

SECRETARY'S POTASH

OCD Hobbs

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

Split Estate

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HOBBS OCD

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work: ☒ DRILL ☐ REENTER		5. Lease Serial No. SHL: State Lot 1 & UL H: NMNM114981 BHL: NMNM094846	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name	
2. Name of Operator COG Operating LLC.		7. If Unit or CA Agreement, Name and No.	
3a. Address 2208 West Main Street Artesia, NM 88210		8. Lease Name and Well No. Ringo 32 Federal Com #1H	
3b. Phone No. (include area code) 575-748-6940		9. API Well No. 30-025-45411	
4. Location of Well (Report location clearly and in accordance with any State requirements.*) At surface 330' FSL & 490' FEL Unit Letter P (SESE) SHL: Section 32-19S-32E At proposed prod. Zone 330' FSL & 380' FEL Unit Letter P (SESE) BHL: Section 5-20S-32E		10. Field and Pool, or Exploratory Lusk; Bone Spring, South	
14. Distance in miles and direction from nearest town or post office* About 15 miles from Maljamar		11. Sec., T.R.M. or Blk and Survey or Area Sec. 32 - T19S - R32E	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any) 330'		12. County or Parish Lea County	
16. No. of acres in lease SHL: State Lot 1 & UL H: 79.99 BHL: 960.05		13. State NM	
17. Spacing Unit dedicated to this well 159.99		18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 160' BHL: 4102'	
19. Proposed Depth 950' 1452' TVD: 9450' MD: 1447'		20. BLM/BIA Bond No. on file NMB000740 & NMB000215	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3535' GL		22. Approximate date work will start* 6/1/2013	
23. Estimated duration 30 days			

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall be attached to this form:

- | | |
|---|--|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan | 5. Operator certification |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

25. Signature <i>Mayte Reyes</i>	Name (Printed/Typed) Mayte Reyes	Date 7/19/2012
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Regulatory Analyst Approved by <i>Aden L. Seidlitz</i>		Name (Printed/Typed)	Date SEP - 5 2013
Title STATE DIRECTOR		Office NM STATE OFFICE	

Application approval does not warrant or certify that the applicant holds legan or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

APPROVAL FOR TWO YEARS

Conditions of approval, if any, are attached.

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)

Capitan Controlled Water Basin

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

SEP 23 2013

STATEMENT ACCEPTING RESPONSIBILITY FOR OPERATIONS

The undersigned accepts all applicable terms, conditions, stipulations, and restrictions concerning operations conducted on the leased land or portion thereof, as described below:

Date: 5/1/2013

Lease #: SHL: State, BHL: NMNM011776
Ringo 32 Federal Com #1H

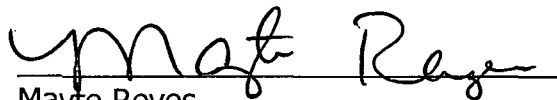
Legal Description: Sec. 32– T19S – R32E
Lea County, New Mexico

Formation(s): 2nd Bone Spring Sand

Bond Coverage: Statewide

BLM Bond File #: NMB000740 & NMB000215

COG OPERATING LLC


Mayte Reyes
Regulatory Analyst

COG Operating LLC
DRILLING AND OPERATIONS PROGRAM
Ringo 32 Federal Com #1H
SHL: 330' FSL & 490' FEL of Sect 32 T19S
BHL: 330' FSL & 380' FEL of Sect 5 T20S
R32E
Lea County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill subject well, COG Operating LLC submits the following eleven items of pertinent information in accordance with BLM requirements.

1. Geological surface formation: Permian
2. The estimated tops of geologic markers & estimated depths at which anticipated water, oil or gas formations are expected to be encountered are as follows:

Fresh Water	~ 223'	
Rustler	932'	
Top of Salt	1022'	
Base of Salt	2381'	
Yates	2530'	
7 Rivers	2634'	
Reef	2850'	
B/ Reef	4150'	
Delaware	4634'	Oil
Bone Spring	7362'	Oil
TD TVD	9500'	
TD MD	14,521'	

No other formations are expected to give up oil, gas or fresh water in measurable quantities. The surface fresh water sands will be protected by setting 16" casing at 920' ^{980'} and circulating cement back to surface. All intervals will be isolated by setting 5 1/2" casing to total depth and tying back cement to a minimum of 50' above Capitan Reef.

3. Proposed Casing Program: All casing is new and API approved

See COA

Hole Size	Depths	Section	OD Casing	New/Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
20"	0' - 980'	Surface	16"	New	65#	STC	H-40	1.125	1.125	1.6
14 3/4"	0' - 2670' ^{2800'}	1 st Intrmd	11 3/4"	New	47#	STC	J-55	1.125	1.125	1.6
10 5/8"	0' - 4650' ^{4500'}	2 nd Intrmd	8 5/8"	New	32#	BTC	J-55	1.125	1.125	1.6
7 7/8"	0' - 14521'	Production Curve & Lateral	5 1/2"	New	17#	LTC	2P-110	1.125	1.125	1.6

CYB 223
BNSF

- While running all casing strings, the pipe will be kept a minimum of 1/3 full at all times to avoid approaching the collapse pressure of casing.

a. 16" Surface
Lead: 590 sx Class C + 4% Gel + 2% CaCl₂
(13.5 ppg / 1.75 cuft/sx)
Tail: 400 sx Class C + 2% CaCl₂
(14.8 ppg / 1.35 cuft/sx)
**Calculated w/100% excess on OH volumes

b. 11 3/4" Intermediate:
Lead: 835 sx Class C + 4% Gel + 2% CaCl₂
(13.5 ppg / 1.75 cuft/sx)
Tail: 200 sx Class C + 2% CaCl₂
(14.8 ppg / 1.35 cuft/sx)
**Calculated w/60% excess on OH volumes

c. 8 5/8" Intermediate:
1st stg: Lead: 340 sx 35:65:6 C + Salt+Gilsonite+CFR-3+ HR601
(12.7 ppg / 1.89 cuft/sx)
Tail: 125 sx Class C
(14.8 ppg / 1.35 cuft/sx)
2nd stg: Lead: 400 sx Class C + 4% Gel
(13.5 ppg / 1.75 cuft/sx)
Tail: 100 sx Class C
(14.8 ppg / 1.35 cuft/sx)
*Calculated w/>100% excess on OH volumes
**DVT/ECP set @ 2720' SecCOR

d. 5 1/2" Production:
Lead: 870 sx 50:50:10 H +Salt+Gilsonite+CFR-3+HR601
(11.8 ppg / 2.5 cuft/sx)
Tail: 1150 sx 50:50:2 H +Salt+GasStop +HR601 +CFR-3
(14.4 ppg / 1.25 cuft/sx)
**Calculated w/60% excess on OH volumes

- The above cement volumes could be revised pending the caliper measurement from the open hole logs.
- The 16", 11 3/4" & 8 5/8" cements volumes are designed to circulate to surface.
- The production string will tie back at least 50' above Capitan Reef.

Nipple up on 16" casing with 20" 2M annular preventer tested to 1000 psi by independent tester and the rest of the 2M system tested to 2000 psi.

Nipple up on 11 3/4" with 13 5/8" 2M annular preventer tested to 1000 psi by independent tester and the rest of the 2M system tested to 2000 psi. C

See COA

Nipple up on 8 5/8" with 11" 3M double ram BOP and 3M annular. Annular preventer to be tested to 1500 psi and remainder of system tested to 3000 psi to by independent tester.

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. A 2" kill line and a minimum 3" choke line will be included in the drilling spool located below the ram-type BOP. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold with 3000 psi WP rating.

6. Estimated BHP & BHT:

Lateral TD = 4150 psi

Lateral TD = 145° F

7. Mud Program: The applicable depths and properties of this system are as follows:

See COA

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' - 980'	Fresh Water	8.4	29	N.C.
980' - 2670'	Brine	10	29	N.C.
2670' - 4650'	Fresh Water	8.4	29	N.C.
4650' - 14,521' (Lateral)	Cut Brine	8.9 - 9.2	29	N.C.

- The necessary mud products for weight addition and fluid loss control will be on location at all times.
- A visual and electronic mud monitoring system will be rigged up prior to spud to detect changes in the volume of mud system. The electronic system consists of a pit volume totalizer, stroke counter and flow sensor at flow line.
- If weight and/or viscosity are introduced to the mud system a daily mud check will be performed by mud contractor, along with hourly check by rig personnel.
- After setting 8 5/8" casing, a third party gas unit detection system will be installed at the flow line.

8. Auxiliary Well Control and Monitoring Equipment:

- a. A Kelly cock will be in the drill string at all times.
- b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
- c. Hydrogen Sulfide detection equipment will be in operation after drilling out the 16" casing shoe until the 5 1/2" casing is cemented. Breathing equipment will be on location upon drilling the 16" shoe until total depth is reached.

9. Testing, Logging and Coring Program:

- a. Drill stem tests will be based on geological sample shows.
- b. If open hole electrical logging is preformed, the program will be:

OVER
8032

- i. Total Depth to 8 5/8" Intermediate Casing: Dual Laterolog-Micro Laterolog and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.
- ii. Total Depth to Surface: Compensated Neutron with Gamma Ray
- iii. No coring program is planned
- iv. Additional testing will be initiated subsequent to setting the 5 1/2" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

10. Potential Hazards:

- See COA*
- a. No abnormal pressures or temperatures are expected. There is no known presence of H₂S in this area. If H₂S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. No H₂S is anticipated to be encountered.

11. Anticipated starting date and Duration of Operations:

- a. Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as soon as possible after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 30 days.



COG Ringo 32 Federal Com #1H Rev0 MDT 29Apr13 Proposal Geodetic
Report
(Def Plan)

PATHFINDER
A Schlumberger Company

Report Date: April 30, 2013 - 03:11 PM
Client: COG
Field: NM Lea County (NAD 27)
Structure / Slot: COG Ringo 32 Federal Com #1H / COG Ringo 32 Federal Com #1H
Well: COG Ringo 32 Federal Com #1H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: COG Ringo 32 Federal Com #1H Rev0 MDT 29Apr13
Survey Date: April 30, 2013
Tort / AHD / DDI / ERD Ratio: 89.169 * / 5296.102 ft / 5.858 / 0.557
Coordinate Reference System: NAD27 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 36' 37.46246", W 103° 46' 51.15025"
Location Grid N/E Y/X: N 586219.300 RUS, E 670116.000 RUS
CRS Grid Convergence Angle: 0.2977 *
Grid Scale Factor: 0.99994223

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 178.840 * (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3552.000 ft above
Seabed / Ground Elevation: 3535.000 ft above
Magnetic Declination: 7.590 *
Total Gravity Field Strength: 998.5064mgn (9.80665 Based)
Total Magnetic Field Strength: 48611.522 nT
Magnetic Dip Angle: 60.423 *
Declination Date: April 30, 2013
Magnetic Declination Model: BGGM 2012
North Reference: Grid North
Grid Convergence Used: 0.2977 *
Total Corr Mag North->Grid North: 7.2920 *
Local Coord Referenced To: Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS ("/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL	0.00	0.00	178.84	0.00	0.00	0.00	0.00	N/A	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	100.00	0.00	178.84	100.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	200.00	0.00	178.84	200.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	300.00	0.00	178.84	300.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	400.00	0.00	178.84	400.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	500.00	0.00	178.84	500.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	600.00	0.00	178.84	600.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	700.00	0.00	178.84	700.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	800.00	0.00	178.84	800.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	900.00	0.00	178.84	900.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	1000.00	0.00	178.84	1000.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	1100.00	0.00	178.84	1100.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	1200.00	0.00	178.84	1200.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	1300.00	0.00	178.84	1300.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	1400.00	0.00	178.84	1400.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	1500.00	0.00	178.84	1500.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	1600.00	0.00	178.84	1600.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	1700.00	0.00	178.84	1700.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	1800.00	0.00	178.84	1800.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	1900.00	0.00	178.84	1900.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	2000.00	0.00	178.84	2000.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	2100.00	0.00	178.84	2100.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	2200.00	0.00	178.84	2200.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	2300.00	0.00	178.84	2300.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	2400.00	0.00	178.84	2400.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
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	2600.00	0.00	178.84	2600.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	2700.00	0.00	178.84	2700.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	2800.00	0.00	178.84	2800.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	2900.00	0.00	178.84	2900.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	3000.00	0.00	178.84	3000.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	3100.00	0.00	178.84	3100.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	3200.00	0.00	178.84	3200.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	3300.00	0.00	178.84	3300.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	3400.00	0.00	178.84	3400.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	3500.00	0.00	178.84	3500.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	3600.00	0.00	178.84	3600.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	3700.00	0.00	178.84	3700.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	3800.00	0.00	178.84	3800.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	3900.00	0.00	178.84	3900.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	4000.00	0.00	178.84	4000.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	4100.00	0.00	178.84	4100.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	4200.00	0.00	178.84	4200.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
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	4400.00	0.00	178.84	4400.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	4500.00	0.00	178.84	4500.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	4600.00	0.00	178.84	4600.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	4700.00	0.00	178.84	4700.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	4800.00	0.00	178.84	4800.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	4900.00	0.00	178.84	4900.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	5000.00	0.00	178.84	5000.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	5100.00	0.00	178.84	5100.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	5200.00	0.00	178.84	5200.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	5300.00	0.00	178.84	5300.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	5400.00	0.00	178.84	5400.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	5500.00	0.00	178.84	5500.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	5600.00	0.00	178.84	5600.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	5700.00	0.00	178.84	5700.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	5800.00	0.00	178.84	5800.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	5900.00	0.00	178.84	5900.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	6000.00	0.00	178.84	6000.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	6100.00	0.00	178.84	6100.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	6200.00	0.00	178.84	6200.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	6300.00	0.00	178.84	6300.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	6400.00	0.00	178.84	6400.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	6500.00	0.00	178.84	6500.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	6600.00	0.00	178.84	6600.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	6700.00	0.00	178.84	6700.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	6800.00	0.00	178.84	6800.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	6900.00	0.00	178.84	6900.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	7000.00	0.00	178.84	7000.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	7100.00	0.00	178.84	7100.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	7200.00	0.00	178.84	7200.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	7300.00	0.00	178.84	7300.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	7400.00	0.00	178.84	7400.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	7500.00	0.00	178.84	7500.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	7600.00	0.00	178.84	7600.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	7700.00	0.00	178.84	7700.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	7800.00	0.00	178.84	7800.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	7900.00	0.00	178.84	7900.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	8000.00	0.00	178.84	8000.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	8100.00	0.00	178.84	8100.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	8200.00	0.00	178.84	8200.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	8300.00	0.00	178.84	8300.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	8400.00	0.00	178.84	8400.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	8500.00	0.00	178.84	8500.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	8600.00	0.00	178.84	8600.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	8700.00	0.00	178.84	8700.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	8800.00	0.00	178.84	8800.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	8900.00	0.00	178.84	8900.00	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
KOP Build @ 12"/100"	8952.59	0.00	178.84	8952.59	0.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.46 W 103 46 51.15	
	9000.00	5.69	178.84	8999.92	2.35	-2.35	0.05	12.00	586216.95	670116.05	N 32 36 37.44 W 103 46 51.15	
	9100.00	17.69	178.84	9097.67	22.58	-22.57	0.46	12.00	586196.73	670116.46	N 32 35 37.24 W 103 46 51.15	
	9200.00	29.69	178.84	9189.08	62.68	-62.67	1.27	12.00	586156.64	670117.27	N 32 35 36.84 W 103 46 51.14	
	9300.00	41.69	178.84	9270.15	120.91	-120.89	2.45	12.00	586098.42	670118.45	N 32 35 36.27 W 103 46 51.13	
	9400.00	53.69	178.84	9337.34	194.73	-194.69	3.94	12.00	586024.62	670119.94	N 32 35 35.54 W 103 46 51.12	
	9500.00	65.69	178.84	9387.72	280.90	-280.84	5.69	12.00	585938.48	670121.69	N 32 35 34.68 W 103 46 51.10	
	9600.00	77.69	178.84	9419.08	375.66	-375.59	7.60	12.00	585843.74	670123.60	N 32 35 33.75 W 103 46 51.08	
Landing Point	9695.66	89.17	178.84	9430.00	470.54	-470.44	9.52	12.00	585748.88	670125.52	N 32 35 32.81 W 103 46 51.07	
	9700.00	89.17	178.84	9430.07	474.87	-474.78	9.61	0.00	585744.55	670125.61	N 32 35 32.76 W 103 46 51.07	
	9800.00	89.17	178.84	9431.52	574.86	-574.75	11.64	0.00	585644.59	670127.64	N 32 35 31.77 W 103 46 51.05	
	9900.00	89.17	178.84	9432.97	674.85	-674.72	13.66	0.00	585544.63	670129.66	N 32 35 30.79 W 103 46 51.03	
	10000.00	89.17	178.84	9434.42	774.84	-774.68	15.68	0.00	585444.66	670131.68	N 32 35 29.80 W 103 46 51.01	
	10100.00	89.17	178.84	9435.87	874.83	-874.65	17.71	0.00	585344.70	670133.71	N 32 35 28.81 W 103 46 51.00	
	10200.00	89.17	178.84	9437.32	974.82	-974.62	19.73	0.00	585244.74	670135.73	N 32 35 27.82 W 103 46 50.98	
	10300.00	89.17	178.84	9438.77	1074.81	-1074.59	21.76	0.00	585144.77	670137.76	N 32 35 26.83 W 103 46 50.96	
	10400.00	89.17	178.84	9440.22	1174.80	-1174.56	23.78	0.00	585044.81	670139.78	N 32 35 25.84 W 103 46 50.94	
	10500.00	89.17	178.84	9441.67	1274.79	-1274.53	25.80	0.00	584944.85	670141.80	N 32 35 24.85 W 103 46 50.93	
	10600.00	89.17	178.84	9443.12	1374.78	-1374.50	27.83	0.00	584844.88	670143.83	N 32 35 23.86 W 103 46 50.91	
	10700.00	89.17	178.84	9444.57	1474.77	-1474.47	29.85	0.00	584744.92	670145.85	N 32 35 22.87 W 103 46 50.89	
	10800.00	89.17	178.84	9446.02	1574.76	-1574.44	31.88	0.00	584644.96	670147.88	N 32 35 21.88 W 103 46 50.87	
	10900.00	89.17	178.84	9447.47	1674.75	-1674.41	33.90	0.00	584544.99	670149.90	N 32 35 20.89 W 103 46 50.86	
	11000.00	89.17	178.84	9448.92	1774.74	-1774.37	35.93	0.00	584445.03	670151.92	N 32 35 19.90 W 103 46 50.84	
	11100.00	89.17	178.84	9450.37	1874.73	-1874.34	37.95	0.00	584345.07	670153.95	N 32 35 18.91 W 103 46 50.82	
	11200.00	89.17	178.84	9451.82	1974.72	-1974.31	39.97	0.00	584245.11	670155.97	N 32 35 17.93 W 103 46 50.80	
	11300.00	89.17	178.84	9453.27	2074.71	-2074.28	42.00	0.00	584145.14	670157.99	N 32 35 16.94 W 103 46 50.79	
	11400.00	89.17	178.84	9454.72	2174.70	-2174.25	44.02	0.00	584045.18	670160.02	N 32 35 15.95 W 103 46 50.77	
	11500.00	89.17	178.84	9456.17	2274.69	-2274.22	46.05	0.00	583945.22	670162.04	N 32 35 14.96 W 103 46 50.75	
	11600.00	89.17	178.84	9457.62	2374.67	-2374.19	48.07	0.00	583845.25	670164.07	N 32 35 13.97 W 103 46 50.73	
	11700.00	89.17	178.84	9459.07	2474.66	-2474.16	50.09	0.00	583745.29	670166.09	N 32 35 12.98 W 103 46 50.71	
	11800.00	89.17	178.84	9460.53	2574.65	-2574.13	52.12	0.00	583645.33	670168.11	N 32 35 11.99 W 103 46 50.70	
	11900.00	89.17	178.84	9461.98	2674.64	-2674.10	54.14	0.00	583545.36	670170.14	N 32 35 11.00 W 103 46 50.68	
	12000.00	89.17	178.84	9463.43	2774.63	-2774.06	56.17	0.00	583445.40	670172.16	N 32 35 10.01 W 103 46 50.66	
	12100.00	89.17	178.84	9464.88	2874.62	-2874.03	58.19	0.00	583345.44	670174.19	N 32 35 9.02 W 103 46 50.64	
	12200.00	89.17	178.84	9466.33	2974.61	-2974.00	60.21	0.00	583245.48	670176.21	N 32 35 8.03 W 103 46 50.63	
	12300.00	89.17	178.84	9467.78	3074.60	-3073.97	62.24	0.00	583145.51	670178.23	N 32 35 7.04 W 103 46 50.61	
	12400.00	89.17	178.84	9469.23	3174.59	-3173.94	64.26	0.00	583045.55	670180.26	N 32 35 6.05 W 103 46 50.59	
	12500.00	89.17	178.84	9470.68	3274.58	-3273.91	66.29	0.00	582945.59	670182.28	N 32 35 5.06 W 103 46 50.57	
	12600.00	89.17	178.84	9472.13	3374.57	-3373.88	68.31	0.00	582845.62	670184.31	N 32 35 4.08 W 103 46 50.56	
	12700.00	89.17	178.84	9473.58	3474.56	-3473.85	70.33	0.00	582745.66	670186.33	N 32 35 3.09 W 103 46 50.54	
	12800.00	89.17	178.84	9475.03	3574.55	-3573.82	72.36	0.00	582645.70	670188.35	N 32 35 2.10 W 103 46 50.52	
	12900.00	89.17	178.84	9476.48	3674.54	-3673.79	74.38	0.00	582545.73	670190.38	N 32 35 1.11 W 103 46 50.50	
	13000.00	89.17	178.84	9477.93	3774.53	-3773.75	76.41	0.00	582445.77	670192.40	N 32 35 0.12 W 103 46 50.49	
	13100.00	89.17	178.84	9479.38	3874.52	-3873.72	78.43	0.00	582345.81	670194.43	N 32 35 59.13 W 103 46 50.47	
	13200.00	89.17	178.84	9480.83	3974.51	-3973.69	80.45	0.00	582245.85	670196.45	N 32 35 58.14 W 103 46 50.45	
	13300.00	89.17	178.84	9482.28	4074.50	-4073.66	82.48	0.00	582145.88	670198.47	N 32 35 57.15 W 103 46 50.43	
	13400.00	89.17	178.84	9483.73	4174.49	-4173.63	84.50	0.00	582045.92	670200.50	N 32 35 56.16 W 103 46 50.42	
	13500.00	89.17	178.84	9485.18	4274.47	-4273.60	86.53	0.00	581945.96	670202.52	N 32 35 55.17 W 103 46 50.40	
	13600.00	89.17	178.84	9486.63	4374.46	-4373.57	88.55	0.00	581845.99	670204.54	N 32 35 54.18 W 103 46 50.38	
	13700.00	89.17	178.84	9488.08	4474.45	-4473.54	90.57	0.00	581746.03	670206.57	N 32 35 53.19 W 103 46 50.36	
	13800.00	89.17	178.84	9489.53	4574.44	-4573.51	92.60	0.00	581646.07	670208.59	N 32 35 52.20 W 103 46 50.35	
	13900.00	89.17	178.84	9490.98	4674.43	-4673.48	94.62	0.00	581546.10	670210.62	N 32 35 51.21 W 103 46 50.33	
	14000.00	89.17	178.84	9492.43	4774.42	-4773.44	96.65					

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ° °)	Longitude (E/W ° ° °)
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Survey Type: Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
 Survey Program:

Description	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	0.000	17.000	1/100.000	30.000	30.000	SLB_MWD-STD-Depth Only	Original Borehole / COG Ringo 32 Federal Com #1H Rev0 MDT
	17.000	14521.734	1/100.000	30.000	30.000	SLB_MWD-STD	Original Borehole / COG Ringo 32 Federal Com #1H Rev0 MDT

3001 1111-1 13 13:32

CV2725 1111-1 13 13:32



COG

Rev0

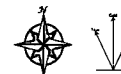
PATHFINDER
A Schlumberger Company

WELL	COG Ringo 32 Federal Com #1H	FILED	NM Lea County (NAD 27)	STRUCTURE	McVay 7
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Magnetic Parameters	Model: RING 2017	Typ: 00 421	Date: April 10, 2013	Site Location	NAD27 New Mexico State Plane, Eastern Zone, US Feet	Miscellaneous	Site: Ringo 32 Federal Com #1H	TVD Ref: RING 32 Fed Com #1H	Srv Date: April 10, 2013
		Mag Dec: 7.590	FS: 0.001507	Lat: N 12 16 17.462	Longitude: 106 19 10.815		File: RING 32 Fed Com #1H		
				Long: W 103 46 51.150	Easting: 670116.00				

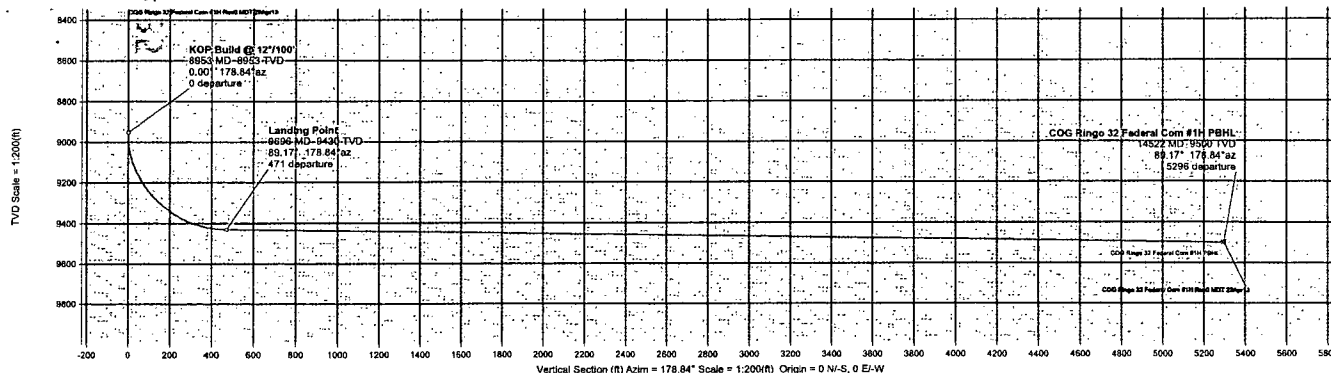
Legend

COG Ringo 32 Federal Com #1H (100' Elevation)
COG Ringo 32 Federal Com #1H (100' Elevation)
COG Ringo 32 Federal Com #1H (100' Elevation)
COG Ringo 32 Federal Com #1H (100' Elevation)

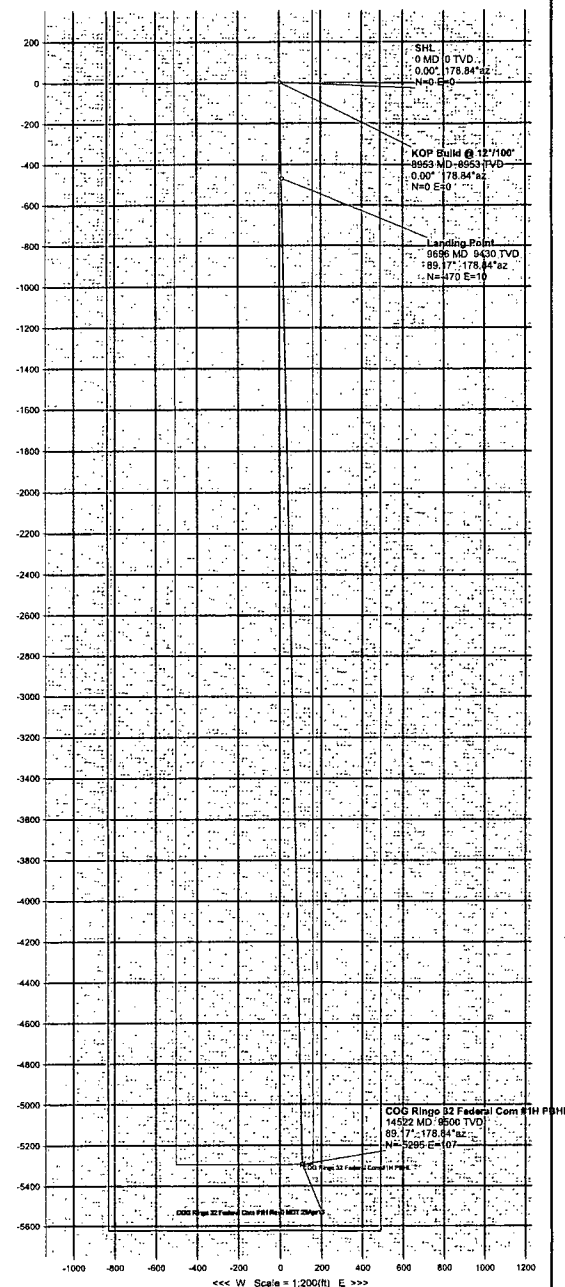


Grid North
Tot Corr (M->G)
7.2920"
Mag Dec (7.590°)
Grid Conv (0.298°)

Comments	Survey (MD)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Sub Sea (TVD)	WS (ft)	NS (ft)	EW (ft)	North (ftUS)	East (ftUS)	Latitude (deg)	Longitude (deg)	DUS (ftM)	Total Face (deg)
SHL	0.00	0.00	178.84	0.00	-3552.00	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.462	W 103 46 51.150		178.84
KOP Build @ 12°/100'	8952.59	0.00	178.84	8952.59	5400.59	0.00	0.00	0.00	586219.30	670116.00	N 32 36 37.462	W 103 46 51.150	0.00	178.84
Landing Point	9695.66	89.17	178.84	9430.00	5878.00	470.54	-470.44	9.52	585748.88	670125.52	N 32 36 32.807	W 103 46 51.067	12.00	0.00
COG Ringo 32 Federal Com #1H PBHL	14521.73	89.17	178.84	9500.00	5948.00	5296.10	-5295.02	107.21	580924.60	670223.20	N 32 35 45.064	W 103 46 50.219	0.00	



<<< S Scale = 1:200(ft) N >>>



Drawn By: Current User
Date Created: April 10, 2013 02:46:40 PM
Checked By:
Checked Date:
Approved By:
Approved Date:



New Mexico Office of the State Engineer **Water Column/Average Depth to Water**

No records found.

PLSS Search:

Section(s): 32

Township: 19S

Range: 32E

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the
POD suffix indicates the
POD has been replaced
& no longer serves a
water right file.)

(R=POD has
been replaced,
O=orphaned,
C=the file is

closed) (quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	POD Code	Subbasin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
CP 00073			LE	2	4	34	19S	32E		617502	3609301*	575		
CP 00075			LE	2	4	34	19S	32E		617502	3609301*	575		
CP 00639 EXPL			LE	3	1	20	19S	32E		613029	3612880*	350	345	5
CP 00640 EXPL			LE	2	2	19	19S	32E		612621	3613280*	260	102	158

Average Depth to Water: **223 feet**

Minimum Depth: **102 feet**

Maximum Depth: **345 feet**

Record Count: 4

PLSS Search:

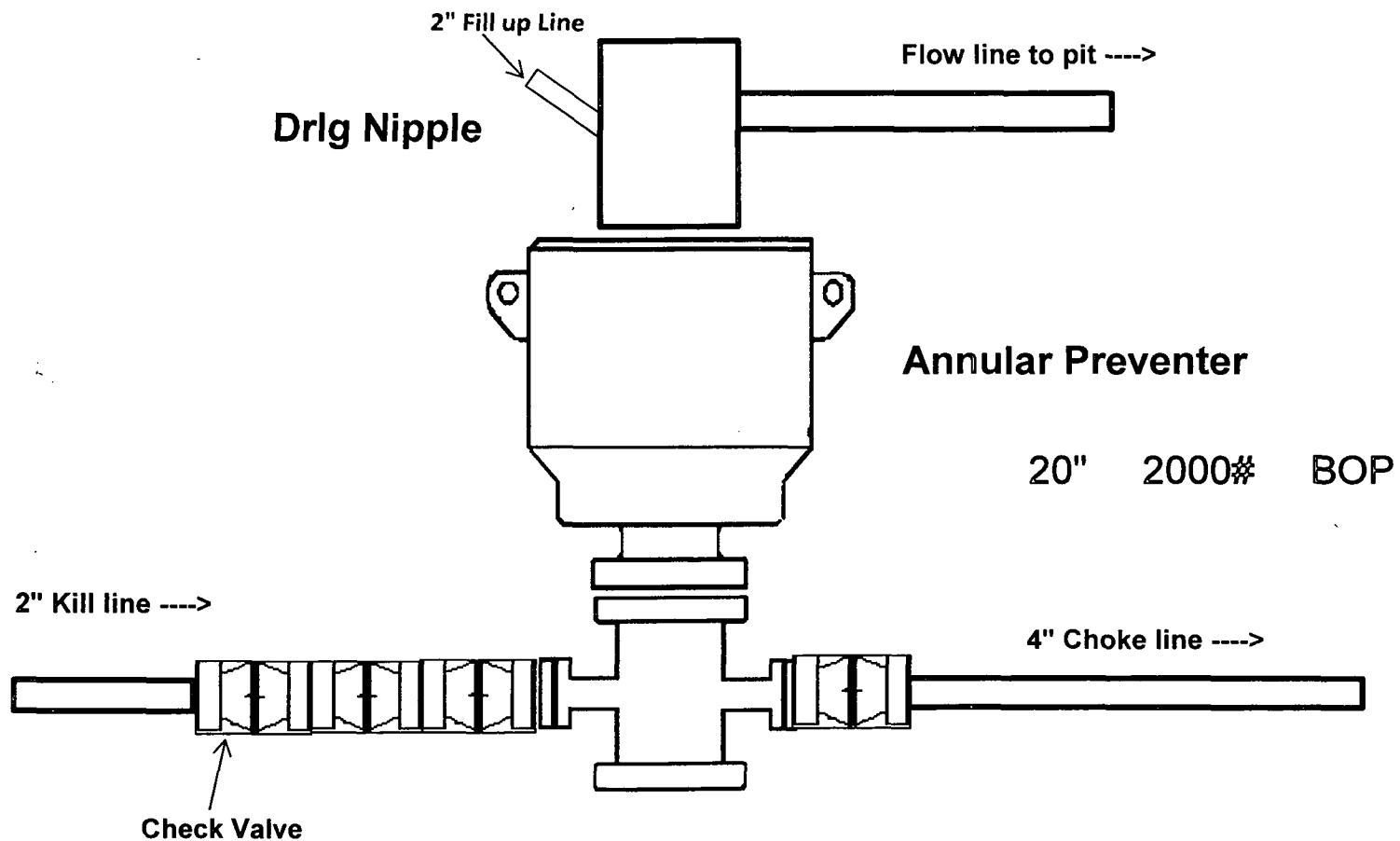
Township: 19S

Range: 32E

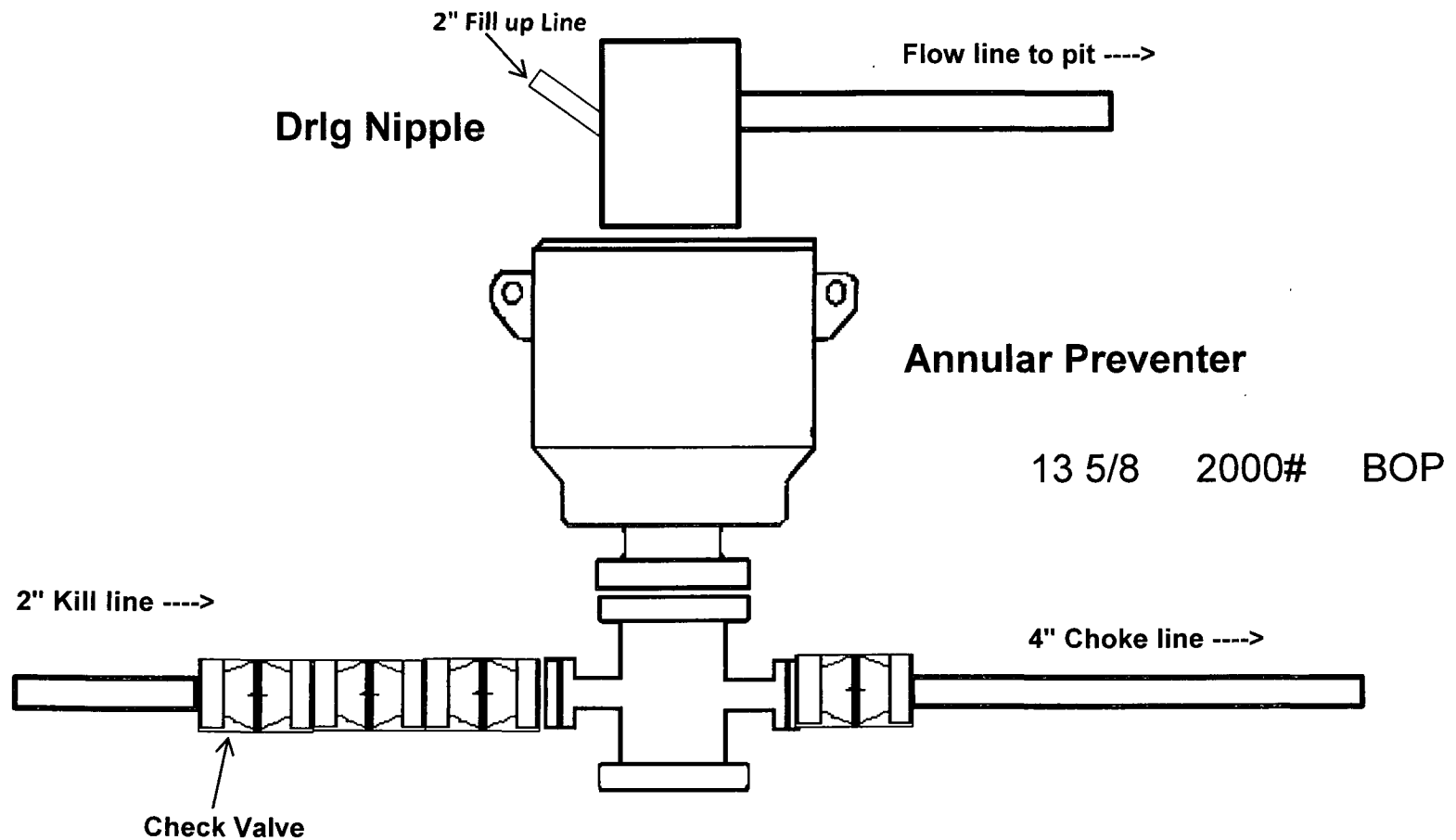
*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

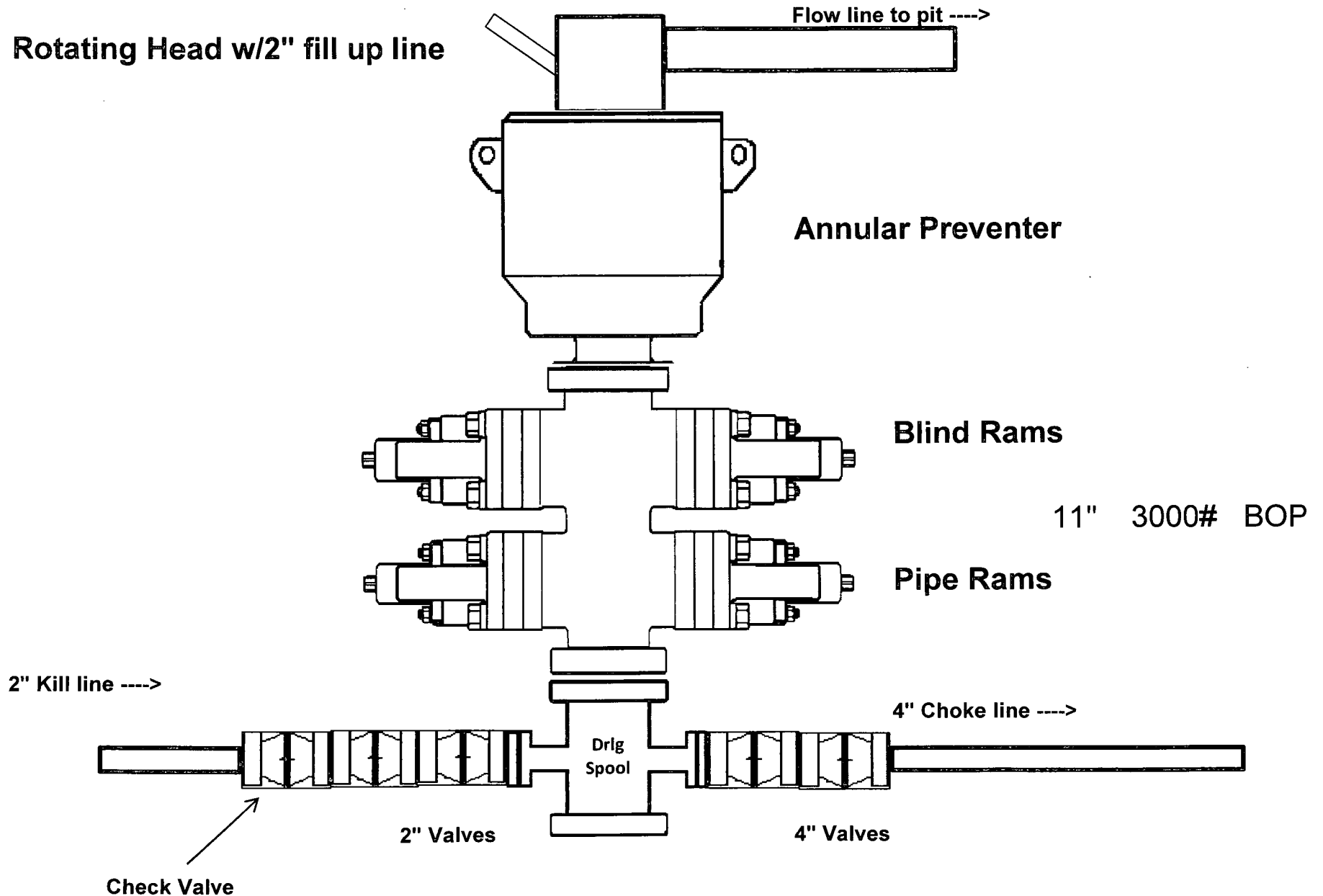
2,000 psi BOP Schematic

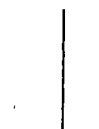


2,000 psi BOP Schematic



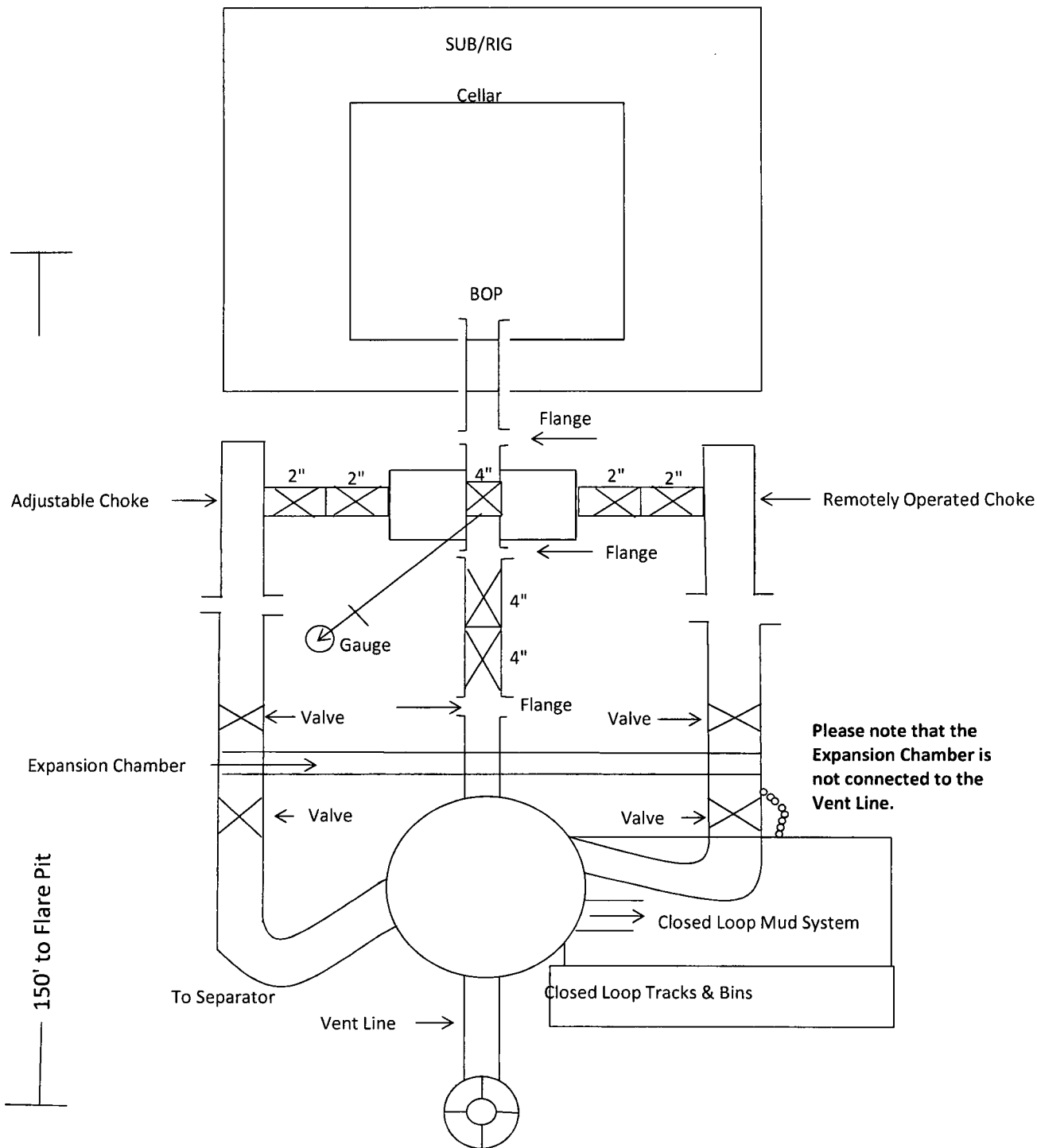
3,000 psi BOP Schematic





6-10-70

3M Choke Manifold Equipment



**Design Plan
Operating and Maintenance Plan
Closure Plan**

**Ringo 32 Federal Com #1H
SHL: 330' FSL & 490' FEL of Sect 32 T19S R32E
BHL: 330' FSL & 380' FEL of Sect 5 T20S R32E
Lea County, New Mexico**

COG Operating LLC will be using all above ground steel pits for fluid and cuttings while drilling. If any tank develops a leak we will have immediate visual discovery, we would then transfer the fluid to another tank then remove any contaminated soil and dispose of it in the cuttings bins for transportation. All leaks should be kept to less than 5 barrels. Rig crews will monitor the tanks at all times.

Equipment List:

- 2- Mongoose Shale Shakers
- 1- 414 Centrifuge
- 1- 518 Centrifuge
- 2- Roll Off Bins w/ Tracks
- 2- 500 BBL Frac Tanks

During drilling operations all liquids, drilling fluids and cuttings will be hauled off via CRI (Controlled Recovery Inc.) Permit R-9166 or any other approved facility.