12-630

Form 3160-3
(March 2012)

RECEIVED
JUL 03 2013
NMOCD ARTESIA

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. SHL: NMNM115407, BHL: NMNM115409 — 2/12/2013

6. If Indian, Allotee or Tribe Name

1a. Type of Work: ☑ DRILL ☐ REENTER

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

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone

8. Lease Name and Well No. 40010?
Running Buffalo 1 Federal Com #1H

2. Name of Operator
COG Operating LLC. 229137

9. API Well No.
30-015-41538

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

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

10. Field and Pool, or Exploratory
WC-015 G-05 S202935P; BS
~~Wildcat; Bone Spring~~ 97995?

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 1980' FSL & 1090' FEL Unit Letter I (NESE) SHL Sec 1-T21S-R28E
At proposed prod. Zone 330' FNL & 380' FEL Lot #1 NENE BHL Sec 1-T21S-R28E

11. Sec., T.R.M. or Blk and Survey or Area
Sec. 1 - T21S - R28E

14. Distance in miles and direction from nearest town or post office*
Approximately 10 miles from Carlsbad

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'	SHL: 160 BHL: 294.31	187.18
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft.	**19. Proposed Depth**	
SHL: 890' BHL: 1312'	TVD: 8610' MD: 13,688'	NMB000740
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	**22. Approximate date work will start***	**23. Estimated duration**
~~3451.7~~ GL 3448.9 per plat	When Approved	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	4/20/2012

Title: Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
/s/George MacDonell		JUL - 5 2013
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

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

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

Form C-102
Revised October 15,2009
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-41538	97995	WC-015 G-05 S202935P; B.S. ~~Wildcat; Bone Spring~~

[4] Property Code	[5] Property Name	[6] Well Number
40010	RUNNING BUFFALO 1 FEDERAL COM	1H

[7] OGRID No.	[8] Operator Name	[9] Elevation
229137	COG OPERATING, LLC	3448.9

[10] Surface Location

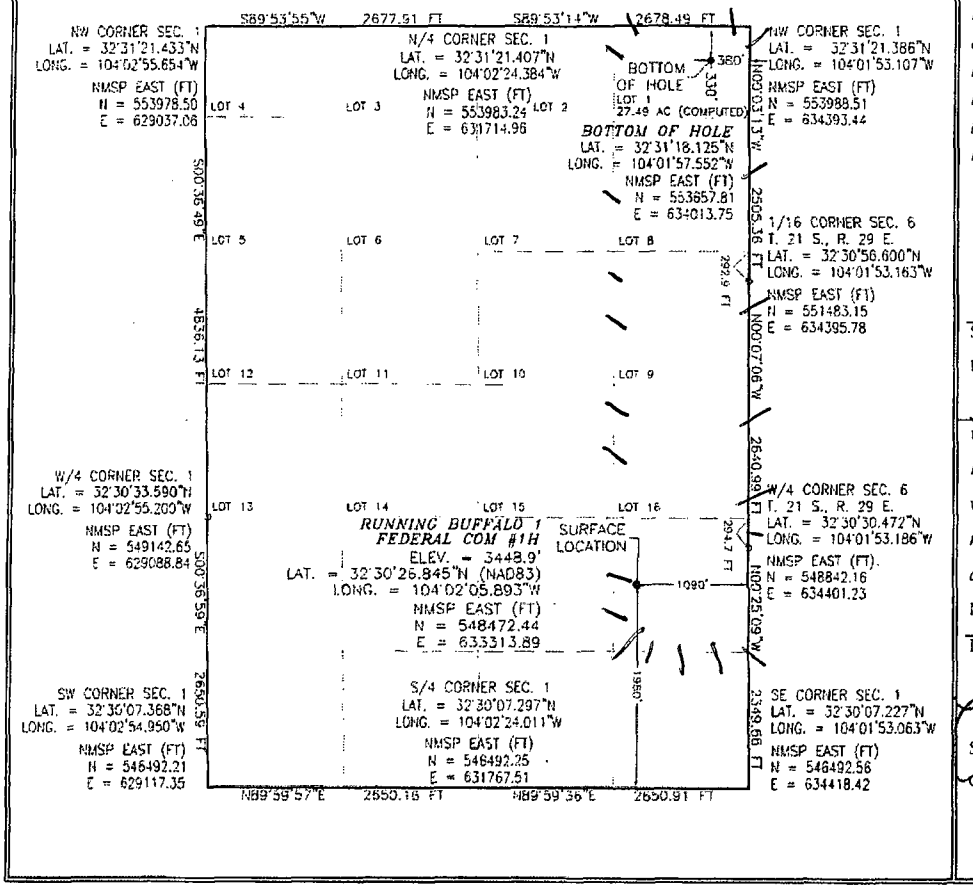
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	1	21 S	28 E		1980	SOUTH	1090	EAST	EDDY

[11] 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
1	1	21 S	28 E		330	NORTH	380	EAST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
187.18			

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.



[17] OPERATOR CERTIFICATION

I hereby certify that the information contained 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Melanie J. Parker Date 3/18/13

Printed Name
Melanie J. Parker

[18] 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.

MAY 16, 2012
Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number FILIMON F. JARAMILLO, PLS 12797
SURVEY NO. 756B

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 18th day of April, 2013.

Signed: Melanie Parker

Printed Name: Melanie J. Parker
Position: Regulatory Analyst
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

STATEMENT ACCEPTING RESPONSIBILITY FOR OPERATIONS

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

Date: March 18, 2013

Lease #: SHL: NMNM115407 & BHL: NMNM115409
Running Buffalo 1 Federal Com #1H

Legal Description: Sec. 1 – T21S – R28E
Eddy County, New Mexico

Formation(s): Bone Spring

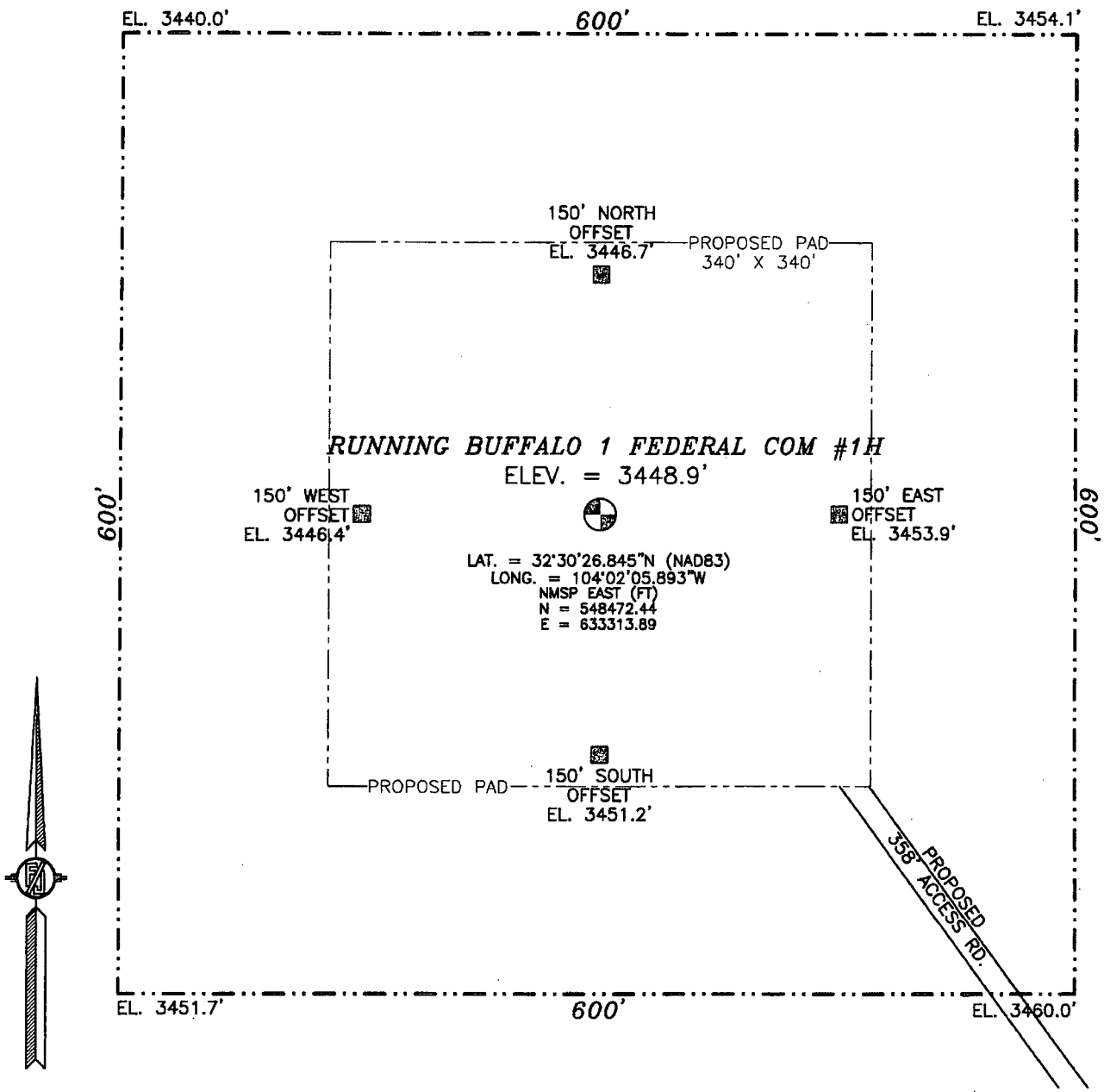
Bond Coverage: Statewide

BLM Bond File #: NMB000740 & NMB00215

COG OPERATING LLC

Mayte Reyes
Regulatory Analyst

SECTION 1, TOWNSHIP 21 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO



010 50 100 200
SCALE 1" = 100'

DIRECTIONS TO LOCATION
FROM MILE MARKER 47 ON US HWY 62-180 (HOBBS HWY) GO EAST 0.55 MILES OR FROM LANDFILL ROAD & HOBBS HWY GO EAST 1.2 MILES EAST TO CALICHE RD ON RIGHT GO SOUTH ON CALICHE ROAD 0.35 MILES THEN TURN LEFT (EAST) ON CALICHE RD GO SOUTHEAST 0.75 MILES ROAD BENDS LEFT AND GO EAST-NORTHEAST 1.1 MILES LOCATION IS 540 FT NORTH.

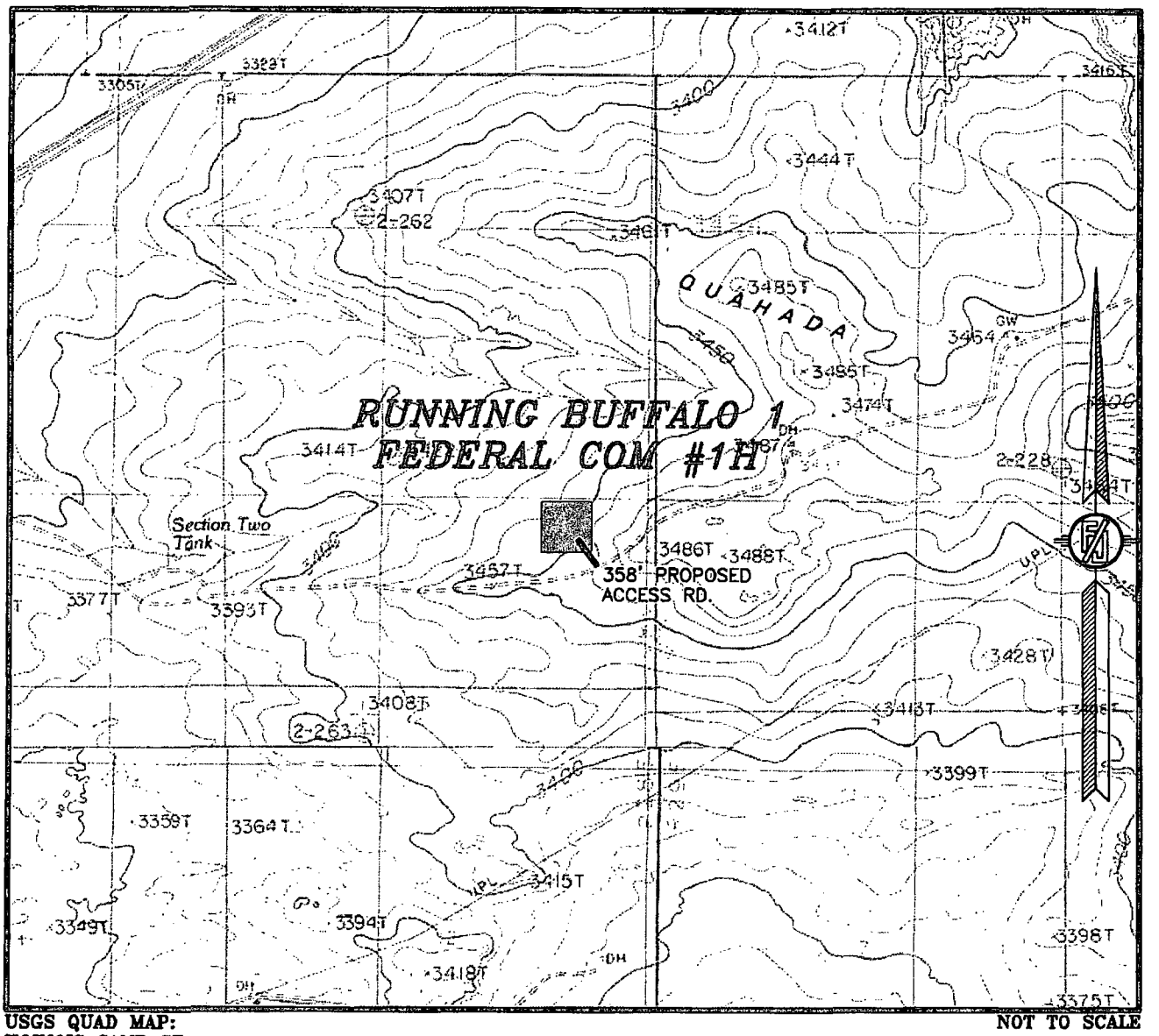
COG OPERATING LLC
RUNNING BUFFALO 1 FEDERAL COM #1H
LOCATED 1980 FT. FROM THE SOUTH LINE
AND 1090 FT. FROM THE EAST LINE OF
SECTION 1, TOWNSHIP 21 SOUTH,
RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MAY 16, 2012

SURVEY NO. 756B
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

EXHIBIT 2

SECTION 1, TOWNSHIP 21 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LOCATION VERIFICATION MAP



USGS QUAD MAP:
ILLINOIS CAMP SE

NOT TO SCALE

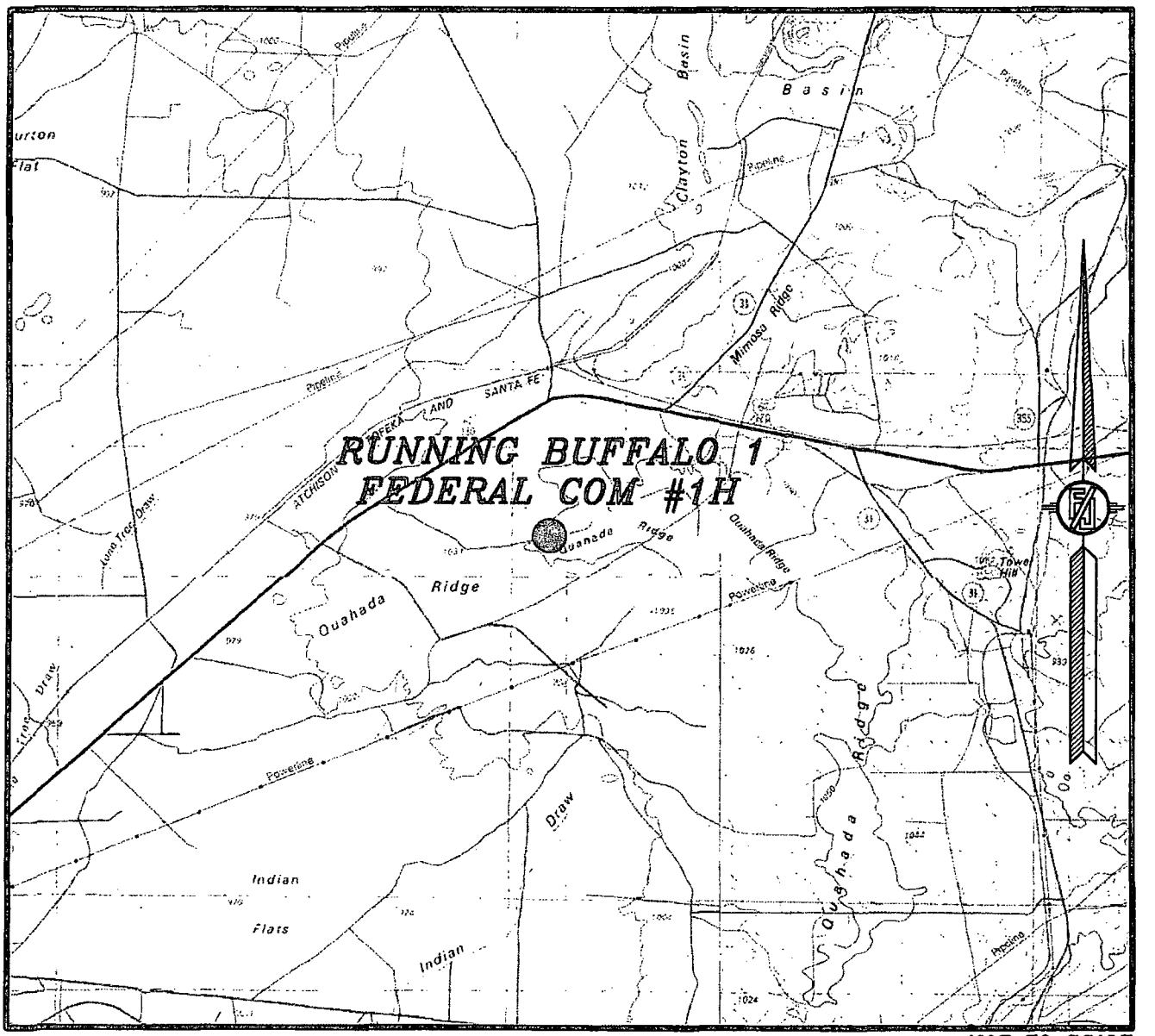
COG OPERATING LLC
RUNNING BUFFALO 1 FEDERAL COM #1H
LOCATED 1980 FT. FROM THE SOUTH LINE
AND 1090 FT. FROM THE EAST LINE OF
SECTION 1, TOWNSHIP 21 SOUTH,
RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MAY 16, 2012

SURVEY NO. 756B
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

SECTION 1, TOWNSHIP 21 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

VICINITY MAP



NOT TO SCALE

COG OPERATING LLC

RUNNING BUFFALO 1 FEDERAL COM #1H

LOCATED 1980 FT. FROM THE SOUTH LINE
AND 1090 FT. FROM THE EAST LINE OF
SECTION 1, TOWNSHIP 21 SOUTH,
RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

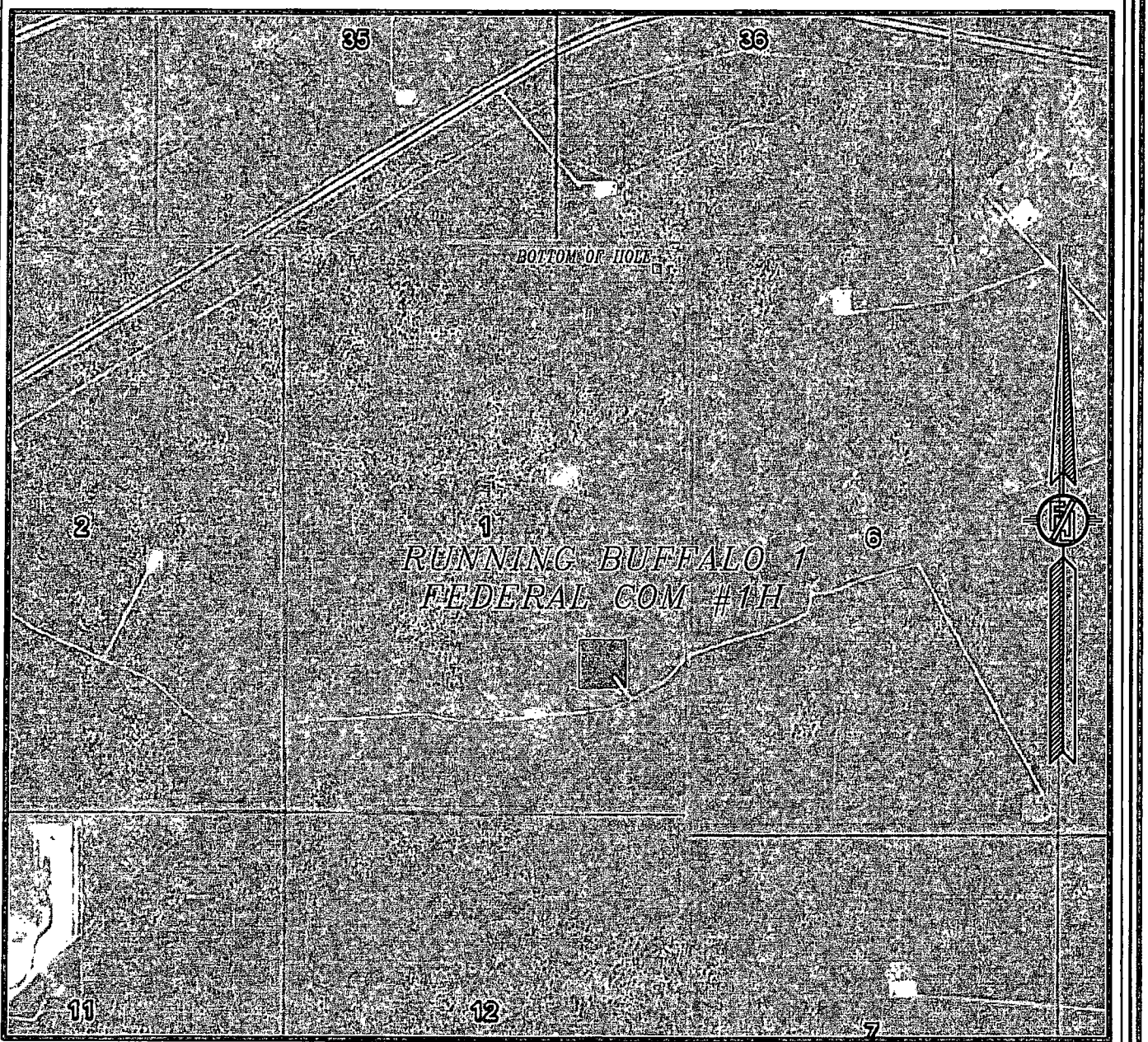
MAY 16, 2012

SURVEY NO. 756B

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 1, TOWNSHIP 21 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
JUNE, 2011

COG OPERATING LLC
RUNNING BUFFALO 1 FEDERAL COM #1H
LOCATED 1980 FT. FROM THE SOUTH LINE
AND 1090 FT. FROM THE EAST LINE OF
SECTION 1, TOWNSHIP 21 SOUTH,
RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MAY 16, 2012

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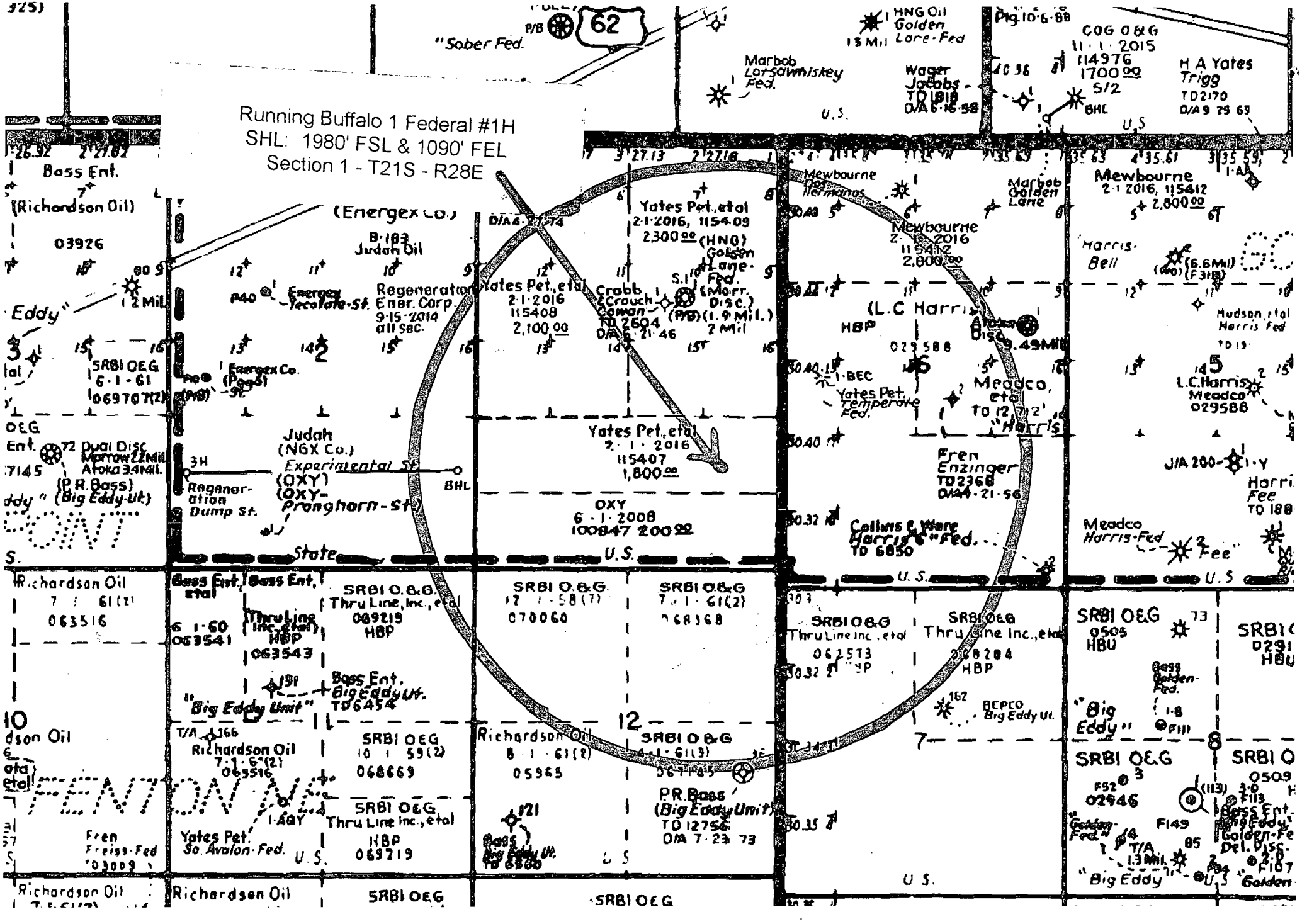
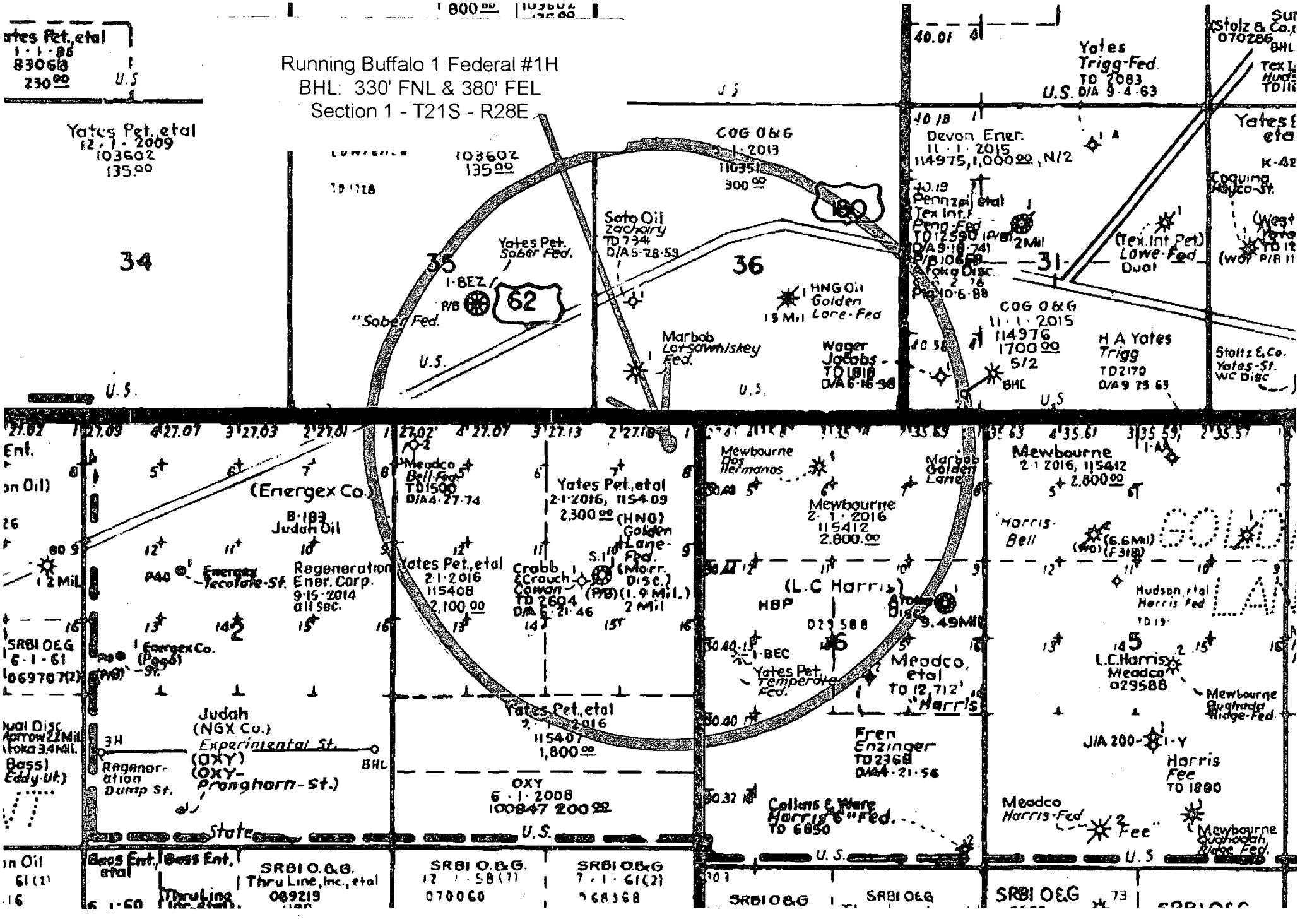

Running Buffalo 1 Federal #1H
SHL: 1980' FSL & 1090' FEL
Section 1 - T21S - R28E
62
"Sober Fed."
Marbob Lotsawhiskey Fed.
HNG Oil Golden Lane-Fed
Wager Jacobs - TD 8180
COG O&G 11-1-2015 114976 1700.00 S/2
H A Yates Trigg TD 2170
Bass Ent.
(Richardson Oil)
03926
Eddy
SRBI O&G 6-1-61
Dual Disc Morrow 2.2 Mil. Atoka 3.4 Mil.
(P.R. Bass) (Big Eddy Ut.)
(Energex Co.)
B-183 Judah Oil
Regeneration Ener. Corp. 9-15-2014 all sec.
Energex Yecolate-St.
Energex Co. (Pogo)
Judah (NGX Co.) Experimental St.
3H
Regeneration Dump St.
(OXY) (OXY-Pronghorn-St.)
BHL
Yates Pet. etal 2-1-2016 115408 2,100.00
Crabb & Crouch Cowan TD 2604
Yates Pet. etal 2-1-2016, 115409 2,300.00 (HNG) Golden Lane-Fed. (Morr. Disc.) (P/B) (1.9 Mil.) 2 Mil
Yates Pet. etal 2-1-2016 115407 1,800.00
OXY 6-1-2008 100847 200.00
State
U.S.
Mewbourne Nos. Hermanos
Marbob Golden Lane
Mewbourne 2-1-2016 115412 2,800.00
(L.C. Harris) HBP 029588
Meadco etal TD 12,712'
Yates Pet. Temperate Fed.
Fren Enzinger TD 2368
Collins & Ware Harris "6" Fed. TD 6850
Harris
Harris-Bell
Hudson etal Harris Fed TD 13,
L.C. Harris Meadco 029588
Meadco Harris-Fed
Richardson Oil 063516
Bass Ent. etal
SRBI O&G Thru Line, Inc., etal 069219 HBP
Thru Line Inc. (Etal) HBP 063543
6 1-60 063541
Bass Ent. Big Eddy Ut. TD 6454
"Big Eddy Unit"
T/A 1366 Richardson Oil 7-1-6(2) 063516
SRBI O&G 10-1-59(2) 068669
SRBI O&G Thru Line Inc., etal HBP 069219
Yates Pet. So. Avalon-Fed.
Fren Freiss-Fed 03009
SRBI O&G 12-1-58(7) 070060
Richardson Oil 8-1-61(2) 05965
SRBI O&G 4-1-61(3)
P.R. Bass (Big Eddy Unit) TD 12756 DA 7-23-73
Bass Big Eddy Ut. TD 6360
SRBI O&G Thru Line Inc., etal 062573 HBP
SRBI O&G Thru Line Inc., etal 068204 HBP
BEPCO Big Eddy Ut.
SRBI O&G 0505 HBU
Bass Golden-Fed.
"Big Eddy"
SRBI O&G 02946
Golden-Fed
T/A 1.3 Mi.
Bass Ent. Big Eddy Golden-Fe
Del. D 356
"Big Eddy"
Golden
U.S.


Running Buffalo 1 Federal #1H
BHL: 330' FNL & 380' FEL
Section 1 - T21S - R28E
Yates Pet. etal
12-1-2009
103602
135.00
34
35
36
31
Yates Pet.
Sober Fed.
1-BEZ
P/B
62
"Sober" Fed.
U.S.
Soto Oil
Zachary
TD 734
D/A 5-28-59
COG O&G
5-1-2013
110351
300.00
180
HNG Oil
Golden Lane-Fed
1 Mi
Marbob
Lay-Sawmiskey
Fed.
Wager
Jacobs
TD 1818
D/A 6-16-58
Devon Ener.
11-1-2015
114975, 1,000.00, N/2
Penn Zoil etal
Tex Int.
Penn-Fed
TD 12590 (Penn)
D/A 9-18-74
P/B 10658
Yates
Trigg-Fed
TD 2083
D/A 9-4-63
(Tex. Int. Pet)
Lowe-Fed
Dual
2 Mil
COG O&G
11-1-2015
114976
1700.00
S/2
BHL
H A Yates
Trigg
TD 2170
D/A 9-25-63
Stoltz & Co.
Yates-St.
WC Disc
Energex Co.
B-183
Judah Oil
Energex
Tecolote-St.
Regeneration
Ener. Corp.
9-15-2014
all sec.
Energex Co.
(Pogo)
SRBI O&G
6-1-61
069707(2)
Judah
(NGX Co.)
Experimental St.
(OXY)
(OXY-
Pronghorn-St.)
3H
Regeneration
Dump St.
BHL
State
U.S.
Meadco
Bell-Fed
TD 1500
D/A 4-27-74
Yates Pet. etal
2-1-2016, 115409
2,300.00
(HNG)
Golden
Lane-
Fed.
(Morr.
Disc.)
(1.9 Mil.)
2 Mil
Yates Pet. etal
2-1-2016
115408
2,100.00
Crabb
& Crouch
Coman
TD 2604
D/A 5-21-46
Yates Pet. etal
2-1-2016
115407
1,800.00
OXY
6-1-2008
1008947 200.00
Mewbourne
Dos Hermanos
Marbob
Golden
Lane
Mewbourne
2-1-2016
115412
2,800.00
(L.C Harris)
HBP
029588
1-BEC
Yates Pet.
Temperance
Fed.
Meadco, etal
TD 12,712'
Harris
Fren
Enzinger
TD 2368
D/A 4-21-56
Collins & Ware
Harris 6 "Fed.
TD 6850
Mewbourne
2-1-2016, 115412
2,800.00
Harris-
Bell
(6.6 Mil)
(F318)
Hudson etal
Harris Fed
TD 13
L.C. Harris
Meadco
029588
Mewbourne
Bughada
Ridge-Fed.
JIA 200-
1-Y
Harris
Fee
TD 1880
Meadco
Harris-Fed
2
Fee
Mewbourne
Bughada
Ridge Fed.
Bass Ent.
etal
Bass Ent.
Thru Line
SRBI O.&G.
Thru Line, Inc., etal
089219
SRBI O.&G.
12-1-58(7)
070060
SRBI O&G
7-1-61(2)
SRBI O&G
SRBI O&G
SRBI O&G

COG Operating LLC
DRILLING AND OPERATIONS PROGRAM
Running Buffalo 1 Federal 1H
SHL: 1980' FSL & 1090' FEL
BHL: 330' FNL & 380' FEL
Section 1 T21S R28E
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	~ 78'	
Rustler	534'	
Top of Salt	957'	
Base of Salt	1607'	
Yates	1652'	
7 Rivers	1845'	
Capitan Reef	1913'	
Delaware	3321'	Oil
Bone Spring	6617'	Oil
2nd BoneSpring	8444'	Oil
TD TVD	8610'	
TD MD	13,688'	

No other formations are expected to give up oil, gas or fresh water in measurable quantities. The surface fresh water sands will be protected by setting 16" casing at ~~560'~~ 850' 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 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
20"	0' - ~~560'~~ 850'	Surface	16"	New	65#	STC	H-40	1.125	1.125	1.6
14 3/4"	0' – ~~1770'~~ 1700'	Intrmd	11 3/4"	New	47#	STC	J-55	1.125	1.125	1.6
10 5/8"	0' – ~~3300'~~ 3100'	Intrmd	8 5/8"	New	32#	BTC	J-55	1.125	1.125	1.6
7 7/8"	0' – 13,688'	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. 16" Surface — See COA

Lead: 225 sx Class C + 4% Gel + 2% $CaCl_2$
(13.5 ppg /1.75 cuft/sx)
Tail: 250 sx Class C + 2% $CaCl_2$
(14.8 ppg / 1.34 cuft/sx)
**Calculated w/50% excess on OH volumes

b. 11 3/4" Intermediate: — See COA

Lead: 400 sx Class C + 4% Gel + 2% $CaCl_2$
(13.5 ppg /1.75 cuft/sx)
Tail: 250 sx Class C + 2% $CaCl_2$
(14.8 ppg / 1.34 cuft/sx)
**Calculated w/35% excess on OH volumes

c. 8 5/8" Intermediate

1st Stg:
Lead: 100 sx 35:65:6 C+Salt+Gilsonite
(12.7 ppg /1.89 cuft/sx)
Tail: 250 sx Class C + 1% $CaCl_2$
(14.8 ppg / 1.35 cuft/sx)
2nd Stg: DVT/ECP @ +/- ~~1820'~~ See COA (depth okay)
Lead: 300 sx Class C + 4% Gel + 2% $CaCl_2$
(13.5 ppg /1.75 cuft/sx)
Tail: 100 sx Class C + 2% $CaCl_2$
(14.8 ppg / 1.35 cuft/sx)
**Calculated w/35% excess on OH volumes

d. 5 ½" Production

Lead: 775 sx 35:65:6 H + Salt+Gilsonite+CFR-3+ HR601
(12.7 ppg / 1.89 cuft/sx)
Tail: 1050 sx 50:50:2 H +Salt+GasStop +HR601 +CFR-3
(14.4 ppg /1.25 cuft/sx)
**Calculated w/35% excess on OH volumes

- The above cement volumes could be revised pending the caliper measurement.
- The 11-3/4" & 8-5/8" intermediate strings are designed to circulate to surface.
- The production string will tie back a minimum of 50' above the Capitan Reef.

5. Control:

Nipple up on 16" with 20" 2M annular preventer tested to 50% of rated working pressure by independent tester and the rest of the 2M system tested to 2000 psi.
Nipple up on 11 3/4" with 13 5/8" 2M annular preventer tested to 50% of rated working pressure by independent tester and the rest of the 2M system tested to 2000 psi.
Nipple up on 8-5/8" with 11" 3M system tested to 3000 psi by independent tester.
Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. A 2" kill line and a minimum 3" choke line will be included in the drilling spool located below the ram-type BOP. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold with 3000 psi WP rating. A remotely operated choke will be installed before drilling out intermediate shoe.

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

No records found.

PLSS Search:

Section(s): 1 **Township:** 21S **Range:** 28E

LLD ACREAGE REPORT

Admin State: NM

Geo State: NM

MTR: 23 0210S 0280E

Section: 001

Sur Type	Sur No	Lld Suff	NE NW SW SE NNSS NNSS NNSS NNSS EWWE EWWE EWWE EWWE	Sur Note	Dup Flg	Sub Surf	Acreage
A			---- ---- XXXX XXXX				320.000
L	1		X--- ---- ---- ----	X			27.180
L	10		-X-- ---- ---- ----				40.000
L	11		---- X--- ---- ----				40.000
L	12		---- -X-- ---- ----				40.000
L	13		---- --X- ---- ----				40.000
L	14		---- ---X ---- ----				40.000
L	15		--X- ---- ---- ----				40.000
L	16		---X ---- ---- ----				40.000
L	2		-X-- ---- ---- ----	X			27.130
L	3		---- X--- ---- ----	X			27.070
L	4		---- -X-- ---- ----	X			27.020
L	5		---- -X-- ---- ----	X			40.000
L	6		---- X--- ---- ----	X			40.000
L	7		-X-- ---- ---- ----	X			40.000
L	8		X--- ---- ---- ----	X			40.000
L	9		X--- ---- ---- ----				40.000

Section 001 Total: **908.400**

MTR Total Exluding Survey Notes C/D/R and Sub Surf = Y **908.400**

Grand Total Excluding Survey Notes C/D/R and Sub Surf = Y: **908.400**

COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

Well pads 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 +/- 150'

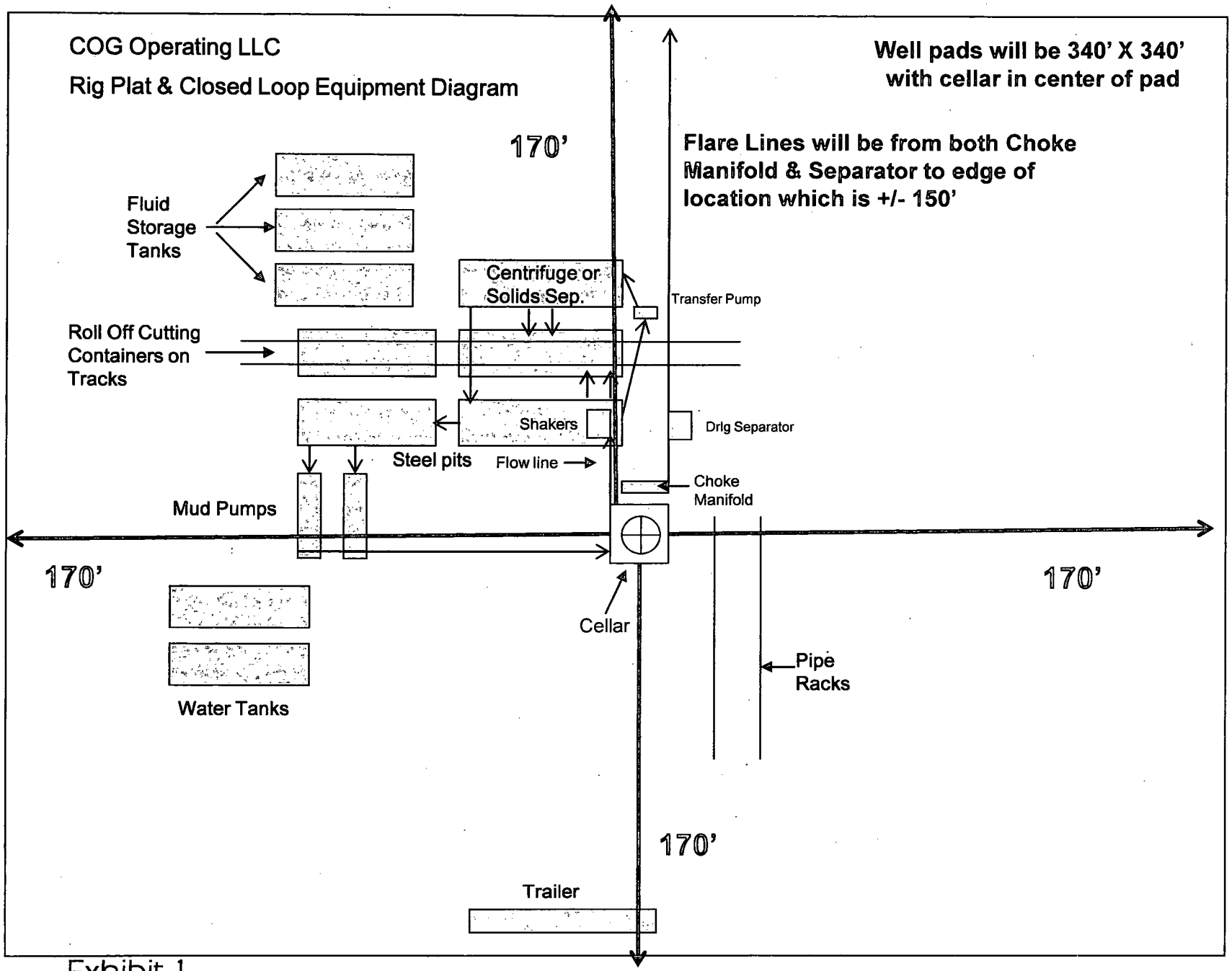


Exhibit 1

COG OPERATING LLC
HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

I. HYDROGEN SULFIDE TRAINING

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

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 H_2S 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 H_2S zone (within 3 days or 500 feet) and weekly H_2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H_2S 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.

II. 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 H_2S.

A. Well Control Equipment:

Flare line.

Choke manifold. w/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. H_2S detection and monitoring equipment:

2 - portable H_2S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H_2S 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 H_2S 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 H_2S 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.

WARNING

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	HOME
COG OPERATING LLC OFFICE	575-748-6940		
SHERYL BAKER	575-748-6940	432-934-1873	575-748-2396
RON BEASLEY	575-746-2010	432-254-9883	
SETH WILD	575-748-6940	432-528-3633	
DEAN CHUMBLEY	575-748-3303	575-748-5988	575-748-2426

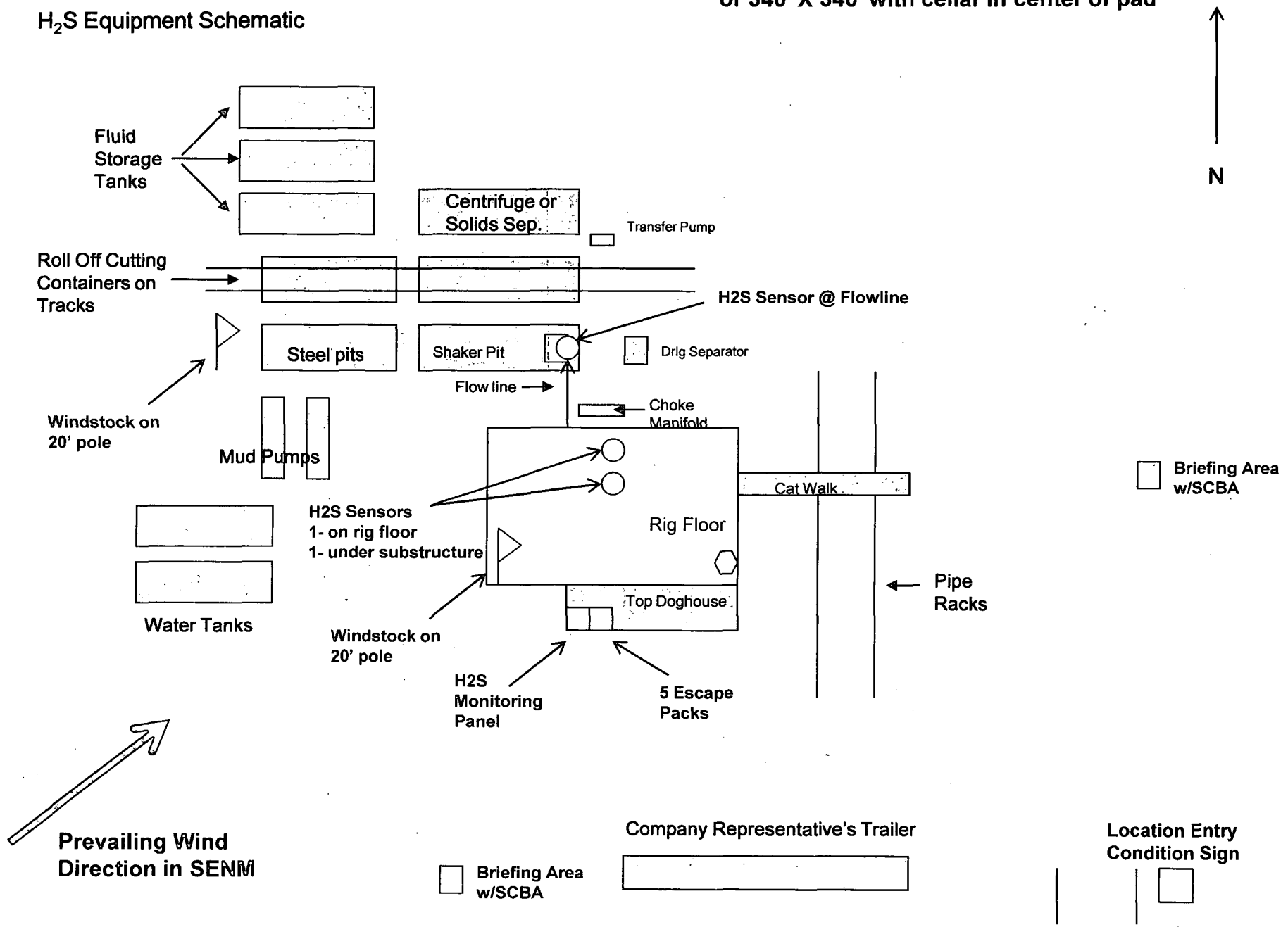
EMERGENCY RESPONSE NUMBERS

	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

H_2S Equipment Schematic

Well pads are normally300' X 300'
or 340' X 340' with cellar in center of pad



6. **Estimated BHP & BHT:**

Lateral TD = 3940 psi

Lateral TD= 142°F

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

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' – ~~560'~~ 860'	Fresh Water	8.4	29	N.C.
560' – ~~1770'~~ 1700'	Brine	10	29	N.C.
~~1770'~~ – ~~3,300'~~ 3100'	Fresh Water	8.4	29	N.C.
~~3,300'~~ – 13,688' (Lateral)	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 the 8-5/8" 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 16" casing shoe until the 5 ½" casing is cemented. Breathing equipment will be on location upon drilling the 16" 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.

11. Anticipated starting date and Duration of Operations:

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

COG Running Buffalo 1 Federal COM #1H Rev0 MDT 12Mar13 Proposal
Geodetic Report
(Def Plan)

PATHFINDER
A Schlumberger Company

Report Date:	March 15, 2013 - 03:15 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	COG	**Vertical Section Azimuth:**	6.599 ° (Grid North)
Field:	NM Eddy County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	COG Running Buffalo 1 Federal COM #1H / COG Running Buffalo 1 Federal COM #1H	**TVD Reference Datum:**	RKB
Well:	COG Running Buffalo 1 Federal COM #1H	**TVD Reference Elevation:**	3466.900 ft above
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	3448.900 ft above
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	7.714 °
Survey Name:	COG Running Buffalo 1 Federal COM #1H Rev0 MDT 12Mar13	**Total Gravity Field Strength:**	999.1836 mgn (9.8 based)
Survey Date:	March 12, 2013	**Total Magnetic Field Strength:**	48535.916 nT
Tort / AHD / DDI / ERD Ratio:	90.603 ° / 5232.822 ft / 5.875 / 0.604	**Magnetic Dip Angle:**	60.285 °
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Declination Date:**	March 12, 2013
Location Lat / Long:	N 32° 30' 26.84662", W 104° 2' 5.89011"	**Magnetic Declination Model:**	BGGM 2012
Location Grid N/E Y/X:	N 548472.440 ftUS, E 633313.890 ftUS	**North Reference:**	Grid North
CRS Grid Convergence Angle:	0.1603 °	**Grid Convergence Used:**	0.1603 °
Grid Scale Factor:	0.99991878	**Total Corr Mag North->Grid North:**	7.5539 °
		Local Coord Referenced To:	Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL	0.00	0.00	7.69	0.00	0.00	0.00	0.00	N/A	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	100.00	0.00	7.69	100.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	200.00	0.00	7.69	200.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	300.00	0.00	7.69	300.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	400.00	0.00	7.69	400.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	500.00	0.00	7.69	500.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	600.00	0.00	7.69	600.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	700.00	0.00	7.69	700.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	800.00	0.00	7.69	800.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	900.00	0.00	7.69	900.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	1000.00	0.00	7.69	1000.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	1100.00	0.00	7.69	1100.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	1200.00	0.00	7.69	1200.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	1300.00	0.00	7.69	1300.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	1400.00	0.00	7.69	1400.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	1500.00	0.00	7.69	1500.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	1600.00	0.00	7.69	1600.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	1700.00	0.00	7.69	1700.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	1800.00	0.00	7.69	1800.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	1900.00	0.00	7.69	1900.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	2000.00	0.00	7.69	2000.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	2100.00	0.00	7.69	2100.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	2200.00	0.00	7.69	2200.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	2300.00	0.00	7.69	2300.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	2400.00	0.00	7.69	2400.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	2500.00	0.00	7.69	2500.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	2600.00	0.00	7.69	2600.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	2700.00	0.00	7.69	2700.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	2800.00	0.00	7.69	2800.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	2900.00	0.00	7.69	2900.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	3000.00	0.00	7.69	3000.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	3100.00	0.00	7.69	3100.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	3200.00	0.00	7.69	3200.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	3300.00	0.00	7.69	3300.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	3400.00	0.00	7.69	3400.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	3500.00	0.00	7.69	3500.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	3600.00	0.00	7.69	3600.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	3700.00	0.00	7.69	3700.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	3800.00	0.00	7.69	3800.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	3900.00	0.00	7.69	3900.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	4000.00	0.00	7.69	4000.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	4100.00	0.00	7.69	4100.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	4200.00	0.00	7.69	4200.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	4300.00	0.00	7.69	4300.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	4400.00	0.00	7.69	4400.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	4500.00	0.00	7.69	4500.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	4600.00	0.00	7.69	4600.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	4700.00	0.00	7.69	4700.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	4800.00	0.00	7.69	4800.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	4900.00	0.00	7.69	4900.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	5000.00	0.00	7.69	5000.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	5100.00	0.00	7.69	5100.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	5200.00	0.00	7.69	5200.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	5300.00	0.00	7.69	5300.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	5400.00	0.00	7.69	5400.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	5500.00	0.00	7.69	5500.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	5600.00	0.00	7.69	5600.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	5700.00	0.00	7.69	5700.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	5800.00	0.00	7.69	5800.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	5900.00	0.00	7.69	5900.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	6000.00	0.00	7.69	6000.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	6100.00	0.00	7.69	6100.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	6200.00	0.00	7.69	6200.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	6300.00	0.00	7.69	6300.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	6400.00	0.00	7.69	6400.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	6500.00	0.00	7.69	6500.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	6600.00	0.00	7.69	6600.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	6700.00	0.00	7.69	6700.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	6800.00	0.00	7.69	6800.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	6900.00	0.00	7.69	6900.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	7000.00	0.00	7.69	7000.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	7100.00	0.00	7.69	7100.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	7200.00	0.00	7.69	7200.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	7300.00	0.00	7.69	7300.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	7400.00	0.00	7.69	7400.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	7500.00	0.00	7.69	7500.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	7600.00	0.00	7.69	7600.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	7700.00	0.00	7.69	7700.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	7800.00	0.00	7.69	7800.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	7900.00	0.00	7.69	7900.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	8000.00	0.00	7.69	8000.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	8100.00	0.00	7.69	8100.00	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
KOP Build @ 12°/100'	8182.56	0.00	7.69	8182.56	0.00	0.00	0.00	0.00	548472.44	633313.89	N 32 30 26.85	W 104 2 5.89
	8200.00	2.09	7.69	8200.00	0.32	0.32	0.04	12.00	548472.76	633313.93	N 32 30 26.85	W 104 2 5.89
	8300.00	14.09	7.69	8298.82	14.37	14.24	1.92	12.00	548486.68	633315.81	N 32 30 26.99	W 104 2 5.87
	8400.00	26.09	7.69	8392.56	48.65	48.22	6.51	12.00	548520.66	633320.40	N 32 30 27.32	W 104 2 5.81
	8500.00	38.09	7.69	8477.13	101.68	100.78	13.60	12.00	548573.21	633327.49	N 32 30 27.84	W 104 2 5.73
	8600.00	50.09	7.69	8548.82	171.12	169.61	22.89	12.00	548642.04	633336.78	N 32 30 28.52	W 104 2 5.62
	8700.00	62.09	7.69	8604.50	253.95	251.71	33.97	12.00	548724.13	633347.86	N 32 30 29.34	W 104 2 5.49
	8800.00	74.09	7.69	8641.74	346.54	343.49	46.36	12.00	548815.90	633360.25	N 32 30 30.24	W 104 2 5.34
	8900.00	86.09	7.69	8658.92	444.85	440.93	59.51	12.00	548913.34	633373.40	N 32 30 31.21	W 104 2 5.18
Landing Point	8937.59	90.60	7.69	8660.00	482.40	478.15	64.54	12.00	548950.55	633378.42	N 32 30 31.58	W 104 2 5.12
	9000.00	90.60	7.69	8659.34	544.80	540.01	72.88	0.00	549012.40	633386.77	N 32 30 32.19	W 104 2 5.02
	9100.00	90.60	7.69	8658.29	644.78	639.10	86.26	0.00	549111.49	633400.14	N 32 30 33.17	W 104 2 4.86
	9200.00	90.60	7.69	8657.24	744.76	738.20	99.63	0.00	549210.58	633413.51	N 32 30 34.15	W 104 2 4.70
	9300.00	90.60	7.69	8656.18	844.73	837.29	113.01	0.00	549309.66	633426.89	N 32 30 35.13	W 104 2 4.54
	9400.00	90.60	7.69	8655.13	944.71	936.39	126.38	0.00	549408.75	633440.26	N 32 30 36.11	W 104 2 4.38
	9500.00	90.60	7.69	8654.08	1044.69	1035.48	139.76	0.00	549507.84	633453.64	N 32 30 37.09	W 104 2 4.22
	9600.00	90.60	7.69	8653.03	1144.66	1134.58	153.13	0.00	549606.93	633467.01	N 32 30 38.07	W 104 2 4.06
	9700.00	90.60	7.69	8651.97	1244.64	1233.68	166.51	0.00	549706.01	633480.38	N 32 30 39.05	W 104 2 3.91
	9800.00	90.60	7.69	8650.92	1344.61	1332.77	179.88	0.00	549805.10	633493.76	N 32 30 40.03	W 104 2 3.75
	9900.00	90.60	7.69	8649.87	1444.59	1431.87	193.26	0.00	549904.19	633507.13	N 32 30 41.01	W 104 2 3.59
	10000.00	90.60	7.69	8648.82	1544.57	1530.96	206.63	0.00	550003.28	633520.50	N 32 30 41.99	W 104 2 3.43
	10100.00	90.60	7.69	8647.76	1644.54	1630.06	220.01	0.00	550102.36	633533.88	N 32 30 42.97	W 104 2 3.27
	10200.00	90.60	7.69	8646.71	1744.52	1729.16	233.38	0.00	550201.45	633547.25	N 32 30 43.95	W 104 2 3.11
	10300.00	90.60	7.69	8645.66	1844.50	1828.25	246.76	0.00	550300.54	633560.63	N 32 30 44.93	W 104 2 2.95
	10400.00	90.60	7.69	8644.61	1944.47	1927.35	260.13	0.00	550399.63	633574.00	N 32 30 45.91	W 104 2 2.79
	10500.00	90.60	7.69	8643.55	2044.45	2026.44	273.51	0.00	550498.72	633587.37	N 32 30 46.89	W 104 2 2.63
	10600.00	90.60	7.69	8642.50	2144.43	2125.54	286.88	0.00	550597.80	633600.75	N 32 30 47.87	W 104 2 2.47
	10700.00	90.60	7.69	8641.45	2244.40	2224.64	300.26	0.00	550696.89	633614.12	N 32 30 48.85	W 104 2 2.31
	10800.00	90.60	7.69	8640.40	2344.38	2323.73	313.63	0.00	550795.98	633627.49	N 32 30 49.83	W 104 2 2.15
	10900.00	90.60	7.69	8639.34	2444.36	2422.83	327.00	0.00	550895.07	633640.87	N 32 30 50.81	W 104 2 1.99
	11000.00	90.60	7.69	8638.29	2544.33	2521.92	340.38	0.00	550994.15	633654.24	N 32 30 51.79	W 104 2 1.83
	11100.00	90.60	7.69	8637.24	2644.31	2621.02	353.75	0.00	551093.24	633667.61	N 32 30 52.77	W 104 2 1.67
	11200.00	90.60	7.69	8636.19	2744.28	2720.12	367.13	0.00	551192.33	633680.99	N 32 30 53.75	W 104 2 1.51
	11300.00	90.60	7.69	8635.13	2844.26	2819.21	380.50	0.00	551291.42	633694.36	N 32 30 54.73	W 104 2 1.35
	11400.00	90.60	7.69	8634.08	2944.24	2918.31	393.88	0.00	551390.50	633707.74	N 32 30 55.71	W 104 2 1.19
	11500.00	90.60	7.69	8633.03	3044.21	3017.40	407.25	0.00	551489.59	633721.11	N 32 30 56.69	W 104 2 1.04
	11600.00	90.60	7.69	8631.98	3144.19	3116.50	420.63	0.00	551588.68	633734.48	N 32 30 57.67	W 104 2 0.88
	11700.00	90.60	7.69	8630.92	3244.17	3215.60	434.00	0.00	551687.77	633747.86	N 32 30 58.65	W 104 2 0.72
	11800.00	90.60	7.69	8629.87	3344.14	3314.69	447.38	0.00	551786.86	633761.23	N 32 30 59.63	W 104 2 0.56
	11900.00	90.60	7.69	8628.82	3444.12	3413.79	460.75	0.00	551885.94	633774.60	N 32 31 0.61	W 104 2 0.40
	12000.00	90.60	7.69	8627.77	3544.10	3512.88	474.13	0.00	551985.03	633787.98	N 32 31 1.59	W 104 2 0.24
	12100.00	90.60	7.69	8626.72	3644.07	3611.98	487.50	0.00	552084.12	633801.35	N 32 31 2.57	W 104 2 0.08
	12200.00	90.60	7.69	8625.66	3744.05	3711.08	500.88	0.00	552183.21	633814.73	N 32 31 3.55	W 104 1 59.92
	12300.00	90.60	7.69	8624.61	3844.03	3810.17	514.25	0.00	552282.29	633828.10	N 32 31 4.53	W 104 1 59.76
	12400.00	90.60	7.69	8623.56	3944.00	3909.27	527.63	0.00	552381.38	633841.47	N 32 31 5.51	W 104 1 59.60
	12500.00	90.60	7.69	8622.51	4043.98	4008.36	541.00	0.00	552480.47	633854.85	N 32 31 6.49	W 104 1 59.44
	12600.00	90.60	7.69	8621.45	4143.95	4107.46	554.38	0.00	552579.56	633868.22	N 32 31 7.47	W 104 1 59.28
	12700.00	90.60	7.69	8620.40	4243.93	4206.56	567.75	0.00	552678.65	633881.59	N 32 31 8.45	W 104 1 59.12
	12800.00	90.60	7.69	8619.35	4343.91	4305.65	581.13	0.00	552777.73	633894.97	N 32 31 9.43	W 104 1 58.96
	12900.00	90.60	7.69	8618.30	4443.88	4404.75	594.50	0.00	552876.82	633908.34	N 32 31 10.41	W 104 1 58.80
	13000.00	90.60	7.69	8617.24	4543.86	4503.84	607.88	0.00	552975.91	633921.71	N 32 31 11.39	W 104 1 58.64
	13100.00	90.60	7.69	8616.19	4643.84	4602.94	621.25	0.00	553075.00	633935.09	N 32 31 12.37	W 104 1 58.48
	13200.00	90.60	7.69	8615.14	4743.81	4702.03	634.63	0.00	553174.08	633948.46	N 32 31 13.35	W 104 1 58.32
	13300.00	90.60	7.69	8614.09	4843.79	4801.13	648.00	0.00	553273.17	633961.84	N 32 31 14.33	W 104 1 58.17
	13400.00	90.60	7.69	8613.03	4943.77	4900.23	661.37	0.00	553372.26	633975.21	N 32 31 15.31	W 104 1 58.01
	13500.00	90.60	7.69	8611.98	5043.74	4999.32	674.75	0.00	553471.35	633988.58	N 32 31 16.29	W 104 1 57.85
	13600.00	90.60	7.69	8610.93	5143.72	5098.42	688.12	0.00	553570.43	634001.96	N 32 31 17.27	W 104 1 57.69
COG Running Buffalo 1 Federal Com #1H PBHL	13688.18	90.60	7.69	8610.00	5231.88	5185.80	699.92	0.00	553657.81	634013.75	N 32 31 18.14	W 104 1 57.55

Survey Type: Def Plan

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

Survey Program:

Description	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
		0.000	18.000		1/100.000	30.000	30.000	SLB_MWD-STD-Depth Only		Original Borehole / COG Running Buffalo 1 Federal COM #1H Rev0		
		18.000	13688.180		1/100.000	30.000	30.000	SLB_MWD-STD		Original Borehole / COG Running Buffalo 1 Federal COM #1H Rev0		

CONCHO

COG Rev0

PATHFINDER
A Schlumberger Company

WELL	FIELD	STRUCTURE
COG Running Buffalo 1 Federal COM #1H	NM Eddy County (NAD 83)	Patriot 6

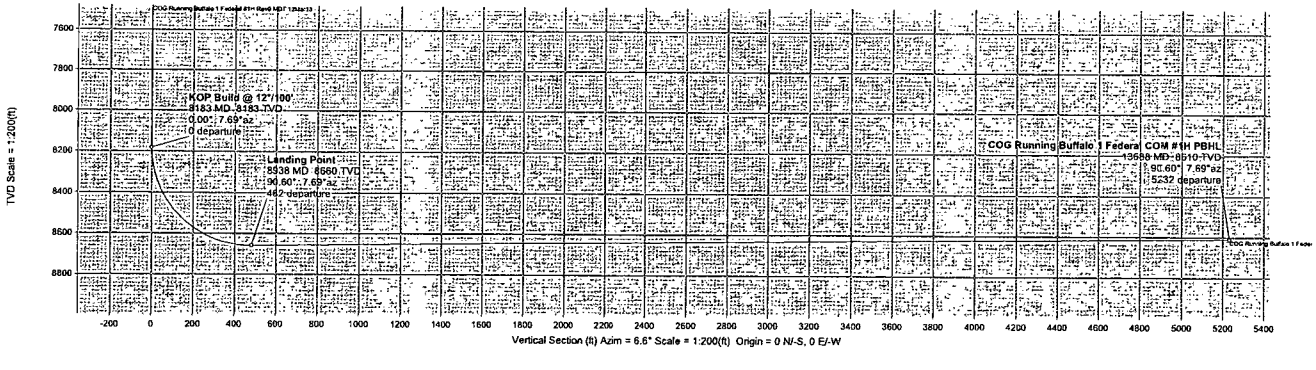
Magnetic Parameters				Surface Location				Miscellaneous			
Model: BGGM 2012	Dip: 60.285°	Date: March 12, 2013		Lat: N 32 30 26.847	Northing: 548472.44 AUS	Grid Conv: 0.160°		Slot: Running Buffalo 1 Federal COM PBB Ref: RKB(3466 ft above)			
	Mag Dec: 7.714°	FS: 48535.9nT		Lon: W 104 2 5.890	Easting: 633313.89 AUS	Scale Fact: 0.99991878		Plan: Rev0 MDT 12Mar13	Srvy Date: March 12, 2013		

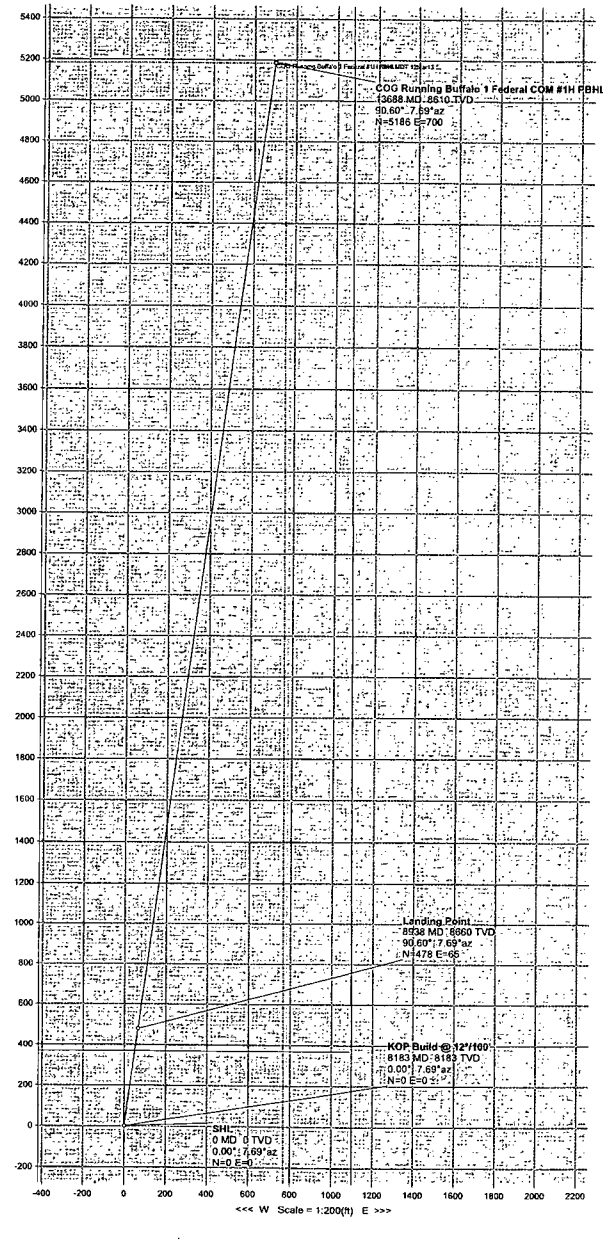
Legend

- COG Running Buffalo 1 Federal COM #1H Lease Line
- COG Running Buffalo 1 Federal COM #1H Section Line
- COG Running Buffalo 1 Federal COM #1H 330' Hardline
- COG Running Buffalo 1 Federal COM #1H PBHL
- COG Running Buffalo 1 Federal COM #1H Rev0 MDT 12Mar13

Grid North
Tot Corr (M->G 7.5539°)
Mag Dec (7.714°)
Grid Conv (0.160°)

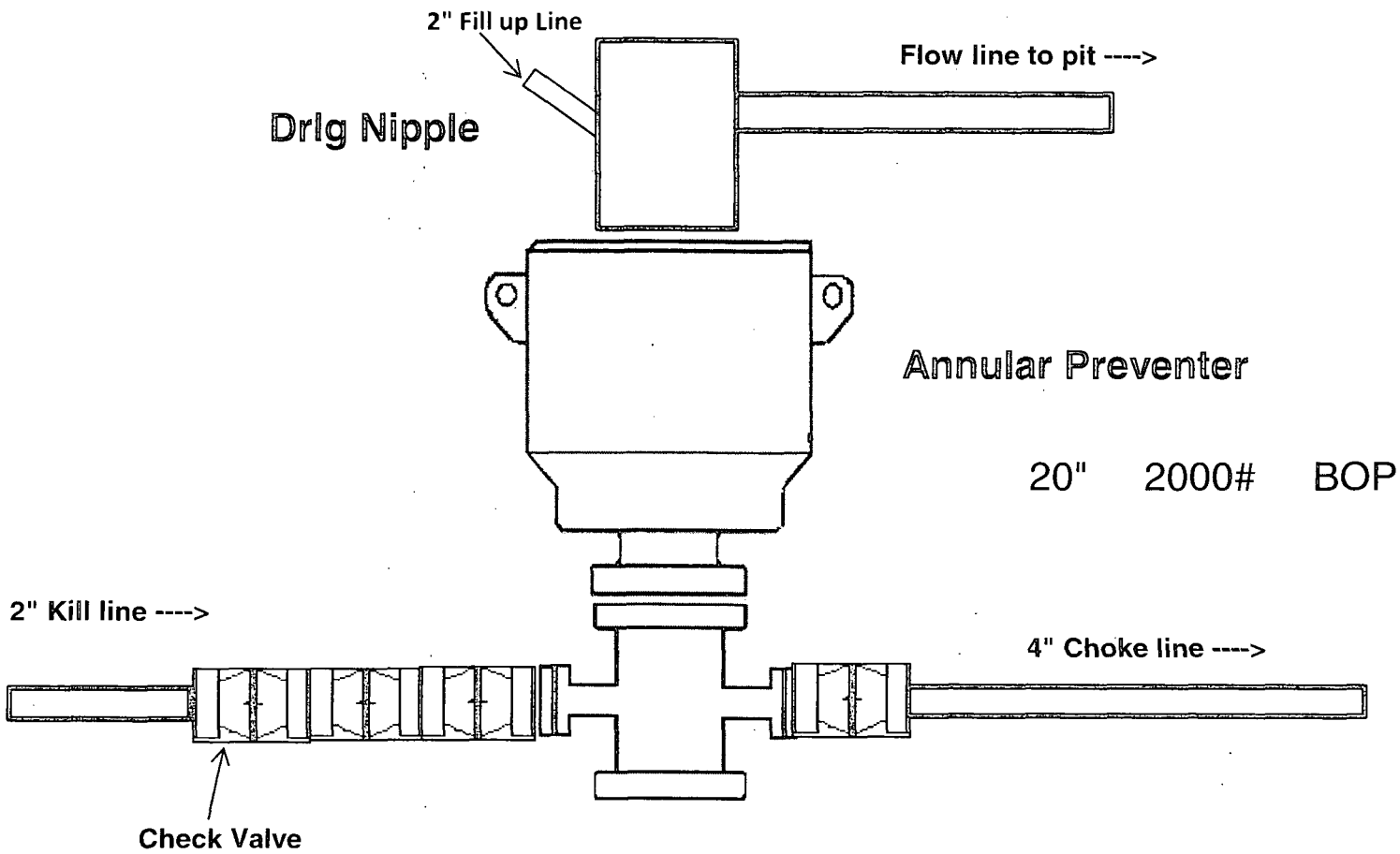
Point	Comments	Survey MD(ft)	Inclination(deg)	Azimuth(deg)	TVD(ft)	Sub-Sea TVD	VSec	NS(ft)	EW(ft)	Longitude(deg)	Latitude(deg)	Easting(AUS)	Northing(AUS)	Closure(ft)	Closure Azimuth(deg)	DLS(°/100ft)	Tool Face(deg)
SHL		0.00	0.00	7.69	0.00	-3466.90	0.00	0.00	0.00	W 104 2 5.890	N 32 30 26.847	633313.89	548472.44	0.00	0.00		7.69
KOP Build @ 12°/100'		8182.56	0.00	7.69	8182.56	4715.66	0.00	0.00	0.00	W 104 2 5.890	N 32 30 26.847	633313.89	548472.44	0.00	0.00	0.00	7.69
Landing Point		8937.59	90.60	7.69	8660.00	5193.10	482.40	478.15	64.54	W 104 2 5.121	N 32 30 31.576	633378.42	548950.55	482.49	7.69	12.00	0.00
COG Running Buffalo 1 Federal Com #1H PBHL		13688.18	90.60	7.69	8610.00	5143.10	5231.88	5185.80	699.92	W 104 1 57.546	N 32 31 18.139	634013.75	553657.81	5232.82	7.69	0.00	



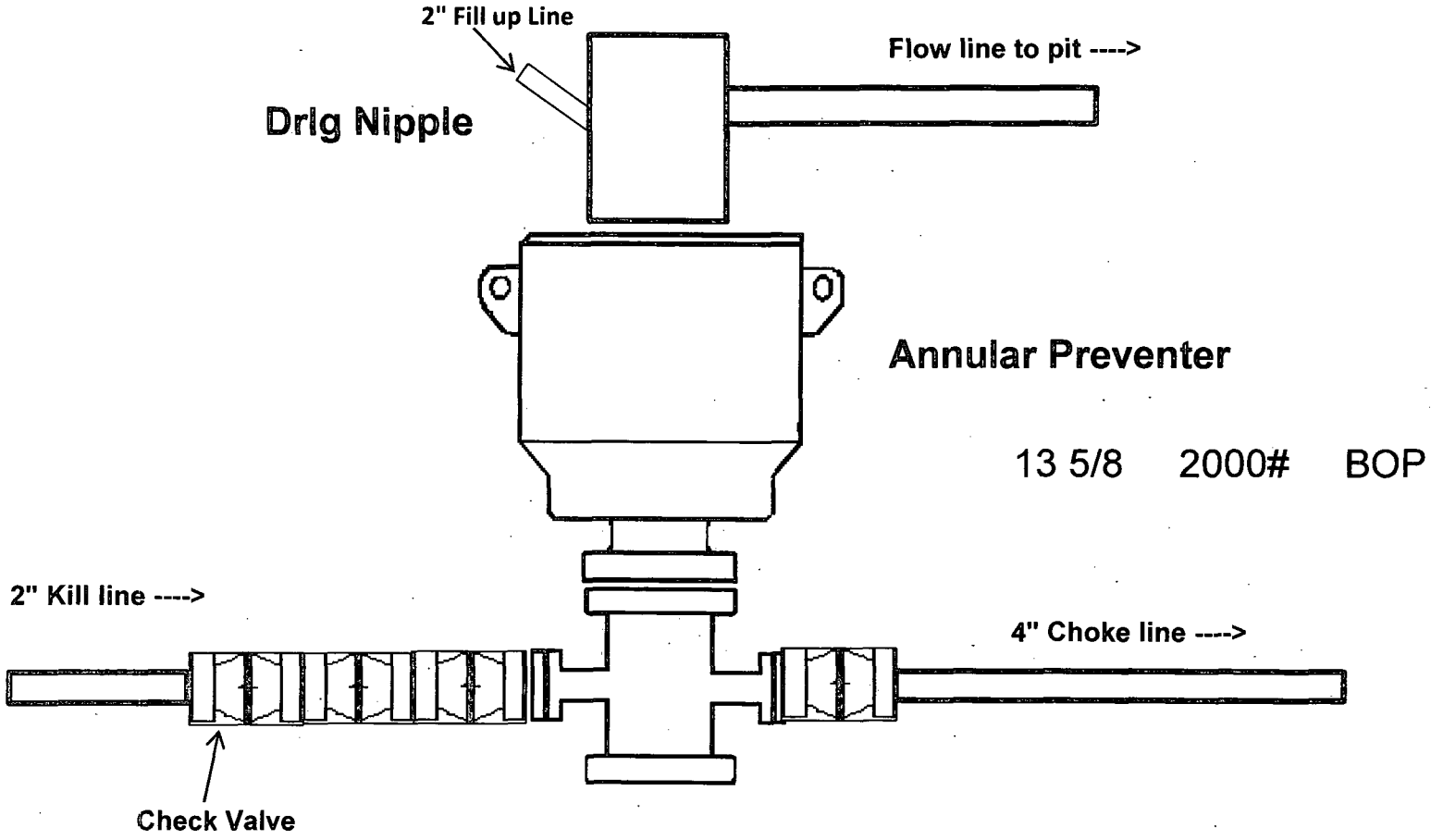


Drawn By:	Current User
Date Created:	March 15, 2013 02:45:29 PM
Checked By:	
Checked Date:	
Approved By:	
Approved Date:	

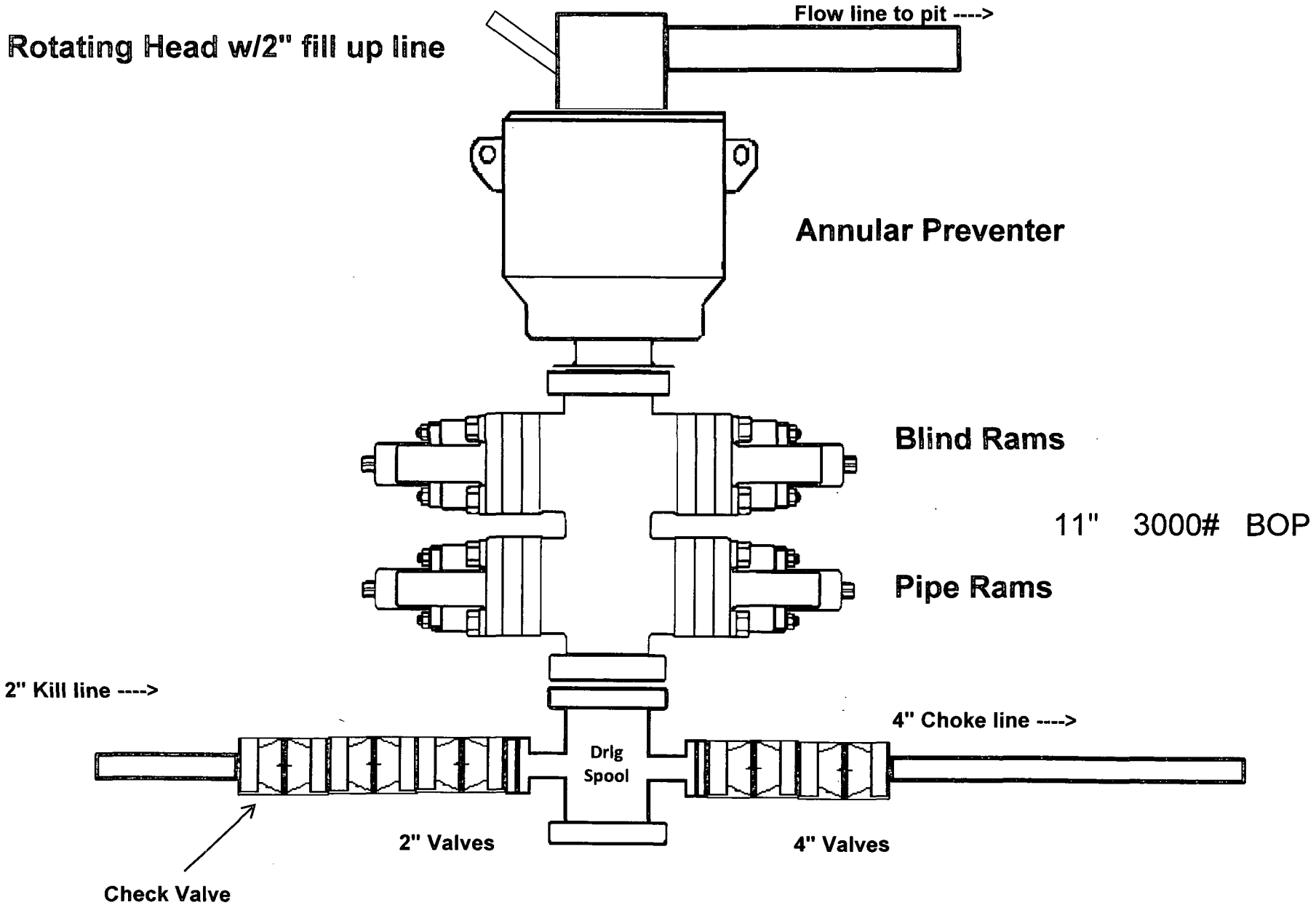
2,000 psi BOP Schematic



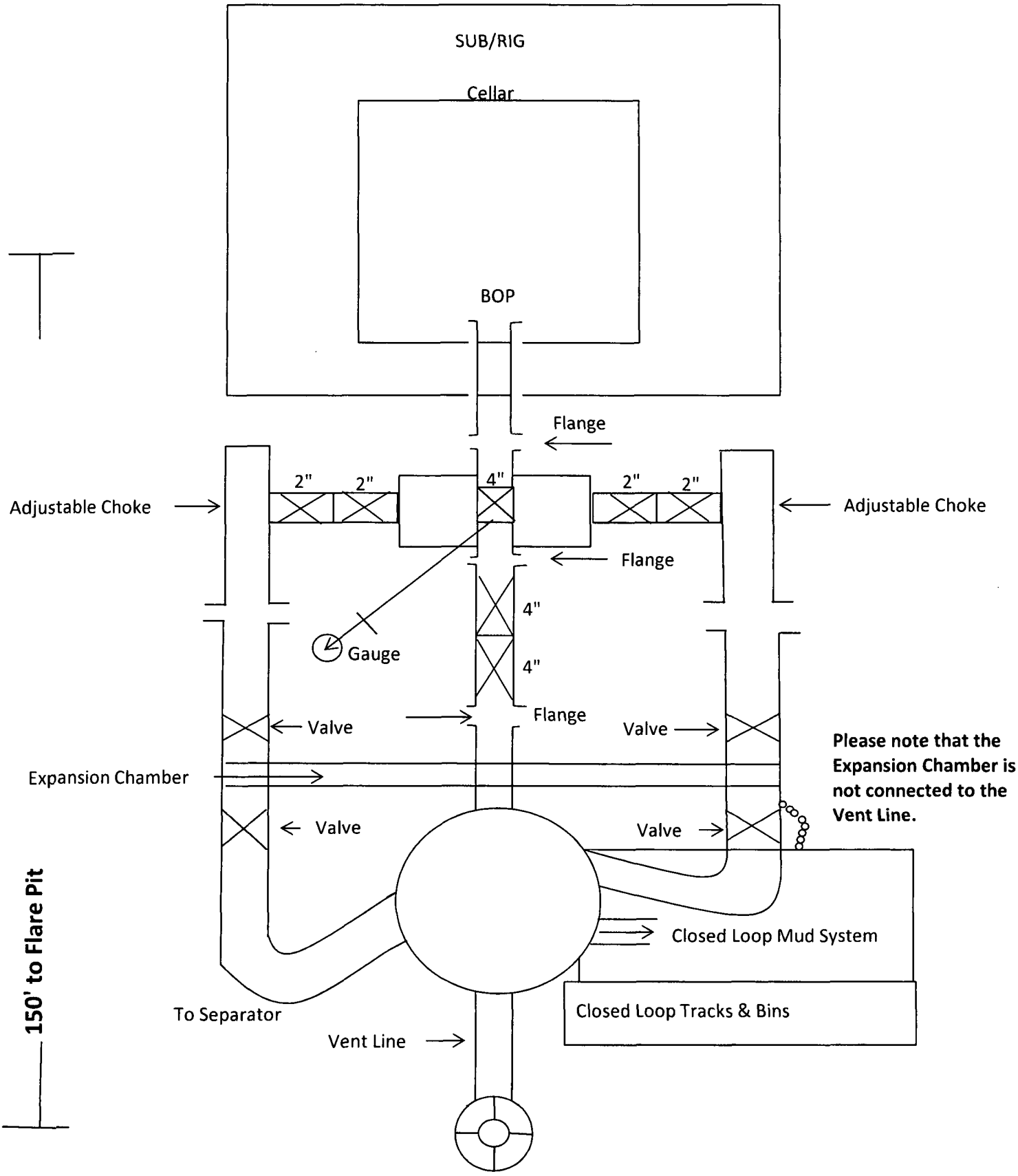
2,000 psi BOP Schematic



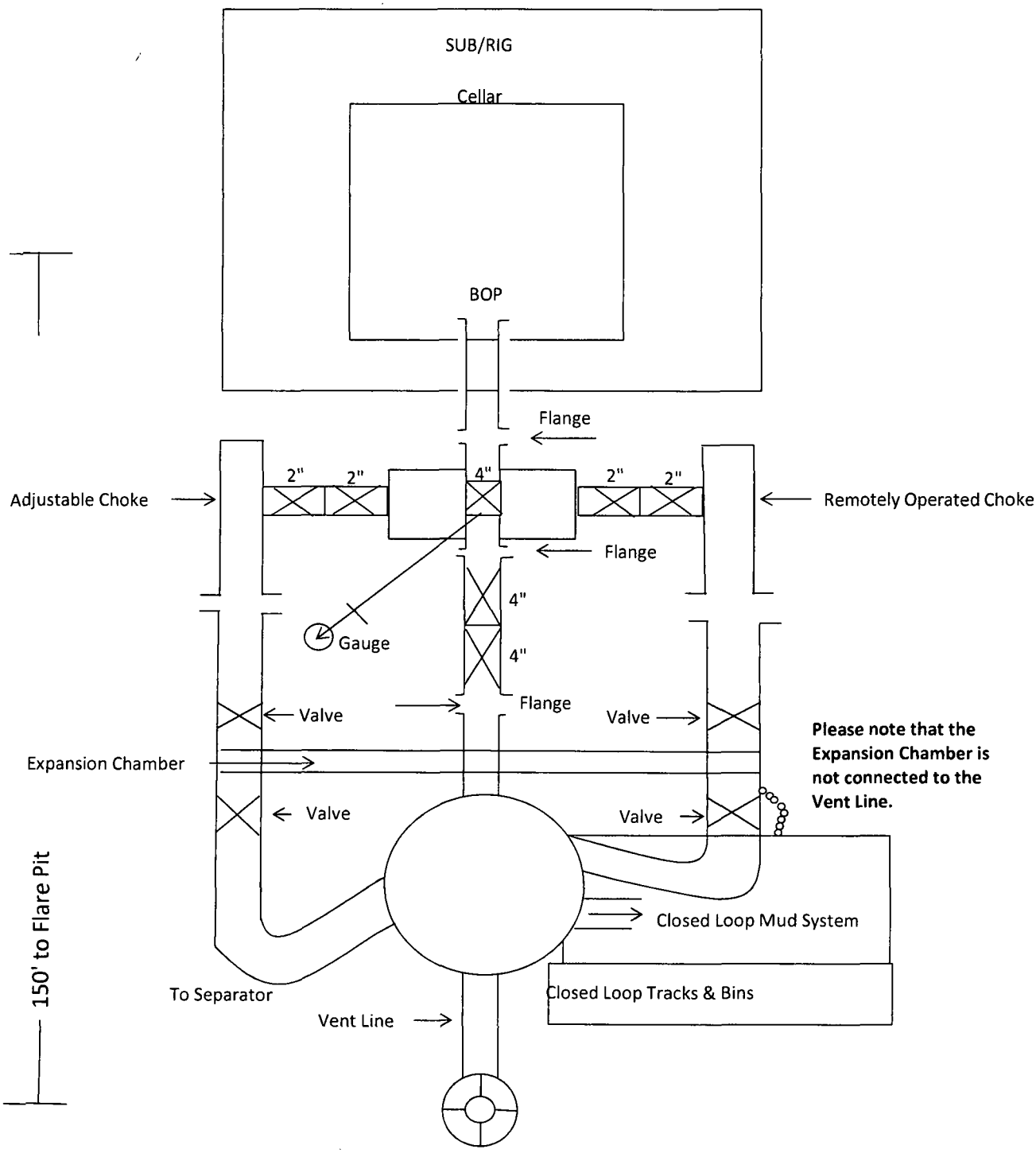
3,000 psi BOP Schematic



2M Choke Manifold Equipment



3M Choke Manifold Equipment



Design Plan
Operating and Maintenance Plan
Closure Plan

Running Buffalo 1 Federal Com #1H
SHL: 1980' FSL & 1090' FEL
BHL: 330' FNL & 380' FEL
Section 1 T21S R28E
Eddy County, New Mexico

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

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

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

Serial Register Page Go

Click To Map It on map

Run Date: 04/19/2012

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CASE RECORDATION
(MASS) Serial Register Page

Run Time: 01:33 PM
Page 1 of 1

01 12-22-1987;101STAT1330;30USC181 ET SE | Total Acres 160.000 | Serial Number NMNM-- - 115407

Case Type 312021: O&G LSE COMP PD -1987
Commodity 459: OIL & GAS L
Case Disposition: AUTHORIZED

Serial Number: NMNM-- - 115407

Name & Address			Int Rel	% Intere
ABO PETRO CORP	105 S 4TH ST	ARTESIA NM 88210	LESSEE	10.0000000
COG OPERATING LLC	550 W TEXAS AVE STE 100	MIDLAND TX 797014287	OPERATING RIGHTS	0.0000000
COG OPERATING LLC	550 W TEXAS AVE STE 100	MIDLAND TX 797014287	LESSEE	47.5000000
CONCHO OIL AND GAS LLC	550 W TEXAS AVE STE 100	MIDLAND TX 797014287	OPERATING RIGHTS	0.0000000
CONCHO OIL AND GAS LLC	550 W TEXAS AVE STE 100	MIDLAND TX 797014287	LESSEE	2.5000000
MYCO INDUSTRIES INC	105 S 4TH ST	ARTESIA NM 88210	LESSEE	10.0000000
OXY Y-1 COMPANY	PO BOX 27570	HOUSTON TX 772277570	LESSEE	10.0000000
YATES PETRO CORP	105 S 4TH ST	ARTESIA NM 88210	LESSEE	20.0000000

Serial Number: NMNM-- - 115407

Mer Twp Rng Sec	STyp	SNr Suff	Subdivision	District/Field Office	County	Mgmt Agency
23 021OS 028OE 001	ALIQ		N2S2;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGMT

Serial Number: NMNM-- - 115407

Act Date	Code	Action	Action Remar	Pending Offic
01/17/2006	387	CASE ESTABLISHED	200601027;	
01/18/2006	191	SALE HELD		
01/18/2006	267	BID RECEIVED	$288000.00;	
02/28/2006	237	LEASE ISSUED		
02/28/2006	974	AUTOMATED RECORD VERIF	BTM	
03/01/2006	496	FUND CODE	05;145003	
03/01/2006	530	RLTY RATE - 12 1/2%		
03/01/2006	868	EFFECTIVE DATE		
04/03/2006	140	ASGN FILED	YATES PET/MARBOB EN;1	
05/09/2006	963	CASE MICROFILMED		
05/17/2006	139	ASGN APPROVED	EFF 05/01/2006;	
05/17/2006	974	AUTOMATED RECORD VERIF	JLV	
04/19/2011	140	ASGN FILED	MARBOB EN/COG OPERA;1	
04/19/2011	932	TRF OPER RGTS FILED	MARBOB EN/COG OPERA;1	
05/12/2011	940	NAME CHANGE RECOGNIZED	YATES DRL CO/OXY Y-1	
06/22/2011	139	ASGN APPROVED	EFF 05/01/11	
06/22/2011	933	TRF OPER RGTS APPROVED	EFF 05/01/11;	
06/22/2011	974	AUTOMATED RECORD VERIF	RAYO/RAYO	
02/28/2016	763	EXPIRES		

Serial Number: NMNM-- - 115407

Line Nr	Remarks
0002	STIPULATIONS ATTACHED TO LEASE:
0003	SENM-LN-1 CAVE - KARST OCCURRENCE AREA
0004	SENM-S-15 WILDLIFE HABITAT PROJECTS
0005	SENM-S-25 VISUAL RESOURCE MANAGEMENT
0006	NM-11-LN SPECIAL CULTURAL RESOURCE LEASE
0007	NOTICE
0008	06/22/2011 - PER MMS RENT PD ON 01/18-2011
0009	THRU 03/01/2012

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DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CASE RECORDATION
(MASS) Serial Register Page

Run Time: 01:35 PM
Page 1 of 1

Run Date: 04/19/2012

01 12-22-1987;101STAT1330;30USC181 ET SE
Case Type 312021: O&G LSE COMP PD -1987
Commodity 459: OIL & GAS L
Case Disposition: AUTHORIZED

Total Acres 294.310
Serial Number NMNM-- - 115409

Serial Number: NMNM-- -115409

Name & Address			Int Rel	% Intere
ABO PETRO CORP	105 S 4TH ST	ARTESIA NM 88210	LESSEE	10.0000000
COG OPERATING LLC	550 W TEXAS AVE STE 100	MIDLAND TX 797014287	OPERATING RIGHTS	0.0000000
COG OPERATING LLC	550 W TEXAS AVE STE 100	MIDLAND TX 797014287	LESSEE	47.5000000
CONCHO OIL AND GAS LLC	550 W TEXAS AVE STE 100	MIDLAND TX 797014287	OPERATING RIGHTS	0.0000000
CONCHO OIL AND GAS LLC	550 W TEXAS AVE STE 100	MIDLAND TX 797014287	LESSEE	2.5000000
MYCO INDUSTRIES INC	105 S 4TH ST	ARTESIA NM 88210	LESSEE	10.0000000
OXY Y-1 COMPANY	PO BOX 27570	HOUSTON TX 772277570	LESSEE	10.0000000
YATES PETRO CORP	105 S 4TH ST	ARTESIA NM 88210	LESSEE	20.0000000

Serial Number: NMNM-- - 115409

Mer Twp Rng Sec	STyp	SNr Suff	Subdivision	District/Field Office	County	Mgmt Agency
23 0210S 0280E 001	LOTS		1,2,7-10,15,16;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGMT

Serial Number: NMNM-- - 115409

Act Date	Code	Action	Action Remar	Pending Offic
01/17/2006	387	CASE ESTABLISHED	200601029;	
01/18/2006	191	SALE HELD		
01/18/2006	267	BID RECEIVED	$678500.00;	
02/28/2006	237	LEASE ISSUED		
02/28/2006	974	AUTOMATED RECORD VERIF	BTM	
03/01/2006	496	FUND CODE	05;145003	
03/01/2006	530	RLTY RATE - 12 1/2%		
03/01/2006	868	EFFECTIVE DATE		
04/03/2006	140	ASGN FILED	YATES PET/MARBOB EN;1	
05/09/2006	963	CASE MICROFILMED		
05/17/2006	139	ASGN APPROVED	EFF 05/01/06;	
05/17/2006	974	AUTOMATED RECORD VERIF	JLV	
04/19/2011	140	ASGN FILED	MARBOB EN/COG OPERA;1	
04/19/2011	932	TRF OPER RGTS FILED	MARBOB EN/COG OPERA;1	
05/12/2011	940	NAME CHANGE RECOGNIZED	YATES DRL CO/OXY Y-1	
06/22/2011	139	ASGN APPROVED	EFF 05/01/11;	
06/22/2011	933	TRF OPER RGTS APPROVED	EFF 05/01/11;	
06/22/2011	974	AUTOMATED RECORD VERIF	RAYO/RAYO	
02/28/2016	763	EXPIRES		

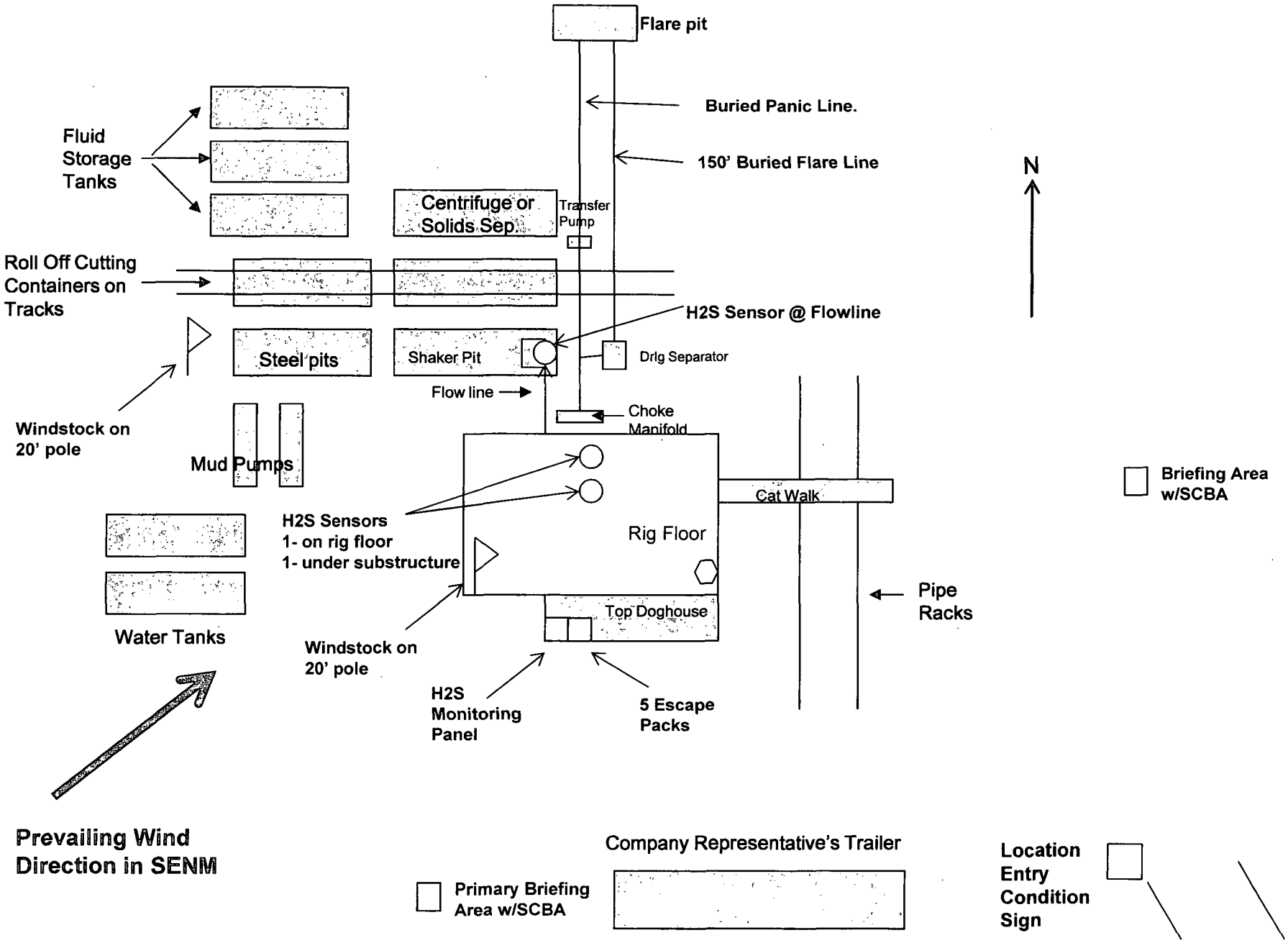
Serial Number: NMNM-- - 115409

Line Nr	Remarks
0002	STIPULATIONS ATTACHED TO LEASE:
0003	SENM-LN-1 CAVE - KARST OCCURRENCE AREA
0004	SENM-S-15 WILDLIFE HABITAT PROJECTS
0005	SENM-S-25 VISUAL RESOURCE MANAGEMENT
0006	NM-11-LN SPECIAL CULTURAL RESOURCE LEASE NOTICE
0007	06/22/2011 - PER MMS RENT PD ON 01/18/2011
0008	THRU 03/01/2012

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

Secondary egress.

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



CONCHO

COG Operating LLC
2208 West Main
Artesia, NM 88210

Production Facility Layout

Running Buffalo 1 Federal Com #1H
Section 1 - T21S - R28E

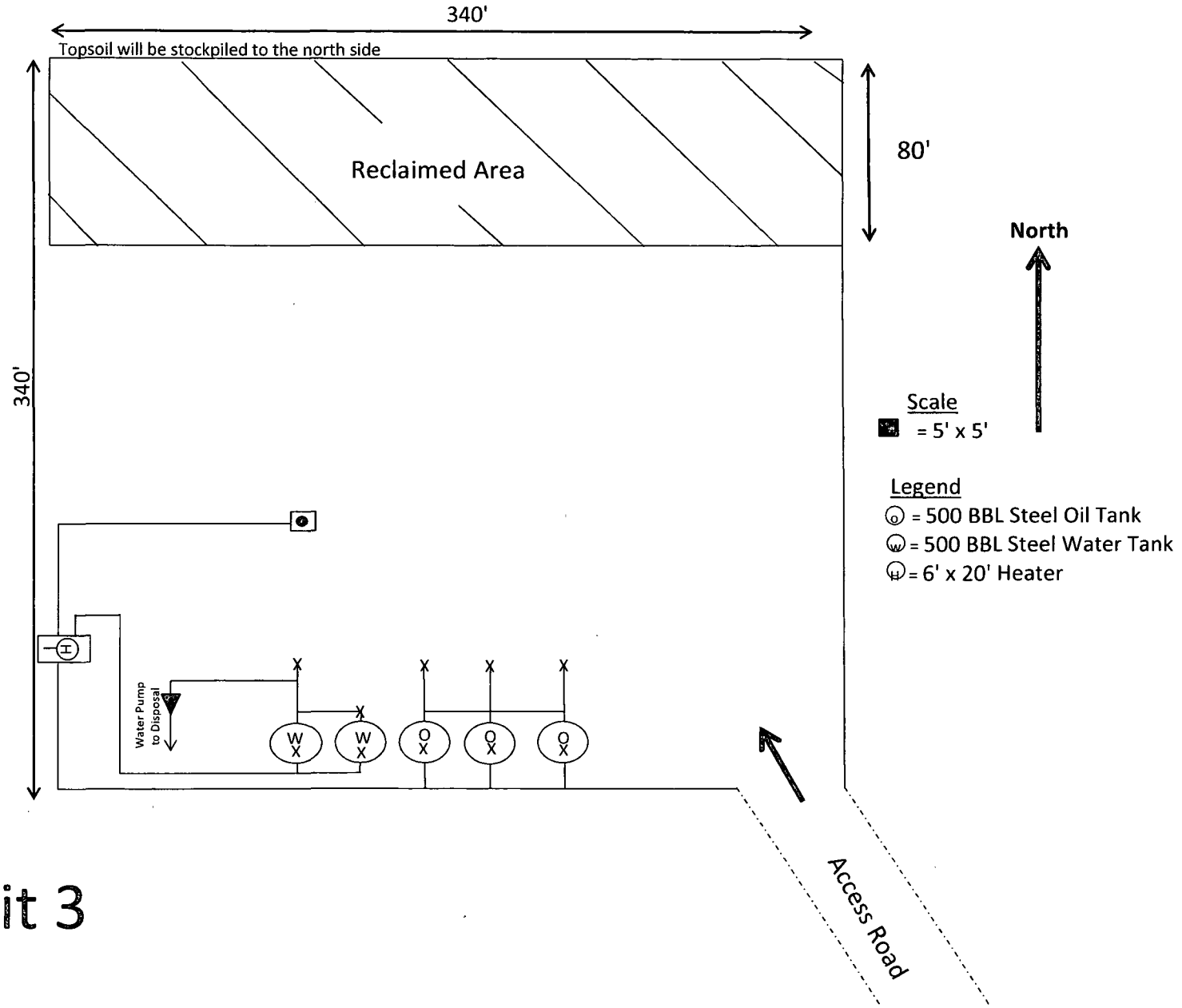


Exhibit 3

Surface Use & Operating Plan

Running Buffalo 1 Federal Com #1H

- Surface Tenant: Justin & Doyce Magby, P O Box 1664, Carlsbad, NM 88221.
- New Road: approx. 358'
- Flow Line: on well pad
- Facilities: will be constructed on well pad – see Exhibit 3

Well Site Information

V Door: East
Topsoil: North
Interim Reclamation: North

Notes

Flipped location from north to south due to topography. Moved again due to gradual slopes.

Onsite: John Fast and Rand French in approximately July 2011 and May 2012.

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 Madron Surveying, Carlsbad, NM.

B. All roads to the location are shown in the Vicinity Map. 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 highlighted in Exhibit #2 will be used to access the well.

C. Directions to location: See 600 x 600 plat for directions to location.

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 2A of this Surface Use and Operating Plan.

2. Proposed Access Road:

The Elevation Plat shows that 358' of new access road will be required for this location. If any road is required it will be constructed as follows:

A. 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.

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

C. No turnouts are planned.

D. No culverts, cattleguard, gates, low water crossings or fence cuts are necessary.

E. 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 surface hole location and the bottom hole location.

There are three vertical wells producing from the Morrow and one well producing from the Morrow and Atoka formations within the one-mile radius area.

4. Location of Existing and/or Proposed Facilities:

A. COG Operating LLC does not operate a 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 on 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 #1. 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: The 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 sight. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cu. Yards is max 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 along the entire length of one side of a 340' x 340' 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. 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 attached plat.

In the event that no caliche is found onsite, caliche will be hauled in from a BLM approved caliche pit or other source.

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 Madron 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 Justin & Doyce Magby P O Box 1664, Carlsbad, NM 88221.

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 Southern New Mexico Archaeological Services, Inc. P.O. Box 1, Bent New Mexico, 88314, phone # 505-671-4797 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 # NMB000215 and NMB000740

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**COG Operating LLC**
LEASE NO.:	**NMNM-115409**
WELL NAME & NO.:	**Running Buffalo 1 Federal Com 1H**
SURFACE HOLE FOOTAGE:	**1980' FSL & 1090' FEL**
BOTTOM HOLE FOOTAGE	**0330' FNL & 0380' FEL**
LOCATION:	**Section 01, T. 21 S., R 28 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)

Limit well pad 150' east from center hole to reduce cut.

A Right-of-Way must be obtained prior to construction of this location.

Drilling:

Communitization Agreement

A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales. In addition, the well sign shall include the surface and bottom hole lease numbers. If the Communitization Agreement number is known, it shall also be on the sign. If not, it shall be placed on the sign when the sign is replaced.

VI. CONSTRUCTION

A. NOTIFICATION

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

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

B. TOPSOIL

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

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

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

F. ON LEASE ACCESS ROADS

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

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

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

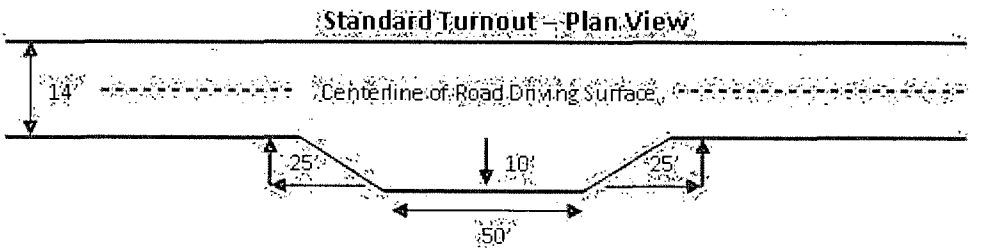
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing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

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

Ditching

Ditching shall be required on both sides of the road.

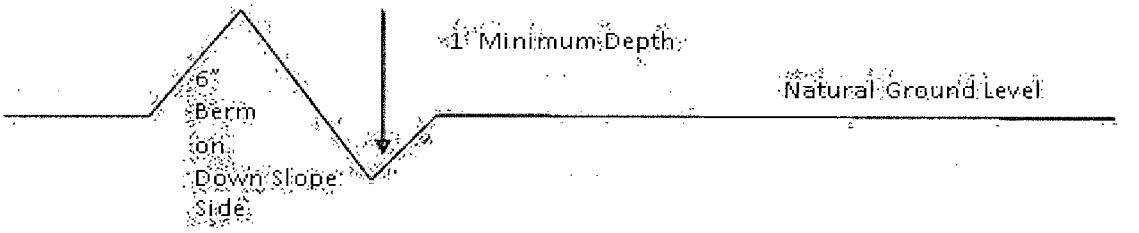
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



Drainage
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

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

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

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

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

Fence Requirement

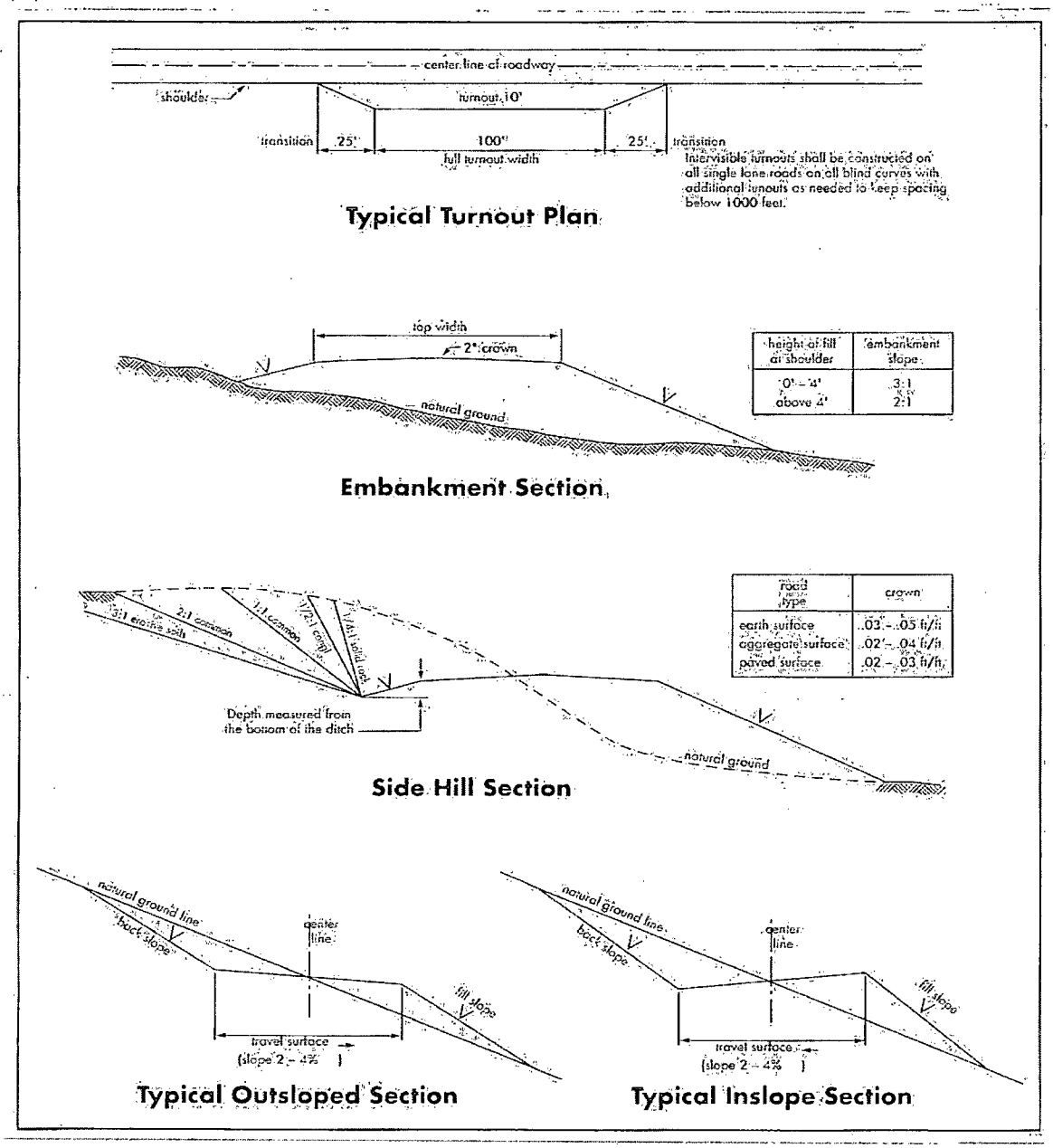
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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

Public Access

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

Figure 1 – Cross Sections and Plans For Typical Road Sections



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified 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. **Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, 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. 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.

Capitan Reef
Medium Cave/Karst
Possibility of water and brine flows in the Artesia Group, Rustler Formation, and Salado group.
Possibility of lost circulation in the Artesia Group.

1. The **16** inch surface casing shall be set at approximately **850** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt. Excess calculates to negative 15% - Additional cement will be required.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **11-3/4** inch 1st intermediate casing, which shall be set at approximately **1700** feet, is:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to medium cave/karst. Excess calculates to 24% - Additional cement may be required.**

3. The minimum required fill of cement behind the **8-5/8** inch 2nd intermediate casing, which shall be set at approximately **3100** feet, is:

Operator has proposed DV tool at depth of 1820'. 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 or approved top of cement 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. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to medium cave/karst and Capitan Reef.**

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

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

☒ Cement should tie-back at least 50' above top of Capitan Reef. Operator shall provide method of verification.

5. 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. 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.

    a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.

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

4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

    c. The 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.

    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 062613

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

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

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

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

B. PIPELINES (not applied for in APD)

C. ELECTRIC LINES (not applied for in APD)

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).

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