

15-815

Form 3160-3  
(March 2012)

**HOBBS OCD**

**DEC 13 2016**

**RECEIVED**

**NM OIL CONSERVATION**  
OCD Artesia  
ARTESIA DISTRICT

**DEC 12 2016**

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

FORM APPROVED  
OMB No. 1004-0137  
Expires October 31, 2014

5. Lease Serial No.  
NMLC-057210  
6. If Indian, Allottee or Tribe Name  
N/A

1a. Type of work:  DRILL  REENTER  
1b. Type of Well:  Oil Well  Gas Well  Other SWD  Single Zone  Multiple Zone

7. If Unit or CA Agreement, Name and No.  
N/A  
8. Lease Name and Well No.  
Maljamar 27 SWD #3

2. Name of Operator COG Operating LLC (229137)

9. API Well No.  
30-025-43501

3a. Address One Concho Center, 600 W. Illinois Ave  
Midland, TX 79701

3b. Phone No. (include area code)  
432-685-4385

10. Field and Pool, or Exploratory  
SWD; Wolfcamp (96135)

4. Location of Well (Report location clearly and in accordance with any State requirements.)  
At surface SHL: 255' FSL & 2185' FEL, Unit N  
At proposed prod. zone

11. Sec., T. R. M. or Blk. and Survey or Area  
Sec 27, T17S, R32E

14. Distance in miles and direction from nearest town or post office\*  
2 miles from Loco Hills, NM

12. County or Parish  
EDDY Lea  
13. State  
NM

15. Distance from proposed\* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)  
255'

16. No. of acres in lease  
1200

17. Spacing Unit dedicated to this well  
40

18. Distance from proposed location\* to nearest well, drilling, completed, applied for, on this lease, ft.  
386.6'

19. Proposed Depth  
10500'

20. BLM/BIA Bond No. on file  
NMB000740; NMB000215

21. Elevations (Show whether DF, KDB, RT, GL, etc.)  
3962' GL

22. Approximate date work will start\*  
11/30/2015

23. Estimated duration  
15 Days

**24. Attachments**

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must 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 must 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 BLM.

25. Signature *Robyn M. Odom*  
Title  
Regulatory Analyst

Name (Printed/Typed)  
Robyn M. Odom

Date  
06/05/2015

Approved by (Signature) *Cody Layton*

Name (Printed/Typed)

Date  
JUL 15 2016

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.

(Continued on page 2)

\*(Instructions on page 2)

**Roswell Controlled Water Basin**

*K3*  
*12/16/16*

**SEE ATTACHED FOR  
CONDITIONS OF APPROVAL**

**Approval Subject to General Requirements  
& Special Stipulations Attached**

**COG Operating LLC  
Maljamar 27 SWD #3**

**1. Geologic Formations**

TD of target **	9650'	Pilot hole depth	NA
TD: **	10500'	Deepest expected fresh water:	132'

\*\* Note this is a vertical well

**Back Reef**

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Fresh Water	
Rustler	960'	Brackish Water	
Top of Salt	1140'	Salt	
Tansill	2265'	Barren	
Yates	2360'	Oil/Gas	
Seven Rivers	2750'	Oil/Gas	
Queen	3365'	Oil/Gas	
Grayburg	3725'	Oil/Gas	
San Andres	4150'	Oil/Gas	
Yeso	6045'	Oil/Gas	
Tubb	7350'	Oil/Gas	
Abo	7810'	Oil/Gas	
Wolfcamp	9345'	Oil/Gas	
Wolfcamp Reef***	9650'	Target	
Cisco***	10450'	Target	

\*H2S, water flows, loss of circulation, abnormal pressures, etc.

\*\*\* Because the reef porosity is so discontinuous we won't know for sure where the porosity stops until we drill the openhole and therefore TD might penetrate part of Cisco.

**2. Casing Program**

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	<del>985'</del> 1090'	13.375"	48	H40	STC	1.64	3.28	6.81
12.25"	0	2285'	9.625"	40	J55	LTC	2.16	0.79	5.69
8.75"	0	9650'	7.0"	26	L80	LTC	2.44	1.33	2.04
6.125" OH	9650'	10500'	NA	NA	NA	NA	NA	NA	NA
BLM Minimum Safety Factor							1.125	1	1.6 Dry 1.8 Wet

See COA

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h BLM standard formulas where used on all SF calculations

**COG Operating LLC  
Maljamar 27 SWD #3**

Assumed 9.0 ppg MW equivalent pore pressure from 9 5/8" shoe to Deepest TVD in wellbore. This is justified by offset field data in the area that shows upper Wolfcamp section drilled with 8.8-9.0 ppg mud weights. (Maljamar SWD "29" #1 Sec 1 T17S R32E and Maljamar SWD 30 #2 Sec 30 T17S R32E)

Explanation for SFs below BLM'S minimum standards:

9 5/8' Burst SF @0.81 –used BLM's frac gradient scenario to qualify.

9 5/8" 40# J55 burst 3950 psi hence  $3950 \text{ psi} / 2285' = 1.73 > 0.7$

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 <sup>rd</sup> string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 <sup>nd</sup> string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

**3. Cementing Program**

Casing	# Sks	Wt. lb/Gal	Yld ft3/sack	H <sub>2</sub> O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	400	13.5	1.75	9.2	13	Lead: Class "C" + 4% Gel + 2% CaCl <sub>2</sub> + 0.25 pps CF
	325	14.8	1.32	6.3	6	Tail: Class C + 2% CaCl <sub>2</sub> + 0.25 pps CelloFlake

**COG Operating LLC  
Maljamar 27 SWD #3**

Inter	350	11.8	2.45	14.4	24	Lead: 50:50:10 C PozGel w/5% Salt+ 5 pps LCM+ 0.25 pps CelloFlake
	300	14.8	1.32	6.3	6	Tail: Class C + 2% Ca Cl2
Multi-stage DV Tool +/-8000'						
Prod.	300	14.0	1.37	6.4	18	1st stage Tail: 50:50:2 H Pox Gel w/5% salt+3 pps LCM + 0.2% SMS + 0.5% FL-25+0.5% BFL-52 +2% gel
	600	12.5	2.01	12.5	22	2 <sup>nd</sup> Stage Lead: 35:65;6 C:Poz Gel w/5% salt+5 pps LCM+0.2% SMS + 1% FL-25+1% BA-58+0.3% FL-52A+ 0.125 pps CF
	400	14.2	1.19	6.6	8	2 <sup>nd</sup> Stage Tail: Class "H" w/ 3 pps Gilsonite + 3 pps Poli-E-Flake + 0.3% Halad 9

Casing String	TOC	% Excess
Surface	0'	50%
Intermediate	0'	50%
Production	0'	35%

**4. Pressure Control Equipment** — See COA

No	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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BOP installed and tested before drilling which hole?	Size?	Min Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	2M	Annular	X	2000 psi
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		
8-3/4"	13-5/8"	3M	Annular	X	1500 psi
			Blind Ram		
			Pipe Ram		
			Double Ram	X	
			Other*		
6 -1/8"	13 5/8"	3M	Annular	X	1500 psi
			Blind Ram		
			Pipe Ram		
			Double Ram	X	
			Other*		

\*Specify if additional ram is utilized.

**COG Operating LLC  
Maljamar 27 SWD #3**

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

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 will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

NA	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
NA	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
NA	Are anchors required by manufacturer?
NA	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. <ul style="list-style-type: none"> <li>• Provide description here</li> </ul> See attached schematic.

**5. Mud Program**

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. shoe	FW Gel	8.6-8.8	28-34	N/C
Surf shoe	Int shoe	Saturated Brine	10.0-10.2	28-34	N/C
Int shoe	TD	FW-Cut Brine	8.5-9.0	28-34	N/C

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

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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**COG Operating LLC  
Maljamar 27 SWD #3**

**6. Logging and Testing Procedures**

Logging, Coring and Testing.	
X	Will run Cased hole GR/CNL from TD to surface. Stated logs run will be in the Completion Report and submitted to the BLM.
X	Open hole logs are planned from TD to Intermediate casing shoe.
No	Drill stem test? If yes, explain
No	Coring? If yes, explain

Additional logs planned	Interval
Resistivity	Int. shoe to KOP
Density	Int. shoe to KOP
CBL	Production casing
X	Mud log
X	PEX/HRLA/HNGS

**7. Drilling Conditions**

Condition	Specify what type and where?
BH Pressure at deepest TVD	4600 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions.

Hydrogen Sulfide (H <sub>2</sub> S) monitors will be installed prior to drilling out the surface shoe. If H <sub>2</sub> S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
Yes	H <sub>2</sub> S is present
Yes	H <sub>2</sub> S Plan attached

**8. Other facets of operation**

Is this a walking operation? No.

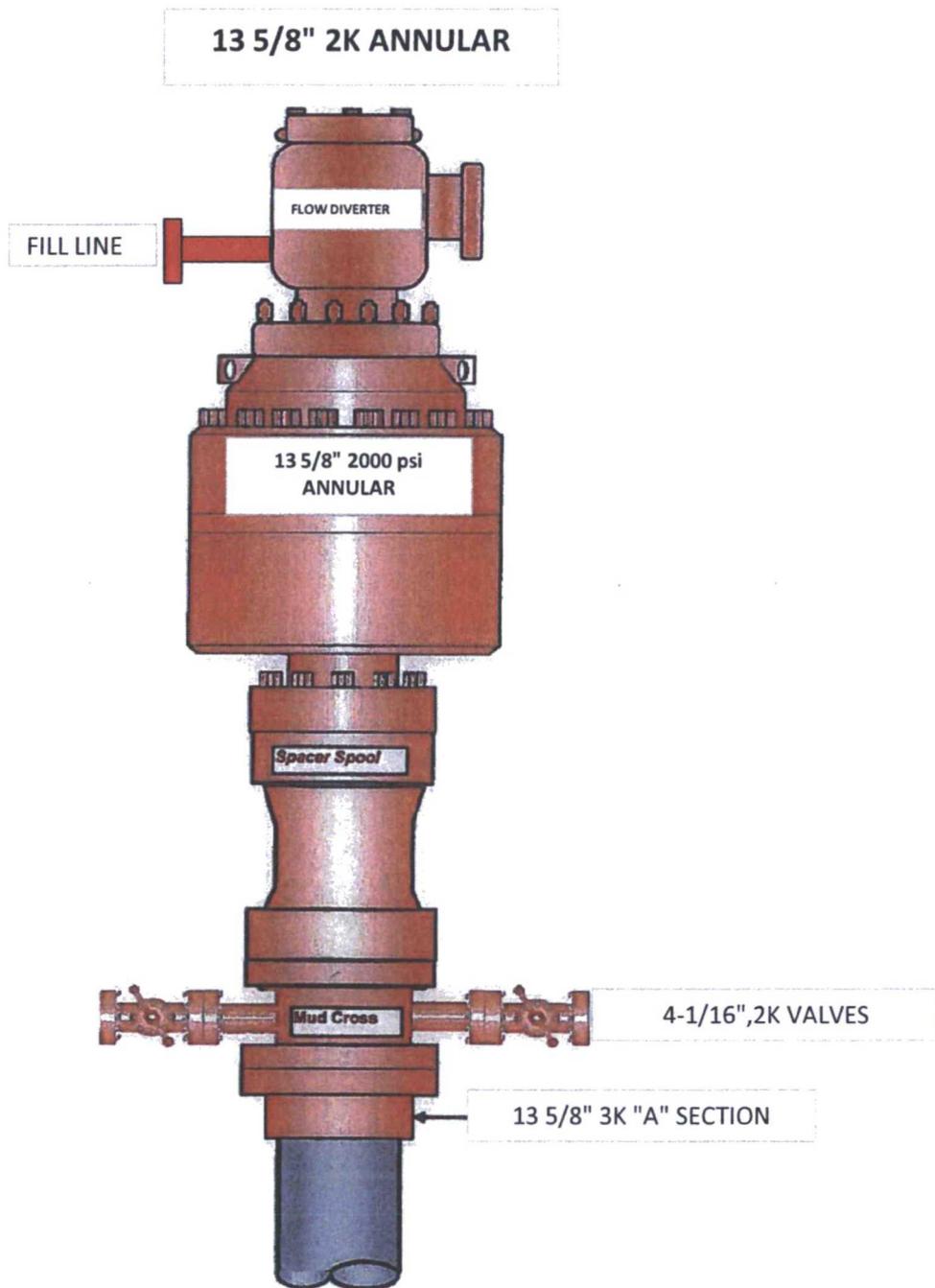
Will be pre-setting casing? No

Attachments:  
BOPs drawings

GEG 5/28/15

# Exhibit #10

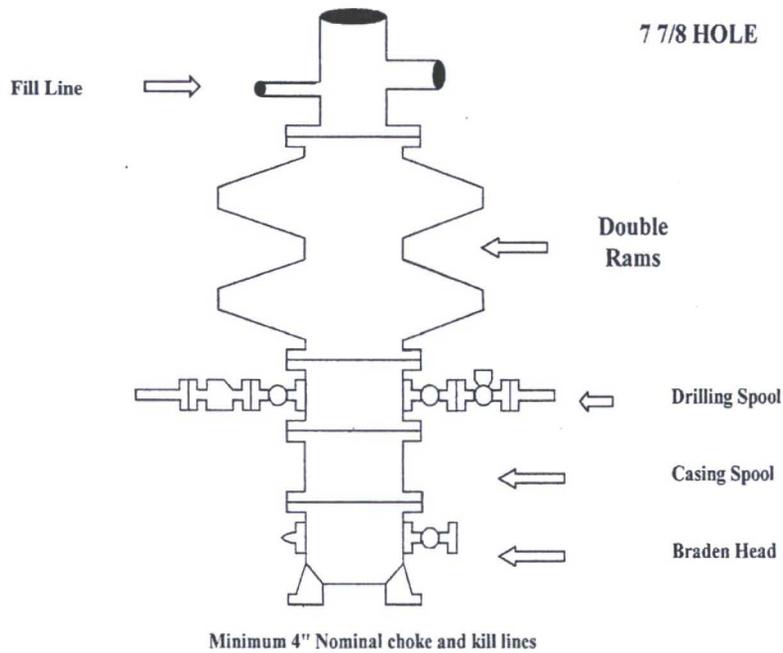
(Choke Manifold Schematic same as Exhibit #9)



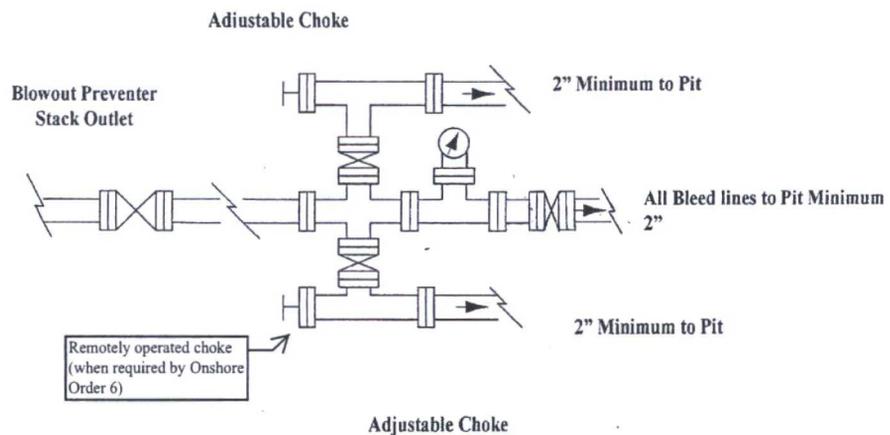
# COG Operating LLC

## Exhibit #9

### BOPE and Choke Schematic



Choke Manifold Requirement (2000 psi WP)  
No Annular Required



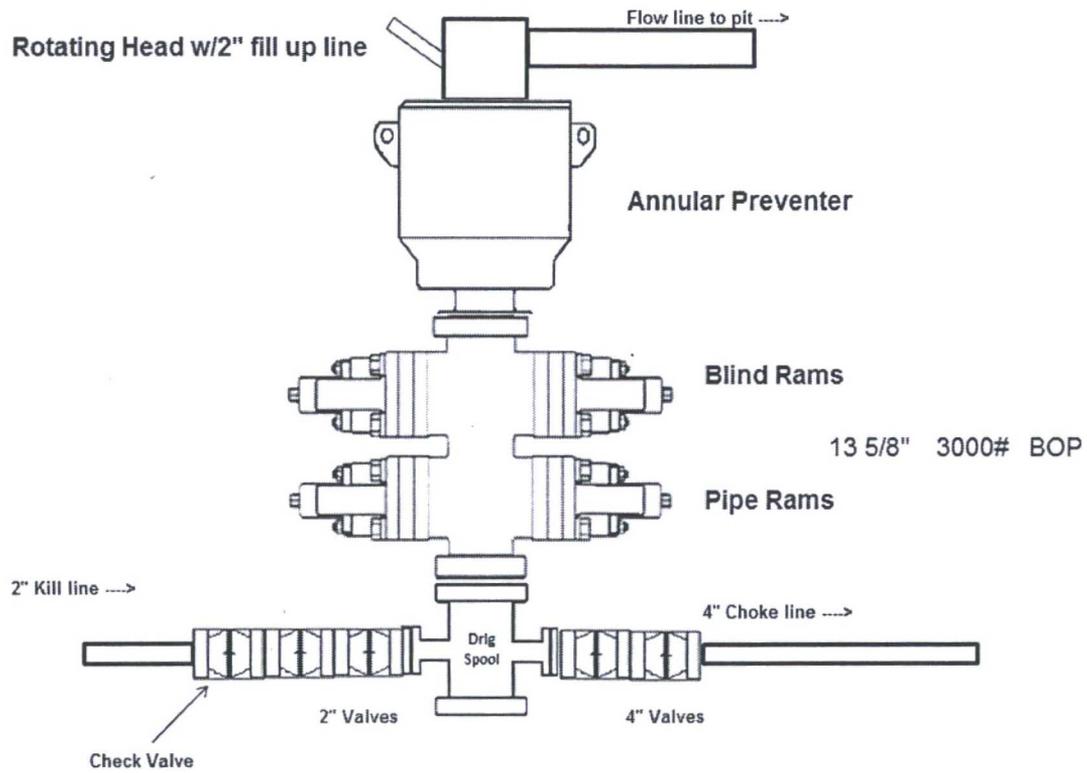
**NOTES REGARDING THE BLOWOUT PREVENTERS**

**Master Drilling Plan  
Eddy County, New Mexico**

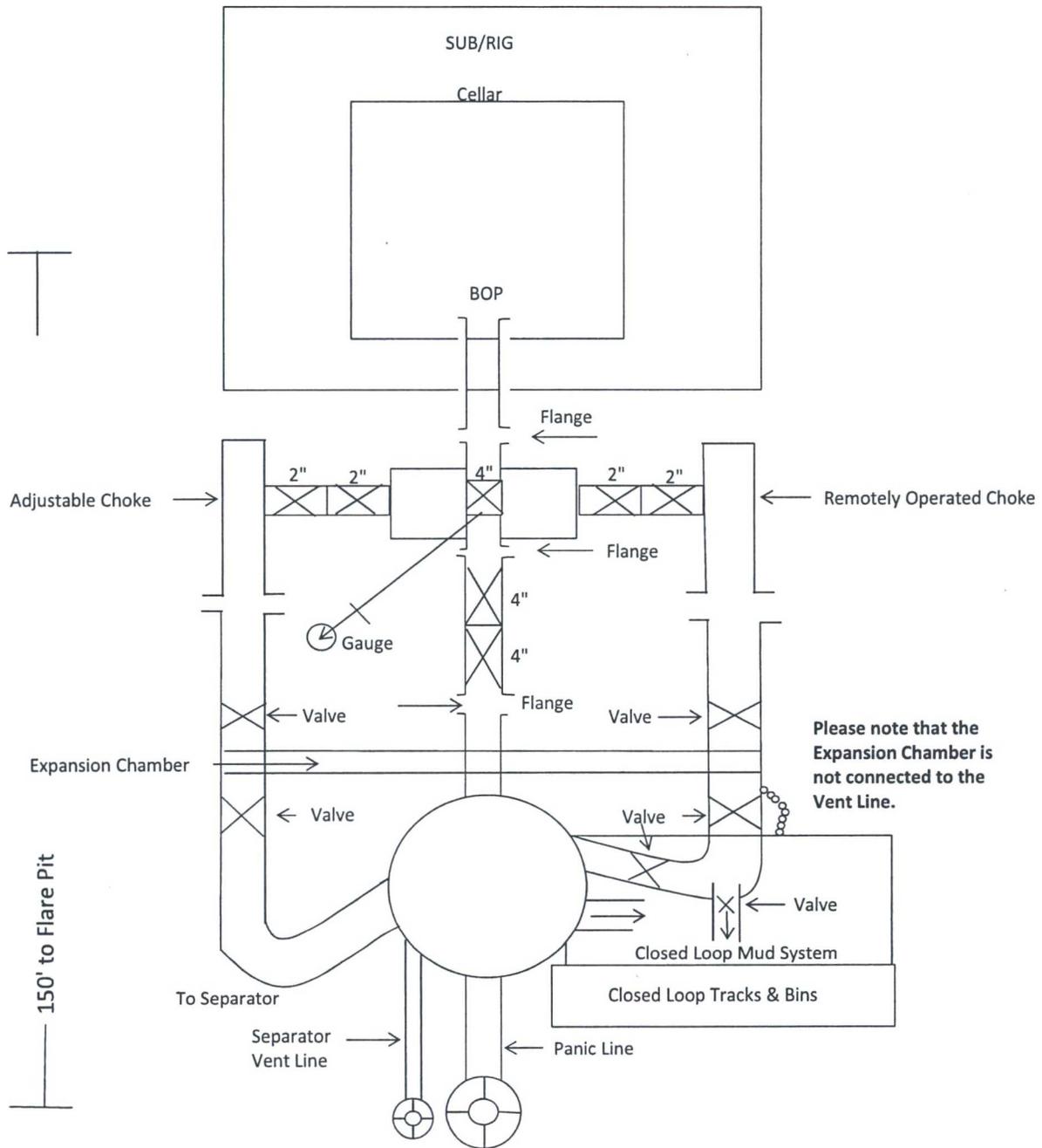
1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All 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.

# Exhibit #11

## 3,000 psi BOP Schematic



# 3M Choke Manifold Equipment



## 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:

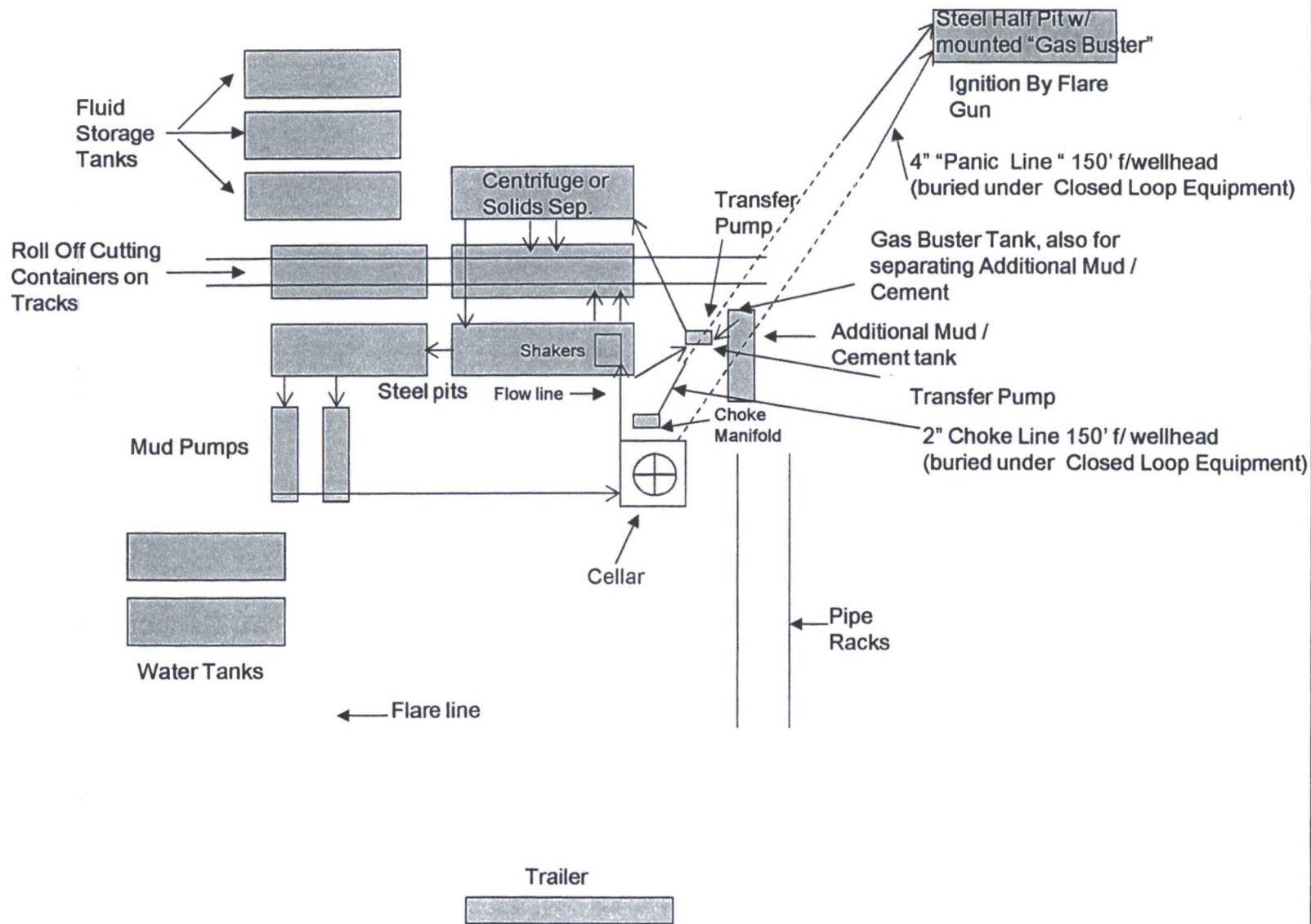
CRI (permit number R9166)

or

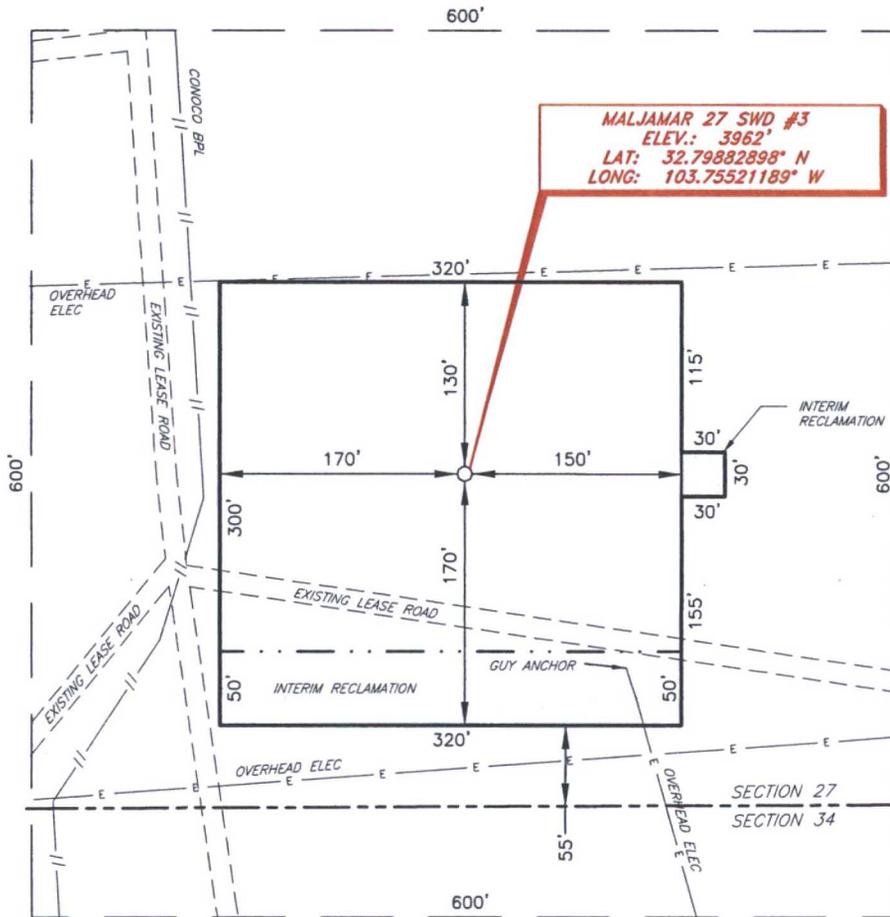
GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.

COG Operating LLC  
Closed Loop Equipment Diagram



COG OPERATING, LLC  
 INTERIM RECLAMATION  
 MALJAMAR 27 SWD #3  
 (225' FSL & 2185' FWL)  
 SECTION 27, T17S, R32E  
 N. M. P. M., LEA CO., NEW MEXICO



DIRECTIONS TO LOCATION

From the intersection of CR-126 (Maljamar Rd.) and Hwy 529;  
 Go North on CR-126 approx. 0.7 miles to a lease road;  
 Turn right on the lease road and go East approx. 0.4 miles;  
 Turn right and go South 300 feet;  
 Location is 200' east of the lease road.



Firm No.: TX 10193838 NM 4655451

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1	Reclamation	6/1/15
NO.	REVISION	DATE
JOB NO.: LS140317		
DWG. NO.: 140317_REC		



308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 7-31-2014
SURVEYED BY: GB/IE
DRAWN BY: LNY
APPROVED BY: RMH
SHEET : 1 OF 1