

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 NMNM-71030C, Skelly Unit
3a. Address 550 W. Texas Ave., Suite 1300 Midland, TX 79701		8. Lease Name and Well No. SKELLY UNIT #683 305607
3b. Phone No. (include area code) 432-685-4384		9. API Well No. 30-015-39631
4. Location of Well (Report location clearly and in accordance with any State requirements *) At surface 2273 FSL & 1002 FEL, Unit I At proposed prod. zone 2310 FSL & 330 FEL, Unit I		10. Field and Pool, or Exploratory Fren; Glorieta-Yeso 26770
14. Distance in miles and direction from nearest town or post office* 9 miles East of Loco Hills, NM		11. Sec, T, R, M or Bk and Survey or Area Sec 14 T17S R31E
15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line, if any) 1002'	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. 400'	19. Proposed Depth TVD: 6900' MD: 6947'	20. BLM/BIA Bond No. on file NMB000740; NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc) 3915' GL	22. Approximate date work will start* 05/31/2011	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		Name (Printed/Typed) Kelly J. Holly	Date 05/11/2011
Title Permitting Tech			
Approved by (Signature) /s/ James A. Amos		Name (Printed/Typed) /s/ James A. Amos	Date OCT 28 2011
Title FOR FIELD MANAGER		Office CARLSBAD FIELD OFFICE	

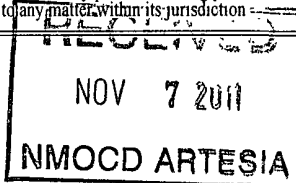
Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

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



**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

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

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 and Natural Resources Department

OIL CONSERVATION DIVISION
11885 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 - 39631	Pool Code 26770	Pool Name Fren; Glorieta-Yeso
Property Code 305607	Property Name SKELLY UNIT	Well Number 683
OGRID No 229137	Operator Name COG OPERATING, LLC	Elevation 3915'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	14	17-S	31-E		2273	SOUTH	1002	EAST	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	14	17-S	31-E		2310	SOUTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
40			

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=667309.2 N X=653235.9 E LAT.=32.833525° N LONG.=103.834452° W BOTTOM HOLE LOCATION Y=667350.3 N X=653907.7 E	DETAIL 3914.2' 3917.7' 600' 600' 3915.0' 3916.6' Penetration Point 2282' FSL + 330' FEL GRID AZ.=86°29'47" HORZ. DIST.=673.2' Y=667683.3 N X=654235.7 E Y=667674.0 N X=652916.4 E Y=666354.0 N X=652924.0 Y=666363.2 N X=654243.2 E 1002' 330' 2273' 2310'	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. <i>Kelly J. Holly</i> 4-4-11 Signature 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 14, 2011 Date Surveyed DSS Signature & Seal of Professional Surveyor <i>Ronald J. Bidson</i> 3/30/2011 11.11.06018 Certificate No. GARY G. BIDSON 12641 RONALD J. BIDSON 3239
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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 GA 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 GA

4. Casing Program

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	Jt.	burst/collapse/tension
17 1/2"	0-650'	13 3/8"	48#	H-40orJ-55	New	ST&C	8.71/3.724/14.91
11" 2000	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.

See
COA

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**

See
COA

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 POP*

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'	Fresh Water	8.5	28	N.C.
650-1800' 2000	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 #683

Skelly Unit #683

OH

Plan: Plan #1 - 7-7/8" Hole

SHL = 2273' FSL & 1002' FEL

BHL = 2260' FSL & 380' FEL

Top of Paddock = 7' S of Surface & 522' E of Surface @ 5220' TVD

Standard Planning Report

06 May, 2011



Scientific Drilling
Directional Drilling Operations



Scientific Drilling

Planning Report



Database: EDM-Julio
Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Skelly Unit #683
Well: Skelly Unit #683
Wellbore: OH
Design: Plan #1 - 7-7/8" Hole

Local Co-ordinate Reference: Site Skelly Unit #683
TVD Reference: GL Elev @ 3915 00usft
MD Reference: GL Elev @ 3915 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 #683		
Site Position:		Northing:	667,309 20 usft
From:	Map	Easting:	653,235 90 usft
Position Uncertainty:	0 00 usft	Slot Radius:	0 "
		Latitude:	32° 50' 0 689 N
		Longitude:	103° 50' 4 029 W
		Grid Convergence:	0 27 °

Well	Skelly Unit #683		
Well Position	+N/-S	0 00 usft	Northing:
	+E/-W	0 00 usft	Easting:
Position Uncertainty	0 00 usft	Wellhead Elevation:	Ground Level:
			3,915 00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	2011/05/06	7 77
			Dip Angle
			60 71
			Field Strength
			48,962

Design	Plan #1 - 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
			90.82

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	
1,950 00	0 00	0 00	1,950 00	0 00	0 00	0 00	0 00	0 00	0 00	
2,459 92	10 20	90 82	2,457 24	-0 65	45 26	2 00	2 00	0 00	90 82	
4,924.62	10 20	90 82	4,882 99	-6 89	481 61	0 00	0 00	0 00	0 00	
5,264 22	3 41	90 82	5,220 00	-7 47	521 81	2 00	-2 00	0 00	-180 00	TG1-SU #683
6,947 19	3 41	90 82	6,900 00	-8 90	621 80	0 00	0 00	0 00	0 00	PBHL-SU #683



Scientific Drilling
Planning Report



Database: EDM-Julio
Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Skelly Unit #683
Well: Skelly Unit #683
Wellbore: OH
Design: Plan #1 - 7-7/8" Hole

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference
Survey Calculation Method:
Site Skelly Unit #683
GL Elev @ 3915 00usft
GL Elev @ 3915 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
North HL-SU #683 - West HL-SU #683									
1,850 00	0 00	0 00	1,850 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	90 82	2,000 00	-0.01	0 44	0 44	2 00	2 00	0 00
2,100 00	3 00	90 82	2,099 93	-0 06	3 93	3 93	2 00	2 00	0 00
2,200 00	5 00	90 82	2,199 68	-0 16	10 90	10 90	2 00	2 00	0 00
2,300 00	7 00	90 82	2,299 13	-0 31	21 35	21 35	2 00	2 00	0 00
2,400 00	9 00	90 82	2,398 15	-0 50	35 27	35 27	2 00	2 00	0 00
2,459 92	10 20	90 82	2,457 23	-0 65	45 26	45 26	2 00	2 00	0 00
EOC hold 10.20°									
2,500 00	10.20	90 82	2,496 68	-0 75	52 35	52 36	0 00	0 00	0 00
2,600 00	10 20	90 82	2,595 10	-1 00	70 06	70 06	0 00	0 00	0 00
2,700 00	10 20	90 82	2,693 52	-1 26	87 76	87 77	0 00	0 00	0 00
2,800 00	10 20	90 82	2,791 94	-1 51	105 47	105 48	0 00	0 00	0 00
2,900 00	10 20	90 82	2,890 36	-1 76	123 17	123 18	0 00	0 00	0 00
3,000 00	10 20	90 82	2,988 78	-2 02	140 87	140 89	0 00	0 00	0 00
3,100 00	10 20	90 82	3,087 20	-2 27	158 58	158 59	0 00	0 00	0 00
3,200 00	10 20	90 82	3,185 62	-2 52	176 28	176 30	0 00	0 00	0 00
3,300 00	10 20	90 82	3,284 04	-2 78	193 99	194 01	0 00	0 00	0 00
3,400 00	10 20	90 82	3,382 46	-3 03	211 69	211 71	0 00	0 00	0 00
3,500 00	10 20	90 82	3,480 88	-3 28	229 39	229 42	0 00	0 00	0 00
3,600 00	10 20	90 82	3,579 30	-3 54	247 10	247 12	0 00	0 00	0 00
3,700 00	10 20	90 82	3,677 72	-3 79	264 80	264 83	0 00	0 00	0 00
3,800 00	10 20	90 82	3,776 14	-4 04	282 51	282 53	0 00	0 00	0 00
3,900 00	10 20	90 82	3,874 56	-4 30	300 21	300 24	0 00	0 00	0 00
4,000 00	10 20	90 82	3,972 98	-4 55	317 91	317 95	0 00	0 00	0 00
4,100 00	10 20	90 82	4,071 40	-4 80	335 62	335 65	0 00	0 00	0 00
4,200 00	10 20	90 82	4,169 82	-5 06	353 32	353 36	0 00	0 00	0 00
4,300 00	10 20	90 82	4,268 24	-5 31	371 03	371 06	0 00	0 00	0 00
4,400 00	10 20	90 82	4,366 66	-5 56	388 73	388 77	0 00	0 00	0 00
4,500 00	10 20	90 82	4,465 08	-5 82	406 43	406 48	0 00	0 00	0 00
4,600 00	10 20	90 82	4,563 50	-6 07	424 14	424 18	0 00	0 00	0 00
4,700 00	10 20	90 82	4,661 92	-6 32	441 84	441 89	0 00	0 00	0 00
4,800 00	10 20	90 82	4,760 34	-6 58	459 55	459 59	0 00	0 00	0 00
4,900 00	10 20	90 82	4,858 76	-6 83	477 25	477 30	0 00	0 00	0 00
4,924 62	10 20	90 82	4,882 99	-6 89	481 61	481 66	0 00	0 00	0 00
Start Drop 2.00°/100'									
5,000 00	8 69	90 82	4,957 35	-7 07	493 98	494 03	2 00	-2 00	0 00
5,100 00	6 69	90 82	5,056 44	-7 26	507 36	507 41	2 00	-2 00	0 00
5,200 00	4 69	90 82	5,155 94	-7 40	517 27	517 33	2 00	-2 00	0 00
5,264 22	3 41	90 82	5,220 00	-7 47	521 81	521 86	2 00	-2 00	0 00
EOC hold 3.41° - Top of Paddock - TG1-SU #683									
5,300 00	3 41	90 82	5,255 72	-7 50	523 93	523 99	0 00	0 00	0 00
5,400 00	3 41	90 82	5,355 54	-7 58	529 87	529 93	0 00	0 00	0 00
5,500 00	3 41	90 82	5,455 37	-7 67	535 82	535 87	0 00	0 00	0 00
5,600 00	3 41	90 82	5,555 19	-7 75	541 76	541 81	0 00	0 00	0 00
5,700 00	3 41	90 82	5,655 01	-7 84	547 70	547 75	0 00	0 00	0 00
5,800 00	3 41	90 82	5,754 84	-7 92	553 64	553 70	0 00	0 00	0 00
5,900 00	3 41	90 82	5,854 66	-8 01	559 58	559 64	0 00	0 00	0 00
6,000 00	3 41	90 82	5,954 48	-8 09	565 52	565 58	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 #683
Well: Skelly Unit #683
Wellbore: OH
Design: Plan #1 - 7-7/8" Hole

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Site Skelly Unit #683
GL Elev @ 3915 00usft
GL Elev @ 3915 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)
6,100 00	3 41	90 82	6,054 31	-8 18	571 46	571 52	0 00	0 00	0 00
6,200 00	3 41	90 82	6,154 13	-8 26	577 41	577 46	0 00	0 00	0 00
6,300 00	3 41	90 82	6,253 95	-8 35	583 35	583 41	0 00	0 00	0 00
6,400 00	3 41	90 82	6,353 78	-8 43	589 29	589 35	0 00	0 00	0 00
6,500 00	3 41	90 82	6,453 60	-8 52	595 23	595 29	0 00	0 00	0 00
6,600 00	3 41	90 82	6,553 42	-8 60	601 17	601 23	0 00	0 00	0 00
6,700 00	3 41	90 82	6,653 25	-8 69	607 11	607 18	0 00	0 00	0 00
6,800 00	3 41	90 82	6,753 07	-8 77	613 05	613 12	0 00	0 00	0 00
6,900 00	3 41	90 82	6,852 89	-8 86	619 00	619 06	0 00	0 00	0 00
6,947 19	3 41	90 82	6,900 00	-8 90	621 80	621 86	0 00	0 00	0 00

PBHL-SU #683

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
North HL-SU #683 - plan misses target center by 673 06usft at 0 00usft MD (0 00 TVD, 0 00 N, 0 00 E) - Rectangle (sides W500 00 H0 00 D0 00)	0 00	0 00	0 00	41 10	671 80	667,350 30	653,907 70	32° 50' 1 065 N	103° 49' 56 153 W
West HL-SU #683 - plan misses target center by 673 06usft at 0 00usft MD (0 00 TVD, 0 00 N, 0 00 E) - Rectangle (sides W0 00 H200 00 D0 00)	0 00	0 01	0 00	41 10	671 80	667,350 30	653,907 70	32° 50' 1 065 N	103° 49' 56 153 W
TG1-SU #683 - plan hits target center - Point	0 00	0 01	5,220 00	-7.47	521 81	667,301 74	653,757 71	32° 50' 0 591 N	103° 49' 57 914 W
PBHL-SU #683 - plan hits target center - Circle (radius 50 00)	0 00	0 00	6,900 00	-8 90	621 80	667,300 30	653,857 70	32° 50' 0 572 N	103° 49' 56 742 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,850 00	1,850 00	8-5/8" Casing	8-5/8	12-1/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,264.22	5,220 00	Top of Paddock		0 00	



Scientific Drilling
Planning Report



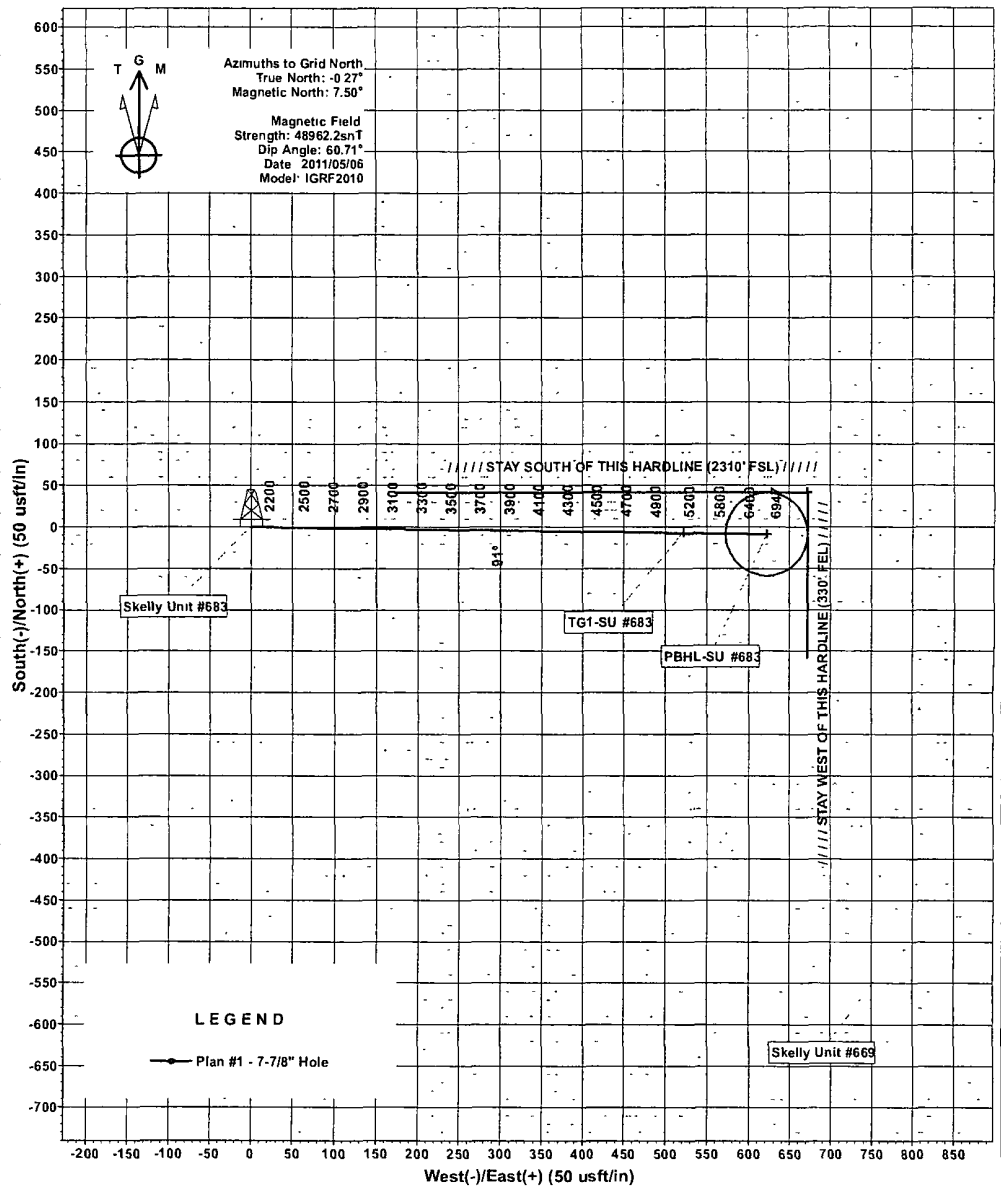
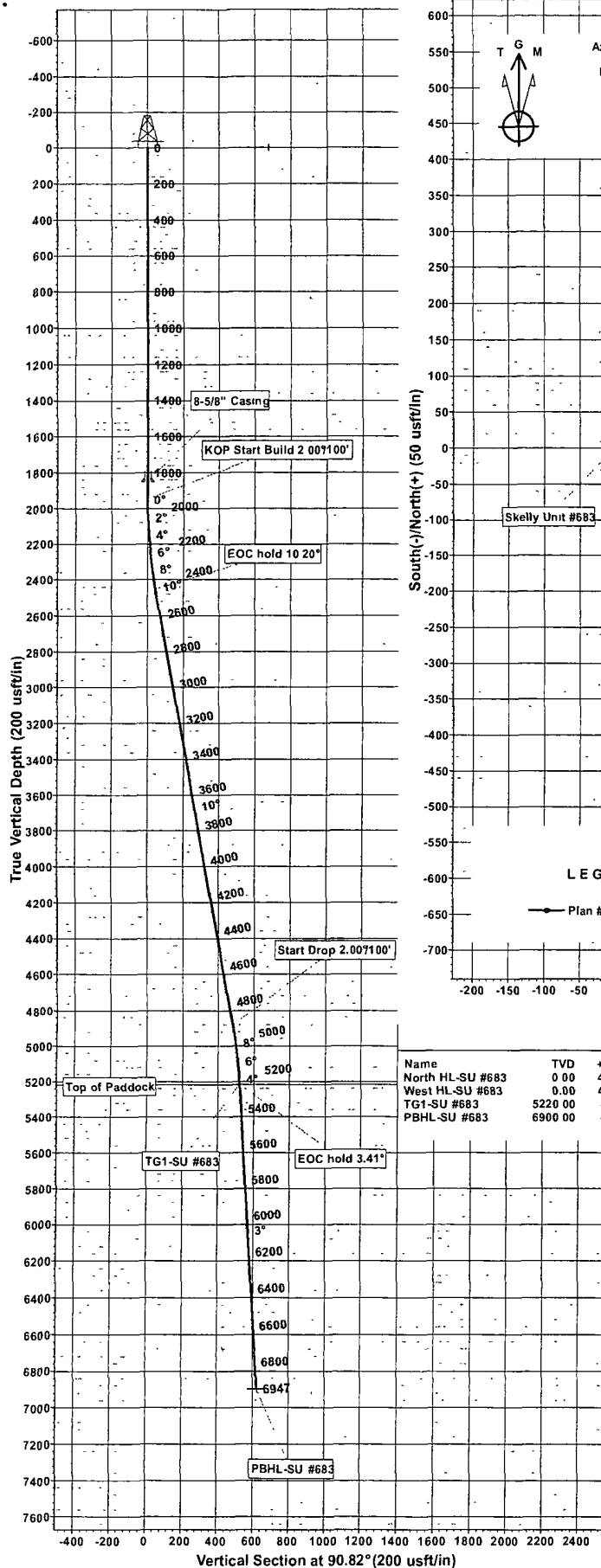
Database: EDM-Julio
Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Skelly Unit #683
Well: Skelly Unit #683
Wellbore: OH
Design: Plan #1 - 7-7/8" Hole

Local Co-ordinate Reference: Site Skelly Unit #683
TVD Reference: GL Elev @ 3915 00usft
MD Reference: GL Elev @ 3915 00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,950 00	1,950 00	0 00	0 00	KOP Start Build 2 00°/100'	
2,459 92	2,457 23	-0 65	45 26	EOC hold 10.20°	
4,924 62	4,882 99	-6 89	481.61	Start Drop 2 00°/100'	
5,264 22	5,220 00	-7 47	521 81	EOC hold 3 41°	



Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Skelly Unit #683
Wellbore: OH
Design: Plan #1 - 7-7/8" Hole



Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
North HL-SU #683	0.00	41.10	671.80	667350.30	653807.70	32° 50' 1.065 N	103° 49' 56.153 W	Rectangle (Sides: L0. 00 W500.00)
West HL-SU #683	0.00	41.10	671.80	667350.30	653807.70	32° 50' 1.065 N	103° 49' 56.153 W	Rectangle (Sides: L200.00 W0.00)
TG1-SU #683	5220.00	-7.47	521.81	667301.73	653757.71	32° 50' 0.591 N	103° 49' 57.914 W	Point
PBHL-SU #683	6900.00	-8.90	621.80	667300.30	653857.70	32° 50' 0.572 N	103° 49' 56.742 W	Circle (Radius: 50.00)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
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	2459.92	10.20	90.82	2457.24	-0.65	45.26	2.00	90.82	45.26	
4	4924.62	10.20	90.82	4882.98	-6.89	481.61	0.00	0.00	481.66	
5	5264.22	3.41	90.82	5220.00	-7.47	521.81	2.00	-180.00	521.86	TG1-SU #683
6	6947.19	3.41	90.82	6900.00	-8.90	621.80	0.00	0.00	621.86	PBHL-SU #683

WELL DETAILS: Skelly Unit #683

+N/-S	+E/-W	Northing	Easting	Ground Level	Latitude	Longitude	Slot
0.00	0.00	667309.20	653235.90	3915.00	32° 50' 0.689 N	103° 50' 4.029 W	

PROJECT DETAILS: Eddy County, NM (NAN27 NME)

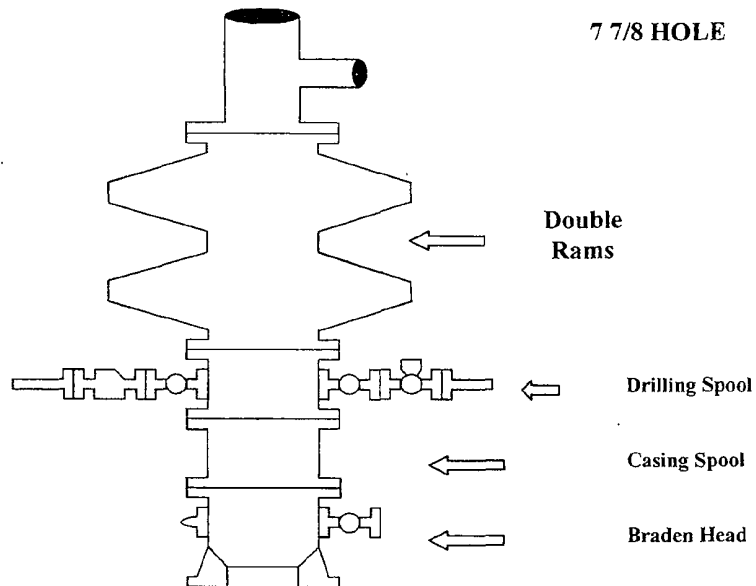
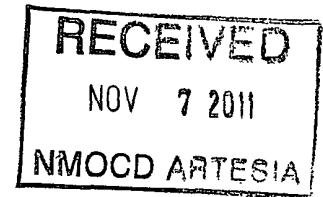
Plan Plan #1 - 7-7/8" Hole (Skelly Unit #683/OH)

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
Created By: Julio Pina
Checked: _____
Reviewed: _____
Approved: _____
Date: 06-May-11
Date: _____
Date: _____

COG Operating LLC

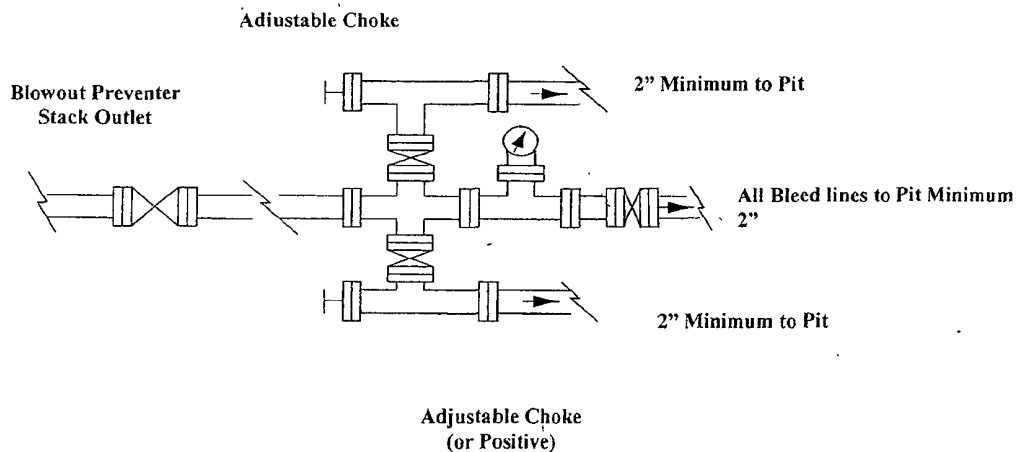
Exhibit #9

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.

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)

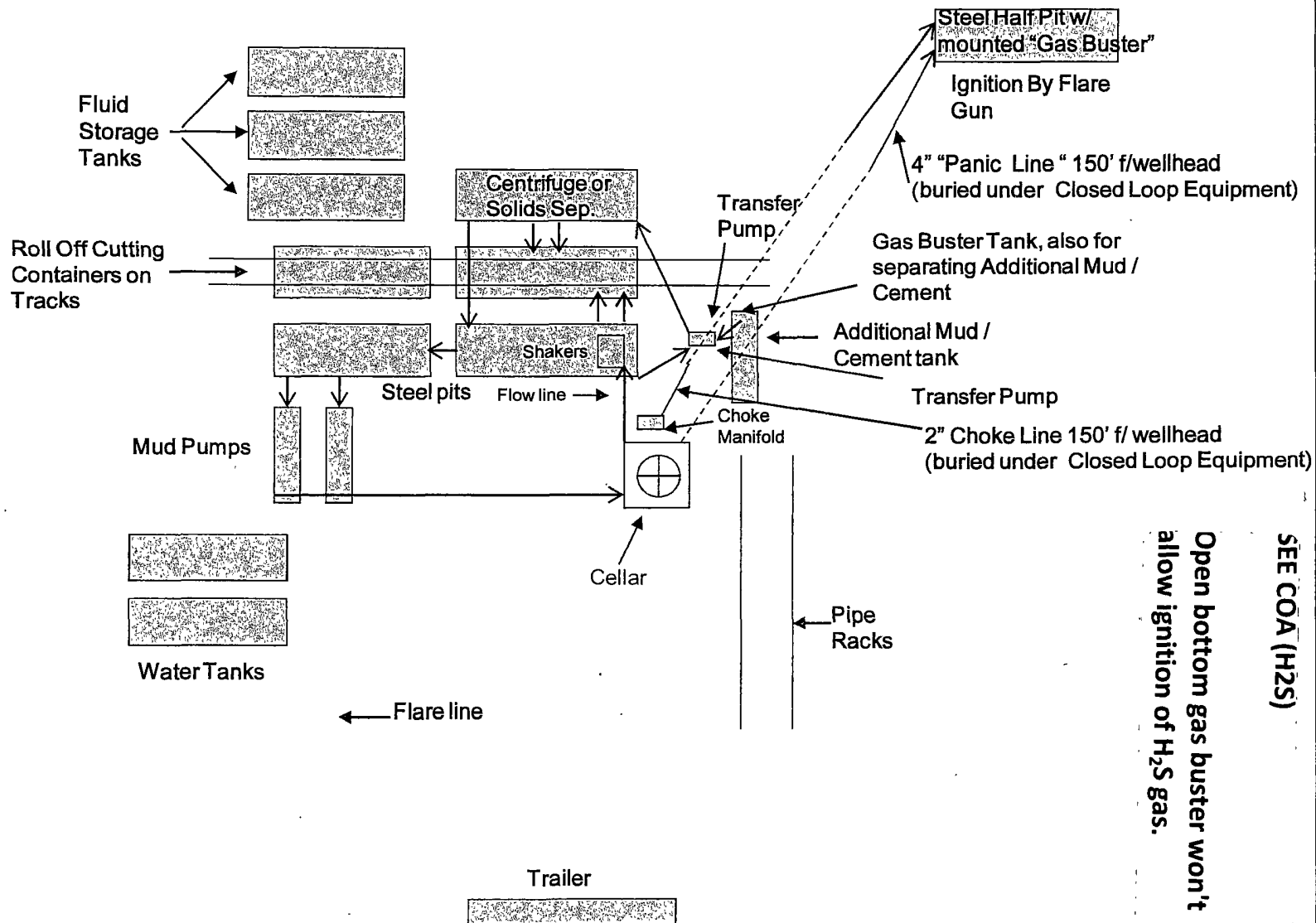
or

GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.

COG Operating LLC

Closed Loop Equipment Diagram



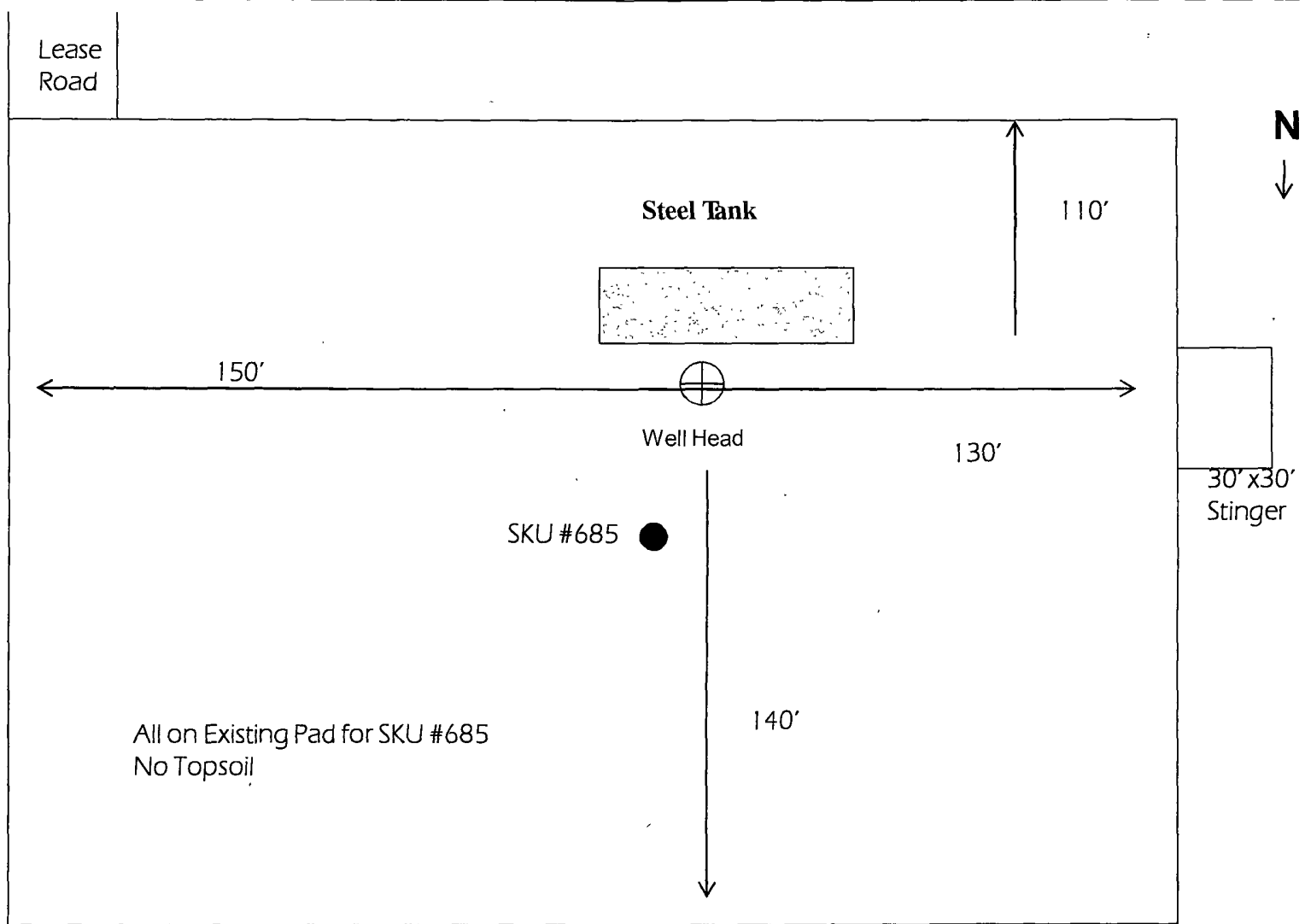


Exhibit #6

Not To Scale

COG OPERATING LLC
Rig Layout-Closed Loop
System

DISTRICT 2 -- CHECKLIST FOR INTENTS TO DRILL

305607

Operator COG OPR OGRID # 229134
Well Name & # SKULLY UNIT 683 Surface Type (F) (S) (P)
Location: UL _____, Sect _____, Township _____, s, RNG _____, e, Sub-surface Type (F) (S) (P)

- A. Date C101 rec'd 11 / 07 / 2011 C101 reviewed 11 / 14 / 2011
- B. 1. Check mark, Information is OK on Forms:
OGRID ☒, BONDING ☒, PROP CODE ☒, WELL # 683, SIGNATURE ☒
2. Inactive Well list as of: 11 / 14 / 2011 # wells 3649, # 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 / 14 / 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 FRON: Horvath - Yes, Code 26770
1. Pool FRON: Horvath - Yes, Code 26770
a. Dedicated acreage 1, What Units 90
b. SUR. Location Standard ☒; Non-Standard Location _____
c. Well shares acres: Yes ☒, No _____, # of wells 4 plus this well # 683
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 / 14 / 2011 API #30-0 15 39631
8. Reviewers 105