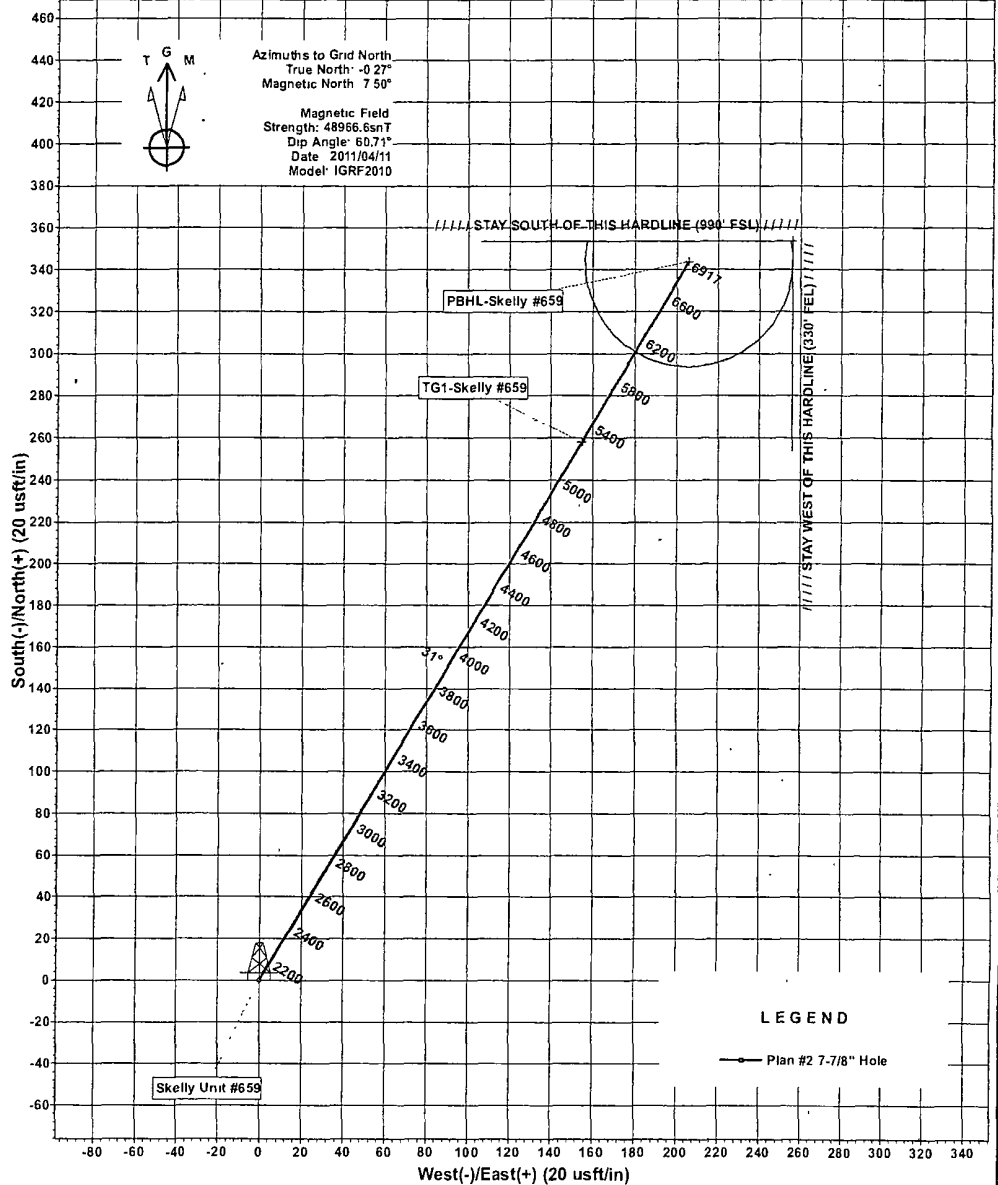
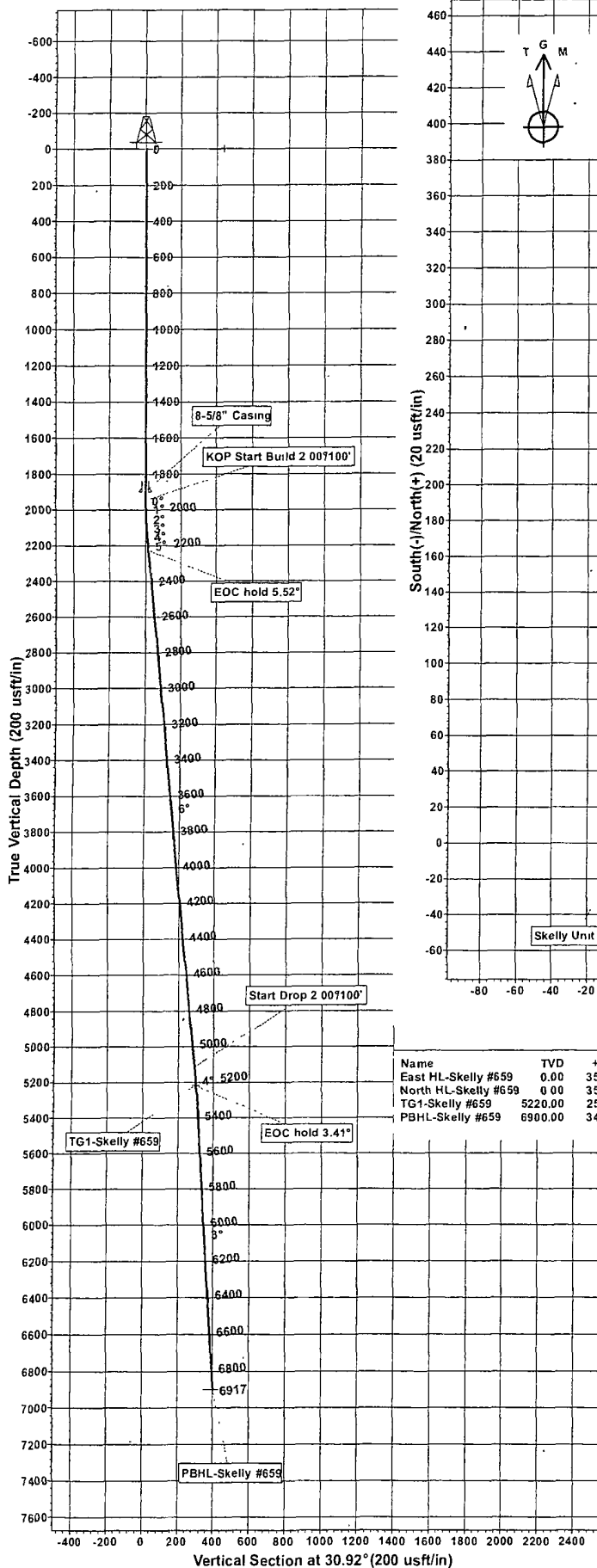
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,900.00	1,900.00	8-5/8" Casing	8-5/8	12-1/4

Plan Annotations

Measured	Vertical	Local Coordinates		Comment
Depth (usft)	Depth (usft)	+N/-S (usft)	+E/-W (usft)	
1,950.00	1,950.00	0.00	0.00	KOP Start Build 2.00°/100'
2,225.95	2,225.52	11.39	6.82	EOC hold 5.52°
5,128.57	5,114.69	250.87	150.29	Start Drop 2.00°/100'
5,234.21	5,220.00	257.92	154.51	EOC hold 3.41°



Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Skelly Unit #659
Wellbore: OH
Design: Plan #2 7-7/8" Hole



Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
East HL-Skelly #659	0.00	353.70	255.90	666030.70	653915.10	32°49' 48 007 N	103°49' 56 140 W	Rectangle (Sides : L100.00 W0.00)
North HL-Skelly #659	0.00	353.70	255.90	666030.70	653815.10	32°49' 48 007 N	103°49' 56 140 W	Rectangle (Side s : L0.00 W150.00)
TG1-Skelly #659	5220.00	257.92	154.51	665934.92	653813.71	32°49' 47 064 N	103°49' 57 333 W	Point
PBHL-Skelly #659	6900.00	343.70	205.90	666020.70	653865.10	32°49' 47 910 N	103°49' 56 726 W	Circle (Radius : 50.00)

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1950.00	0.00	0.00	1950.00	0.00	0.00	0.00	0.00	0.00
3	2225.95	5.52	30.92	2225.52	11.39	6.82	2.00	30.92	13.28
4	5128.57	5.52	30.92	5114.69	250.87	150.29	0.00	0.00	292.44
5	5234.21	3.41	30.92	5220.00	257.92	154.51	2.00	-180.00	300.66
6	6917.18	3.41	30.92	6900.00	343.70	205.90	0.00	0.00	400.66

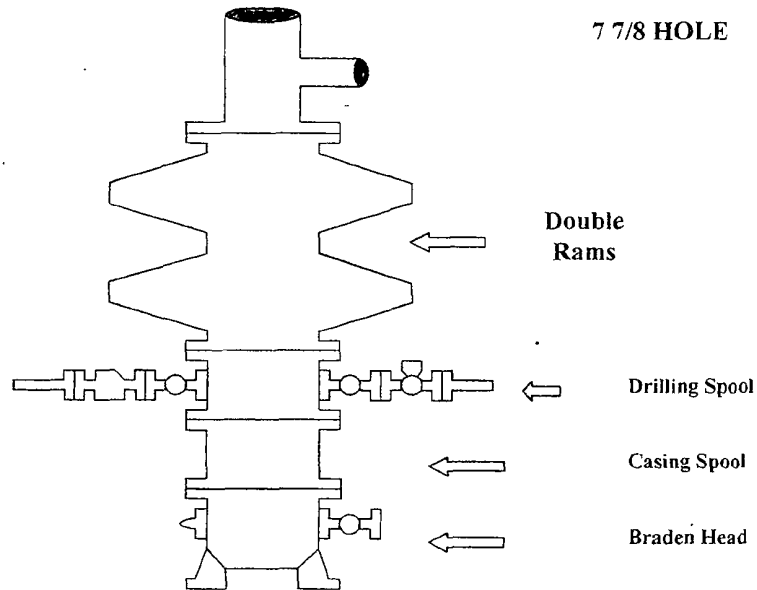
WELL DETAILS: Skelly Unit #659							
Ground Level				3906.00			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot	
0.00	0.00	665677 00	653659 20	32°49' 44 519 N	103°49' 59 158 W		

PROJECT DETAILS: Eddy County, NM (NAN27 NME)									
Geodetic System: US State Plane 1927 (Exact solution)					Created By: Julio Pina				
Datum: NAD 1927 (NADCON CONUS)					Date: 11-Apr-11				
Ellipsoid: Clarke 1866					Checked: _____				
Zone: New Mexico East 3001					Date: _____				
System Datum: Mean Sea Level					Reviewed: _____				
					Date: _____				
					Approved: _____				
					Date: _____				

COG Operating LLC

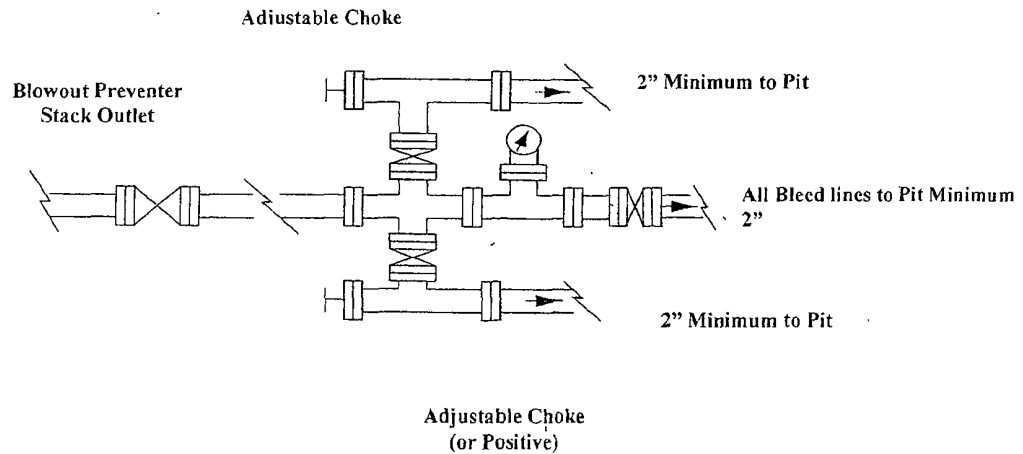
Exhibit #9

BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required

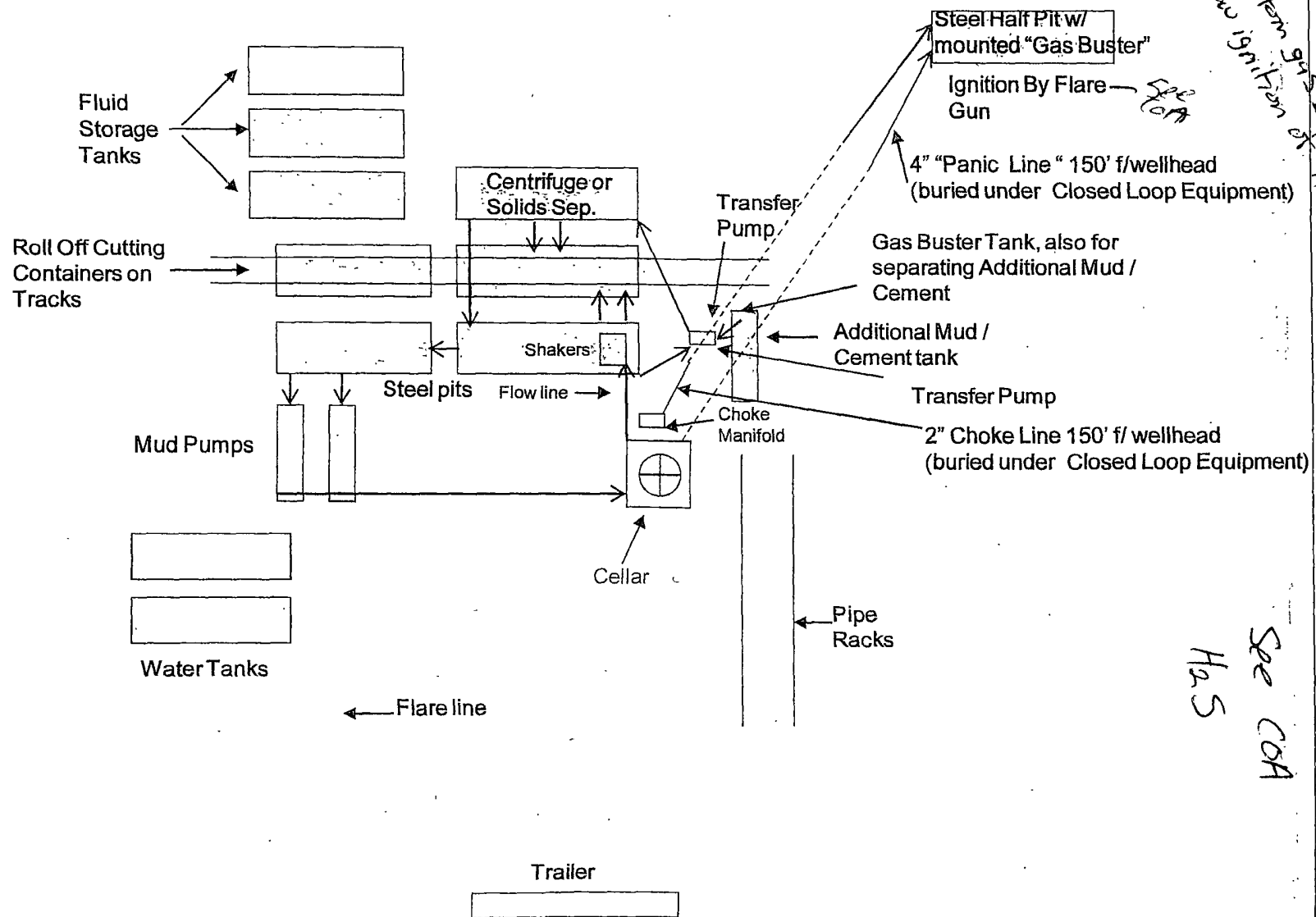


NOTES REGARDING THE BLOWOUT PREVENTERS
Master Drilling Plan
Eddy County, New Mexico

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.

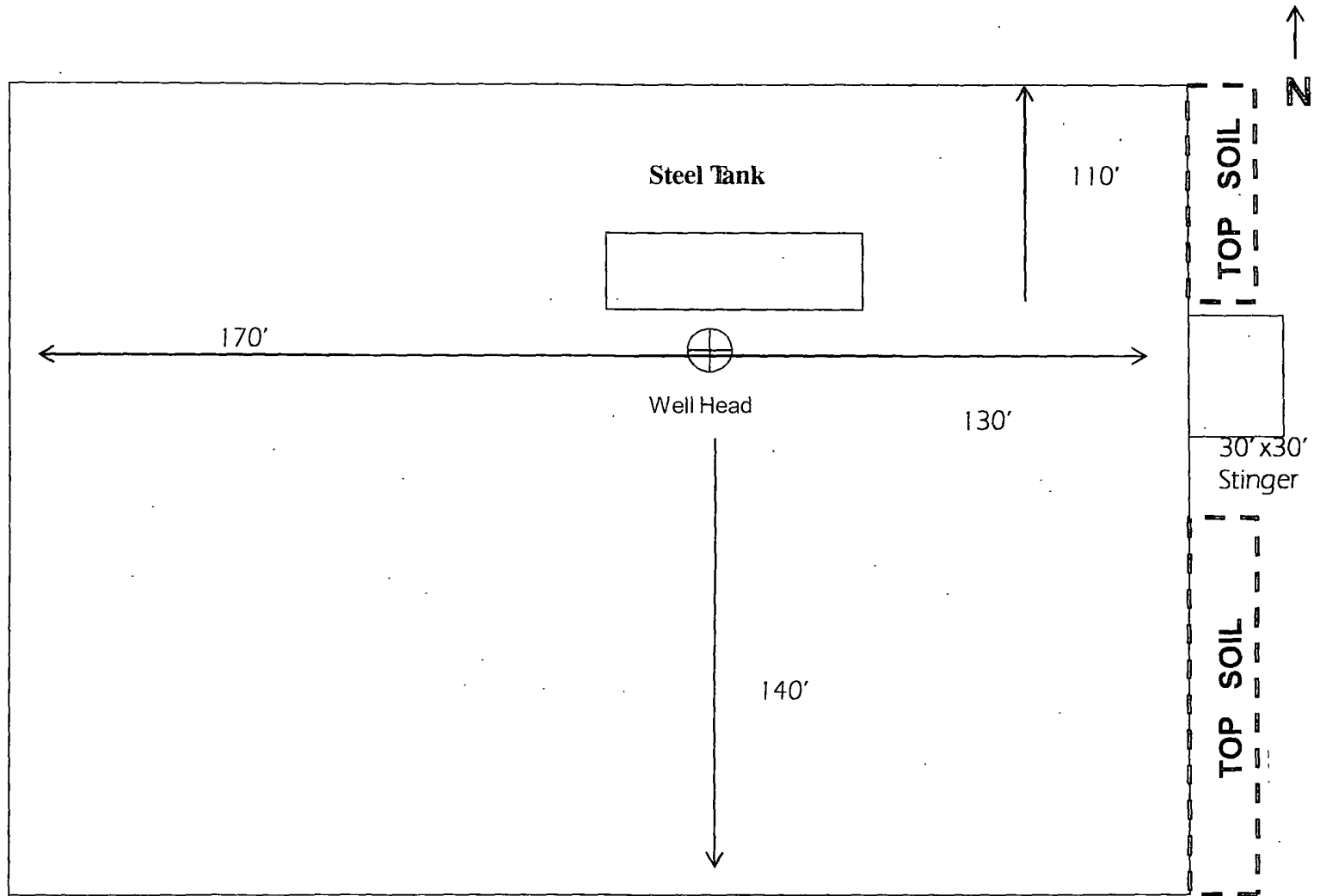
Cuttings will be hauled to either:

CRI (permit number R9166)

or

GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.



Not To Scale

Exhibit #6

COG OPERATING LLC
Rig Layout-Closed Loop
System

DISTRICT 2 -- CHECKLIST FOR INTENTS TO DRILL

C 305607

Operator COG OPR OGRID # 229134
 Well Name & # SKULLY UNIT 659 Surface Type (F) (S) (P)
 Location: UL P Sect 14 Township 17 s, RNG 31 e, Sub-surface Type (F) (S) (P)

A. Date C101 rec'd 11/17/2011 C101 reviewed 11/17/2011

- B. 1. Check mark, Information is OK on Forms:
 OGRID ☒, BONDING ☒, PROP CODE ☒, WELL # ☒, SIGNATURE ☒
 2. Inactive Well list as of: 11/28/2011 # wells 367, # Inactive wells 8
 a. District Grant APD but see number of inactive wells:
 No letter required ☒; Sent Letter to Operator ☐, to Santa Fe ☐
 3. Additional Bonding as of: 11/28/2011
 a. District Denial because operator needs addition bonding:
 No Letter required ☒; Sent Letter to Operator ☐, To Santa Fe ☐
 b. District Denial because of Inactive well list and Financial Assurance:
 No Letter required ☒; Sent Letter to Operator ☐, To Santa Fe ☐

C. C102 YES ☒, NO ☐, Signature ☒
 Mar Laca Pool FIREN: GILBERTA-1450, Code 26770 97866

- a. Dedicated acreage 40, What Units P
 b. SUR. Location Standard ☒; Non-Standard Location ☐
 c. Well shares acres: Yes ☒, No ☐, # of wells ☐ plus this well # ☐
 2. 2nd. Operator in same acreage, Yes ☐, No ☐
 Agreement Letter ☐, Disagreement letter ☐
 3. Intent to Directional Drill Yes ☐, No ☐
 a. Dedicated acreage ☐, What Units ☐
 b. Bottomhole Location Standard ☐, Non-Standard Bottomhole ☐
 4. Downhole Commingle: Yes ☐, No ☐
 a. Pool #2 ☐, Code ☐, Acres ☐
 Pool #3 ☐, Code ☐, Acres ☐
 Pool #4 ☐, Code ☐, Acres ☐

5. POTASH Area Yes ☐, No ☒
 D. Blowout Preventer Yes ☒, No ☐
 E. H2S Yes ☒, No ☐
 F. C144 Pit Registration Yes ☒, No ☐
 G. Does APD require Santa Fe Approval:
 1. Non-Standard Location: Yes ☐, No ☒, NSL # ☐
 2. Non-Standard Proration: Yes ☐, No ☒, NSP # ☐
 3. Simultaneous Dedication: Yes ☐, No ☒, SD # ☐
 Number of wells ☐ Plus # ☐
 4. Injection order Yes ☐, No ☒; PMX # ☐ or WFX # ☐
 5. SWD order Yes ☐, NO ☒; SWD # ☐
 6. DHC from SF ☐; DHC-HOB ☐; Holding ☐

7. OCD Approval Date 11/28/2011 API #30-015- 39697
 8. Reviewers TES