

Form 3160-3  
(April 2004)UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

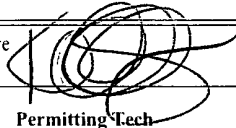

## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		FORM APPROVED OMB No 1004-0137 Expires March 31, 2007	
1b. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		5 Lease Serial No <b>NMLC - 029418A</b>	
2 Name of Operator <b>Chevron USA Agent: COG Operating LLC [229137]</b>		6 If Indian, Allottee or Tribe Name	
3a Address <b>550 W. Texas Ave., Suite 100 Midland, TX 79701</b>		7 If Unit or CA Agreement, Name and No <b>NMNM-71030C; Skelly Unit</b>	
3b Phone No. (include area code) <b>432-685-4384</b>		8 Lease Name and Well No. <b>SKELLY UNIT #673 [305607]</b>	
4 Location of Well (Report location clearly and in accordance with any State requirements *) At surface <b>SHL: 1621 FSL &amp; 1134 FWL, Unit L</b> At proposed prod zone <b>BHL: 1650 FSL &amp; 1650 FWL, Unit K</b>		9 API Well No <b>30-015-40093</b>	
14 Distance in miles and direction from nearest town or post office* <b>9 miles East of Loco Hills, NM</b>		10 Field and Pool, or Exploratory <b>FRON; Gloria Yeso 26770</b>	
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drg unit line, if any) <b>1134'</b>		11 Sec, T R M or Blk and Survey or Area <b>Sec 14 T17S R31E</b>	
16 No of acres in lease <b>640</b>		12 County or Parish <b>EDDY</b>	
17 Spacing Unit dedicated to this well <b>40</b>		13 State <b>NM</b>	
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft <b>173'</b>		19 Proposed Depth <b>TVD: 6800' MD: 6829'</b>	
20 BLM/BIA Bond No on file <b>NMB000740; NMB000215</b>		21 Elevations (Show whether DF, KDB, RT, GL, etc) <b>3900' GL</b>	
22 Approximate date work will start* <b>03/31/2012</b>		23 Estimated duration <b>15 days</b>	

## 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) <b>Kelly Holly</b>	Date <b>01/19/2012</b>
Title <b>Permitting Tech</b>		
Approved by (Signature) 	Name (Printed/Typed) <b>James A. Ames</b>	Date <b>MAR 20 2012</b>
Title <b>FIELD MANAGER</b>		
Office <b>CARLSBAD FIELD OFFICE</b>		

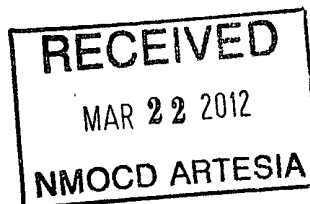
Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.  
Conditions of approval, if any, are attached.

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

*Surface Use Plan*  
*COG Operating, LLC*  
*Skelly Unit #673*  
*SL: 1621' FSL & 1134' FWL    UL L*  
*BHL: 1650' FSL & 1650' FWL    UL K*  
*Section 14, T-17-S, R-31-E*  
*Eddy County, New Mexico*

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I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or COG Operating, LLC, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements. Executed this 10th day of January, 2012.

Signed: Carl Bird

Printed Name: Carl Bird

Position: Drilling Engineer

Address: 550 W. Texas, Suite 1300, Midland, Texas 79701

Telephone: (432) 683-7443

Field Representative (if not above signatory): Same

E-mail: cbird@conchoresources.com

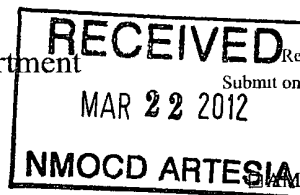
DISTRICT I  
1625 N. French Dr., Hobbs, NM 88240  
Phone (575) 393-6161 Fax: (575) 393-0720

DISTRICT II  
811 S. First St., Artesia, NM 88210  
Phone (575) 748-1283 Fax: (575) 748-9720

DISTRICT III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone (505) 476-3460 Fax: (505) 476-3462

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



Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office

RECOMMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015- <b>40093</b>	Pool Code <b>26770</b>	Pool Name <b>FRON; GLORIETA-YOSO</b>
Property Code 305607	Property Name <b>SKELLY UNIT</b>	Well Number 673
OGRID No. 229137	Operator Name <b>COG OPERATING, LLC</b>	Elevation 3900'

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	14	17-S	31-E		1621	SOUTH	1134	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
K	14	17-S	31-E		1650	SOUTH	1650	WEST	EDDY

Dedicated Acres 40	Joint or Infill	Consolidation Code	Order No
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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

<p><b>CORNER COORDINATES TABLE</b></p> <p>① - Y=667646.2 N, X=648957.1 E</p> <p>② - Y=667664.7 N, X=651597.0 E</p> <p>③ - Y=666326.1 N, X=648964.6 E</p> <p>④ - Y=666344.7 N, X=651604.9 E</p> <p><b>Penetration Point</b> 1144.8 FSL + 1469 FWL</p> <p><b>DETAIL</b></p> <p>3895.8' 3901.7'</p> <p>3893.7' 3898.6'</p> <p>600' 600'</p> <p>1650' 1134' S.L.</p> <p>SEE DETAIL</p> <p>GRID AZ.=86°22'07" HORZ. DIST=516.8'</p>	<p><b>OPERATOR CERTIFICATION</b></p> <p>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</p> <p><b>1-9-2012</b></p> <p><b>Kelly J. Holly</b></p> <p><b>kholly@concho.com</b></p> <p><b>SURVEYOR CERTIFICATION</b></p> <p>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</p> <p><b>DECEMBER 19, 2011</b></p> <p>Date of Survey</p> <p>Signature &amp; Seal of Professional Surveyor</p> <p><b>GARY G. EIDSON</b></p> <p><b>12641</b></p> <p>Certificate Number Gary G. Eidson 12641 Ralph J. Eidson 3239</p> <p>AF JWSC W.O.: 11.11.2213</p>
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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'
Blaine	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
Blaine	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

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	Jt.	burst/collapse/tension
17 1/2" <i>See COA</i> 580	0-650'	13 3/8"	48#	H-40orJ-55	New	ST&C	8.71/3.724/14.91
11" 1950	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% CaCl<sub>2</sub>, 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% CaCl<sub>2</sub>, yield-1.32, back to surface. 145% excess

**Multi-Stage:** Stage 1: 350 sx Class C, w/2% CaCl<sub>2</sub>, yield. - 1.32. 40% excess  
Stage 2: 200 sx Class C w/2% CaCl<sub>2</sub>, 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" *See COA* 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.

**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- <del>650</del> 580	Fresh Water	8.5	28	N.C.
<del>650-1800</del> 750	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. Completion is planned in the Paddock and Blinbry formations.





## **COG Operating LLC**

**Eddy County, NM (NAN27 NME)**

**Skelly Unit #673**

**Skelly Unit #673**

**OH**

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

**SHL = 1621' FSL & 1134' FWL**

**BHL = 1660' FSL & 1660' FWL**

**Top of Paddock = 27' North of Surface & 335' East of Surface @ 5100' TVD**

## **Standard Planning Report**

**13 January, 2012**



**Scientific Drilling**  
Directional Drilling Operations



SDI  
Planning Report



Database:	EDM 5000.1: Single User Db	Local Co-ordinate Reference:	Site Skelly Unit #673
Company:	COG Operating LLC	TVD Reference:	GL @ 3900 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL @ 3900 00usft
Site:	Skelly Unit #673	North Reference:	Grid
Well:	Skelly Unit #673	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

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 #673		
Site Position:		Northing:	666,634.90 usft
From:	Map	Easting:	650,096.70 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 49' 54.162 N
		Longitude:	103° 50' 40.857 W
		Grid Convergence:	0.26 °

Well:	Skelly Unit #673		
Well Position	+N/-S	0 00 usft	Northing:
	+E/-W	0 00 usft	Easting:
Position Uncertainty	0 00 usft	Wellhead Elevation:	Ground Level:
			3,900 00 usft

Wellbore:	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	2012/01/13	7.69
			Dip Angle:
			(°)
			60.69
			Field Strength
			(nT)
			48,891

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
			(°)
			85.36

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(usft)	(°)	(°)	(usft)	(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	
2,270 80	6.42	85.36	2,270 13	1.45	17.88	2.00	2.00	26.61	85.36	
6,829 22	6.42	85.36	6,800 00	42.70	525.60	0 00	0 00	0 00	0 00	PBHL-SU #673



SDI  
Planning Report



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Skelly Unit #673
Company:	COG Operating LLC	TVD Reference:	GL @ 3900.00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL @ 3900.00usft
Site:	Skelly Unit #673	North Reference:	Grnd
Well:	Skelly Unit #673	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

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
South HL-SU #673 - West HL-SU #673									
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
Start Build 2.00°/100'									
2,000.00	1.00	85.36	2,000.00	0.04	0.43	0.44	2.00	2.00	0.00
2,100.00	3.00	85.36	2,099.93	0.32	3.91	3.93	2.00	2.00	0.00
2,200.00	5.00	85.36	2,199.68	0.88	10.87	10.90	2.00	2.00	0.00
2,270.80	6.42	85.36	2,270.13	1.45	17.88	17.94	2.00	2.00	0.00
Hold 6.42°									
2,300.00	6.42	85.36	2,299.15	1.72	21.14	21.21	0.00	0.00	0.00
2,400.00	6.42	85.36	2,398.52	2.62	32.27	32.38	0.00	0.00	0.00
2,500.00	6.42	85.36	2,497.89	3.53	43.41	43.56	0.00	0.00	0.00
2,600.00	6.42	85.36	2,597.27	4.43	54.55	54.73	0.00	0.00	0.00
2,700.00	6.42	85.36	2,696.64	5.34	65.69	65.90	0.00	0.00	0.00
2,800.00	6.42	85.36	2,796.02	6.24	76.83	77.08	0.00	0.00	0.00
2,900.00	6.42	85.36	2,895.39	7.15	87.96	88.25	0.00	0.00	0.00
3,000.00	6.42	85.36	2,994.76	8.05	99.10	99.43	0.00	0.00	0.00
3,100.00	6.42	85.36	3,094.14	8.96	110.24	110.60	0.00	0.00	0.00
3,200.00	6.42	85.36	3,193.51	9.86	121.38	121.78	0.00	0.00	0.00
3,300.00	6.42	85.36	3,292.88	10.77	132.52	132.95	0.00	0.00	0.00
3,400.00	6.42	85.36	3,392.26	11.67	143.65	144.13	0.00	0.00	0.00
3,500.00	6.42	85.36	3,491.63	12.58	154.79	155.30	0.00	0.00	0.00
3,600.00	6.42	85.36	3,591.00	13.48	165.93	166.48	0.00	0.00	0.00
3,700.00	6.42	85.36	3,690.38	14.39	177.07	177.65	0.00	0.00	0.00
3,800.00	6.42	85.36	3,789.75	15.29	188.21	188.83	0.00	0.00	0.00
3,900.00	6.42	85.36	3,889.13	16.19	199.34	200.00	0.00	0.00	0.00
4,000.00	6.42	85.36	3,988.50	17.10	210.48	211.18	0.00	0.00	0.00
4,100.00	6.42	85.36	4,087.87	18.00	221.62	222.35	0.00	0.00	0.00
4,200.00	6.42	85.36	4,187.25	18.91	232.76	233.52	0.00	0.00	0.00
4,300.00	6.42	85.36	4,286.62	19.81	243.90	244.70	0.00	0.00	0.00
4,400.00	6.42	85.36	4,385.99	20.72	255.03	255.87	0.00	0.00	0.00
4,500.00	6.42	85.36	4,485.37	21.62	266.17	267.05	0.00	0.00	0.00
4,600.00	6.42	85.36	4,584.74	22.53	277.31	278.22	0.00	0.00	0.00
4,700.00	6.42	85.36	4,684.12	23.43	288.45	289.40	0.00	0.00	0.00
4,800.00	6.42	85.36	4,783.49	24.34	299.59	300.57	0.00	0.00	0.00
4,900.00	6.42	85.36	4,882.86	25.24	310.72	311.75	0.00	0.00	0.00
5,000.00	6.42	85.36	4,982.24	26.15	321.86	322.92	0.00	0.00	0.00
5,100.00	6.42	85.36	5,081.61	27.05	333.00	334.10	0.00	0.00	0.00
5,118.51	6.42	85.36	5,100.00	27.22	335.06	336.16	0.00	0.00	0.00
Top of Paddock									
5,200.00	6.42	85.36	5,180.98	27.96	344.14	345.27	0.00	0.00	0.00
5,300.00	6.42	85.36	5,280.36	28.86	355.28	356.45	0.00	0.00	0.00
5,400.00	6.42	85.36	5,379.73	29.77	366.41	367.62	0.00	0.00	0.00
5,500.00	6.42	85.36	5,479.10	30.67	377.55	378.80	0.00	0.00	0.00
5,600.00	6.42	85.36	5,578.48	31.58	388.69	389.97	0.00	0.00	0.00
5,700.00	6.42	85.36	5,677.85	32.48	399.83	401.14	0.00	0.00	0.00
5,800.00	6.42	85.36	5,777.23	33.39	410.97	412.32	0.00	0.00	0.00
5,900.00	6.42	85.36	5,876.60	34.29	422.10	423.49	0.00	0.00	0.00
6,000.00	6.42	85.36	5,975.97	35.20	433.24	434.67	0.00	0.00	0.00
6,100.00	6.42	85.36	6,075.35	36.10	444.38	445.84	0.00	0.00	0.00
6,200.00	6.42	85.36	6,174.72	37.01	455.52	457.02	0.00	0.00	0.00
6,300.00	6.42	85.36	6,274.09	37.91	466.66	468.19	0.00	0.00	0.00



SDI  
Planning Report



Database:	EDM 5000-1 Single User.Db	Local Co-ordinate Reference:	Site: Skelly Unit #673
Company:	COG Operating LLC	TVD Reference:	GL @ 3900.00usft
Project:	Eddy County NM (NAN27 NME)	MD Reference:	GL @ 3900.00usft
Site:	Skelly Unit #673	North Reference:	Grnd
Well:	Skelly Unit #673	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

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)
6,400.00	6.42	85.36	6,373.47	38.82	477.79	479.37	0.00	0.00	0.00
6,500.00	6.42	85.36	6,472.84	39.72	488.93	490.54	0.00	0.00	0.00
6,600.00	6.42	85.36	6,572.22	40.63	500.07	501.72	0.00	0.00	0.00
6,700.00	6.42	85.36	6,671.59	41.53	511.21	512.89	0.00	0.00	0.00
6,800.00	6.42	85.36	6,770.96	42.44	522.35	524.07	0.00	0.00	0.00
6,829.22	6.42	85.36	6,800.00	42.70	525.60	527.33	0.00	0.00	0.00
PBHL-SU #673									

Design Targets

Target Name	hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
South HL-SU #673		0.00	0.00	-1.00	32.70	515.60	666,667.60	650,612.30	32° 49' 54.462 N	103° 50' 34.812 W
- plan misses target center by 516.64usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Rectangle (sides W100.00 H0.00 D0.00)										
West HL-SU #673		0.00	0.00	-1.00	32.70	515.60	666,667.60	650,612.30	32° 49' 54.462 N	103° 50' 34.812 W
- plan misses target center by 516.64usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Rectangle (sides W0.00 H100.00 D0.00)										
PBHL-SU #673		0.00	0.00	6,800.00	42.70	525.60	666,677.60	650,622.30	32° 49' 54.561 N	103° 50' 34.694 W
- plan hits target center										
- Circle (radius 10.00)										

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 (°)
5,118.51	5,100.00	Top of Paddock		0.00	

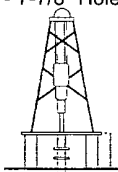
Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates	Comment
1,950.00	1,950.00	+N/-S (usft) 0.00	Start Build 2.00°/100'
2,270.80	2,270.13	+E/-W (usft) 1.45	Hold 6.42°

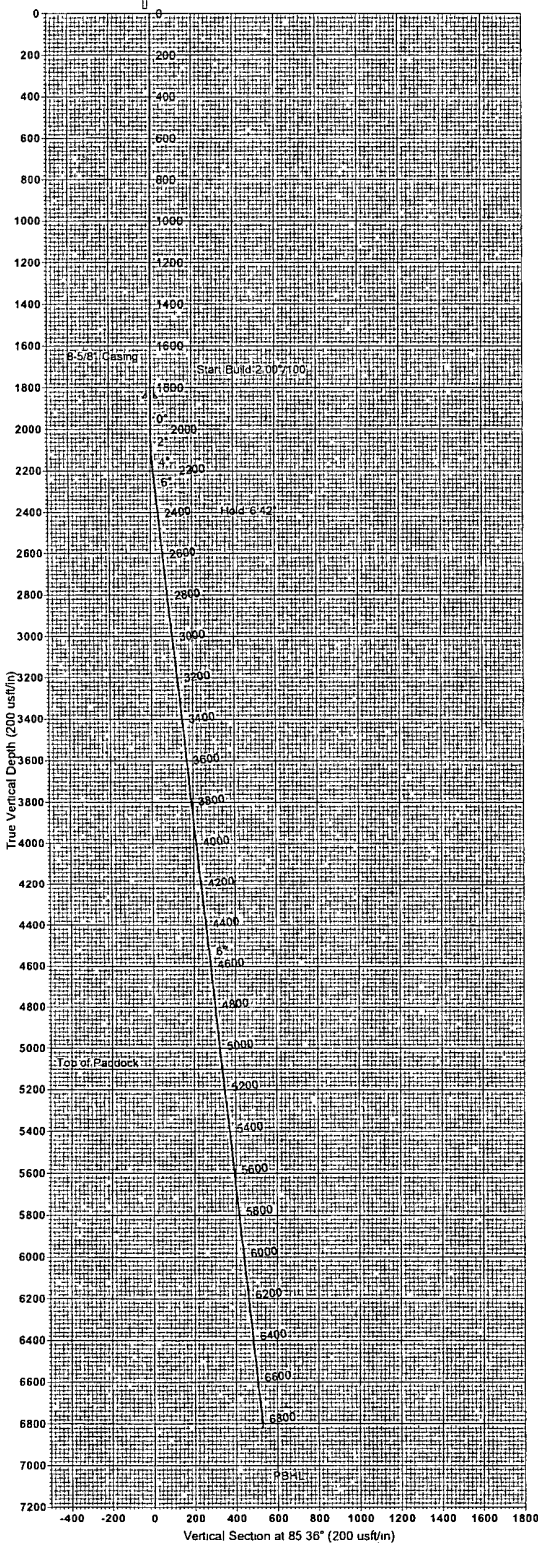


Azimuths to Grid North  
True North -0.27°  
Magnetic North 7.42°  
Magnetic Field  
Strength - 48800 TnT  
Dip Angle 60.68°  
Date 2012/01/13  
Model IGRF2010

Skelly Unit #673  
Eddy County, NM (NAN27 NME)  
Northing: (Y) 666634.90  
Easting: (X) 650096.70  
Plan #1 - 7-7/8" Hole



GL 3900.00



#### WELL DETAILS Skelly Unit #673

	+N-S	+E-W	Northing	Ground Level	Easting	3900.00	Latitude	Longitude	Slot
	0.00	0.00	666634.90	650096.70			32° 45' 54.162" N	103° 50' 40.857" W	

#### SECTION DETAILS

Sec	MD	Inch	Azi	TVD	+N-S	+E-W	Diag	TFace	VSeal	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	2270.80	6.42	85.36	2270.13	1.45	17.68	2.00	85.36	17.68	
4	6829.22	6.42	85.36	6800.00	42.70	525.60	0.00	0.00	527.33	PBHL-SU #673

#### DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape
South HL-SU #673	-1.00	515.60	515.60	666667.00	650612.3032° 49'	54.462° N	50° 34.812° W	Rectangle (Sides L:0.00 W:100.00)
West HL-SU #673	-1.00	32.70	515.60	666667.00	650612.3032° 49'	54.462° N	50° 34.812° W	Rectangle (Sides L:100.00 W:0.00)
PBHL-SU #673	6800.00	42.70	525.60	680677.00	650622.3032° 49'	54.561° N	50° 34.894° W	Circle (Radius: 10.00)

#### SITE DETAILS Skelly Unit #673

Site Centre Northing 666634.90  
Easting 650096.70  
Positional Uncertainty 0.00  
Convergence 0.26  
Local North Grid

#### PROJECT DETAILS Eddy County, NM (NAN27 NME)

Geodetic System: US State Plane 1927 (Exact solution)  
Datum: NAD 1927 (NADCON CONUS)  
Elevation: Clarke 1866  
Zone: New Mexico East 3001  
System Datum: Mean Sea Level

#### FORMATION TOP DETAILS

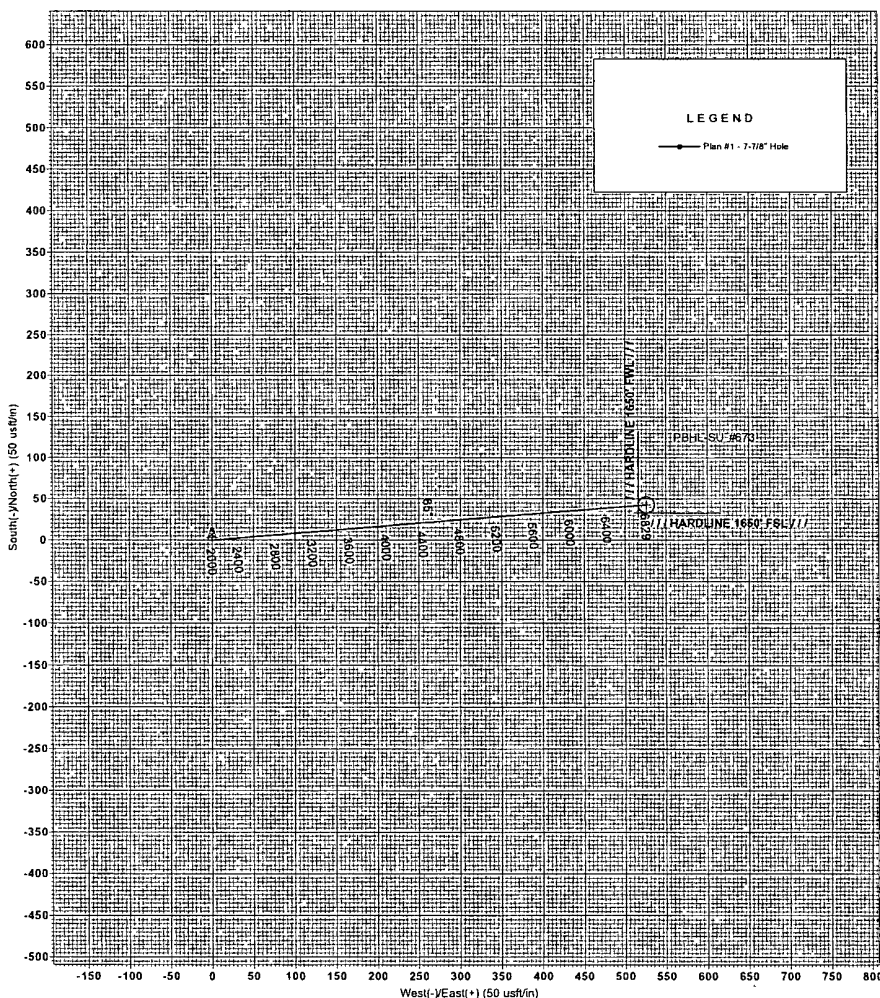
TVDPath	MDPath	Formation	DipAngle	DipDir
5100.00	5116.51	Top of Paddock	0.00	

#### CASING DETAILS

CASING DETAILS			
TVD	MD	Name	Size
1850.00	1850.00	8-5/8 Casing	8-5/8

#### LEGEND

Plan #1 - 7-7/8" Hole



**COG OPERATING LLC**

550 West Texas, Suite 1300  
Midland, TX 79701

**DIRECTIONAL PLAN VARIANCE REQUEST**

**SKELLY UNIT #673**

**EDDY COUNTY, NM**

SHL	1621 FSL, 1134 FWL	Sec 14, T17S, R31E, UL L
BHL	1650 FSL, 1650 FWL	Sec 14, T17S, R31E, UL K

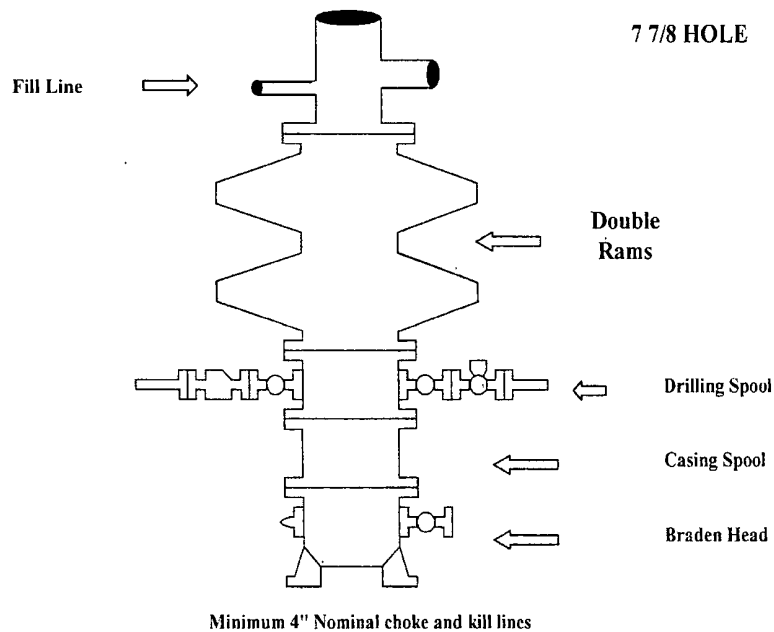
COG Operating LLC, as Operator, desires that the APD reflect the footages as stated on the surveyor's plat. However, Operator also desires to avoid inadvertently drilling the well to a non-standard location.

Therefore, due to the proximity of the plat bottom hole location to the pro-ration unit hard line(s), the attached directional plan is designed to avoid the hard lines by as much as fifty feet; said fifty feet being in either (or both) the north-south and/or east-west directions as applicable.

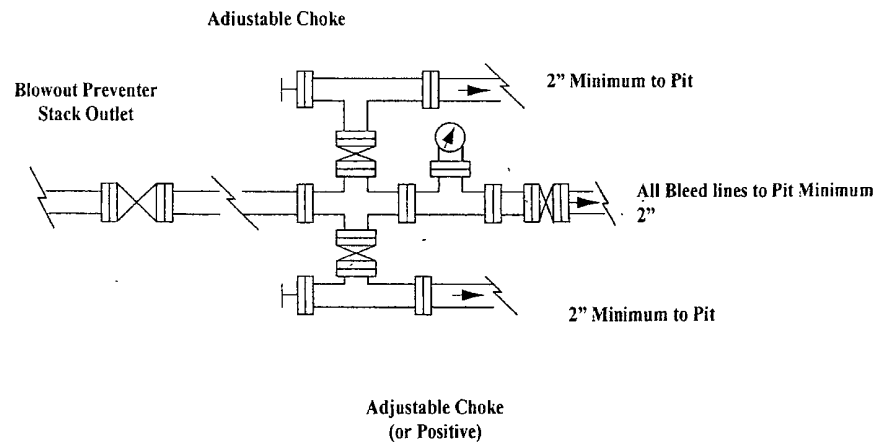
# COG Operating LLC

## Exhibit #9

### BOPE and Choke Schematic



Choke Manifold Requirement (2000 psi WP)  
No Annular Required

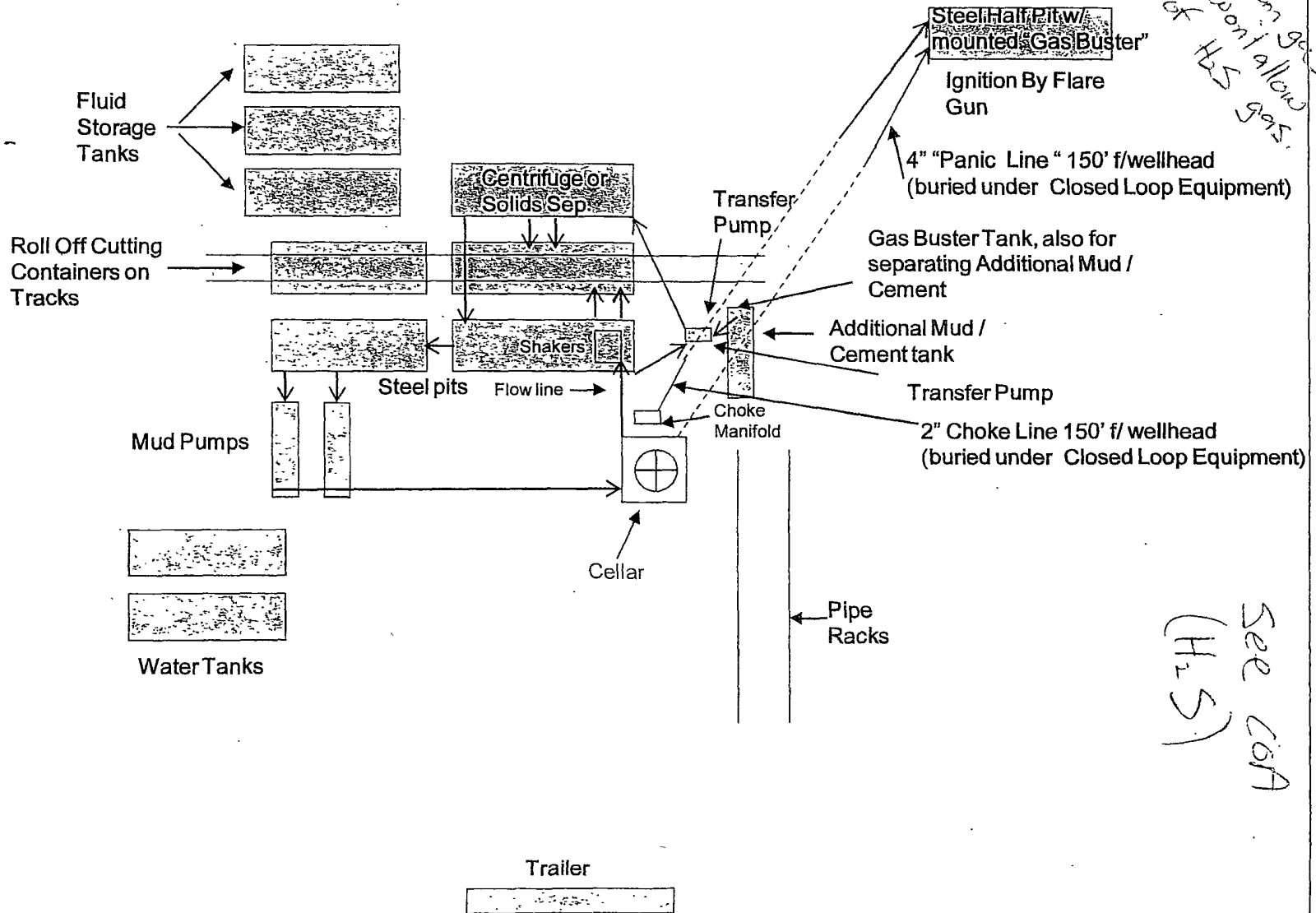


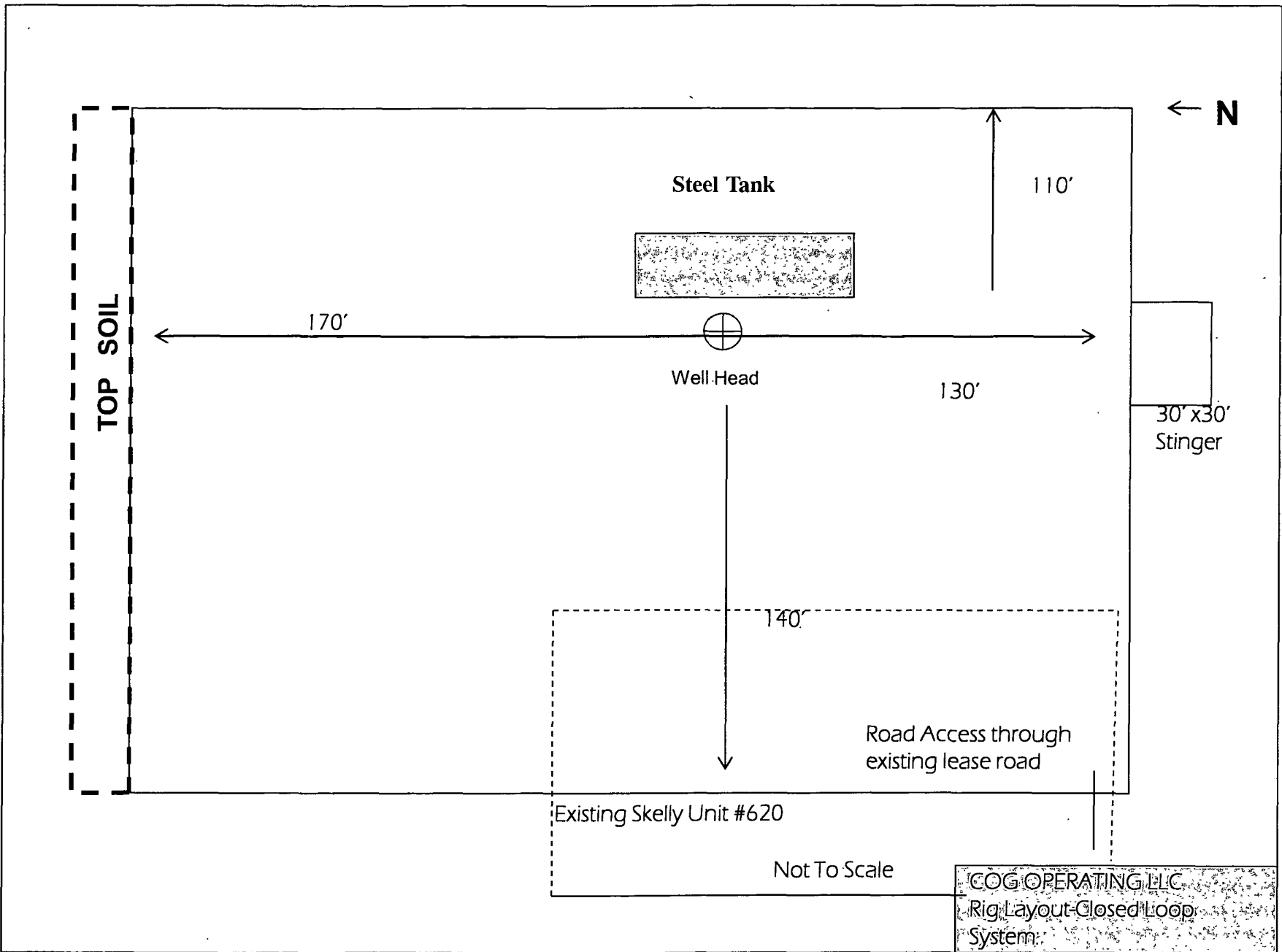
**NOTES REGARDING THE BLOWOUT PREVENTERS**  
**Master Drilling Plan**  
**Eddy County, New Mexico**

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





## COG Operating LLC

### Hydrogen Sulfide Drilling Operation Plan

#### I. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards and characteristics of hydrogen sulfide (H<sub>2</sub>S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H<sub>2</sub>S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H<sub>2</sub>S on metal components. If high tensile tubular are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H<sub>2</sub>S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan. **The concentrations of H<sub>2</sub>S of wells in this area from surface to TD are low enough that a contingency plan is not required.**

## **II. H2S SAFETY EQUIPMENT AND SYSTEMS**

Note: All H2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonable expected to contain H2S.

### **1. Well Control Equipment:**

- A. Flare line.
- B. Choke manifold.
- C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
- D. Auxiliary equipment may include if applicable: annular preventer & rotating head.

### **2. Protective equipment for essential personnel:**

- A. Mark II Survive air 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.

### **3. H2S detection and monitoring equipment:**

- A. 1 portable H2S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 PPM are reached.

### **4. Visual warning systems:**

- A. Wind direction indicators as shown on well site diagram (Exhibit #8).
- B. Caution/Danger signs (Exhibit #7) shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

### **5. Mud program:**

- A. The mud program has been designed to minimize the volume of H2S circulated to surface. Proper mud weight, safe drilling practices, and the use of H2S scavengers will minimize hazards when penetrating H2S bearing zones.

**6. Metallurgy:**

- A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H<sub>2</sub>S service.
- B. All elastomers used for packing and seals shall be H<sub>2</sub>S trim.

**7. Communication:**

- A. Radio communications in company vehicles including cellular telephone and 2-way radio.
- B. Land line (telephone) communication at Office.

**8. Well testing:**

- A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H<sub>2</sub>S environment will use the closed chamber method of testing.
- B. There will be no drill stem testing.

**EXHIBIT #7**

**WARNING**  
**YOU ARE ENTERING AN H<sub>2</sub>S**  
**AUTHORIZED PERSONNEL ONLY**

- 1. BEARDS OR CONTACT LENSES NOT ALLOWED
- 2. HARD HATS REQUIRED
- 3. SMOKING IN DESIGNATED AREAS ONLY
- 4. BE WIND CONSCIOUS AT ALL TIMES
- 5. CHECK WITH COG OPERATING FOREMAN AT

**COG OPERATING LLC**  
**1-432-683-7443**  
**1-575-746-2010**

**EDDY COUNTY EMERGENCY NUMBERS**

ARTESIA FIRE DEPT. 575-746-5050  
ARTESIA POLICE DEPT. 575-746-5000  
EDDY CO. SHERIFF DEPT. 575-746-9888

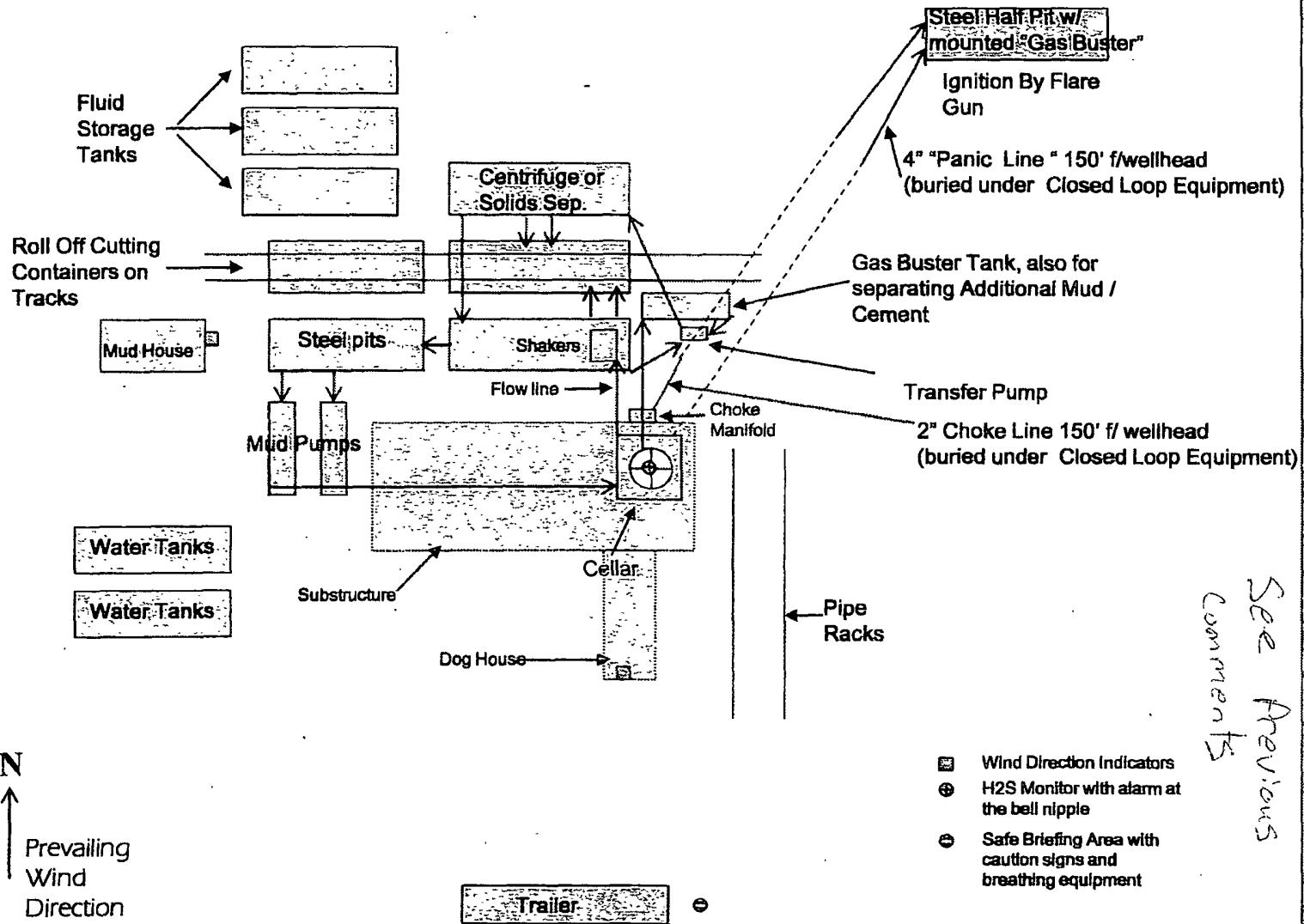
**LEA COUNTY EMERGENCY NUMBERS**

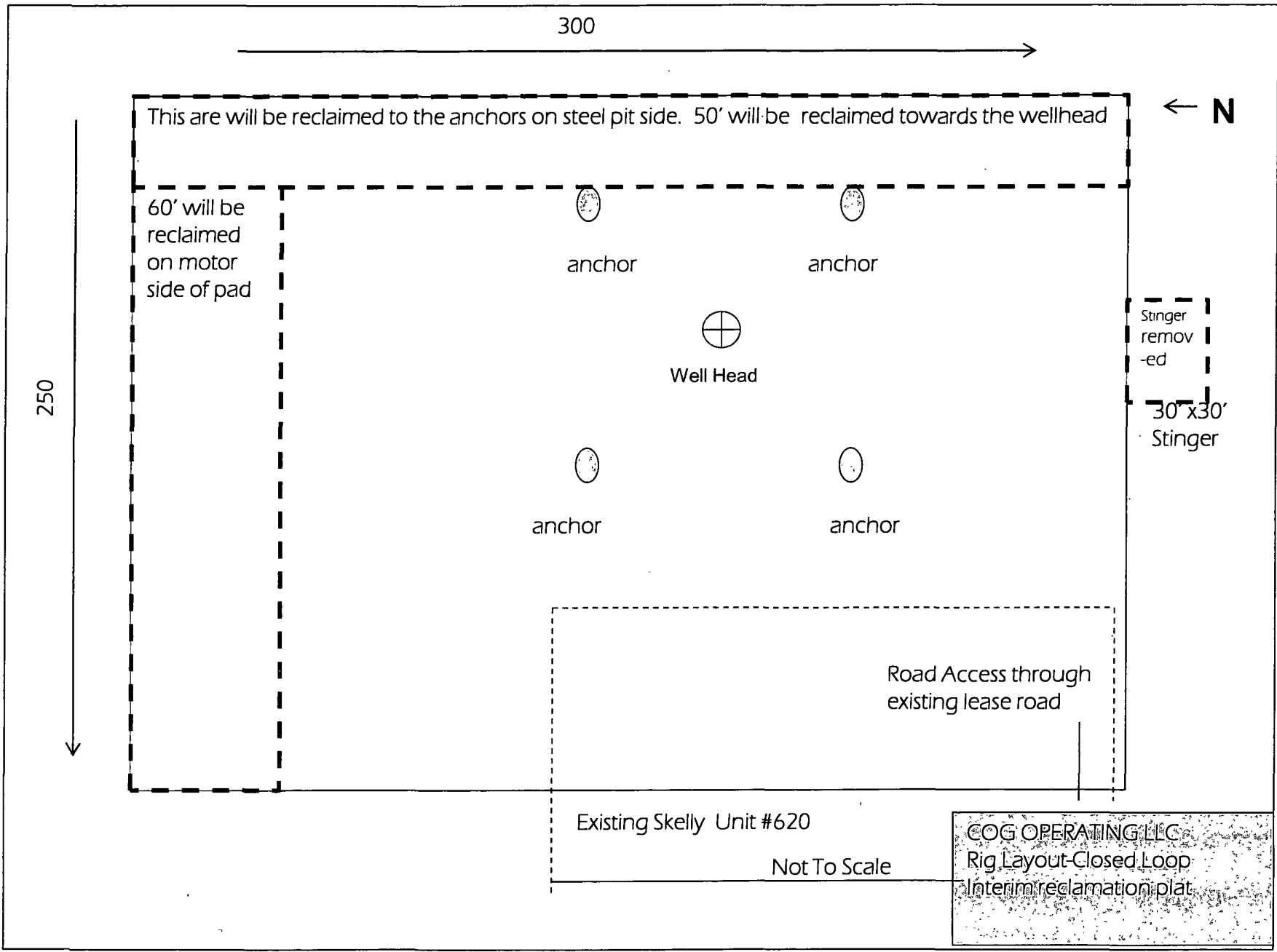
HOBBS FIRE DEPT. 575-397-9308  
HOBBS POLICE DEPT. 575-397-9285  
LEA CO. SHERIFF DEPT. 575-396-1196

COG Operating LLC

## EXHIBIT 8

Drilling Location - H2S Safety Equipment Diagram





# PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating
LEASE NO.:	LC029418A
WELL NAME & NO.:	673 Skelly Unit
SURFACE HOLE FOOTAGE:	1621' FSL & 1134' FWL
BOTTOM HOLE FOOTAGE:	1650' FSL & 1650' FWL
LOCATION:	Section 14, T.17 S., R.31 E., NMPM
COUNTY:	Eddy County, New Mexico

## TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
  - Lesser Prairie-Chicken Timing Stipulations
  - Ground-level Abandoned Well Marker
- ☐ **Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
  - H2S requirement
  - Logging requirement
  - Waste Material and Fluids
- ☒ **Production (Post Drilling)**
  - Well Structures & Facilities
  - Pipelines
  - Electric Lines
- ☒ **Interim Reclamation**
- ☒ **Final Abandonment & Reclamation**



## **I. GENERAL PROVISIONS**

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## **II. PERMIT EXPIRATION**

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## **IV. NOXIOUS WEEDS**

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

## **V. SPECIAL REQUIREMENT(S)**

### **Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:**

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period.

Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted.

Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

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

## **VI. CONSTRUCTION**

### **A. NOTIFICATION**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-6235 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

### **B. TOPSOIL**

The operator shall stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 4 inches in depth. The topsoil will be used for interim and final reclamation.

There is no measurable soil on this well pad to stockpile. No topsoil stockpile is required.

### **C. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

#### **D. FEDERAL MINERAL MATERIALS PIT**

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

#### **E. WELL PAD SURFACING**

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

#### **F. ON LEASE ACCESS ROADS**

##### **Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty (20) feet.

##### **Surfacing**

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

##### **Crowning**

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

##### **Ditching**

Ditching shall be required on both sides of the road.

Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Diagram illustrating a ditch cross-section. The ditch has a 6' berm on the down slope side and a 1' minimum depth. The natural ground level is indicated by a horizontal line.

All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope. (in %);

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

## Culvert Installations

Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

**Cattleguards**

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

A gate shall be constructed and fastened securely to H-braces.

**Fence Requirement**

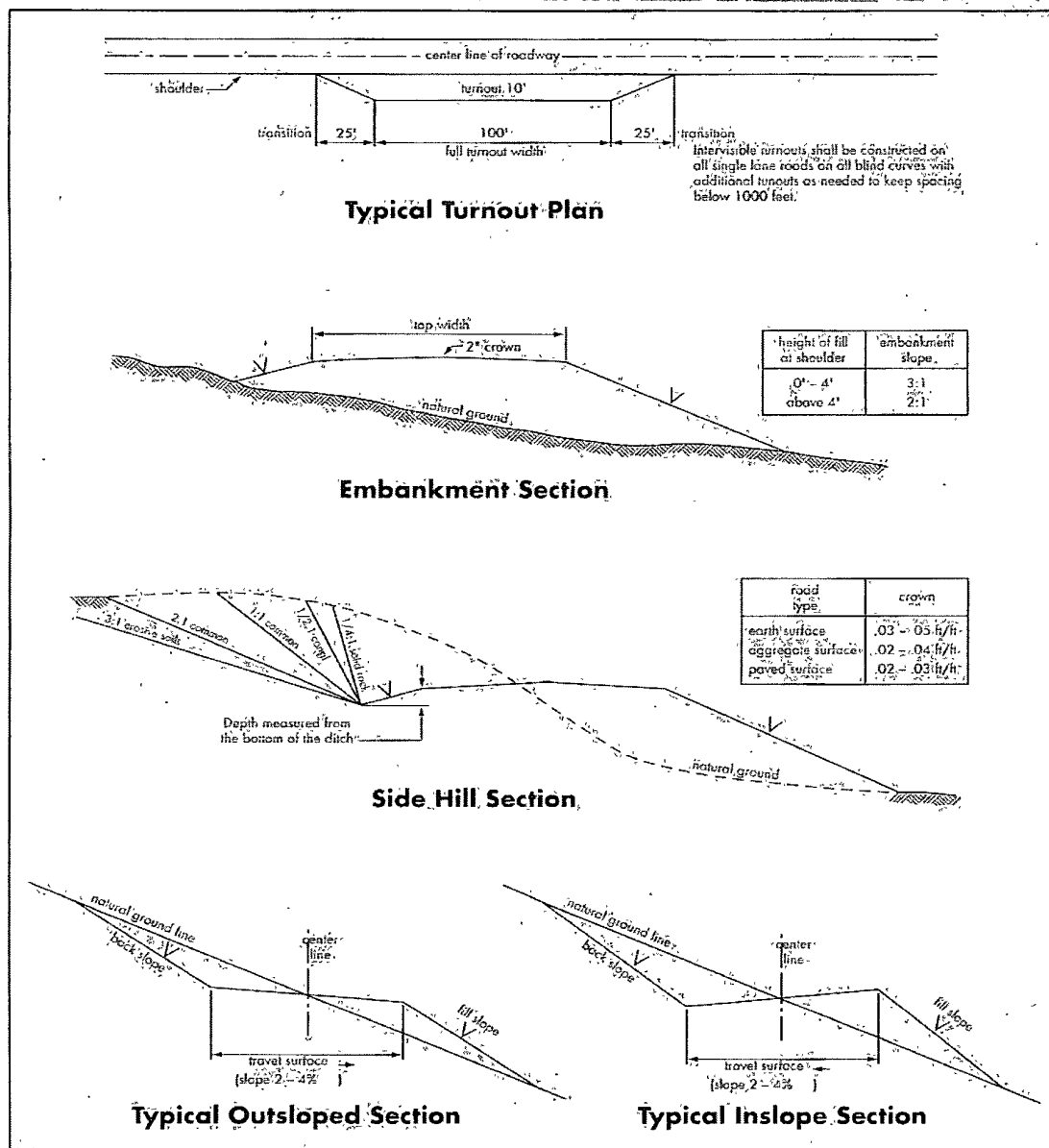
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

**Public Access**

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

**Figure 1 -- Cross Sections and Plans For Typical Road Sections**



## VII. DRILLING

### A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

- a. Spudding well
- b. Setting and/or Cementing of all casing strings
- c. BOPE tests

☒ **Eddy County**

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

1. A Hydrogen Sulfide (H<sub>2</sub>S) Drilling Plan should be activated 500 feet prior to drilling into the **Grayburg** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. The record of the drilling rate along with the GR/N well log run from TD to surface will be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

### B. CASING

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

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

**Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.**

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

**Possible water and brine flows in the Salado and Artesia Group.  
Possible lost circulation in the Grayburg and San Andres formations.**

1. The **13-3/8 inch** surface casing shall be set at **approximately 580 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **8-5/8 inch** intermediate casing, **which is to be set at approximately 1950 feet, is:**

☒ As proposed. If cement does not circulate see B.1.a, c-d above.

**Operator has proposed DV tool at depth of 700', but will adjust cement proportionately if moved. DV tool SHALL be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.**



a. First stage to DV tool:

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

b. Second stage above DV tool:

- ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Additional cement may be required – excess calculates to -9%.**

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

- ☒ As proposed. Operator shall provide method of verification.

**Operator has proposed DV tool at depth of 3000', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.**

a. First stage to DV tool:

- ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve tie-back on the next stage. **Additional cement may be required – excess calculates to 13%.**

b. Second stage above DV tool:

- ☒ Cement as proposed. Operator shall provide method of verification.

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

### **C. PRESSURE CONTROL**

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17. **Operator approved for either 13-5/8" or 11" BOP stack.**

2. Proposed blowout preventer (BOP) and related equipment (BOPE) meets minimum requirement.
  - a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.
3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
  - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
  - c. The results of the test shall be reported to the appropriate BLM office.
  - d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
  - e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

#### **D. DRILL STEM TEST**

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

#### **E. WASTE MATERIAL AND FLUIDS**

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

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

**CRW 031912**

## **VIII. PRODUCTION (POST DRILLING)**

### **A. WELL STRUCTURES & FACILITIES**

#### **Placement of Production Facilities**

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

#### **Containment Structures**

The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

#### **Painting Requirement**

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color  
Shale Green, Munsell Soil Color Chart # 5Y 4/2

### **B. PIPELINES**

#### **STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES**

**A copy of the APD and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.**

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the

revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

## Seed Mixture for LPC Sand/Shinnery Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

<u>Species</u>	<u>lb/acre</u>
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

\*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed