Form 3160-3
(March 2012)

NM OIL CONSERVATION
ARTESIA DISTRICT
AUG 25 2014
OCD Artesia
RECEIVED

ATS-14-352
FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014
TES 8-25-14

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

# APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. SHL - LC029387B
BHL - NMLC0029387A

6. If Indian, Allotee or Tribe Name

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No. <313622>
Flying Squirrel Federal #1H

1a. Type of Work: [✓] DRILL [ ] REENTER

1b. Type of Well: [✓] Oil Well [ ] Gas Well [ ] Other [✓] Single Zone [ ] Multiple Zone

2. Name of Operator
COG Operating LLC. <229137>

9. API Well No.
30-015-42608

3a. Address
2208 West Main Street
Artesia, NM 88210

3b. Phone No. *(include area code)*
575-748-6940

10. Field and Pool, or Exploratory <56405>
Shugart; Bone Spring, North

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 2000' FSL & 450' FEL Unit Letter I (NESE) SHL Sec 30-T18S-R31E
At proposed prod. Zone 2260' FSL & 330' FEL Unit Letter I (NESE) BHL Sec 29-T18S-R31E

11. Sec., T.R.M. or Blk and Survey or Area
Sec. 30 - T18S - R31E

14. Distance in miles and direction from nearest town or post office*
Approximately 20 miles from Maljamar

12. County or Parish
Eddy County

13. State
NM

| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any) | 16. No. of acres in lease | 17. Spacing Unit dedicated to this well |
|---|---|---|
| 330' | 320 | 160 |
| **18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft.** | **19. Proposed Depth** | **20. BLM/BIA Bond No. on file** |
| SHL: 370' BHL: 785'<br>Closest to wellbore: 465' (existing well)<br>271' (proposed well) | TVD: 8,780' MD: 13,981' | NMB000740 &NMB00215 |
| **21. Elevations (Show whether DF, KDB, RT, GL, etc.)** | **22. Approximate date work will start*** | **23. Estimated duration** |
| 3600.0' GL | 6/1/2014 | 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.
2. A Drilling Plan
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the authorized officer.

| 25. Signature | Name *(Printed/Typed)* | Date |
|---|---|---|
| Mayte Reyes | Mayte Reyes | 4/9/2014 |

Title
Regulatory Analyst

| Approved by *(Signature)* | Name *(Printed/Typed)* | Date |
|---|---|---|
| Steve Caffey | | AUG 14 2014 |
| **Title** | **Office** | |
| FIELD MANAGER | CARLSBAD FIELD 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 theron.
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)

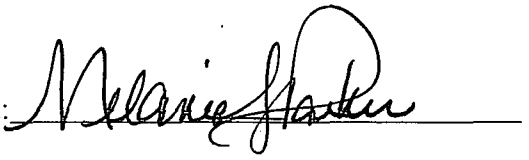
Capitan Controlled Water Basin

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

## OPERATOR CERTIFICATION

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 9th day of April, 2014.

Signed: 

Printed Name: Melanie J. Parker
Position: Regulatory Coordinator
Address: 2208 W. Main Street, Artesia, NM 88210
Telephone: (575) 748-6940
Field Representative (if not above signatory): Rand French
E-mail: mparker@concho.com

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
1301 W. GRAND AVENUE, ARTESIA, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1625 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
11885 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011
Submit one copy to apprpriate

☐ AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION PLAT

| API Number | Pool Code | Pool Name |
|---|---|---|
| 30-015- 42608 | 56405 | Shugart; Bone SPring, North |

| Property Code | Property Name | Well Number |
|---|---|---|
| 313622 | FLYING SQUIRREL FEDERAL | 1H |

| OGRID No. | Operator Name | Elevation |
|---|---|---|
| 229137 | COG OPERATING, LLC | 3600.0 |

### Surface Location

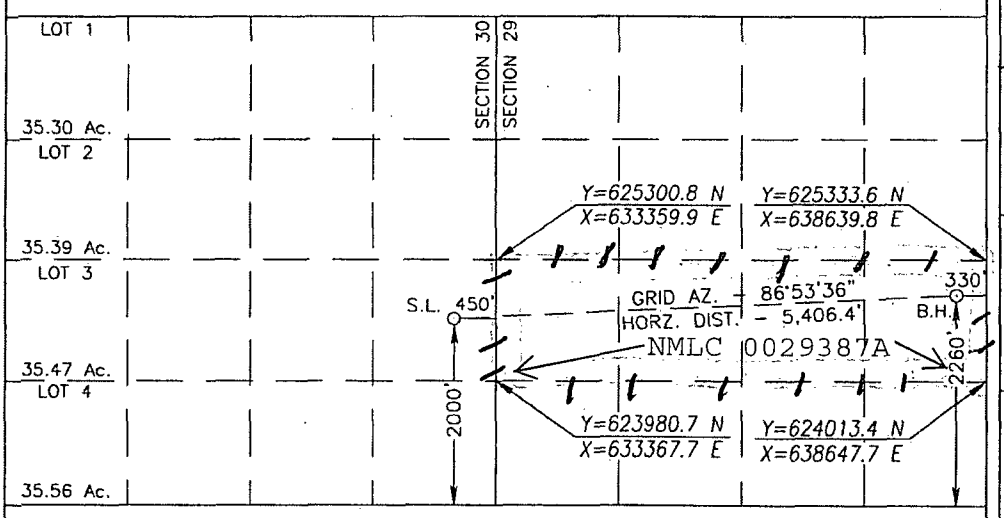
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| I | 30 | 18-S | 31-E | | 2000 | SOUTH | 450 | EAST | EDDY |

### Bottom Hole Location If Different From Surface

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| I | 29 | 18-S | 31-E | | 2260 | SOUTH | 330 | EAST | EDDY |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No. |
|---|---|---|---|
| 160 | | | |

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




NAD 27
SURFACE LOCATION
Y=624658.0 N
X=632913.6 E
LAT.=32.716537° N
LONG.=103.901180° W

NAD 27
PROPOSED BOTTOM HOLE LOCATION
Y=624951.0 N
X=638312.1 E
LAT.=32.717280° N
LONG.=103.883624° W

### OPERATOR CERTIFICATION

*I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.*

Signature Date 4/9/14

Melanie J Parker
Printed Name

mparker@concho.com
E-mail Address

### SURVEYOR CERTIFICATION

*I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.*

FEBRUARY 6, 2014
Date of Survey

Signature & Seal of Professional Surveyor

CHAD L. HARCROW
NEW MEXICO
17777
LICENSED PROFESSIONAL SURVEYOR

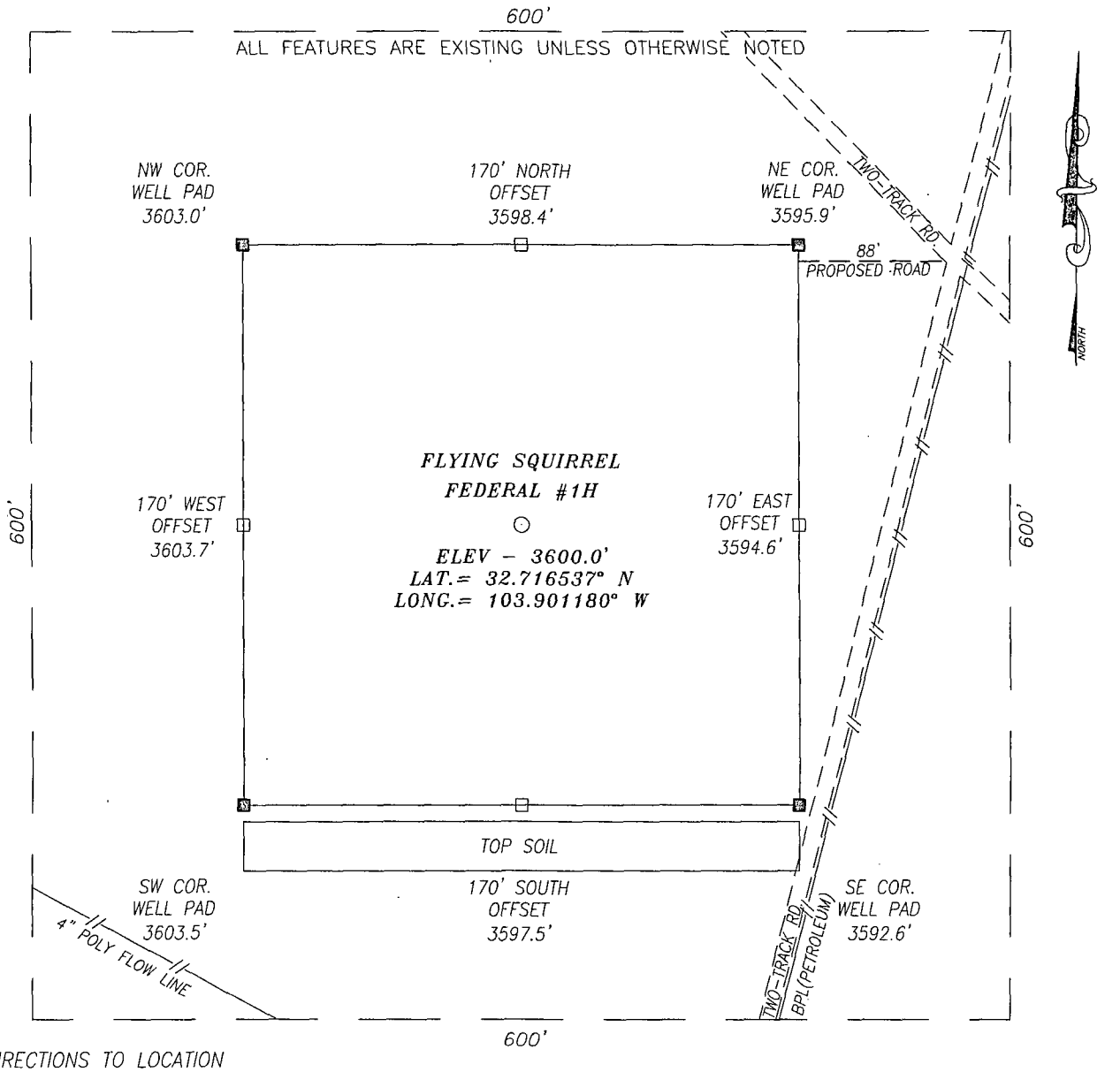
Chad Harcrow 2/7/14

Certificate No. CHAD HARCROW 17777

W.O. # 14-104 DRAWN BY: SP

# SECTION 30, TOWNSHIP 18 SOUTH, RANGE 31 EAST, N.M.P.M.,

EDDY COUNTY NEW MEXICO




DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF CR #222 (SHUGART RD.) AND CR #250 (GRUBBS RD.) GO APPROX. 0.8 MILE SOUTHWEST ALONG GRUBBS RD.; THEN TURN RIGHT (NORTH) ONTO A CALICHE LEASE ROAD AND GO APPROX. 0.4 MILE; THEN TURN LEFT (SOUTHWEST) ONTO PROPOSED ROAD AND GO APPROX. 183 FEET; THEN TURN RIGHT (NORTHWEST) ONTO A TWO TRACK ROAD AND GO APPROX. 0.1 MILE; THEN PROPOSED WELL IS APPROX. 300 FEET SOUTHWEST.

100 0 100 200 Feet

Scale: 1"=100'

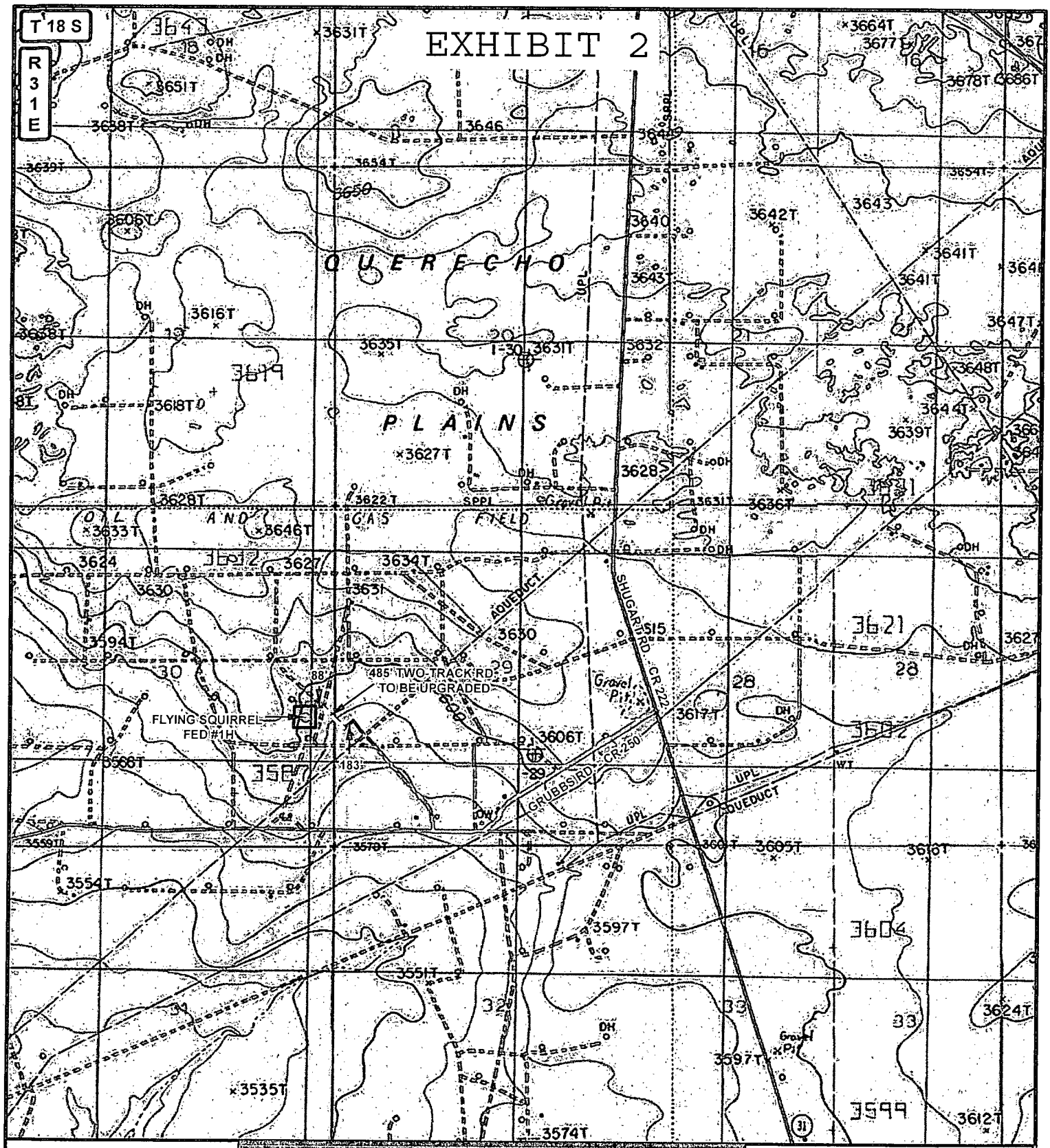

HARCROW SURVEYING, LLC
2314 W. MAIN ST, ARTESIA, N.M. 88210
PH: (575) 513-2570 FAX: (575) 746-2158
chad_harcrow77@yahoo.com


## COG OPERATING, LLC

FLYING SQUIRREL FED #1H WELL
LOCATED 2000 FEET FROM THE SOUTH LINE
AND 450 FEET FROM THE EAST LINE OF SECTION 30,
TOWNSHIP 18 SOUTH, RANGE 31 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

| | | |
|---|---|---|
| SURVEY DATE: 02/06/2014 | | PAGE: 1 OF 1 |
| DRAFTING DATE: 02/10/2014 | | |
| APPROVED BY: CH | DRAWN BY: SP | FILE: 14-104 |

# EXHIBIT 2




LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD
- TWO-TRACK ROAD

**FLYING SQUIRREL FED #1H**

SEC: 30 TWP: 18 S. RGE: 31 E. ELEVATION: 3600.0'

STATE: NEW MEXICO COUNTY: EDDY 2000' FSL & 450' FEL

W.O. # 14-104 LEASE: FLYING SQUIRREL FED SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.125 0.25 0.5 Miles 1 IN = 2,000 FT

LOCATION MAP TOPO 02/11/2014 ST

CONCHO

COG OPERATING, LLC

N

HARCROW SURVEYING, LLC
1107 WATSON, ARTESIA N.M. 88210
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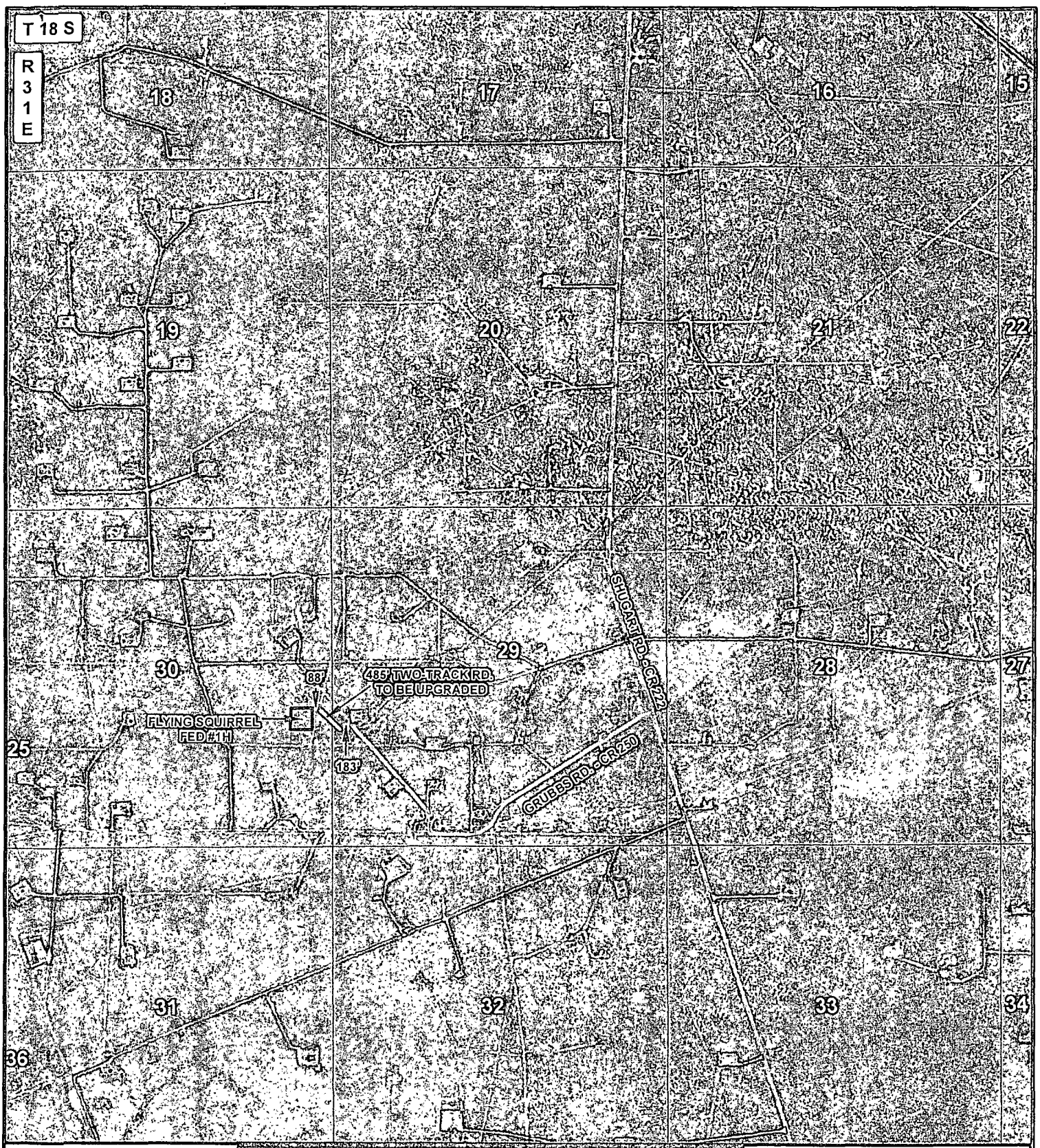


LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD
- TWO-TRACK ROAD

**FLYING SQUIRREL FED #1H**

SEC: 30 TWP: 18 S. RGE: 31 E. ELEVATION: 3600.0'

STATE: NEW MEXICO COUNTY: EDDY 2000' FSL & 450' FEL

W.O. # 14-104 LEASE: FLYING SQUIRREL FED SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.125 0.25 0.5 Miles 1 IN = 2,000 FT

LOCATION MAP IMAGERY 02/11/2014 SP

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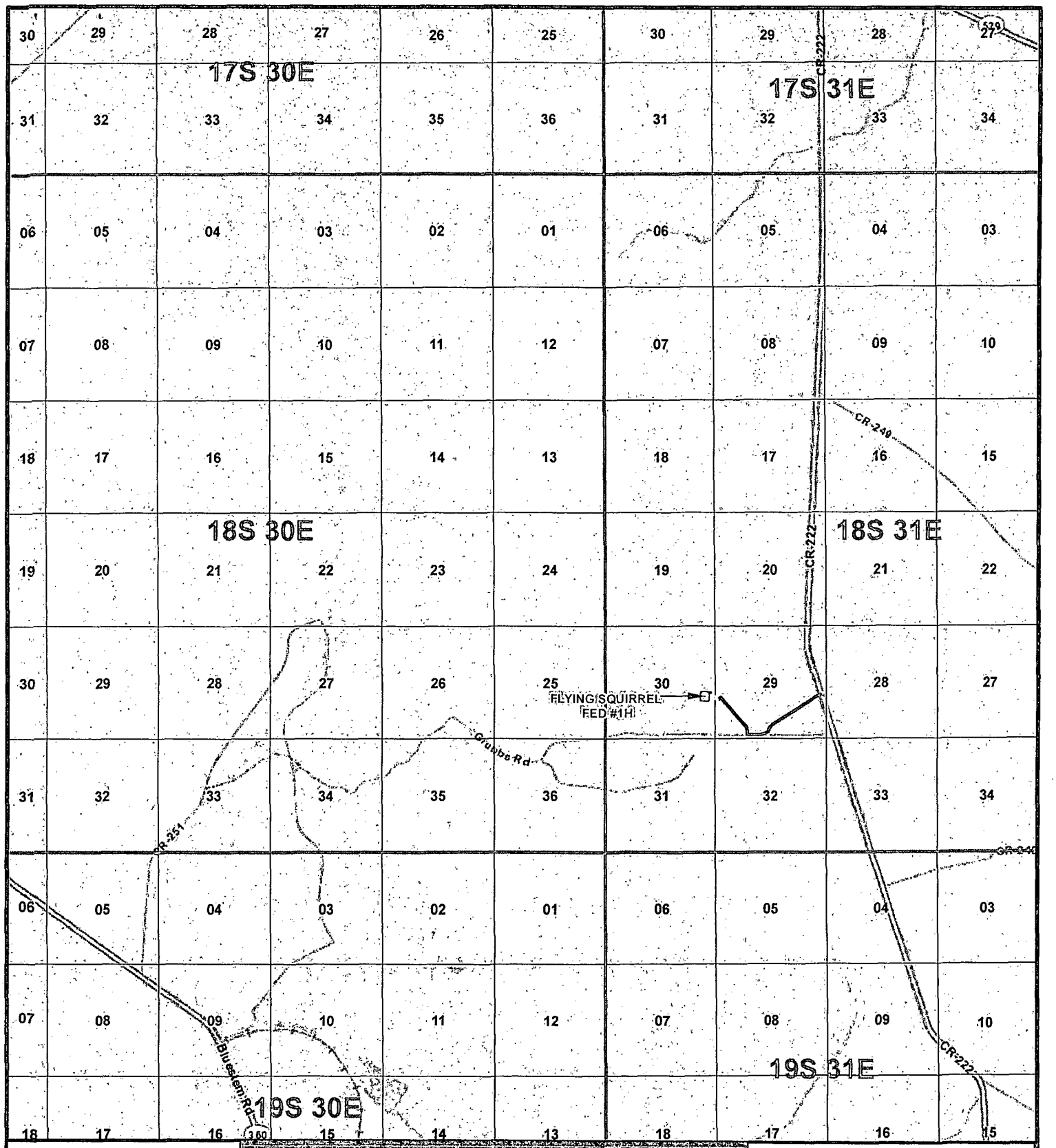


LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD
- TWO-TRACK ROAD

**FLYING SQUIRREL FED #1H**

SEC: 30 TWP: 18 S. RGE: 31 E. ELEVATION: 3600.0'

STATE: NEW MEXICO COUNTY: EDDY 2000' FSL & 450' FEL

W.O. # 14-104 LEASE: FLYING SQUIRREL FED SURVEY: N.M.P.M

0 2,500 5,000 7,500 10,000 12,500 15,000 FEET

0 0.4 0.8 1.6 Miles

1 IN = 6,000 FT

VICINITY MAP 02/11/2014 SP

N

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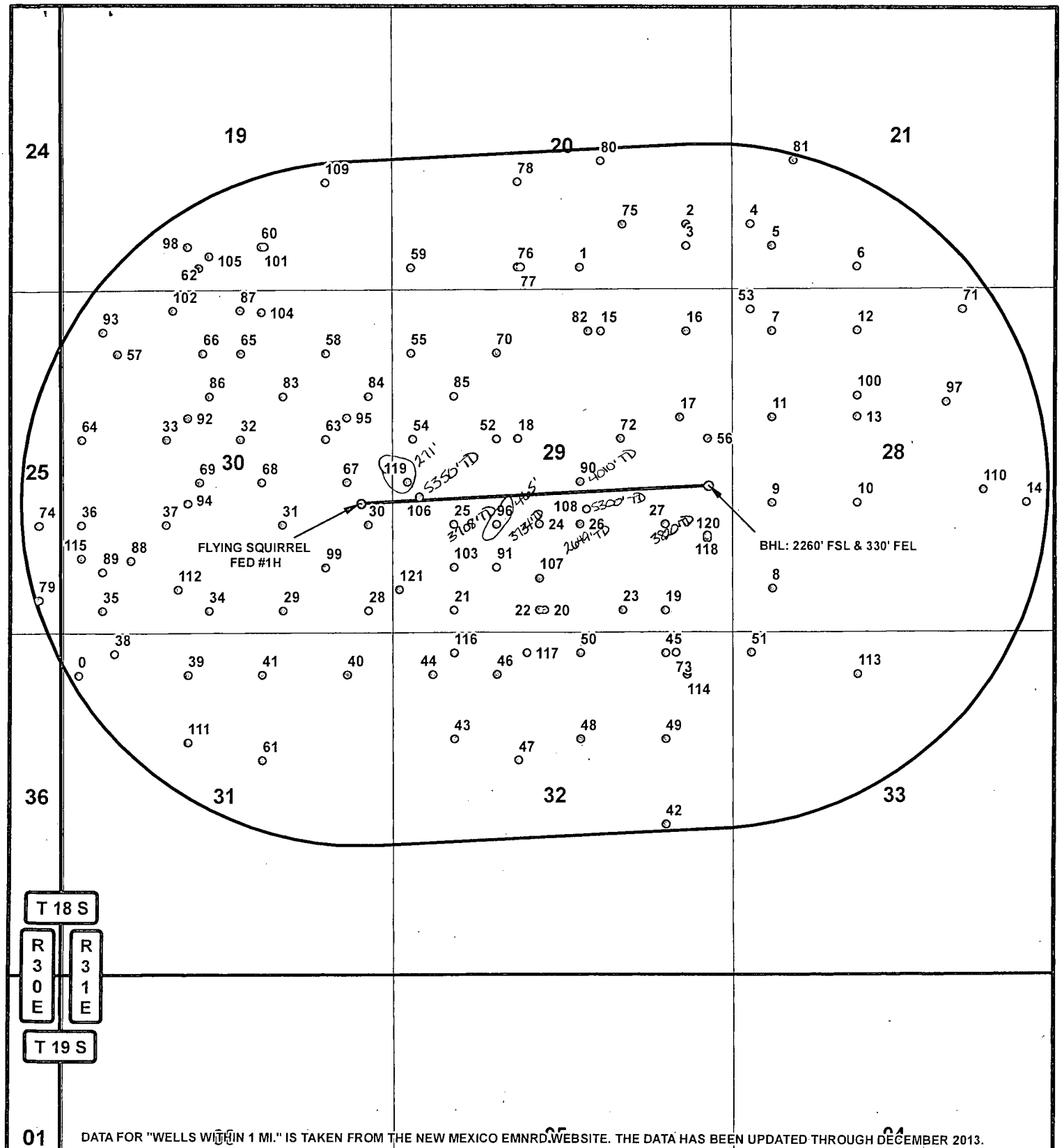


DATA FOR "WELLS WITHIN 1 MI." IS TAKEN FROM THE NEW MEXICO EMNRD WEBSITE. THE DATA HAS BEEN UPDATED THROUGH DECEMBER 2013.

LEGEND

- WELLS WITHIN 1 MI.
- WELL
- BOTTOMHOLE
- 1 MI. BUFFER

**FLYING SQUIRREL FED #1H**

SEC: 30 TWP: 18 S. RGE: 31 E. ELEVATION: 3600.0'

STATE: NEW MEXICO COUNTY: EDDY 2000' FSL & 450' FEL

W.O. # 14-104 LEASE: FLYING SQUIRREL FED SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.125 0.25 0.5 Miles

1 IN = 2,000 FT

1 MILE MAP 02/11/2014 SDH

N

CONCHO

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chad_harcrow77@yahoo.com

| FID | OPERATOR | WELL_NAME | LATITUDE | LONGITUDE | API | SECTION | TOWNSHIP | RANGE | FTG_NS | NS_CD | FTG_EW | EW_CD | TVD_DEPTH | COMPL_STAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | CIMAREX ENERGY CO. OF COLORADO | WEST SHUGART 31 FEDERAL COM 003 | 32.709384 | -103.916043 | 3001537350 | 31 | 18.0S | 31E | 660 | N | 280 | W | 13344 | New (Not drilled or compl) |
| 1 | SHENANDOAH OIL CORP | GULF FED 001 | 32.726657 | -103.890656 | 3001505585 | 20 | 18.0S | 31E | 330 | S | 2310 | E | 0 | Plugged |
| 2 | TOM R CONE | NORTH SHUGART QUEEN UNIT 009 | 32.728478 | -103.885267 | 3001505587 | 20 | 18.0S | 31E | 990 | S | 660 | E | 3750 | Active |
| 3 | SUNSET PETOLEUM CORP | LITTLE B 001 | 32.727571 | -103.885266 | 3001505589 | 20 | 18.0S | 31E | 660 | S | 660 | E | 0 | Plugged |
| 4 | TOM R CONE | NORTH SHUGART QUEEN UNIT 010 | 32.728482 | -103.882032 | 3001505590 | 21 | 18.0S | 31E | 990 | S | 330 | W | 0 | Active |
| 5 | FULLERTON OIL CO | LITTLE 003 | 32.727576 | -103.880953 | 3001505594 | 21 | 18.0S | 31E | 660 | S | 660 | W | 0 | Plugged |
| 6 | TOM R CONE | NORTH SHUGART QUEEN UNIT 011 | 32.726674 | -103.876638 | 3001505600 | 21 | 18.0S | 31E | 330 | S | 1980 | W | 3621 | Active |
| 7 | G B SUPPES | LITTLE A 001 | 32.723948 | -103.880948 | 3001505619 | 28 | 18.0S | 31E | 660 | N | 660 | W | 0 | Plugged |
| 8 | CIMAREX ENERGY CO. OF COLORADO | KEOHANE ETAL A FEDERAL 001 | 32.713061 | -103.880934 | 3001505620 | 28 | 18.0S | 31E | 660 | S | 660 | W | 3805 | Plugged |
| 9 | CIMAREX ENERGY CO. OF COLORADO | KEOHANE ETAL A FEDERAL 002 | 32.716689 | -103.880939 | 3001505621 | 28 | 18.0S | 31E | 1980 | S | 660 | W | 3682 | Plugged |
| 10 | GULF OIL CORP | KEOHANE ETAL A FED 003 | 32.716695 | -103.876626 | 3001505622 | 28 | 18.0S | 31E | 1980 | S | 1980 | W | 0 | Plugged |
| 11 | XERIC OIL & GAS CORP | KEOHANE ET AL B FEDERAL 001 | 32.720319 | -103.880943 | 3001505623 | 28 | 18.0S | 31E | 1980 | N | 660 | W | 3650 | Plugged |
| 12 | LG&S OIL COMPANY, LLC | KEOHANE B FEDERAL 002 | 32.723952 | -103.876636 | 3001505624 | 28 | 18.0S | 31E | 660 | N | 1980 | W | 3650 | Active |
| 13 | LG&S OIL COMPANY, LLC | KEOHANE B FEDERAL 003 | 32.720324 | -103.876631 | 3001505625 | 28 | 18.0S | 31E | 1980 | N | 1980 | W | 3650 | Active |
| 14 | J MASK ET AL | LITTLE 001 | 32.716706 | -103.868076 | 3001505626 | 28 | 18.0S | 31E | 1980 | S | 660 | E | 0 | Plugged |
| 15 | CIMAREX ENERGY CO. OF COLORADO | SHUGART APCO A 002 | 32.723938 | -103.889573 | 3001505628 | 29 | 18.0S | 31E | 660 | N | 1980 | E | 3729 | Active |
| 16 | CIMAREX ENERGY CO. OF COLORADO | SHUGART APCO A 001 | 32.723943 | -103.88526 | 3001505629 | 29 | 18.0S | 31E | 660 | N | 660 | E | 3576 | Active |
| 17 | CIMAREX ENERGY CO. OF COLORADO | SHUGART APCO A 003 | 32.720314 | -103.885582 | 3001505630 | 29 | 18.0S | 31E | 1980 | N | 760 | E | 4150 | Plugged |
| 18 | SOUTHLAND ROYALTY CO | SHUGART (APCO) A 004 | 32.719397 | -103.893801 | 3001505631 | 29 | 18.0S | 31E | 2310 | N | 1980 | W | 0 | Plugged |
| 19 | CIMAREX ENERGY CO. OF COLORADO | SHUGART A 007 | 32.712147 | -103.886323 | 3001505632 | 29 | 18.0S | 31E | 330 | S | 990 | E | 2705 | Plugged |
| 20 | SOUTHLAND ROYALTY CO | SHUGART "A" 008 | 32.712139 | -103.892453 | 3001505633 | 29 | 18.0S | 31E | 330 | S | 2390 | W | 0 | Plugged |
| 21 | CIMAREX ENERGY CO. OF COLORADO | SHUGART A 001 | 32.712132 | -103.897026 | 3001505634 | 29 | 18.0S | 31E | 330 | S | 990 | W | 3740 | Plugged |
| 22 | CIMAREX ENERGY CO. OF COLORADO | SHUGART A 002 | 32.712138 | -103.892714 | 3001505635 | 29 | 18.0S | 31E | 330 | S | 2310 | W | 3724 | Plugged |
| 23 | CIMAREX ENERGY CO. OF COLORADO | SHUGART A 003 | 32.712144 | -103.888479 | 3001505636 | 29 | 18.0S | 31E | 330 | S | 1650 | E | 3763 | Plugged |
| 24 | CIMAREX ENERGY CO. OF COLORADO | SHUGART A 004 | 32.715767 | -103.892718 | 3001505637 | 29 | 18.0S | 31E | 1650 | S | 2310 | W | 3734 | Plugged |
| 25 | CIMAREX ENERGY CO. OF COLORADO | SHUGART A 005 | 32.715761 | -103.897031 | 3001505638 | 29 | 18.0S | 31E | 1650 | S | 990 | W | 3807 | Plugged |
| 26 | CIMAREX ENERGY CO. OF COLORADO | SHUGART A 006 | 32.715769 | -103.89064 | 3001505639 | 29 | 18.0S | 31E | 1650 | S | 2310 | E | 2649 | Plugged |
| 27 | CIMAREX ENERGY CO. OF COLORADO | SHUGART A 009 | 32.715775 | -103.886328 | 3001505640 | 29 | 18.0S | 31E | 1650 | S | 990 | E | 3820 | Plugged |
| 28 | SOUTHLAND ROYALTY CO | SHUGART C 001 | 32.712127 | -103.901339 | 3001505641 | 30 | 18.0S | 31E | 330 | S | 330 | E | 0 | Plugged |
| 29 | SOUTHLAND ROYALTY CO | SHUGART C 002 | 32.712121 | -103.905651 | 3001505642 | 30 | 18.0S | 31E | 330 | S | 1650 | E | 0 | Plugged |
| 30 | SOUTHLAND ROYALTY CO | SHUGART C 003 | 32.715755 | -103.901343 | 3001505643 | 30 | 18.0S | 31E | 1650 | S | 330 | E | 0 | Plugged |
| 31 | KERSEY & COMPANY | SHUGART C 004Y | 32.715749 | -103.905688 | 3001505644 | 30 | 18.0S | 31E | 1650 | S | 1660 | E | 0 | Active |
| 32 | SDX RESOURCES INC | SHUGART D 001 | 32.719381 | -103.907817 | 3001505645 | 30 | 18.0S | 31E | 2310 | N | 2310 | E | 3829 | Plugged |
| 33 | SOUTHLAND ROYALTY CO | SHUGART D 002 | 32.719376 | -103.911554 | 3001505646 | 30 | 18.0S | 31E | 2310 | N | 1650 | W | 0 | Plugged |
| 34 | MANZANO OIL CORP | BENSON SHUGART WATERFLOOD UNIT 035 | 32.712116 | -103.909408 | 3001505647 | 30 | 18.0S | 31E | 330 | S | 2310 | W | 0 | Plugged |
| 35 | CHESAPEAKE OPERATING, INC. | BENSON SHUGART WATERFLOOD UNIT 031 | 32.712107 | -103.914798 | 3001505648 | 30 | 18.0S | 31E | 330 | S | 660 | W | 2604 | Plugged |
| 36 | CHEVRON U S A INC | BENSON SHUGART WATERFLOOD UNIT 029 | 32.715734 | -103.915871 | 3001505649 | 30 | 18.0S | 31E | 1650 | S | 330 | W | 2542 | Active |
| 37 | HANSON OPERATING CO INC | BENSON SHUGART WF UT 033 | 32.715741 | -103.911559 | 3001505650 | 30 | 18.0S | 31E | 1650 | S | 1650 | W | 0 | Plugged |
| 38 | MARBOB ENERGY CORP | PURE FED 001 | 32.710294 | -103.9142 | 3001505652 | 31 | 18.0S | 31E | 330 | N | 844 | W | 0 | Plugged |
| 39 | LINN OPERATING, INC. | FEDERAL E 002 | 32.709393 | -103.91049 | 3001505654 | 31 | 18.0S | 31E | 660 | N | 1980 | W | 3650 | Active |
| 40 | LINN OPERATING, INC. | FEDERAL F 001 | 32.709404 | -103.902413 | 3001505655 | 31 | 18.0S | 31E | 660 | N | 660 | E | 3695 | Active |
| 41 | LINN OPERATING, INC. | FEDERAL F 002 | 32.709398 | -103.906725 | 3001505656 | 31 | 18.0S | 31E | 660 | N | 1980 | E | 3656 | Active |
| 42 | BAKKE WE | MONTEREY ST 002 | 32.703075 | -103.886311 | 3001505660 | 32 | 18.0S | 31E | 2310 | S | 990 | E | 0 | Plugged |
| 43 | BAKKE WE | MONTEREY ST 003 | 32.70669 | -103.89702 | 3001505661 | 32 | 18.0S | 31E | 1650 | N | 990 | W | 0 | Plugged |
| 44 | CIMAREX ENERGY CO. OF COLORADO | MONTEREY B STATE 002 | 32.70941 | -103.898102 | 3001505662 | 32 | 18.0S | 31E | 660 | N | 660 | W | 3500 | Active |
| 45 | SOUTHLAND ROYALTY CO | NEW MEXICO Y ST 002 | 32.710333 | -103.88632 | 3001505663 | 32 | 18.0S | 31E | 330 | N | 990 | E | 0 | Plugged |
| 46 | CIMAREX ENERGY CO. OF COLORADO | MONTEREY B STATE 003 | 32.709414 | -103.894868 | 3001505664 | 32 | 18.0S | 31E | 660 | N | 1650 | W | 3676 | TA |
| 47 | CIMAREX ENERGY CO. OF COLORADO | MONTEREY B STATE 004 | 32.705788 | -103.893786 | 3001505665 | 32 | 18.0S | 31E | 1980 | N | 1980 | W | 3681 | Active |
| 48 | SOUTHLAND ROYALTY CO | NEW MECICO Y STATE 001 | 32.706699 | -103.890627 | 3001505667 | 32 | 18.0S | 31E | 1650 | N | 2310 | E | 0 | Plugged |
| 49 | CIMAREX ENERGY CO. OF COLORADO | NEW MEXICO Y STATE 003 | 32.706705 | -103.886316 | 3001505668 | 32 | 18.0S | 31E | 1650 | N | 990 | E | 3350 | Active |
| 50 | ENERGY RESOURCES CORP | STATE 32 001 | 32.710327 | -103.890632 | 3001505669 | 32 | 18.0S | 31E | 330 | N | 2310 | E | 0 | Plugged |
| 51 | SIRGO OPERATING INC | SHUGART B 005 | 32.710339 | -103.882008 | 3001505674 | 33 | 18.0S | 31E | 330 | N | 330 | W | 0 | Plugged |
| 52 | MOMENTUM OPERATING CO INC | KENWOOD 003 | 32.719396 | -103.894879 | 3001510095 | 29 | 18.0S | 31E | 2310 | N | 1650 | W | 3854 | Active |
| 53 | CHEMICAL EXPRESS | TEXACO FED 002 | 32.724853 | -103.882027 | 3001510113 | 28 | 18.0S | 31E | 330 | N | 330 | W | 0 | Plugged |
| 54 | MOMENTUM OPERATING CO INC | KENWOOD 001Y | 32.719391 | -103.899094 | 3001510130 | 29 | 18.0S | 31E | 2310 | N | 360 | W | 3839 | Active |
| 55 | MOMENTUM OPERATING CO INC | KENWOOD 002 | 32.723019 | -103.899196 | 3001510133 | 29 | 18.0S | 31E | 990 | N | 330 | W | 3870 | Active |
| 56 | V S WELCH | KENWOOD 001 | 32.719409 | -103.884176 | 3001510141 | 29 | 18.0S | 31E | 2310 | N | 330 | E | 0 | Plugged |
| 57 | MOMENTUM OPERATING CO INC | SHUGART D 007 | 32.723001 | -103.914032 | 3001510169 | 30 | 18.0S | 31E | 990 | N | 890 | W | 3817 | Active |
| 58 | SOUTHLAND ROYALTY CO | SHUGART D 008 | 32.723014 | -103.903509 | 3001510171 | 30 | 18.0S | 31E | 990 | N | 990 | E | 0 | Plugged |
| 59 | SOUTHLAND ROYALTY CO | SHUGART D 009 | 32.726647 | -103.899201 | 3001510173 | 20 | 18.0S | 31E | 330 | S | 330 | W | 3961 | Plugged |
| 60 | SOUTHLAND ROYALTY CO | KEOHANE ET AL D FED 001 | 32.727546 | -103.90675 | 3001510175 | 19 | 18.0S | 31E | 660 | S | 1980 | E | 0 | Plugged |
| 61 | CAMPANA PETROLEUM CO | PURE FED 001 | 32.70577 | -103.906721 | 3001510191 | 31 | 18.0S | 31E | 1980 | N | 1980 | E | 0 | Plugged |
| 62 | XERIC OIL & GAS CORP | KENWOOD FEDERAL 001 | 32.726635 | -103.909896 | 3001510192 | 19 | 18.0S | 31E | 330 | S | 2154 | W | 0 | Plugged |
| 63 | SOUTHLAND ROYALTY CO | SHUGART D 004 | 32.719386 | -103.903504 | 3001510210 | 30 | 18.0S | 31E | 2310 | N | 990 | E | 0 | Plugged |
| 64 | SOUTHLAND ROYALTY CO | SHUGART D 003 | 32.71937 | -103.915866 | 3001510212 | 30 | 18.0S | 31E | 2310 | N | 330 | W | 0 | Plugged |
| 65 | MOMENTUM OPERATING CO INC | SHUGART D 005 | 32.723009 | -103.907821 | 3001510224 | 30 | 18.0S | 31E | 990 | N | 2310 | E | 3865 | Active |
| 66 | MOMENTUM OPERATING CO INC | SHUGART D 006 | 32.723007 | -103.90972 | 3001510225 | 30 | 18.0S | 31E | 990 | N | 2210 | W | 3857 | Active |
| 67 | SDX RESOURCES INC | SHUGART C 005 | 32.717567 | -103.902424 | 3001510315 | 30 | 18.0S | 31E | 2310 | S | 660 | E | 0 | Plugged |
| 68 | SOUTHLAND ROYALTY CO | SHUGART C 006 | 32.717562 | -103.906736 | 3001510316 | 30 | 18.0S | 31E | 2310 | S | 1980 | E | 0 | Plugged |
| 69 | CHESAPEAKE OPERATING, INC. | BENSON SHUGART WATERFLOOD UNIT 034 | 32.717557 | -103.90989 | 3001510369 | 30 | 18.0S | 31E | 2310 | S | 2160 | W | 0 | Plugged |
| 70 | SOUTHLAND ROYALTY CO | KENWOOD 004 | 32.723024 | -103.894884 | 3001510417 | 29 | 18.0S | 31E | 990 | N | 1650 | W | 0 | Plugged |
| 71 | J M WELCH | GULF "B" 001 | 32.724866 | -103.871319 | 3001520223 | 28 | 18.0S | 31E | 330 | N | 1650 | E | 0 | Plugged |
| 72 | SOUTHLAND ROYALTY CO | SHUGART (APCO) A 005 | 32.719404 | -103.888587 | 3001520329 | 29 | 18.0S | 31E | 2310 | N | 1680 | E | 0 | Plugged |
| 73 | CIMAREX ENERGY CO. OF COLORADO | NEW MEXICO Y STATE 005 | 32.710334 | -103.885797 | 3001520657 | 32 | 18.0S | 31E | 330 | N | 830 | E | 2779 | Active |
| 74 | CHESAPEAKE OPERATING, INC. | BENSON SHUGART WATERFLOOD UNIT 026 | 32.715733 | -103.918028 | 3001521426 | 25 | 18.0S | 30E | 1650 | S | 330 | E | 3800 | Plugged |
| 75 | MOMENTUM OPERATING CO INC | GULF FEDERAL 002 | 32.728474 | -103.888502 | 3001521694 | 20 | 18.0S | 31E | 990 | S | 1650 | E | 0 | Active |
| 76 | HONEYSUCKLE EXPL CO | FEDERAL 20 001 | 32.726654 | -103.89381 | 3001521695 | 20 | 18.0S | 31E | 330 | S | 1980 | W | 0 | Plugged |
| 77 | PRIDE ENERGY COMPANY | FEDERAL 20 001Y | 32.726654 | -103.893646 | 3001521752 | 20 | 18.0S | 31E | 330 | S | 2030 | W | 0 | Active |
| 78 | HONEYSUCKLE EXPL CO | FEDERAL 20 002 | 32.730282 | -103.893815 | 3001521857 | 20 | 18.0S | 31E | 1650 | S | 1980 | W | 0 | Plugged |
| 79 | CHESAPEAKE OPERATING, INC. | BENSON SHUGART WATERFLOOD UNIT 027 | 32.712572 | -103.918032 | 3001521911 | 25 | 18.0S | 30E | 500 | S | 330 | E | 3800 | Plugged |
| 80 | DEVON ENERGY PRODUCTION COMPANY, LP | LITTLEFIELD EM FEDERAL 001 | 32.731194 | -103.889584 | 3001521996 | 20 | 18.0S | 31E | 1980 | S | 1980 | E | 13165 | Active |
| 81 | DEVON ENERGY PRODUCTION COMPANY, LP | KEOHANE ETAL C FEDERAL 001 | 32.731205 | -103.879879 | 3001522131 | 21 | 18.0S | 31E | 1980 | S | 990 | W | 11983 | Active |
| 82 | CHEVRON U S A INC | N SHUGART DEEP 001 | 32.723937 | -103.890226 | 3001522151 | 29 | 18.0S | 31E | 660 | N | 2180 | E | 0 | Plugged |
| 83 | MOMENTUM OPERATING CO INC | SHUGART D 010 | 32.721198 | -103.905663 | 3001522199 | 30 | 18.0S | 31E | 1650 | N | 1650 | E | 3840 | Active |
| 84 | MOMENTUM OPERATING CO INC | SHUGART D 011 | 32.721203 | -103.90135 | 3001522357 | 30 | 18.0S | 31E | 1650 | N | 330 | E | 3840 | Active |
| 85 | MOMENTUM OPERATING CO INC | KENWOOD 005 | 32.721208 | -103.897038 | 3001522431 | 29 | 18.0S | 31E | 1650 | N | 990 | W | 3855 | Active |
| 86 | MOMENTUM OPERATING CO INC | SHUGART D 012 | 32.721193 | -103.909395 | 3001522432 | 30 | 18.0S | 31E | 1650 | N | 2310 | W | 3839 | Active |
| 87 | MOMENTUM OPERATING CO INC | SHUGART D 013 | 32.724823 | -103.907824 | 3001522436 | 30 | 18.0S | 31E | 330 | N | 2310 | E | 3850 | Active |
| 88 | CHESAPEAKE OPERATING, INC. | BENSON SHUGART WATERFLOOD UNIT 032 | 32.714226 | -103.913358 | 3001523105 | 30 | 18.0S | 31E | 1100 | S | 1100 | W | 2700 | Plugged |
| 89 | CHESAPEAKE OPERATING, INC. | BENSON SHUGART WATERFLOOD UNIT 030 | 32.713757 | -103.914796 | 3001525966 | 30 | 18.0S | 31E | 930 | S | 660 | W | 6125 | Plugged |
| 90 | CIMAREX ENERGY CO. OF COLORADO | SHUGART A 010 | 32.717584 | -103.890643 | 3001526666 | 29 | 18.0S | 31E | 2310 | S | 2310 | E | 4010 | Plugged |
| 91 | CIMAREX ENERGY CO. OF COLORADO | SHUGART A 011 | 32.71395 | -103.894872 | 3001526667 | 29 | 18.0S | 31E | 990 | S | 1650 | W | 3921 | Plugged |
| 92 | DEVON ENERGY PRODUCTION COMPANY, LP | WEST SHUGART 30 FEDERAL 001 | 32.720284 | -103.910475 | 3001529166 | 30 | 18.0S | 31E | 1980 | N | 1980 | W | 12250 | Active |
| 93 | DEVON ENERGY PRODUCTION COMPANY, LP | WEST SHUGART 30 FEDERAL 004 | 32.723907 | -103.914782 | 3001529427 | 30 | 18.0S | 31E | 660 | N | 660 | W | 10350 | Active |
| 94 | DEVON ENERGY PRODUCTION COMPANY, LP | WEST SHUGART 30 FEDERAL 009 | 32.716649 | -103.91048 | 3001529429 | 30 | 18.0S | 31E | 1980 | S | 1980 | W | 10350 | Active |
| 95 | DEVON ENERGY PRODUCTION COMPANY, LP | WEST SHUGART 30 FEDERAL 010 | 32.720294 | -103.902427 | 3001529487 | 30 | 18.0S | 31E | 1980 | N | 660 | E | 12250 | Active |
| 96 | DEVON ENERGY PRODUCTION COMPANY, LP | WEST SHUGART 29 FEDERAL 001 | 32.715764 | -103.894875 | 3001529948 | 29 | 18.0S | 31E | 1650 | S | 1650 | W | 10308 | Active |
| 97 | DEVON ENERGY PRODUCTION COMPANY, LP | SHUGART 28 FEDERAL 001 | 32.720962 | -103.872132 | 3001530137 | 28 | 18.0S | 31E | 1750 | N | 1900 | E | 11990 | Active |
| 98 | MERIT ENERGY COMPANY, LLC | SHUGART WEST 19 FEDERAL 001 | 32.727541 | -103.910464 | 3001530149 | 19 | 18.0S | 31E | 660 | S | 1980 | W | 10275 | Active |
| 99 | KERSEY & COMPANY | SHUGART C 007 | 32.713938 | -103.903497 | 3001530241 | 30 | 18.0S | 31E | 990 | S | 990 | E | 3950 | Active |
| 100 | DEVON ENERGY PRODUCTION COMPANY, LP | SHUGART 28 FEDERAL 002 | 32.721231 | -103.876632 | 3001530363 | 28 | 18.0S | 31E | 1650 | N | 1980 | W | 12050 | Active |
| 101 | MERIT ENERGY COMPANY, LLC | SHUGART WEST 19 FEDERAL 002 | 32.727546 | -103.906587 | 3001530501 | 19 | 18.0S | 31E | 660 | S | 1930 | E | 12130 | Active |
| 102 | MERIT ENERGY COMPANY, LLC | SHUGART WEST 30C FEDERAL 001 | 32.724819 | -103.91122 | 3001530533 | 30 | 18.0S | 31E | 330 | N | 1750 | W | 8450 | Active |
| 103 | DEVON ENERGY PRODUCTION COMPANY, LP | WEST SHUGART 29 FEDERAL 003 | 32.713947 | -103.897029 | 3001530774 | 29 | 18.0S | 31E | 990 | S | 990 | W | 6193 | Active |
| 104 | DEVON ENERGY PRODUCTION COMPANY, LP | WEST SHUGART 30 FEDERAL 003 | 32.724742 | -103.906745 | 3001530776 | 30 | 18.0S | 31E | 360 | N | 1980 | E | 8420 | Active |
| 105 | DEVON ENERGY PRODUCTION COMPANY, LP | WEST SHUGART 19 FEDERAL 002 | 32.72713 | -103.909386 | 3001530780 | 19 | 18.0S | 31E | 510 | S | 2310 | W | 8346 | Active |
| 106 | DEVON ENERGY PRODUCTION COMPANY, LP | WEST SHUGART 29 FEDERAL 002 | 32.71694 | -103.898764 | 3001530798 | 29 | 18.0S | 31E | 2080 | S | 460 | W | 5350 | Active |
| 107 | CIMAREX ENERGY CO. OF COLORADO | WEST SHUGART 29 FEDERAL 004 | 32.713491 | -103.892716 | 3001530870 | 29 | 18.0S | 31E | 822 | S | 2310 | W | 5300 | Plugged |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 108 | DEVON ENERGY PRODUCTION COMPANY, LP | WEST SHUGART 29 FEDERAL 005 | 32.716402 | -103.890314 | 3001531221 | 29 | 18.0S | 31E | 1880 S | 2210 E | 5300 | Plugged |
| 109 | KCS RESOURCES LLC | SHUGART WEST 19 FEDERAL 012 | 32.730271 | -103.903519 | 3001531634 | 19 | 18.0S | 31E | 1650 S | 990 E | 8400 | Plugged |
| 110 | DEVON ENERGY PRODUCTION COMPANY, LP | SHUGART 28 FEDERAL 003 | 32.717253 | -103.870265 | 3001531639 | 28 | 18.0S | 31E | 2180 S | 1330 E | 0 | |
| 111 | CIMAREX ENERGY CO. OF COLORADO | WEST SHUGART 31 FEDERAL 002 | 32.706534 | -103.910494 | 3001531821 | 31 | 18.0S | 31E | 1700 N | 1980 W | 12308 | Active |
| 112 | CHI OPERATING INC | BIG RED FEDERAL COM 001 | 32.71302 | -103.910975 | 3001532113 | 30 | 18.0S | 31E | 660 S | 1830 W | 12245 | Active |
| 113 | JUDAH OIL LLC | OXY T-BONE FEDERAL 001 | 32.709439 | -103.876618 | 3001532122 | 33 | 18.0S | 31E | 660 N | 1980 W | 12172 | Active |
| 114 | CHI OPERATING INC | PORTERHOUSE STATE COM 001 | 32.709427 | -103.885241 | 3001532682 | 32 | 18.0S | 31E | 660 N | 660 E | 12210 | Plugged |
| 115 | CHESAPEAKE OPERATING, INC. | BENSON SHUGART WATERFLOOD UNIT 036 | 32.714332 | -103.915873 | 3001532763 | 30 | 18.0S | 31E | 1140 S | 330 W | 3900 | Plugged |
| 116 | CIMAREX ENERGY CO. OF COLORADO | WEST SHUGART 32 STATE COM 001 | 32.710318 | -103.897025 | 3001538294 | 32 | 18.0S | 31E | 330 N | 990 W | 8838 | New (Not drilled or compl) |
| 117 | CHI OPERATING INC | WEST SHUGART 32 STATE COM 002H | 32.710323 | -103.893366 | 3001539214 | 32 | 18.0S | 31E | 330 N | 2110 W | 0 | New (Not drilled or compl) |
| 118 | DEVON ENERGY PRODUCTION COMPANY, LP | SARGAS 28 FEDERAL COM 004H | 32.71516 | -103.88421 | 3001541560 | 29 | 18.0S | 31E | 1425 S | 342 E | 0 | New (Not drilled or compl) |
| 119 | DEVON ENERGY PRODUCTION COMPANY, LP | SHAULA 30 FEDERAL COM 003H | 32.717572 | -103.899369 | 3001541553 | 29 | 18.0S | 31E | 2310 S | 275 W | 0 | New (Not drilled or compl) |
| 120 | DEVON ENERGY PRODUCTION COMPANY, LP | SARGAS 28 FEDERAL COM 003H | 32.715297 | -103.88421 | 3001541795 | 29 | 18.0S | 31E | 1475 S | 342 E | 0 | New (Not drilled or compl) |
| 121 | DEVON ENERGY PRODUCTION COMPANY, LP | SHAULA 30 FEDERAL COM 004H | 32.713008 | -103.899772 | 3001541525 | 29 | 18.0S | 31E | 650 S | 150 W | 0 | New (Not drilled or compl) |

**COG Operating LLC**
**DRILLING AND OPERATIONS PROGRAM**
**Flying Squirrel Federal 1H**
**SHL: 2000' FSL & 450' FEL of Section 30**
**BHL: 2260' FSL & 330' FEL of Section 29**
**Section 29/30 T18S R31E**
**Eddy 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 | 100' | |
| Rustler | 530' | |
| Salt | 600' | |
| Tansill | 1,920' | |
| Yates | 2,180' | |
| Seven Rivers | 2,490' | |
| Capitan Reef | 4,030' | |
| Delaware | 4,360' | Oil |
| Bone Springs | 6,070' | Oil |
| TD TVD | 8,780' | |
| TD MD | 13,981' | |

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 13-3/8" casing at ~~555'~~ 630' and circulating cement back to surface. All intervals will be isolated by setting 5 ½" casing to total depth and tying back cement to a minimum of 50' above the Capitan Reef.

See COA

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

| Hole Size | Depths | Section | OD Casing | New/ Used | Wt | Collar | Grade | Collapse Design Factor | Burst Design Factor | Tension Design Factor |
|---|---|---|---|---|---|---|---|---|---|---|
| 17 ½" | 0' – ~~555'~~ 630' | Surface | 13 3/8" | New | 48# | STC | H-40 | 1.125 | 1.125 | 1.6 |
| 12 ¼" | 0' – 3,500' 4200' | Intrmd | 9 5/8" | New | 36# | BTC | J-55 | 1.125 | 1.125 | 1.6 |
| 12 ¼" | 3,500' – ~~4,400'~~ | Intrmd | 9 5/8" | New | 40# | BTC | J-55 | 1.125 | 1.125 | 1.6 |
| 8 3/4" | 0' – 13,981' | Production Curve & Lateral | 5 ½" | New | 17# | LTC | P-110 | 1.125 | 1.125 | 1.6 |

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.

**4. Proposed Cement Program**

a. 13-3/8" Surface

Lead: 250 sx Class C + 4% Gel
(13.5 ppg /1.75 cuft/sx / 9.2 gal/sk)
Tail: 250 sx Class C + 2% $CaCl_2$
(14.8 ppg / 1.34 cuft/sx / 6.3 gal/sk)
**Calculated w/50% excess on OH volumes

b. 9 5/8" Intermediate:

1st Stage:
Lead: 100 sx 35:65:6 C + 5% Salt + 5 pps Gilsonite
(12.7 ppg /2 cuft/sx / 11.5 gal/sk)
Tail: 250 sx Class C
(14.8 ppg / 1.34 cuft/sx / 6.3 gal/sk)

See COA

2nd Stage: DVT @ 3900'
Lead: 950 sx Class C + 4% Gel
(13.5 ppg /1.75 cuft/sx / 9.2 gal/sk)
Tail: 100 sx Class C + 1% $CaCl_2$
(14.8 ppg / 1.34 cuft/sx / 6.3 gal/sk)
**Calculated w/35% excess on OH volumes

c. 5 ½" Production:

Lead: 800 sx 35:65:6 H Blend + 5# KolSeal + Salt + CFR-3 + HR601
(12.7 ppg / 2 cuft/sx / 11.5 gal/sk)
Tail: 1575 sx 50:50:2 H +Salt + GasStop +CFR-3 + HR601
(14.4 ppg /1.24 cuft/sx / 6.4 gal/sk)
**Calculated w/35% excess on OH volumes

- The above cement volumes could be revised pending the caliper measurement.
- The 9-5/8" intermediate string is designed to circulate cement to surface.
- The production string will tie back a minimum of 50' above the Capitan Reef.

**5. Pressure Control:**

Nipple up on 13 3/8 with annular preventer tested to 2000 psi by independent tester and the rest of the 2M system tested to 2000 psi.
Nipple up on 9 5/8 with 3M system tested to 3000 psi by independent tester.

See COA

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. A remotely operated choke will be installed before drilling out intermediate shoe. If H2S is monitored with 100 ppm in the gas stream while drilling intermediate, we will shut in and install a remote operated choke.

**6. Estimated BHP & BHT:**

Lateral TD = 4,110 psi
Lateral TD= 144° 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' – ~~555'~~ 630' | Fresh Water | 8.4 – 8.6 | 29 | N.C. |
| ~~555' – 4,400'~~ 4200' | Brine | 10-10.2 | 29 | N.C. |
| ~~4,400'~~ – 13,981' | Cut Brine | 8.8 – 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 total, 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 tourly check by rig personnel.
- After setting intermediate 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 13 3/8" casing shoe until the 5 ½" casing is cemented. Breathing equipment will be on location upon drilling the 13 3/8" shoe until total depth is reached.

See COA

**9. Testing, Logging and Coring Program:**

a. Drill stem tests will be based on geological sample shows.
b. If open hole electrical logging is performed, the program will be:
   i. Total Depth to 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 ½" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

**10. Potential Hazards:**

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.

See COA

**11. Anticipated starting date and Duration of Operations:**

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 35 days.

CONCHO

# COG Operating LLC

**Eddy County, New Mexico**
**Flying Squirrel Federal**
**Flying Squirrel Federal Well No. 1H**
**Original Hole**

SHL: 2000 FSL 450 FEL Sect 30
PP: 2042 FSL 330 FWL Sect 29
BHL: 2260 FSL 330 FEL Sect 29

**Plan: rev0**

# Standard_report

**02 April, 2014**

| | | | |
|---|---|---|---|
| Company: | COG Operating LLC | Local Co-ordinate Reference: | Well Flying Squirrel Federal Well No. 1H |
| Project: | Eddy County, New Mexico | TVD Reference: | RKB=3600+18 @ 3618.00usft (Patriot 6) |
| Site: | Flying Squirrel Federal | MD Reference: | RKB=3600+18 @ 3618.00usft (Patriot 6) |
| Well: | Flying Squirrel Federal Well No. 1H | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | rev0 | Database: | EDM 5000.1 Ddatabase |

**Project** Eddy County, New Mexico

| | | | |
|---|---|---|---|
| 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** Flying Squirrel Federal

| | | | | | |
|---|---|---|---|---|---|
| Site Position: | | Northing: | 624,658.00 usft | Latitude: | 32.71653686 |
| From: | Map | Easting: | 632,913.60 usft | Longitude: | -103.90117977 |
| Position Uncertainty: | 0.00 usft | Slot Radius: | 13-3/16 " | Grid Convergence: | 0.23 ° |

**Well** Flying Squirrel Federal Well No. 1H

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Well Position | +N/-S | 0.00 usft | Northing: | 624,658.00 usft | Latitude: | 32.71653686 |
| | +E/-W | 0.00 usft | Easting: | 632,913.60 usft | Longitude: | -103.90117977 |
| Position Uncertainty | | 0.00 usft | Wellhead Elevation: | usft | Ground Level: | 3,600.00 usft |

**Wellbore** Original Hole

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF2010 | 4/2/2014 | 7.43 | 60.52 | 48,595 |

**Design** rev0

| | | | | | |
|---|---|---|---|---|---|
| Audit Notes: | | | | | |
| Version: | | Phase: | PROTOTYPE | Tie On Depth: | 0.00 |

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 86.89 |

**Survey Tool Program** Date 4/2/2014

| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0.00 | 13,980.98 | rev0 (Original Hole) | MWD | MWD - Standard |

| | | | |
|---|---|---|---|
| Company: | COG Operating LLC | Local Co-ordinate Reference: | Well Flying Squirrel Federal Well No. 1H |
| Project: | Eddy County, New Mexico | TVD Reference: | RKB=3600+18 @ 3618.00usft (Patriot 6) |
| Site: | Flying Squirrel Federal | MD Reference: | RKB=3600+18 @ 3618.00usft (Patriot 6) |
| Well: | Flying Squirrel Federal Well No. 1H | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | rev0 | Database: | EDM 5000.1 Ddatabase |

Planned Survey

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | DLeg (°/100ft) | V. Sec (usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 400.00 | 0.00 | 0.00 | 400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 500.00 | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 600.00 | 0.00 | 0.00 | 600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 700.00 | 0.00 | 0.00 | 700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 800.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 900.00 | 0.00 | 0.00 | 900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 1,000.00 | 0.00 | 0.00 | 1,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 1,100.00 | 0.00 | 0.00 | 1,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 1,200.00 | 0.00 | 0.00 | 1,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 1,300.00 | 0.00 | 0.00 | 1,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 1,400.00 | 0.00 | 0.00 | 1,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 1,500.00 | 0.00 | 0.00 | 1,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 1,600.00 | 0.00 | 0.00 | 1,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 1,700.00 | 0.00 | 0.00 | 1,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 1,800.00 | 0.00 | 0.00 | 1,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 1,900.00 | 0.00 | 0.00 | 1,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 2,000.00 | 0.00 | 0.00 | 2,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 2,100.00 | 0.00 | 0.00 | 2,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 2,200.00 | 0.00 | 0.00 | 2,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 2,300.00 | 0.00 | 0.00 | 2,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 2,400.00 | 0.00 | 0.00 | 2,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 2,500.00 | 0.00 | 0.00 | 2,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 2,600.00 | 0.00 | 0.00 | 2,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |

| | | | |
|---|---|---|---|
| Company: | COG Operating LLC | Local Co-ordinate Reference: | Well Flying Squirrel Federal Well No. 1H |
| Project: | Eddy County, New Mexico | TVD Reference: | RKB=3600+18 @ 3618.00usft (Patriot 6) |
| Site: | Flying Squirrel Federal | MD Reference: | RKB=3600+18 @ 3618.00usft (Patriot 6) |
| Well: | Flying Squirrel Federal Well No. 1H | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | rev0 | Database: | EDM 5000.1 Ddatabase |

Planned Survey

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | DLeg (°/100ft) | V. Sec (usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|
| 2,700.00 | 0.00 | 0.00 | 2,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 2,800.00 | 0.00 | 0.00 | 2,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 2,900.00 | 0.00 | 0.00 | 2,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 3,000.00 | 0.00 | 0.00 | 3,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 3,100.00 | 0.00 | 0.00 | 3,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 3,200.00 | 0.00 | 0.00 | 3,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 3,300.00 | 0.00 | 0.00 | 3,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 3,400.00 | 0.00 | 0.00 | 3,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 3,500.00 | 0.00 | 0.00 | 3,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 3,600.00 | 0.00 | 0.00 | 3,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 3,700.00 | 0.00 | 0.00 | 3,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 3,800.00 | 0.00 | 0.00 | 3,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 3,900.00 | 0.00 | 0.00 | 3,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 4,000.00 | 0.00 | 0.00 | 4,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 4,100.00 | 0.00 | 0.00 | 4,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 4,200.00 | 0.00 | 0.00 | 4,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 4,300.00 | 0.00 | 0.00 | 4,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 4,400.00 | 0.00 | 0.00 | 4,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 4,500.00 | 0.00 | 0.00 | 4,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 4,600.00 | 0.00 | 0.00 | 4,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 4,700.00 | 0.00 | 0.00 | 4,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 4,800.00 | 0.00 | 0.00 | 4,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 4,900.00 | 0.00 | 0.00 | 4,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 5,000.00 | 0.00 | 0.00 | 5,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 5,100.00 | 0.00 | 0.00 | 5,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 5,200.00 | 0.00 | 0.00 | 5,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 5,300.00 | 0.00 | 0.00 | 5,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |

| | | | |
|---|---|---|---|
| Company: | COG Operating LLC | Local Co-ordinate Reference: | Well Flying Squirrel Federal Well No. 1H |
| Project: | Eddy County, New Mexico | TVD Reference: | RKB=3600+18 @ 3618.00usft (Patriot 6) |
| Site: | Flying Squirrel Federal | MD Reference: | RKB=3600+18 @ 3618.00usft (Patriot 6) |
| Well: | Flying Squirrel Federal Well No. 1H | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | rev0 | Database: | EDM 5000.1 Ddatabase |

Planned Survey

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | DLeg (°/100ft) | V. Sec (usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|
| 5,400.00 | 0.00 | 0.00 | 5,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 5,500.00 | 0.00 | 0.00 | 5,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 5,600.00 | 0.00 | 0.00 | 5,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 5,700.00 | 0.00 | 0.00 | 5,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 5,800.00 | 0.00 | 0.00 | 5,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 5,900.00 | 0.00 | 0.00 | 5,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 6,000.00 | 0.00 | 0.00 | 6,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 6,100.00 | 0.00 | 0.00 | 6,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 6,200.00 | 0.00 | 0.00 | 6,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 6,300.00 | 0.00 | 0.00 | 6,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 6,400.00 | 0.00 | 0.00 | 6,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 6,500.00 | 0.00 | 0.00 | 6,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 6,600.00 | 0.00 | 0.00 | 6,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 6,700.00 | 0.00 | 0.00 | 6,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 6,800.00 | 0.00 | 0.00 | 6,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 6,900.00 | 0.00 | 0.00 | 6,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 7,000.00 | 0.00 | 0.00 | 7,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 7,100.00 | 0.00 | 0.00 | 7,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 7,200.00 | 0.00 | 0.00 | 7,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 7,300.00 | 0.00 | 0.00 | 7,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 7,400.00 | 0.00 | 0.00 | 7,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 7,500.00 | 0.00 | 0.00 | 7,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 7,600.00 | 0.00 | 0.00 | 7,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 7,700.00 | 0.00 | 0.00 | 7,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 7,800.00 | 0.00 | 0.00 | 7,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 7,900.00 | 0.00 | 0.00 | 7,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 8,000.00 | 0.00 | 0.00 | 8,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |

| | | | |
|---|---|---|---|
| Company: | COG Operating LLC | Local Co-ordinate Reference: | Well Flying Squirrel Federal Well No. 1H |
| Project: | Eddy County, New Mexico | TVD Reference: | RKB=3600+18 @ 3618.00usft (Patriot 6) |
| Site: | Flying Squirrel Federal | MD Reference: | RKB=3600+18 @ 3618.00usft (Patriot 6) |
| Well: | Flying Squirrel Federal Well No. 1H | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | rev0 | Database: | EDM 5000.1 Ddatabase |

**Planned Survey**

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | DLeg (°/100ft) | V. Sec (usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|
| 8,100.00 | 0.00 | 0.00 | 8,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 8,200.00 | 0.00 | 0.00 | 8,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 8,300.00 | 0.00 | 0.00 | 8,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| 8,302.54 | 0.00 | 0.00 | 8,302.54 | 0.00 | 0.00 | 0.00 | 0.00 | 624,658.00 | 632,913.60 |
| **KOP Begin 12°/100' build** | | | | | | | | | |
| 8,400.00 | 11.70 | 86.89 | 8,399.32 | 0.54 | 9.90 | 12.00 | 9.91 | 624,658.54 | 632,923.50 |
| 8,500.00 | 23.70 | 86.89 | 8,494.42 | 2.18 | 40.19 | 12.00 | 40.25 | 624,660.18 | 632,953.79 |
| 8,600.00 | 35.70 | 86.89 | 8,581.13 | 4.86 | 89.57 | 12.00 | 89.70 | 624,662.86 | 633,003.17 |
| 8,700.00 | 47.70 | 86.89 | 8,655.66 | 8.46 | 155.87 | 12.00 | 156.10 | 624,666.46 | 633,069.47 |
| 8,800.00 | 59.70 | 86.89 | 8,714.76 | 12.82 | 236.19 | 12.00 | 236.54 | 624,670.82 | 633,149.79 |
| 8,900.00 | 71.70 | 86.89 | 8,755.84 | 17.75 | 327.03 | 12.00 | 327.51 | 624,675.75 | 633,240.63 |
| 9,000.00 | 83.70 | 86.89 | 8,777.12 | 23.03 | 424.41 | 12.00 | 425.03 | 624,681.03 | 633,338.01 |
| 9,052.54 | 90.00 | 86.89 | 8,780.00 | 25.88 | 476.76 | 12.00 | 477.46 | 624,683.88 | 633,390.36 |
| **Begin 90.00° lateral** | | | | | | | | | |
| 9,100.00 | 90.00 | 86.89 | 8,780.00 | 28.45 | 524.15 | 0.00 | 524.93 | 624,686.45 | 633,437.75 |
| 9,200.00 | 90.00 | 86.89 | 8,780.00 | 33.87 | 624.01 | 0.00 | 624.93 | 624,691.87 | 633,537.61 |
| 9,300.00 | 90.00 | 86.89 | 8,780.00 | 39.29 | 723.86 | 0.00 | 724.93 | 624,697.29 | 633,637.46 |
| 9,400.00 | 90.00 | 86.89 | 8,780.00 | 44.71 | 823.71 | 0.00 | 824.93 | 624,702.71 | 633,737.31 |
| 9,500.00 | 90.00 | 86.89 | 8,780.00 | 50.13 | 923.57 | 0.00 | 924.93 | 624,708.13 | 633,837.17 |
| 9,600.00 | 90.00 | 86.89 | 8,780.00 | 55.55 | 1,023.42 | 0.00 | 1,024.93 | 624,713.55 | 633,937.02 |
| 9,700.00 | 90.00 | 86.89 | 8,780.00 | 60.96 | 1,123.27 | 0.00 | 1,124.93 | 624,718.96 | 634,036.87 |
| 9,800.00 | 90.00 | 86.89 | 8,780.00 | 66.38 | 1,223.13 | 0.00 | 1,224.93 | 624,724.38 | 634,136.73 |
| 9,900.00 | 90.00 | 86.89 | 8,780.00 | 71.80 | 1,322.98 | 0.00 | 1,324.93 | 624,729.80 | 634,236.58 |
| 10,000.00 | 90.00 | 86.89 | 8,780.00 | 77.22 | 1,422.83 | 0.00 | 1,424.93 | 624,735.22 | 634,336.43 |
| 10,100.00 | 90.00 | 86.89 | 8,780.00 | 82.64 | 1,522.68 | 0.00 | 1,524.93 | 624,740.64 | 634,436.28 |
| 10,200.00 | 90.00 | 86.89 | 8,780.00 | 88.06 | 1,622.54 | 0.00 | 1,624.93 | 624,746.06 | 634,536.14 |
| 10,300.00 | 90.00 | 86.89 | 8,780.00 | 93.48 | 1,722.39 | 0.00 | 1,724.93 | 624,751.48 | 634,635.99 |

| | | | |
|---|---|---|---|
| Company: | COG Operating LLC | Local Co-ordinate Reference: | Well Flying Squirrel Federal Well No. 1H |
| Project: | Eddy County, New Mexico | TVD Reference: | RKB=3600+18 @ 3618.00usft (Patriot 6) |
| Site: | Flying Squirrel Federal | MD Reference: | RKB=3600+18 @ 3618.00usft (Patriot 6) |
| Well: | Flying Squirrel Federal Well No. 1H | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | rev0 | Database: | EDM 5000.1 Ddatabase |

Planned Survey

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | DLeg (°/100ft) | V. Sec (usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|
| 10,400.00 | 90.00 | 86.89 | 8,780.00 | 98.90 | 1,822.24 | 0.00 | 1,824.93 | 624,756.90 | 634,735.84 |
| 10,500.00 | 90.00 | 86.89 | 8,780.00 | 104.32 | 1,922.10 | 0.00 | 1,924.93 | 624,762.32 | 634,835.70 |
| 10,600.00 | 90.00 | 86.89 | 8,780.00 | 109.74 | 2,021.95 | 0.00 | 2,024.93 | 624,767.74 | 634,935.55 |
| 10,700.00 | 90.00 | 86.89 | 8,780.00 | 115.16 | 2,121.80 | 0.00 | 2,124.93 | 624,773.16 | 635,035.40 |
| 10,800.00 | 90.00 | 86.89 | 8,780.00 | 120.58 | 2,221.66 | 0.00 | 2,224.93 | 624,778.58 | 635,135.26 |
| 10,900.00 | 90.00 | 86.89 | 8,780.00 | 126.00 | 2,321.51 | 0.00 | 2,324.93 | 624,784.00 | 635,235.11 |
| 11,000.00 | 90.00 | 86.89 | 8,780.00 | 131.42 | 2,421.36 | 0.00 | 2,424.93 | 624,789.42 | 635,334.96 |
| 11,100.00 | 90.00 | 86.89 | 8,780.00 | 136.84 | 2,521.21 | 0.00 | 2,524.93 | 624,794.84 | 635,434.81 |
| 11,200.00 | 90.00 | 86.89 | 8,780.00 | 142.26 | 2,621.07 | 0.00 | 2,624.93 | 624,800.26 | 635,534.67 |
| 11,300.00 | 90.00 | 86.89 | 8,780.00 | 147.68 | 2,720.92 | 0.00 | 2,724.93 | 624,805.68 | 635,634.52 |
| 11,400.00 | 90.00 | 86.89 | 8,780.00 | 153.10 | 2,820.77 | 0.00 | 2,824.93 | 624,811.10 | 635,734.37 |
| 11,500.00 | 90.00 | 86.89 | 8,780.00 | 158.52 | 2,920.63 | 0.00 | 2,924.93 | 624,816.52 | 635,834.23 |
| 11,600.00 | 90.00 | 86.89 | 8,780.00 | 163.93 | 3,020.48 | 0.00 | 3,024.93 | 624,821.93 | 635,934.08 |
| 11,700.00 | 90.00 | 86.89 | 8,780.00 | 169.35 | 3,120.33 | 0.00 | 3,124.93 | 624,827.35 | 636,033.93 |
| 11,800.00 | 90.00 | 86.89 | 8,780.00 | 174.77 | 3,220.19 | 0.00 | 3,224.93 | 624,832.77 | 636,133.79 |
| 11,900.00 | 90.00 | 86.89 | 8,780.00 | 180.19 | 3,320.04 | 0.00 | 3,324.93 | 624,838.19 | 636,233.64 |
| 12,000.00 | 90.00 | 86.89 | 8,780.00 | 185.61 | 3,419.89 | 0.00 | 3,424.93 | 624,843.61 | 636,333.49 |
| 12,100.00 | 90.00 | 86.89 | 8,780.00 | 191.03 | 3,519.75 | 0.00 | 3,524.93 | 624,849.03 | 636,433.35 |
| 12,200.00 | 90.00 | 86.89 | 8,780.00 | 196.45 | 3,619.60 | 0.00 | 3,624.93 | 624,854.45 | 636,533.20 |
| 12,300.00 | 90.00 | 86.89 | 8,780.00 | 201.87 | 3,719.45 | 0.00 | 3,724.93 | 624,859.87 | 636,633.05 |
| 12,400.00 | 90.00 | 86.89 | 8,780.00 | 207.29 | 3,819.30 | 0.00 | 3,824.93 | 624,865.29 | 636,732.90 |
| 12,500.00 | 90.00 | 86.89 | 8,780.00 | 212.71 | 3,919.16 | 0.00 | 3,924.93 | 624,870.71 | 636,832.76 |
| 12,600.00 | 90.00 | 86.89 | 8,780.00 | 218.13 | 4,019.01 | 0.00 | 4,024.93 | 624,876.13 | 636,932.61 |
| 12,700.00 | 90.00 | 86.89 | 8,780.00 | 223.55 | 4,118.86 | 0.00 | 4,124.93 | 624,881.55 | 637,032.46 |
| 12,800.00 | 90.00 | 86.89 | 8,780.00 | 228.97 | 4,218.72 | 0.00 | 4,224.93 | 624,886.97 | 637,132.32 |
| 12,900.00 | 90.00 | 86.89 | 8,780.00 | 234.39 | 4,318.57 | 0.00 | 4,324.93 | 624,892.39 | 637,232.17 |
| 13,000.00 | 90.00 | 86.89 | 8,780.00 | 239.81 | 4,418.42 | 0.00 | 4,424.93 | 624,897.81 | 637,332.02 |

| | | | |
|---|---|---|---|
| Company: | COG Operating LLC | Local Co-ordinate Reference: | Well Flying Squirrel Federal Well No. 1H |
| Project: | Eddy County, New Mexico | TVD Reference: | RKB=3600+18 @ 3618.00usft (Patriot 6) |
| Site: | Flying Squirrel Federal | MD Reference: | RKB=3600+18 @ 3618.00usft (Patriot 6) |
| Well: | Flying Squirrel Federal Well No. 1H | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | rev0 | Database: | EDM 5000.1 Ddatabase |

**Plannod Survey**

| MD (usft) | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | DLeg (°/100ft) | V. Sec (usft) | Northing (usft) | Easting (usft) |
|---|---|---|---|---|---|---|---|---|---|
| 13,100.00 | 90.00 | 86.89 | 8,780.00 | 245.23 | 4,518.28 | 0.00 | 4,524.93 | 624,903.23 | 637,431.88 |
| 13,200.00 | 90.00 | 86.89 | 8,780.00 | 250.65 | 4,618.13 | 0.00 | 4,624.93 | 624,908.65 | 637,531.73 |
| 13,300.00 | 90.00 | 86.89 | 8,780.00 | 256.07 | 4,717.98 | 0.00 | 4,724.93 | 624,914.07 | 637,631.58 |
| 13,400.00 | 90.00 | 86.89 | 8,780.00 | 261.48 | 4,817.83 | 0.00 | 4,824.93 | 624,919.48 | 637,731.43 |
| 13,500.00 | 90.00 | 86.89 | 8,780.00 | 266.90 | 4,917.69 | 0.00 | 4,924.93 | 624,924.90 | 637,831.29 |
| 13,600.00 | 90.00 | 86.89 | 8,780.00 | 272.32 | 5,017.54 | 0.00 | 5,024.93 | 624,930.32 | 637,931.14 |
| 13,700.00 | 90.00 | 86.89 | 8,780.00 | 277.74 | 5,117.39 | 0.00 | 5,124.93 | 624,935.74 | 638,030.99 |
| 13,800.00 | 90.00 | 86.89 | 8,780.00 | 283.16 | 5,217.25 | 0.00 | 5,224.93 | 624,941.16 | 638,130.85 |
| 13,900.00 | 90.00 | 86.89 | 8,780.00 | 288.58 | 5,317.10 | 0.00 | 5,324.93 | 624,946.58 | 638,230.70 |
| 13,981.52 | 90.00 | 86.89 | 8,780.00 | 293.00 | 5,398.50 | 0.00 | 5,406.45 | 624,951.00 | 638,312.10 |
| PBHL/TD | | | | | | | | | |

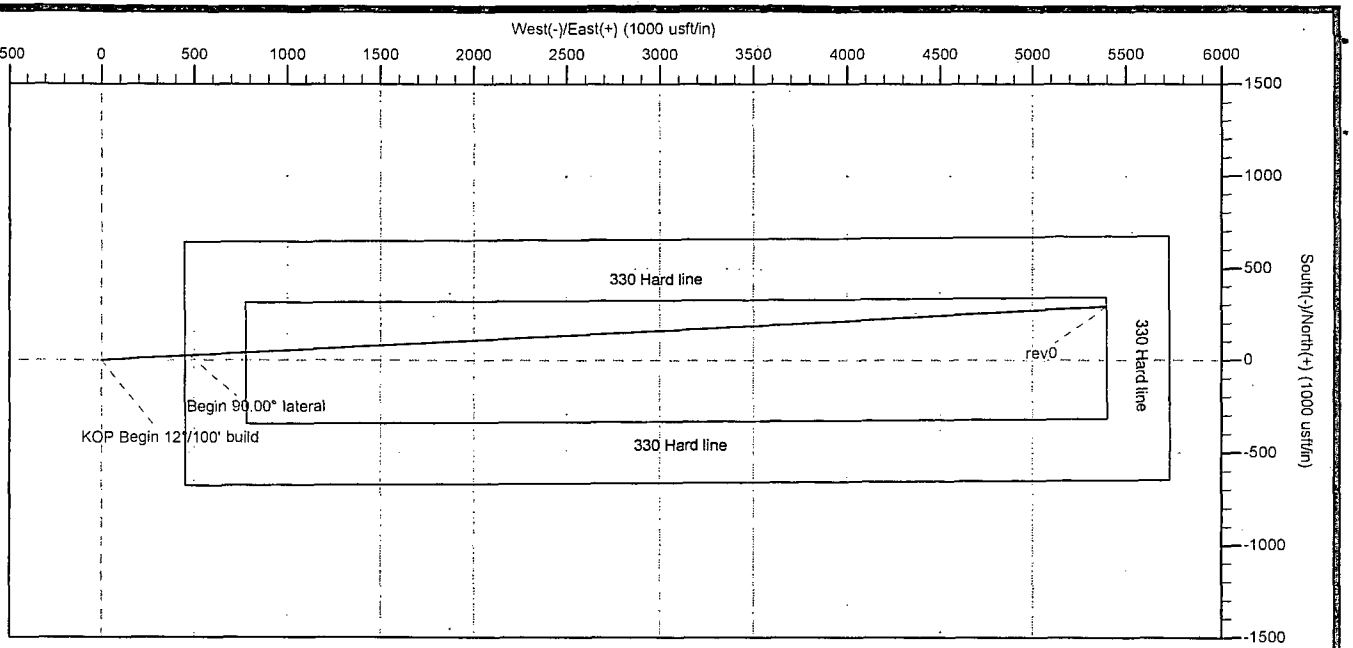
**Plan Annotations**

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates +N/-S (usft) | Local Coordinates +E/-W (usft) | Comment |
|---|---|---|---|---|
| 8,302.54 | 8,302.54 | 0.00 | 0.00 | KOP Begin 12°/100' build |
| 9,052.54 | 8,780.00 | 25.88 | 476.76 | Begin 90.00° lateral |
| 13,981.52 | 8,780.00 | 293.00 | 5,398.50 | PBHL/TD |

CONCHO

COG Operating LLC

**Well:** Flying Squirrel Federal Well No. 1H
**Site:** Flying Squirrel Federal
**Project:** Eddy County, New Mexico
**Design:** rev0
**Rig:** Patriot 6




SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Annotation |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2 | 8302.54 | 0.00 | 0.00 | 8302.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | KOP Begin 12°/100' build |
| 3 | 9052.54 | 90.00 | 86.89 | 8780.00 | 25.88 | 476.76 | 12.00 | 86.89 | 477.46 | Begin 90.00° lateral |
| 4 | 13981.52 | 90.00 | 86.89 | 8780.00 | 293.00 | 5398.50 | 0.00 | 0.00 | 5406.45 | PBHL/TD |

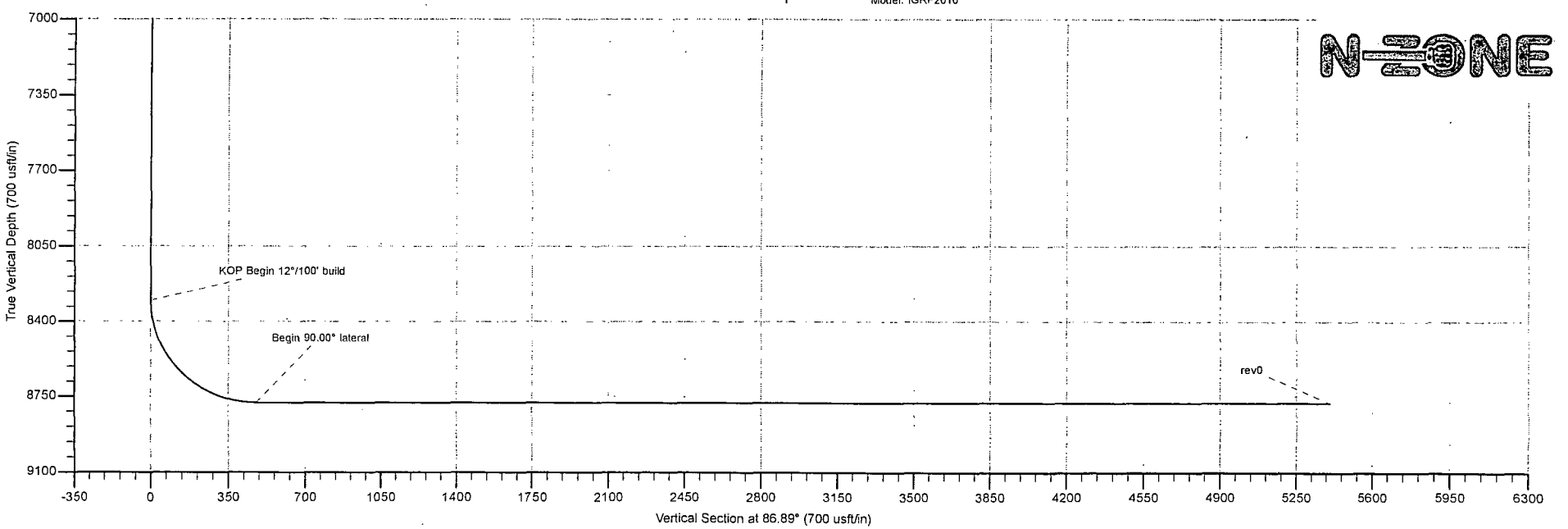

Azimuths to Grid North
True North: -0.23°
Magnetic North: 7.20°

Magnetic Field
Strength: 48595.3snT
Dip Angle: 60.52°
Date: 4/2/2014
Model: IGRF2010

Surface Location: RKB=3600+18 @ 3618.00usft (Patriot 6)
US State Plane 1927 (Exact solution)
New Mexico East 3001

| Northing | Easting | Latitude | Longitude |
|---|---|---|---|
| 624658.00 | 632913.60 | 32.71653686 | -103.90117977 |

Total Correction (M => G) To convert a Magnetic Direction to a Grid Direction, Add 7.20°




11:52, April 02 2014

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

No records found.

**PLSS Search:**

**Section(s):** 29 **Township:** 18S **Range:** 31E

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

No records found.

**PLSS Search:**

**Section(s):** 30 **Township:** 18S **Range:** 31E

# 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 Sub-basin | County | Q 64 | Q 16 | Q 4 | Sec | Tws | Rng | X | Y | Depth Well | Depth Water | Water Column |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L 11092 | L | LE | 2 | 3 | 15 | 18S | 31E | 606849 | 3623669* | | 160 | 98 | 62 |

Average Depth to Water: **98 feet**

Minimum Depth: **98 feet**

Maximum Depth: **98 feet**

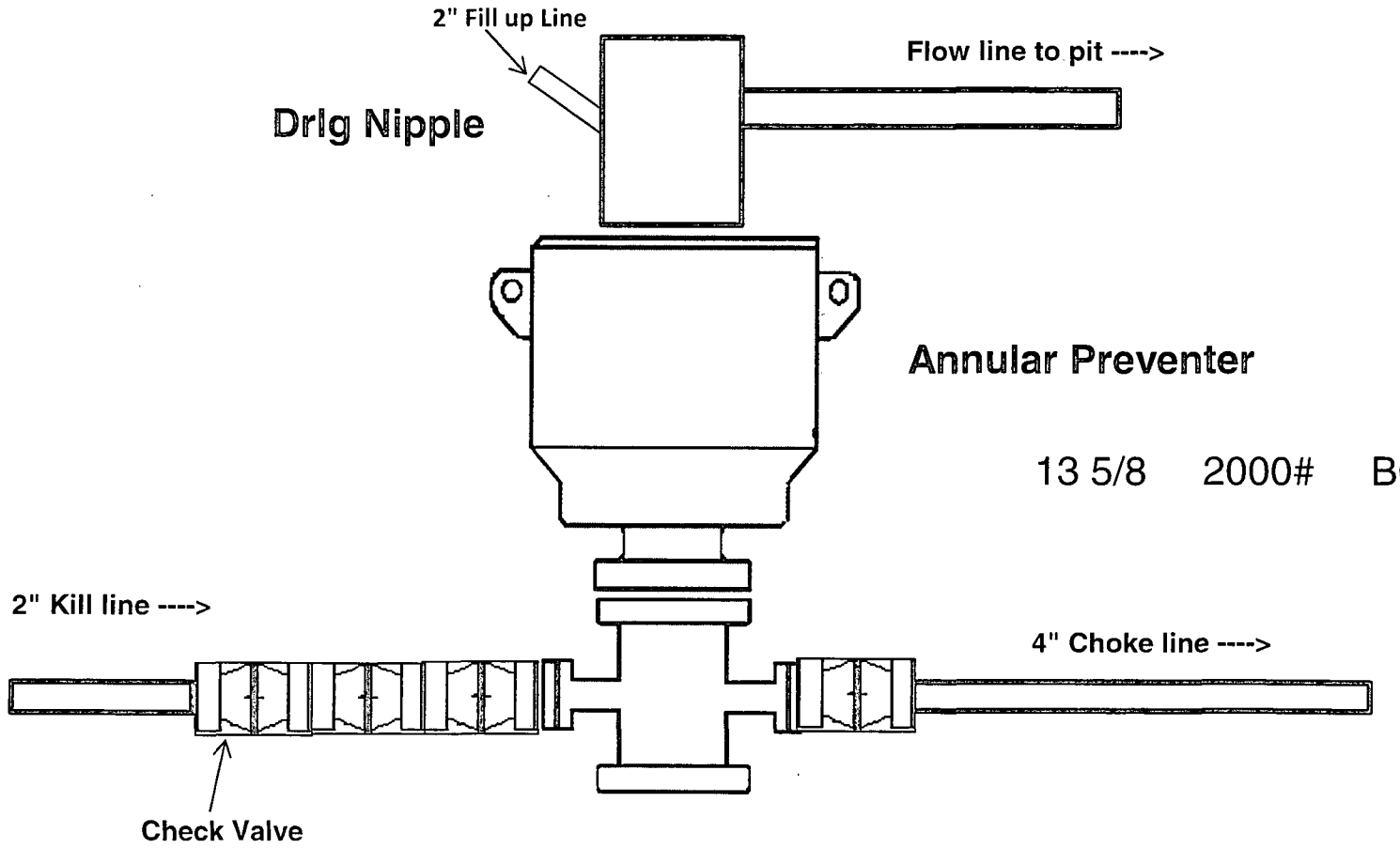
**Record Count:** 1

**PLSS Search:**

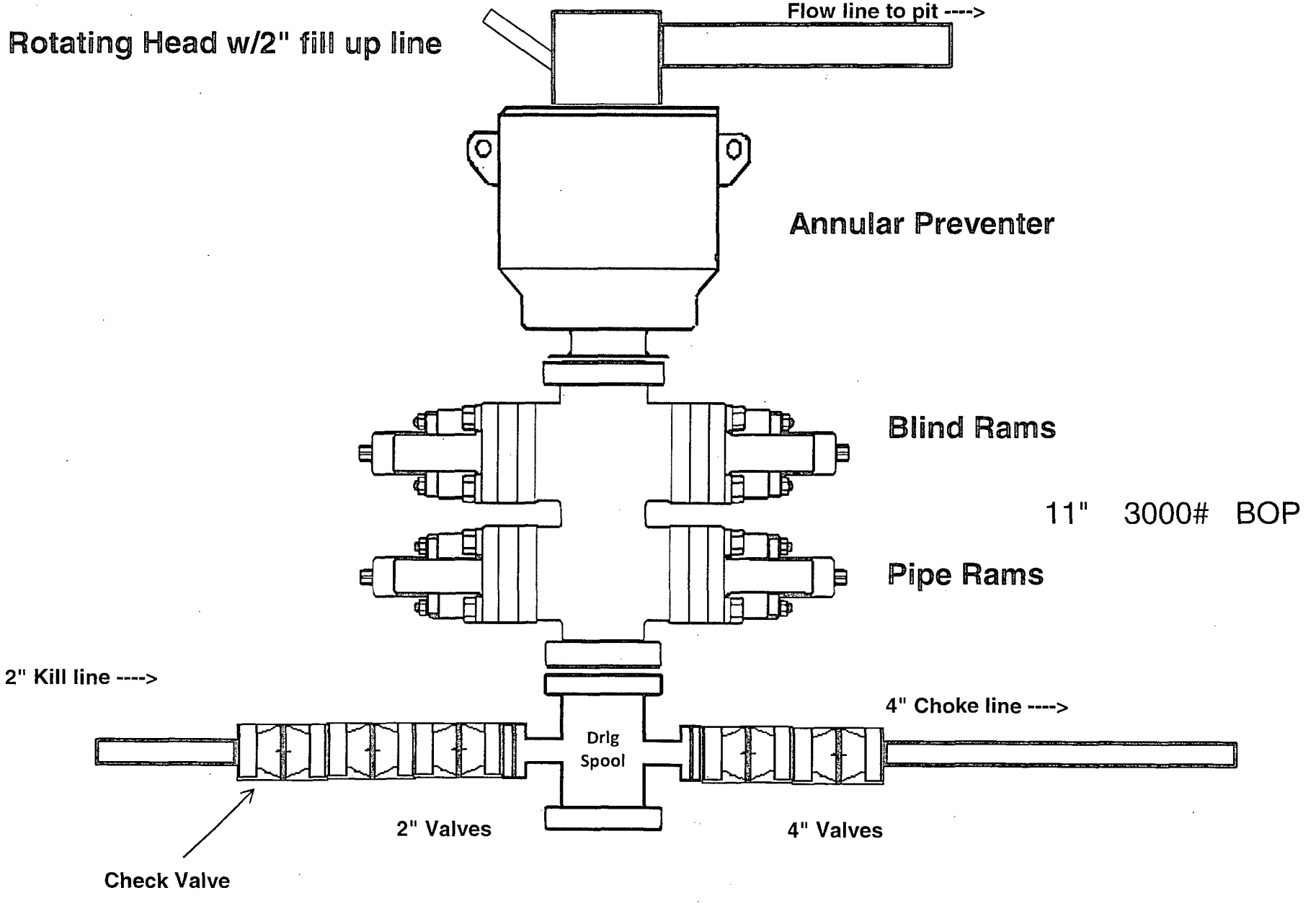
**Township:** 18S **Range:** 31E

***UTM location was derived from PLSS - see Help**

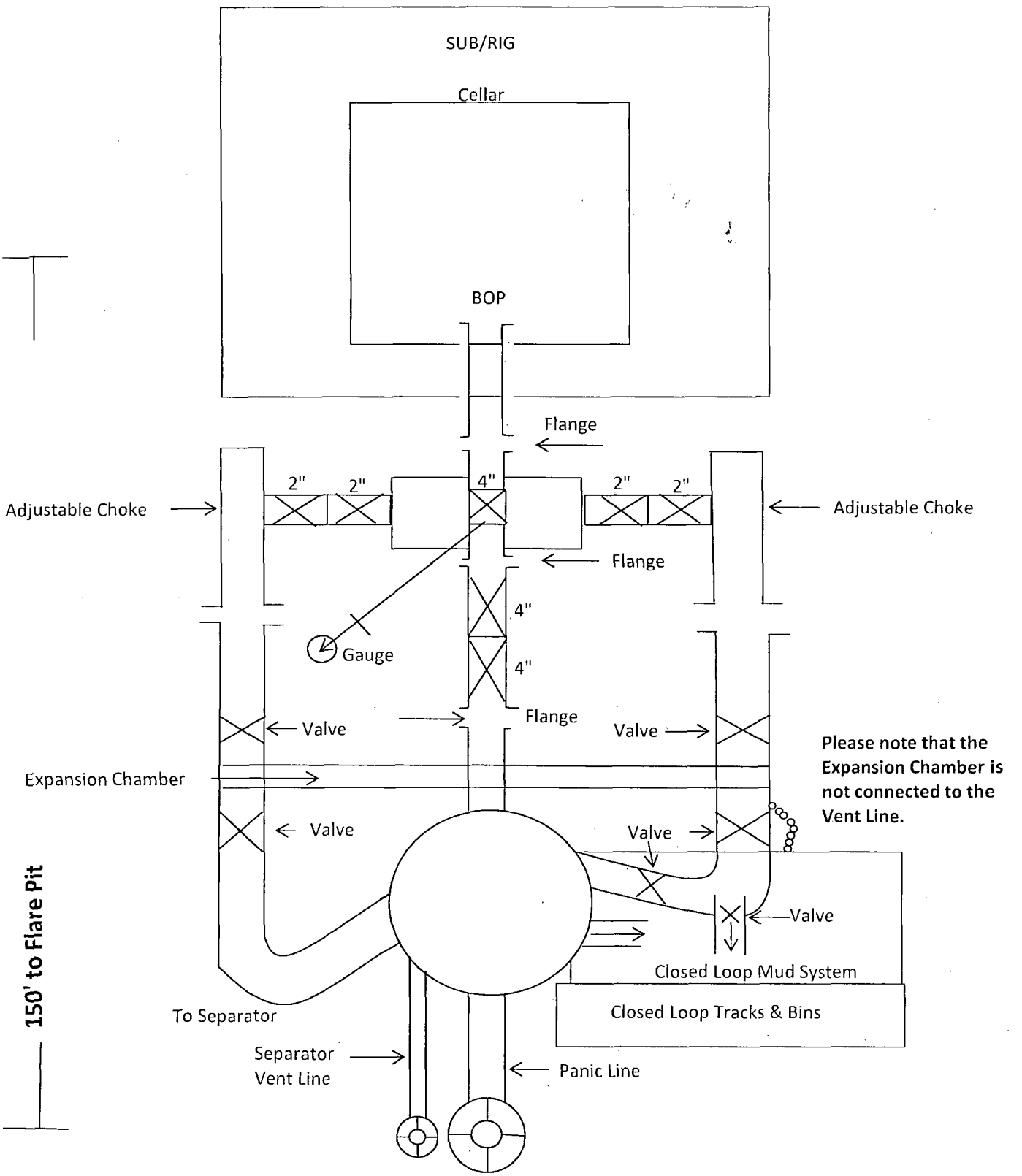
# 2,000 psi BOP Schematic



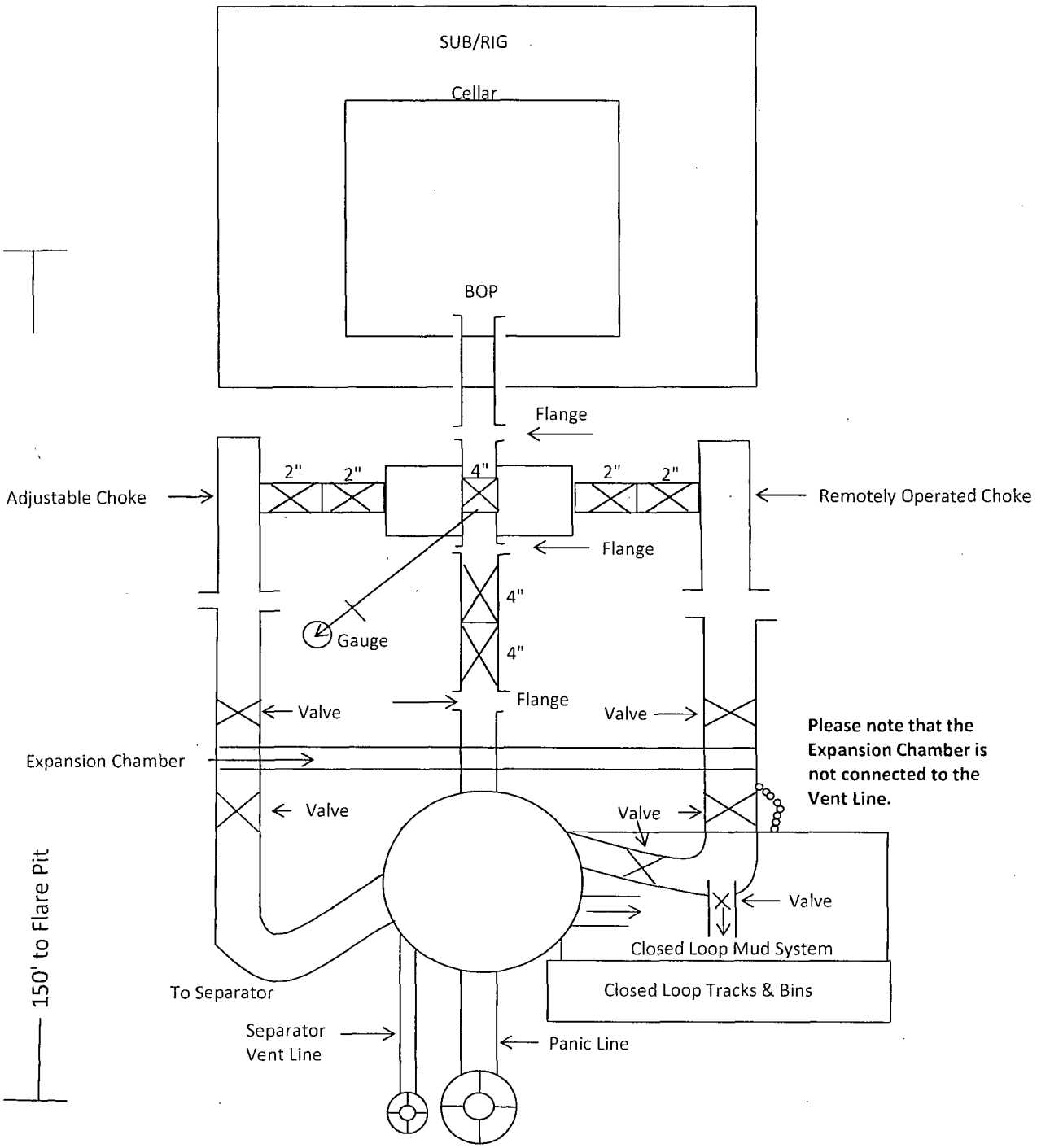
# 3,000 psi BOP Schematic



# 2M Choke Manifold Equipment



# 3M Choke Manifold Equipment



COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

**Well pad will be 340' X 340' with cellar in center of pad**

**Flare Lines will be from both Choke Manifold & Separator to edge of location which is +/- 170'**

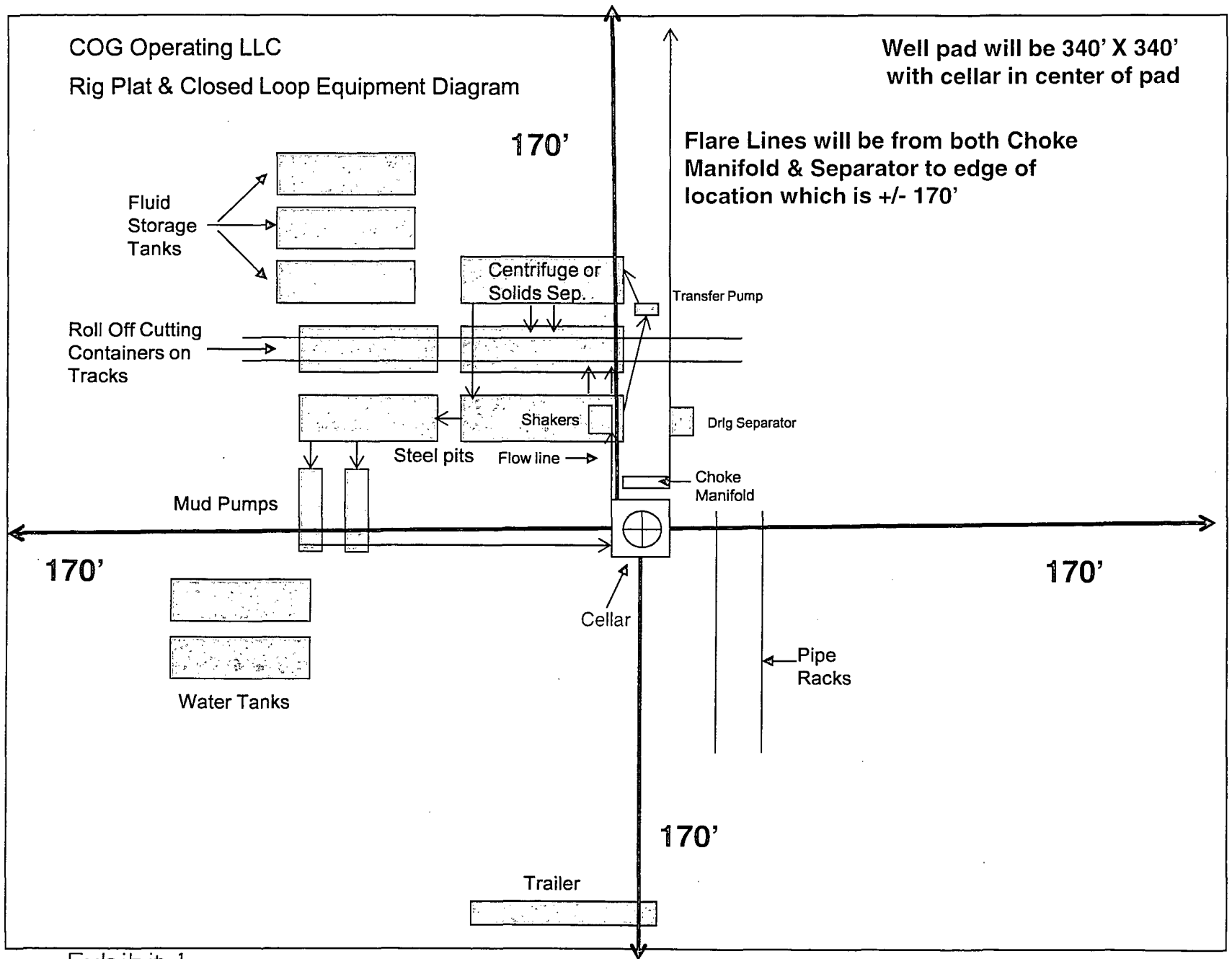
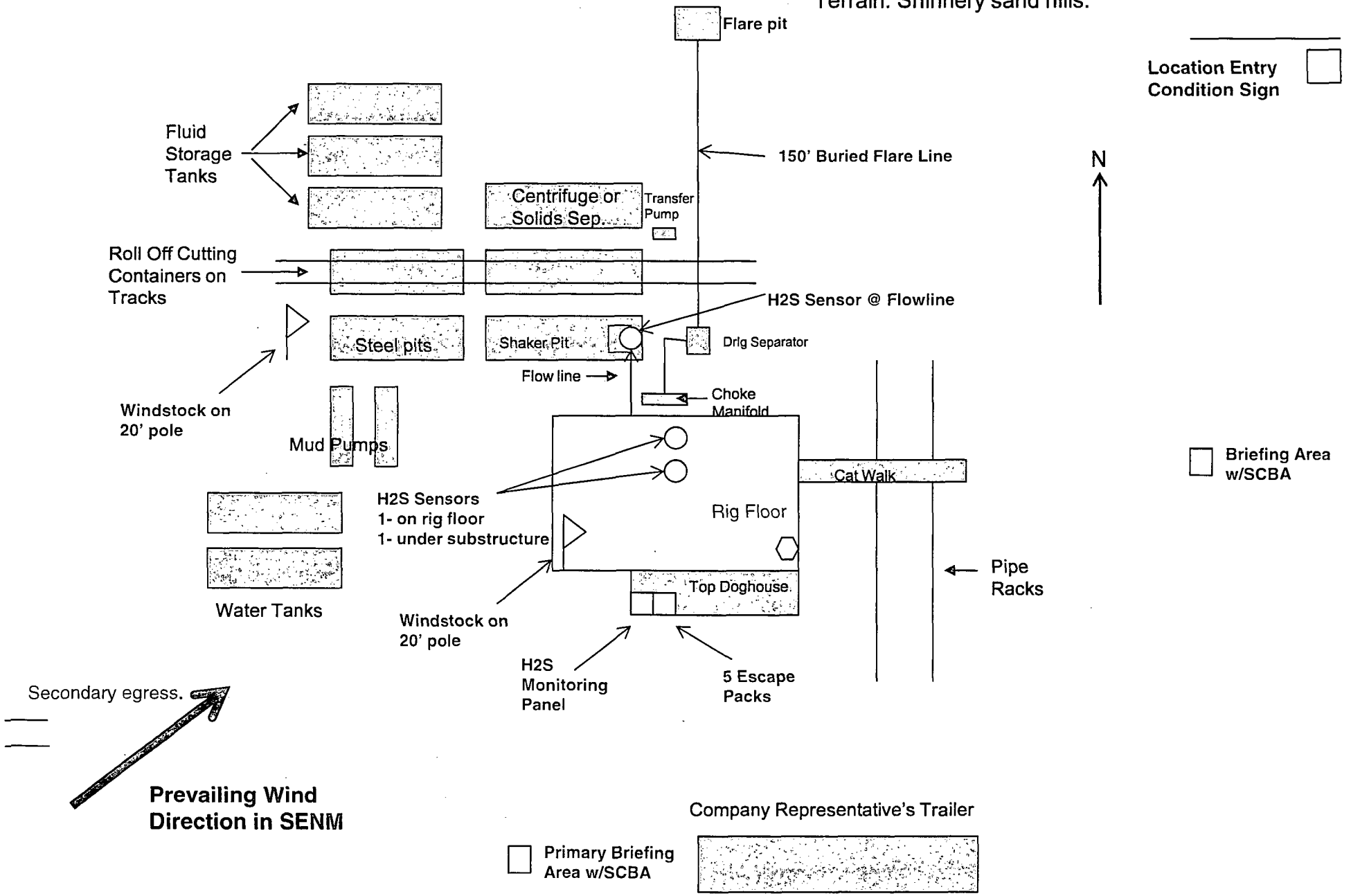



Exhibit 1

"I further certify that COG will comply with Rule 19.15.17 NMAC by using a Closed Loop System."

**Well pad will be 340' X 340' with cellar in center of pad**

COG Operating LLC
$H_2S$ Equipment Schematic
Terrain: Shinnery sand hills.



**COG OPERATING LLC**
**HYDROGEN SULFIDE DRILLING OPERATIONS PLAN**

## 1. 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:

a. The hazards and characteristics of hydrogen sulfide ($H_2S$).
b. The proper use and maintenance of personal protective equipment and life support systems.
c. The proper use of $H_2S$ detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
d. The proper techniques for first aid and rescue procedures.

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

a. The effects of H2S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
b. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
c. The contents and requirements of the $H_2S$ Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H2S zone (within 3 days or 500 feet) and weekly H2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H2S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

## 2. $H_2S$ SAFETY EQUIPMENT AND SYSTEMS

Note: All $H_2S$ 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 reasonably expected to contain H2S. If H2S greater than 100 ppm is encountered in the gas stream we will shut in and install H2S equipment.

a. Well Control Equipment:
   Flare line.
   Choke manifold with remotely operated choke.
   Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
   Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head.

b. Protective equipment for essential personnel:
Mark II Surviveair 30-minute units located in the dog house and at briefing areas.

c. H2S detection and monitoring equipment:
2 - portable H2S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 ppm are reached.

d. Visual warning systems:
Caution/Danger signs 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.

e. Mud Program:
The mud program has been designed to minimize the volume of H2S circulated to the surface.

f. Metallurgy:
All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

g. Communication:
Company vehicles equipped with cellular telephone.

COG OPERATING LLC has conducted a review to determine if an H2S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal. H2S concentrations of wells in this area from surface to TD are low enough; therefore, we do not believe that an H2S contingency plan is necessary.

# W A R N I N G

**YOU ARE ENTERING AN $H_2S$ AREA**
**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. ***CK WITH COG OPERATING LLC FOREMAN AT MAIN OFFICE***

COG OPERATING LLC

1-575-748-6940

# EMERGENCY CALL LIST

| | OFFICE | MOBILE |
|---|---|---|
| COG OPERATING LLC OFFICE | 575-748-6940 | |
| SHERYL BAKER | 575-748-6940 | 432-934-1873 |
| KENT GREENWAY | 575-746-2010 | 432-557-1694 |
| SETH WILD | 432-683-7443 | 432-528-3633 |
| WALTER ROYE | 575-748-6940 | 432-934-1886 |

# EMERGENCY RESPONSE NUMBERS

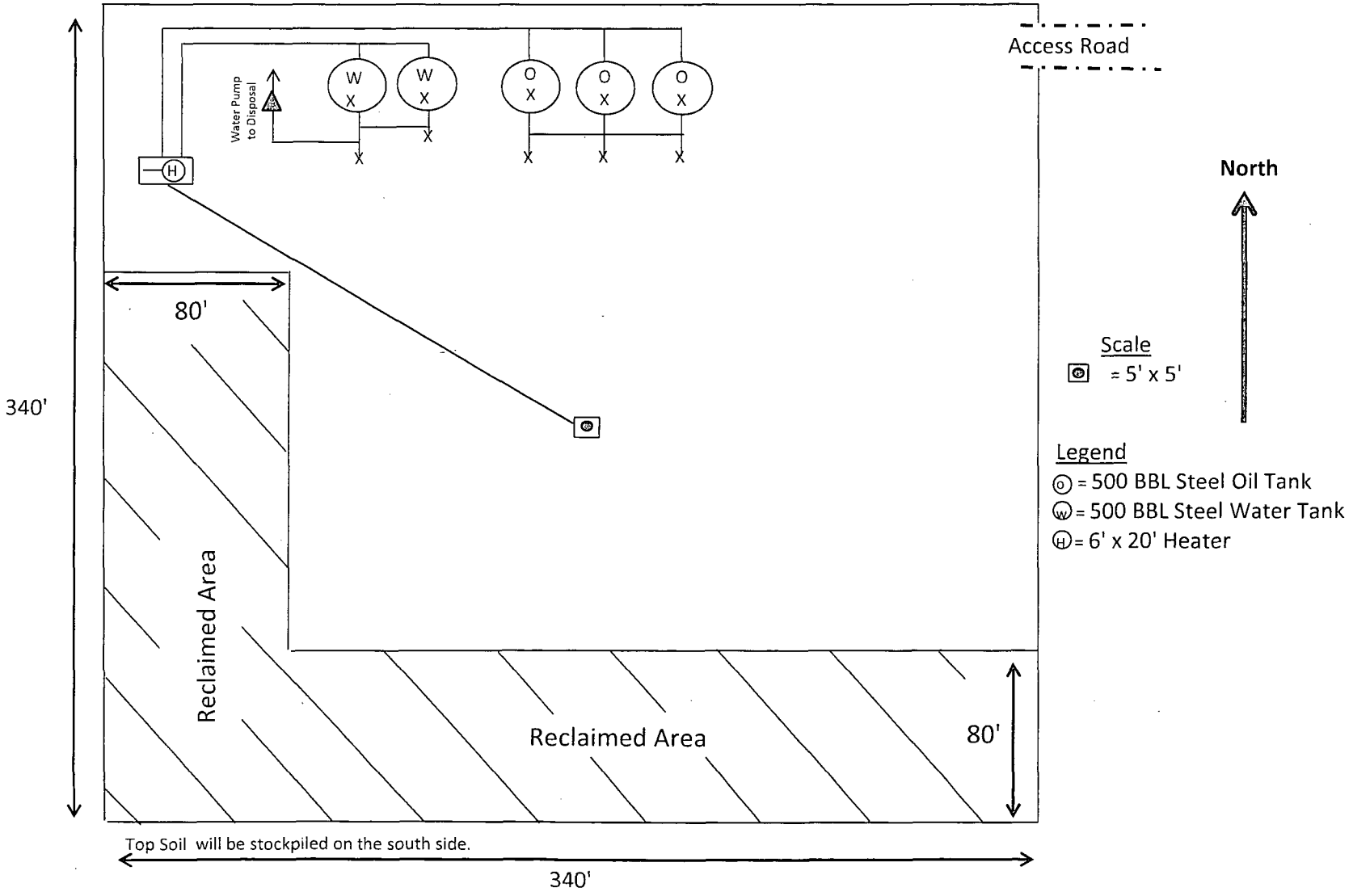
| | OFFICE |
|---|---|
| STATE POLICE | 575-748-9718 |
| EDDY COUNTY SHERIFF | 575-746-2701 |
| EMERGENCY MEDICAL SERVICES (AMBULANCE) | 911 or 575-746-2701 |
| EDDY COUNTY EMERGENCY MANAGEMENT (HARRY BURGESS) | 575-887-9511 |
| STATE EMERGENCY RESPONSE CENTER (SERC) | 575-476-9620 |
| CARLSBAD POLICE DEPARTMENT | 575-885-2111 |
| CARLSBAD FIRE DEPARTMENT | 575-885-3125 |
| NEW MEXICO OIL CONSERVATION DIVISION | 575-748-1283 |
| INDIAN FIRE & SAFETY | 800-530-8693 |
| HALLIBURTON SERVICES | 800-844-8451 |

COG Operating LLC
2208 West Main
Artesia, NM 88210

# Production Facility Layout

Flying Squirrel Federal #1H
Section 30 - T18S - R29E

# Exhibit 3



# Surface Use & Operating Plan

## Flying Squirrel Federal #1H

- Surface Tenant: Ross or Jill Caviness, 3718 NM114, Causey, NM 88113
- New Road: 756'
- Flow Line: On well pad
- Facilities: Will be constructed on well pad – see Exhibit 3

**Well Site Information**

V Door: East

Topsoil: South

Interim Reclamation: South and West

**Notes**

**Onsite**: On-site was done by Tanner Nygren (BLM); Gerald Herrera (COG); on February 6, 2014.

# SURFACE USE AND OPERATING PLAN

## 1. Existing & Proposed Access Roads

A. The well site survey and elevation plat for the proposed well is attached with this application. It was staked by Harcrow Surveying, Artesia, NM.

B. All roads to the location are shown on the Location Verification Map Exhibit 2. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. Upgrading existing roads prior to drilling the well will be done where necessary. The road route to the well site is depicted in Exhibit #2. The road shown in Exhibit #2 will be used to access the well.

C. Directions to location: See 600 x 600 plat

D. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease. Roads will be maintained according to specifications in section 2 of this Surface Use and Operating Plan.

## 2. Proposed Access Road:

The Location Verification Map shows that 756' of new access road will be required for this location. If any road is required it will be constructed as follows:

The maximum width of the running surface will be 14'. The road will be crowned, ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 4 feet wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

A. The average grade will be less than 1%.

B. No turnouts are planned.

C. No culvert, cattleguard, gates, low water crossing, or fence cuts are necessary.

D. Surfacing material will consist of native caliche. Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be hauled from the nearest BLM approved caliche pit.

**3. Location of Existing Well:**

The One-Mile Radius Map shows existing wells within a one-mile radius of the proposed wellbore.

**4. Location of Existing and/or Proposed Facilities:**

A. COG Operating LLC does not operate an oil production facility on this lease.

B. If the well is productive, contemplated facilities will be as follows:

1) A tank battery and facilities will be constructed as shown Exhibit 3.

2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications.

3) Any additional caliche will be obtained from the actual well site. If caliche does not exist or is not plentiful from the well site, the caliche will be hauled from a BLM approved caliche pit. Any additional construction materials will be purchased from contractors.

4) It will be necessary to run electric power if this well is productive. Power will be provided by Xcel Energy and they will submit a separate plan and ROW for service to the well location.

5) If the well is productive, rehabilitation plans will include the following:

- The original topsoil from the well site will be returned to the location, and the site will be re-contoured as close as possible to the original site.

**5. Location and Type of Water Supply:**

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. The water will be obtained from commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in Exhibit #2. If a commercial fresh water source is nearby, fast line may be laid along existing road ROW's and fresh water pumped to the well. No water well will be drilled on the location.

**6. Source of Construction Materials and Location "Turn-Over" Procedure:**

Obtaining caliche: One primary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well site. A caliche permit will be obtained from BLM prior to obtaining caliche. 2400 cubic yards is the maximum amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

A. The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.

B. An approximate 160' X 160' area is used within the proposed well site to remove caliche.

C. Subsoil is removed and stockpiled within the surveyed well pad.

D. When caliche is found, material will be stock piled within the pad site to build the location and road.

E. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.

F. Once well is drilled, the stock piled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced.

G. Neither caliche, nor subsoil will be stock piled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in the Well Site Layout or survey plat.

In the event that no caliche is found onsite, caliche will be hauled in from a BLM approved caliche pit or other established mineral pit. A BLM mineral material permit will be acquired prior to obtaining any mineral material from BLM pits or land.

**7. Methods of Handling Water Disposal:**

A. The well will be drilled utilizing a closed loop mud system. Drill cuttings will be held in roll-off style mud boxes and taken to an NMOCD approved disposal site.

B. Drilling fluids will be contained in steel mud pits.

C. Water produced from the well during completion will be held temporarily in steel tanks and then taken to an NMOCD approved commercial disposal facility.

D. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill. No toxic waste or hazardous chemicals will be produced by this operation.

E. Human waste and grey water will need to be properly contained and disposed of. Proper disposal and elimination of waste and grey water may include but are not limited to portable septic systems and/or portable waste gathering systems (i.e. portable toilets).

F. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole only a dry hole marker will remain.

**8. Ancillary Facilities:**

No airstrip, campsite or other facilities will be built as a result of the operation on this well.

**9. Well Site Layout:**

A. The drill pad layout, with elevations staked by Harcrow Surveying, is shown in the Elevation Plat. Dimensions of the pad and pits are shown on the Rig Layout. V door direction is East. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.

B. The Rig Layout Closed-Loop exhibit shows the proposed orientation of closed loop system and access road. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

**10. Plans for Restoration of the Surface:**

A. Interim Reclamation will take place after the well has been completed. The pad will be downsized by reclaiming the areas not needed for production operations. The portions of the pad that are not needed for production operations will be re-contoured to its original state as much as possible. The caliche that is removed will be reused to either build another pad site or for road repairs within the lease. The stockpiled topsoil will then be spread out reclaimed area and reseeded with a BLM approved seed mixture. In the event that the well must be worked over or maintained, it may be necessary to drive, park, and/or operate machinery on reclaimed land. This area will be repaired or reclaimed after work is complete.

B. Final Reclamation: Upon plugging and abandoning the well all caliche for well pad and lease road will be removed and surface will be recountoured to reflect its surroundings as much as possible. Caliche will be recycled for road repair or reused for another well pad within the lease. If any topsoil remains, it will be spread out and the area will be re-seeded with a BLM approved mixture and re-vegetated as per BLM orders.

**11. Surface Ownership:**

A. The surface is owned by the U.S. Government and is administered by the Bureau of Land Management. The surface is multiple uses with the primary uses of the region for grazing of livestock and the production of oil and gas.

B. The surface tenant is Ross or Jill Caviness, 3718 NM114, Causey, NM 88113.

C. The proposed road routes and surface location will be restored as directed by the BLM.

**12. Other Information:**

A. The area around the well site is grassland and the topsoil is sandy. The vegetation is moderately sparse with native prairie grasses, some mesquite and shinnery oak. No wildlife was observed but it is likely that mule deer, rabbits, coyotes and rodents traverse the area.

B. There is no permanent or live water in the immediate area.

C. There are no dwellings within 2 miles of this location.

D. If needed, a Cultural Resources Examination is being prepared by Boone Arch Services of NM, LLC., 2030 North Canal, Carlsbad, New Mexico, 88220, phone # 575-885-1352 and the results will be forwarded to your office in the near future. Otherwise, **COG will be participating in the Permian Basin MOA Program.**

**13. Bond Coverage:**

Bond Coverage is Statewide Bonds # NMB000740 and NMB000215

**14. Lessee's and Operator's Representative:**

The COG Operating LLC representative responsible for assuring compliance with the surface use plan is as follows:

Sheryl Baker
Drilling Superintendent
COG Operating LLC
2208 West Main Street
Artesia, NM 88210
Phone (575) 748-6940 (office)
(432) 934-1873 (cell)

Ray Peterson
Drilling Manager
COG Operating LLC
One Concho Center
600 W Illinois Ave
Midland, TX 79701
Phone (432) 685-4304 (office)
(432) 818-2254 (business)

# PECOS DISTRICT
# CONDITIONS OF APPROVAL

| | |
|---|---|
| **OPERATOR'S NAME:** | **COG Operating, LLC.** |
| **LEASE NO.:** | **NMLC-029387A** |
| **WELL NAME & NO.:** | **Flying Squirrel Federal 1H** |
| **SURFACE HOLE FOOTAGE:** | **2000' FSL & 0450' FEL** |
| **BOTTOM HOLE FOOTAGE** | **2260' FSL & 0330' FEL Sec. 29, T. 18 S., R 31 E.** |
| **LOCATION:** | **Section 30, T. 18 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.

## 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).234-5909 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 strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

## 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. EXCLOSURE FENCING (CELLARS & PITS)

**Exclosure Fencing**
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

## G. 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-five (25) 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.

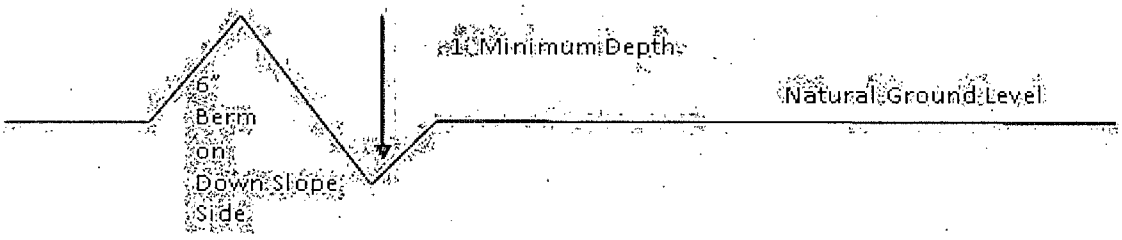
**Turnouts**
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

**Drainage**

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.

**Cross Section of a Typical Lead-off Ditch**




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 %);

**Formula for Spacing Interval of Lead-off Ditches**

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:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

**Cattleguards**

An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattleguards on the access road route 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 cattleguards that are in place and are utilized during lease operations.

**Fence Requirement**

Where entry is granted 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 fences.

**Public Access**

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

**Construction Steps**

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

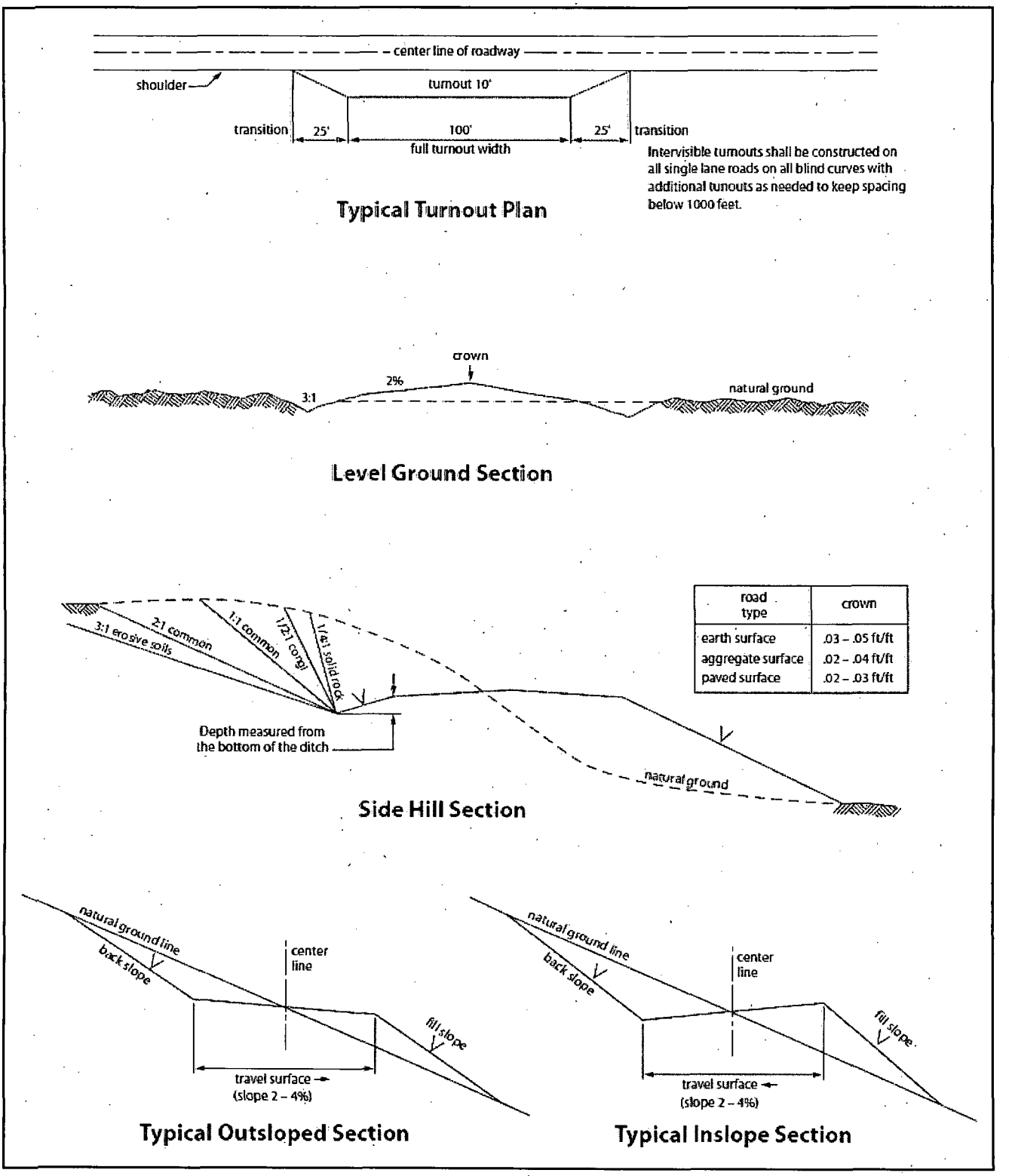



Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

# VII. DRILLING

## A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

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

1. A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Yates** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. Operator has stated that they will have monitoring equipment in place prior to drilling out of the surface shoe. 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. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall 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 or are Non-API. 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. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. 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.**

**Possibility of water flows in the Salado and Queen.**
**Possibility of lost circulation in the Artesia Group, Red Beds, Rustler, Grayburg, San Andres, and Delaware.**

1. The **13-3/8** inch surface casing shall be set at approximately **630** feet (**in a competent bed <u>below the Magenta Dolomite</u>, which is a <u>Member of the Rustler</u>, and if salt is encountered, set casing at least 25 feet above the salt**) and cemented to the surface. **Fresh water mud to be used to setting depth.**

    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.

**Intermediate casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.**

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing, which shall be set at approximately **4200** feet (**in the San Andres Formation**), is:

**Operator has proposed DV tool at depth of 3900'. Operator is to submit sundry if DV tool depth varies by more than 100' from approved depth.**

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 see B.1.a, c-d above.

**Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.**

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

☒ Cement as proposed by operator (Cement must tie-back at least 200 feet into previous casing string). 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.

2. **In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **3000 (3M)** psi.

5. 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**.

    c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

    d. The results of the test shall be reported to the appropriate BLM office.

    e. 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.**

    f. 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. This test shall be performed prior to the test at full stack pressure.

## 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.

**JAM 081314**

# 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.

**Exclosure Netting (Open-top Tanks)**
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

**Chemical and Fuel Secondary Containment and Exclosure Screening**
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

**Open-Vent Exhaust Stack Exclosures**
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

**Containment Structures**
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

**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** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

## IX. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

## X. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory 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 2, for Sandy 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:

| Species | lb/acre |
|---|---|
| Sand dropseed (Sporobolus cryptandrus) | 1.0 |
| Sand love grass (Eragrostis trichodes) | 1.0 |
| Plains bristlegrass (Setaria macrostachya) | 2.0 |

*Pounds of pure live seed:

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