ATS-12-92

Form 3160-3
(August 2007)

OCD-ARTESIA

RECEIVED
FEB 08 2012
NMOCD ARTESIA

FORM APPROVED
OMB No. 1004-013
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM103597

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.: Lucky Bamboo 5 Federal #3H [39061]

2. Name of Operator: COG Operating LLC.

9. API Well No.: 30-015-39914

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

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

10. Field and Pool, or Exploratory: White City; Wolfcamp, SW (GB) [97766]

4. Location of Well *(Report location clearly and in accordance with any State requirements *)*

At surface: 660' FSL & 2080' FWL Unit Letter N SESW) SHL

At proposed prod. Zone: 660' FNL & 1980' FWL Unit Letter C (NENW) BHL

11. Sec., T.R.M. or Blk and Survey or Area: Sec. 5 - T26S - R26E

14. Distance in miles and direction from nearest town or post office*: About 10 miles from Loco Hills

12. County or Parish: Eddy County

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. Unit line, if any)	16. No. of acres in lease	17. Spacing Unit dedicated to this well
660'	1600	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**
2640'	TVD 9620' MD 13401' PH: 10700'	NMB000740
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	**22. Approximate date work will start***	**23. Estimated duration**
3520.3	12/15/2011	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	10/31/2011

Title: Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
/s/ Don Peterson		FEB 6 2012
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)

Carlsbad Controlled Water Basin

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

CERTIFICATION:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route, that I am familiar with the conditions which presently exist; that the statements made in this plan are to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by COG Operating LLC and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

COG OPERATING LLC

10-31-11
Date

Rand French
Regulatory Supervisor

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: October 31, 2011

Lease #: NMNM103597
Lucky Bamboo 5 Federal #3H

Legal Description: Sec. 5– T26S – R26E
Eddy County, New Mexico

Formation(s): Wolfcamp

Bond Coverage: Statewide

BLM Bond File #: NMB000740

COG OPERATING LLC

Mayte Reyes
Regulatory Analyst

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

API Number	Pool Code	Pool Name	
30-015-39914	97766	White City, WOLFCAMP, SW (GAS)	
Property Code	Property Name		Well Number
39061	LUCKY BAMBOO 5 FEDERAL		3H
OGRID No.	Operator Name		Elevation
229137	COG OPERATING, LLC.		3520.3

Surface Location

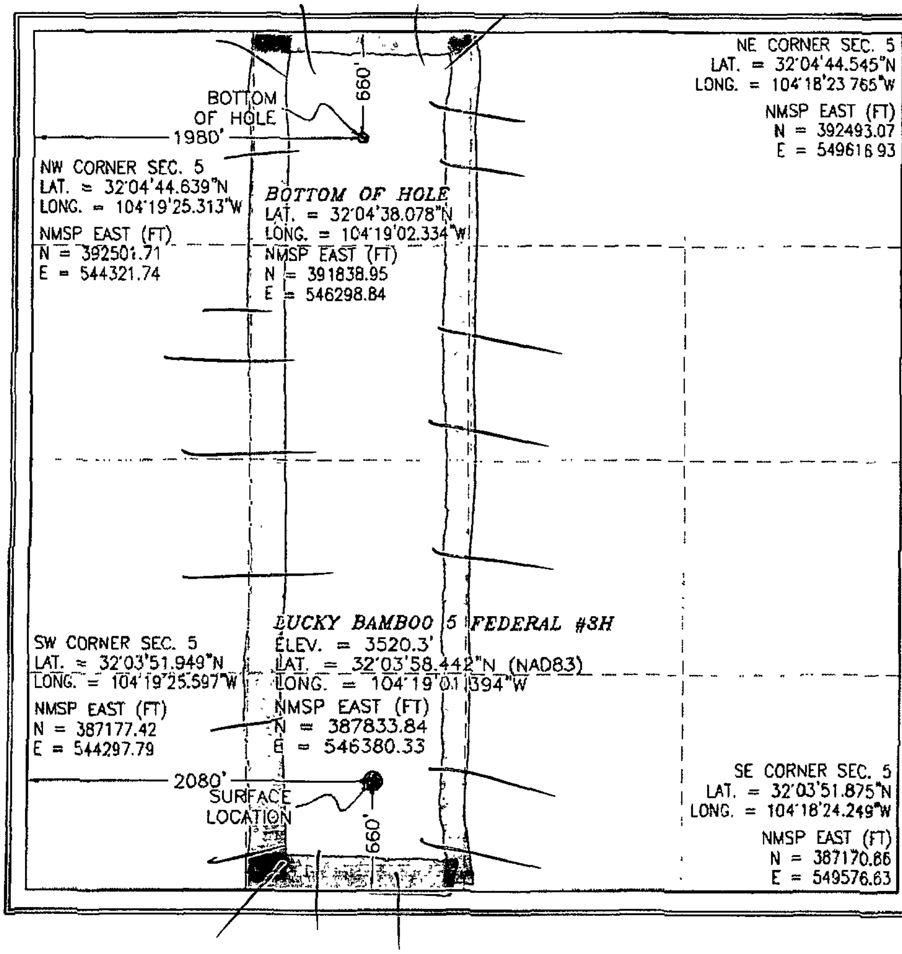
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	5	26 S	26 E		660	SOUTH	2080	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	5	26 S	26 E		660	NORTH	1980	WEST	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.



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: [signature] Date: 10-31-11

Printed Name: RAND FRENCH

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.

OCTOBER 5, 2011

Date of Survey

Signature and Seal of Professional Surveyor [signature and seal: FILIMON F. JARAMILLO, NEW MEXICO, 12797, REGISTERED LAND SURVEYOR]

Certificate Number FILIMON F. JARAMILLO PLS 12797

SURVEY NO. 609

COG Operating LLC
DRILLING AND OPERATIONS PROGRAM
Lucky Bamboo 5 Federal #3H
SHL: 660' FSL & 2080' FWL
BHL: 660' FNL & 1980' FWL
Section 5 T26S R26E
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	~50'	
Rustler	None Present	
Top of Salt	382'	
Base of Salt	1732'	
Delaware	1848'	Oil
Bone Spring	5342'	Oil
Wolfcamp	8438'	Oil/Gas
PH TD	10,700'	
TD TVD	9620'	
TD MD	13,401'	

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 355 ~~300'~~ and circulating cement back to surface. All intervals will be isolated by setting 5 ½" casing to total depth and circulating cement back to surface.

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' - 355'	Surface	13 3/8"	New	48#	STC	J-55	1.125	1.125	1.6
12 ¼"	355' – 4500'	Intrmd	9 5/8"	New	40#	BTC	J-55	1.125	1.125	1.6
12 ¼"	4500' – ~~5400'~~ 5350	Intrmd	9 5/8"	New	40#	BTC	P-110	1.125	1.125	1.6
8 ¾ "	5400' – 10,700'	Pilot Hole								
7 7/8"	0' – 13,401'	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 — Cmt: 425 sx Class C + 2% $CaCl_2$
(14.8 ppg / 1.35 cuft/sx)
**Calculated w/50% excess on OH volumes

b. 9 5/8" Intermediate — 1st Stg:
Lead : 600 sx 35:65:6 C+Salt+Gilsonite+CFR-3+ HR601
(12.7 ppg /1.89 cuft/sx)
Tail: 250 sx Class C + 1% $CaCl_2$
(14.8 ppg / 1.35 cuft/sx)
2nd Stg:
Lead : 500 sx Class C + 4% Gel + 2% $CaCl_2$
(12.7 ppg /1.89 cuft/sx)
Tail: 100 sx Class C + 2% $CaCl_2$
(14.8 ppg / 1.35 cuft/sx)
*Calculated w/35% excess on OH volumes
**DVT/ECP @ approx 1800'

c. 5 ½" Production — Lead: 1500 sx 35:65:6 H +Salt+Gilsonite+CFR-3+ HR601
(12.7 ppg / 1.89 cuft/sx)
Tail: 900 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 from the open hole logs.
- The 9-5/8" intermediate string is designed to circulate to surface.
- The production string is design to circulate to surface.
- After logging the PH, will plug back to kick off point by setting the following plug:
  PH TD: 10,300' – 10,700'
  150 sx Class H + HR-800 @ 15.6 ppg/1.18 ft3/sx
  KO Plug: 9000' – 9700'
  300 sx Class H + HR-800 @ 17.2 ppg/0.98 ft3/sx

5. Minimum Specifications for Pressure Control:

See Onshore Order 2

Nipple up on 13 3/8 with 2M system (Hydril) tested to ~~2000~~ psi by independent tester.
Nipple up on 9 5/8 with 5M system tested to 5000 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 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 5000 psi WP rating.

6. Estimated BHP:

PH TD = 4675 psi
Lateral TD = 4205 psi

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

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' – ~~300'~~ 355	Fresh Water	8.4	29	N.C.
~~300' – 5400'~~ 5350	Brine	10	29	N.C.
~~5400~~ – 10,700' (PH)	Brine	9.4 – 10.6	30	N.C.
5400' – 13,401' (Lateral)	WBM	10.0 – 13.6	36-42	15-20

The necessary mud products for weight addition and fluid loss control will be on location at all times.

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.

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

a. Drill stem tests will be based on geological sample shows.
b. The open hole electrical logging 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. SWCs may be taken.
   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. May see abnormal pressures in Wolfcamp formation. 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.
b. We will supply an anti-collision plan for the Basashi Federal #1 when final TVD of lateral is chosen after OH logs.

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 possible after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 30 days.

CONCHO

COG Operating LLC

Eddy County (NAD83)
Lucky Bamboo 5 Fed Com
#3H
OH

Plan: Plan #1

PathFinder X&Y Report

27 October, 2011

PATHFINDER®
A Schlumberger Company

CONCHO

Project: Eddy County (NAD83)
Site: Lucky Bamboo 5 Fed Com
Well: #3H
Wellbore: OH
Plan: Plan #1 (#3H/OH)

PATHFINDER
A Schlumberger Company

PROJECT DETAILS: Eddy County (NAD83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level
Local North: Grid

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9122.54	0.00	0.00	9122.54	0.00	0.00	0.00	0.00	0.00	
9869.83	89.68	358.83	9600.00	474.66	-9.66	12.00	358.83	474.76	
13401.07	89.68	358.83	9620.00	4005.11	-81.49	0.00	0.00	4005.94	BHL (LB #3H)

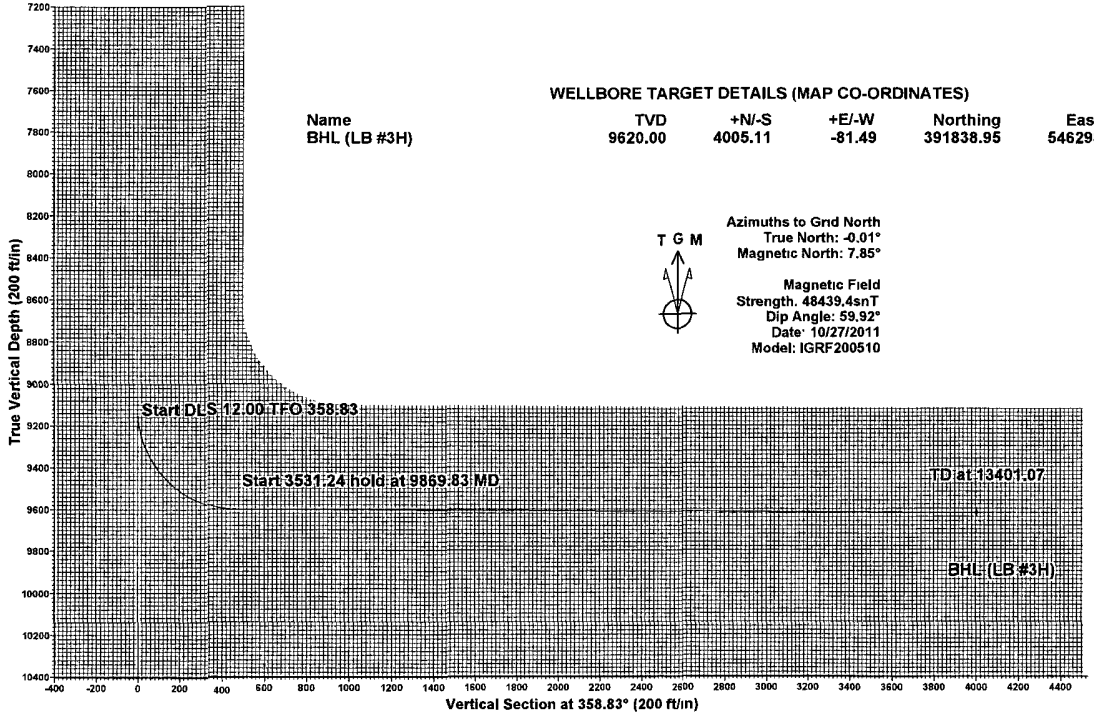
WELL DETAILS: #3H

Ground Elevation: 3520.30
RKB Elevation: WELL @ 3537.30ft (Original Well Elev)
Rig Name: Original Well Elev

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	387833.84	546380.33	32° 3' 58.4422817 N	104° 19' 1.3936797 W

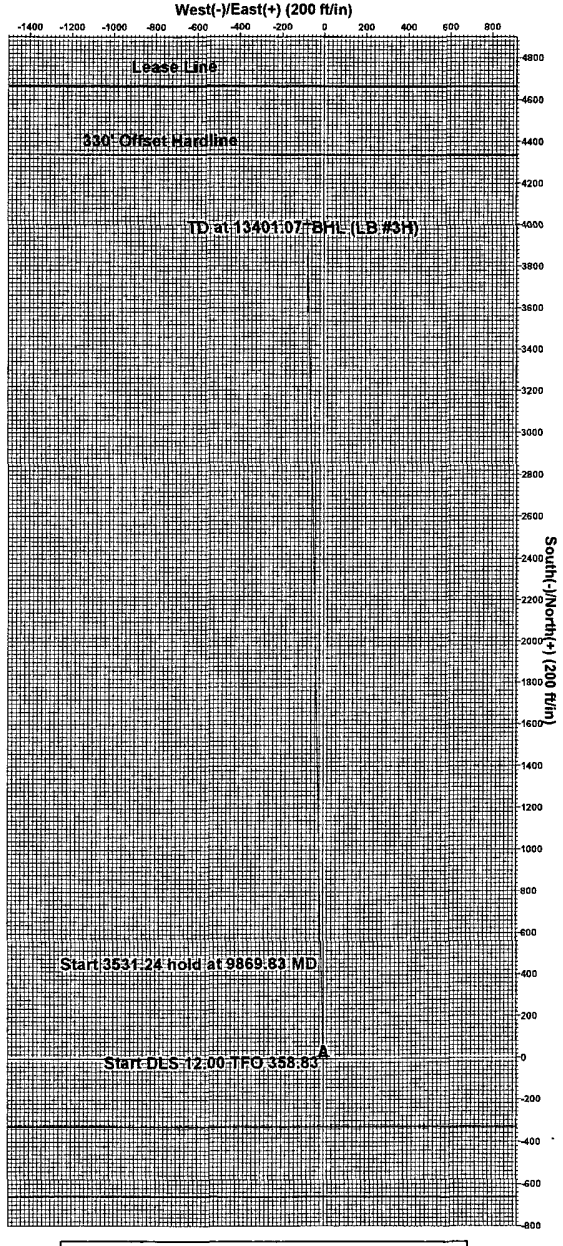
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
BHL (LB #3H)	9620.00	4005.11	-81.49	391838.95	546298.84	Point



Azimuths to Grid North
True North: -0.01°
Magnetic North: 7.85°

Magnetic Field
Strength: 48439.4snT
Dip Angle: 59.92°
Date: 10/27/2011
Model: IGRF200510



Plan: Plan #1 (#3H/OH)
Created By Sherman Sholars Date 14 10, October 27 2011

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #3H
Project:	Eddy County (NAD83)	**TVD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Site:	Lucky Bamboo 5 Fed Com	**MD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Well:	#3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	1 Smith Database

Project Eddy County (NAD83)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Lucky Bamboo 5 Fed Com

Site Position:		**Northing:**	387,833.84 ft	**Latitude:**	32° 3' 58.4422817 N
From:	Map	**Easting:**	546,380.33 ft	**Longitude:**	104° 19' 1.3936797 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	"	**Grid Convergence:**	0.01 °

Well #3H

Well Position	**+N/-S**	0.00 ft	**Northing:**	387,833.84 ft	**Latitude:**	32° 3' 58.4422817 N
	+E/-W	0.00 ft	**Easting:**	546,380.33 ft	**Longitude:**	104° 19' 1.3936797 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	3,520.30 ft

Wellbore OH

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	10/27/11	7.86	59.92	48,439

Design Plan #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	**Depth From (TVD) (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Direction (°)**
	0.00	0.00	0.00	358.83

Survey Tool Program **Date** 10/27/11

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
0.00	13,401.07	Plan #1 (OH)	MWD	MWD - Standard

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #3H
Project:	Eddy County (NAD83)	**TVD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Site:	Lucky Bamboo 5 Fed Com	**MD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Well:	#3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	1 Smith Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
0.00	0.00	0.00	0.00	-3,537.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
100.00	0.00	0.00	100.00	-3,437.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
200.00	0.00	0.00	200.00	-3,337.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
300.00	0.00	0.00	300.00	-3,237.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
400.00	0.00	0.00	400.00	-3,137.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
500.00	0.00	0.00	500.00	-3,037.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
600.00	0.00	0.00	600.00	-2,937.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
700.00	0.00	0.00	700.00	-2,837.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
800.00	0.00	0.00	800.00	-2,737.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
900.00	0.00	0.00	900.00	-2,637.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
1,000.00	0.00	0.00	1,000.00	-2,537.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
1,100.00	0.00	0.00	1,100.00	-2,437.30	0.00	0.00	0.00	0.00	387,833 84	546,380.33
1,200.00	0.00	0.00	1,200.00	-2,337.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
1,300.00	0.00	0.00	1,300.00	-2,237.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
1,400.00	0.00	0.00	1,400.00	-2,137.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
1,500.00	0.00	0.00	1,500.00	-2,037.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
1,600.00	0.00	0.00	1,600.00	-1,937.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
1,700.00	0.00	0.00	1,700.00	-1,837.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
1,800.00	0.00	0.00	1,800.00	-1,737.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
1,900.00	0.00	0.00	1,900.00	-1,637.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
2,000.00	0.00	0.00	2,000.00	-1,537.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
2,100.00	0.00	0.00	2,100.00	-1,437.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
2,200.00	0.00	0.00	2,200.00	-1,337.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
2,300.00	0.00	0.00	2,300.00	-1,237.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
2,400.00	0.00	0.00	2,400.00	-1,137.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
2,500.00	0.00	0.00	2,500.00	-1,037.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
2,600.00	0.00	0.00	2,600.00	-937.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #3H
Project:	Eddy County (NAD83)	**TVD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Site:	Lucky Bamboo 5 Fed Com	**MD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Well:	#3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	1 Smith Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
2,700.00	0.00	0.00	2,700.00	-837.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
2,800.00	0.00	0.00	2,800.00	-737.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
2,900.00	0.00	0.00	2,900.00	-637.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
3,000.00	0.00	0.00	3,000.00	-537.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
3,100.00	0.00	0.00	3,100.00	-437.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
3,200.00	0.00	0.00	3,200.00	-337.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
3,300.00	0.00	0.00	3,300.00	-237.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
3,400.00	0.00	0.00	3,400.00	-137.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
3,500.00	0.00	0.00	3,500.00	-37.30	0.00	0.00	0.00	0.00	387,833.84	546,380.33
3,600.00	0.00	0.00	3,600.00	62.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
3,700.00	0.00	0.00	3,700.00	162.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
3,800.00	0.00	0.00	3,800.00	262.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
3,900.00	0.00	0.00	3,900.00	362.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
4,000.00	0.00	0.00	4,000.00	462.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
4,100.00	0.00	0.00	4,100.00	562.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
4,200.00	0.00	0.00	4,200.00	662.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
4,300.00	0.00	0.00	4,300.00	762.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
4,400.00	0.00	0.00	4,400.00	862.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
4,500.00	0.00	0.00	4,500.00	962.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
4,600.00	0.00	0.00	4,600.00	1,062.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
4,700.00	0.00	0.00	4,700.00	1,162.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
4,800.00	0.00	0.00	4,800.00	1,262.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
4,900.00	0.00	0.00	4,900.00	1,362.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
5,000.00	0.00	0.00	5,000.00	1,462.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
5,100.00	0.00	0.00	5,100.00	1,562.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
5,200.00	0.00	0.00	5,200.00	1,662.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
5,300.00	0.00	0.00	5,300.00	1,762.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #3H
Project:	Eddy County (NAD83)	**TVD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Site:	Lucky Bamboo 5 Fed Com	**MD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Well:	#3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	1 Smith Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
5,400.00	0.00	0.00	5,400.00	1,862.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
5,500.00	0.00	0.00	5,500.00	1,962.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
5,600.00	0.00	0.00	5,600.00	2,062.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
5,700.00	0.00	0.00	5,700.00	2,162.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
5,800.00	0.00	0.00	5,800.00	2,262.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
5,900.00	0.00	0.00	5,900.00	2,362.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
6,000.00	0.00	0.00	6,000.00	2,462.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
6,100.00	0.00	0.00	6,100.00	2,562.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
6,200.00	0.00	0.00	6,200.00	2,662.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
6,300.00	0.00	0.00	6,300.00	2,762.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
6,400.00	0.00	0.00	6,400.00	2,862.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
6,500.00	0.00	0.00	6,500.00	2,962.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
6,600.00	0.00	0.00	6,600.00	3,062.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
6,700.00	0.00	0.00	6,700.00	3,162.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
6,800.00	0.00	0.00	6,800.00	3,262.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
6,900.00	0.00	0.00	6,900.00	3,362.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
7,000.00	0.00	0.00	7,000.00	3,462.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
7,100.00	0.00	0.00	7,100.00	3,562.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
7,200.00	0.00	0.00	7,200.00	3,662.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
7,300.00	0.00	0.00	7,300.00	3,762.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
7,400.00	0.00	0.00	7,400.00	3,862.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
7,500.00	0.00	0.00	7,500.00	3,962.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
7,600.00	0.00	0.00	7,600.00	4,062.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
7,700.00	0.00	0.00	7,700.00	4,162.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
7,800.00	0.00	0.00	7,800.00	4,262.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
7,900.00	0.00	0.00	7,900.00	4,362.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
8,000.00	0.00	0.00	8,000.00	4,462.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #3H
Project:	Eddy County (NAD83)	**TVD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Site:	Lucky Bamboo 5 Fed Com	**MD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Well:	#3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	1 Smith Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
8,100.00	0.00	0.00	8,100.00	4,562.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
8,200.00	0.00	0.00	8,200.00	4,662.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
8,300.00	0.00	0.00	8,300.00	4,762.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
8,400.00	0.00	0.00	8,400.00	4,862.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
8,500.00	0.00	0.00	8,500.00	4,962.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
8,600.00	0.00	0.00	8,600.00	5,062.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
8,700.00	0.00	0.00	8,700.00	5,162.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
8,800.00	0.00	0.00	8,800.00	5,262.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
8,900.00	0.00	0.00	8,900.00	5,362.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
9,000.00	0.00	0.00	9,000.00	5,462.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
9,100.00	0.00	0.00	9,100.00	5,562.70	0.00	0.00	0.00	0.00	387,833.84	546,380.33
9,122.54	0.00	0.00	9,122.54	5,585.24	0.00	0.00	0.00	0.00	387,833.84	546,380.33
9,125.00	0.30	358.83	9,125.00	5,587.70	0.01	0.00	0.01	12.00	387,833.85	546,380.33
9,150.00	3.30	358.83	9,149.98	5,612.68	0.79	-0.02	0.79	12.00	387,834.63	546,380.31
9,175.00	6.30	358.83	9,174.89	5,637.59	2.88	-0.06	2.88	12.00	387,836.72	546,380.27
9,200.00	9.30	358.83	9,199.66	5,662.36	6.27	-0.13	6.27	12.00	387,840.11	546,380.20
9,225.00	12.30	358.83	9,224.22	5,686.92	10.95	-0.22	10.95	12.00	387,844.79	546,380.11
9,250.00	15.30	358.83	9,248.49	5,711.19	16.91	-0.34	16.91	12.00	387,850.75	546,379.99
9,275.00	18.30	358.83	9,272.42	5,735.12	24.13	-0.49	24.14	12.00	387,857.97	546,379.84
9,300.00	21.30	358.83	9,295.94	5,758.64	32.59	-0.66	32.60	12.00	387,866.43	546,379.67
9,325.00	24.30	358.83	9,318.99	5,781.69	42.28	-0.86	42.29	12.00	387,876.12	546,379.47
9,350.00	27.30	358.83	9,341.49	5,804.19	53.15	-1.08	53.16	12.00	387,886.99	546,379.25
9,375.00	30.30	358.83	9,363.40	5,826.10	65.19	-1.33	65.20	12.00	387,899.03	546,379.00
9,400.00	33.30	358.83	9,384.65	5,847.35	78.36	-1.59	78.37	12.00	387,912.20	546,378.74
9,425.00	36.30	358.83	9,405.17	5,867.87	92.62	-1.88	92.64	12.00	387,926.46	546,378.45
9,450.00	39.30	358.83	9,424.93	5,887.63	107.94	-2.20	107.96	12.00	387,941.78	546,378.13
9,475.00	42.30	358.83	9,443.85	5,906.55	124.26	-2.53	124.29	12.00	387,958.10	546,377.80

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #3H
Project:	Eddy County (NAD83)	**TVD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Site:	Lucky Bamboo 5 Fed Com	**MD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Well:	#3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	1 Smith Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
9,500.00	45.30	358.83	9,461.89	5,924.59	141.56	-2.88	141.59	12.00	387,975.40	546,377.45
9,525.00	48.30	358.83	9,479.01	5,941.71	159.78	-3.25	159.81	12.00	387,993.62	546,377.08
9,550.00	51.30	358.83	9,495.14	5,957.84	178.87	-3.64	178.90	12.00	388,012.71	546,376.69
9,575.00	54.30	358.83	9,510.26	5,972.96	198.77	-4.04	198.81	12.00	388,032.61	546,376.29
9,600.00	57.30	358.83	9,524.31	5,987.01	219.44	-4.46	219.49	12.00	388,053.28	546,375.87
9,625.00	60.30	358.83	9,537.26	5,999.96	240.82	-4.90	240.87	12.00	388,074.66	546,375.43
9,650.00	63.30	358.83	9,549.08	6,011.78	262.84	-5.35	262.90	12.00	388,096.68	546,374.98
9,675.00	66.30	358.83	9,559.72	6,022.42	285.45	-5.81	285.51	12.00	388,119.29	546,374.52
9,700.00	69.30	358.83	9,569.17	6,031.87	308.59	-6.28	308.66	12.00	388,142.43	546,374.05
9,725.00	72.30	358.83	9,577.39	6,040.09	332.19	-6.76	332.26	12.00	388,166.03	546,373.57
9,750.00	75.30	358.83	9,584.37	6,047.07	356.19	-7.25	356.27	12.00	388,190.03	546,373.08
9,775.00	78.30	358.83	9,590.08	6,052.78	380.52	-7.74	380.60	12.00	388,214.36	546,372.59
9,800.00	81.30	358.83	9,594.50	6,057.20	405.12	-8.24	405.20	12.00	388,238.96	546,372.09
9,825.00	84.30	358.83	9,597.64	6,060.34	429.91	-8.75	430.00	12.00	388,263.75	546,371.58
9,850.00	87.30	358.83	9,599.47	6,062.17	454.84	-9.25	454.93	12.00	388,288.68	546,371.08
9,869.83	89.68	358.83	9,600.00	6,062.70	474.66	-9.66	474.76	12.00	388,308.50	546,370.67
9,900.00	89.68	358.83	9,600.17	6,062.87	504.82	-10.27	504.92	0.00	388,338.66	546,370.06
10,000.00	89.68	358.83	9,600.73	6,063.43	604.80	-12.31	604.92	0.00	388,438.64	546,368.02
10,100.00	89.68	358.83	9,601.30	6,064.00	704.78	-14.34	704.92	0.00	388,538.62	546,365.99
10,200.00	89.68	358.83	9,601.87	6,064.57	804.75	-16.37	804.92	0.00	388,638.59	546,363.96
10,300.00	89.68	358.83	9,602.43	6,065.13	904.73	-18.41	904.92	0.00	388,738.57	546,361.92
10,400.00	89.68	358.83	9,603.00	6,065.70	1,004.71	-20.44	1,004.92	0.00	388,838.55	546,359.89
10,500.00	89.68	358.83	9,603.57	6,066.27	1,104.69	-22.48	1,104.92	0.00	388,938.53	546,357.85
10,600.00	89.68	358.83	9,604.13	6,066.83	1,204.66	-24.51	1,204.91	0.00	389,038.50	546,355.82
10,700.00	89.68	358.83	9,604.70	6,067.40	1,304.64	-26.54	1,304.91	0.00	389,138.48	546,353.79
10,800.00	89.68	358.83	9,605.27	6,067.97	1,404.62	-28.58	1,404.91	0.00	389,238.46	546,351.75
10,900.00	89.68	358.83	9,605.83	6,068.53	1,504.60	-30.61	1,504.91	0.00	389,338.44	546,349.72

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #3H
Project:	Eddy County (NAD83)	**TVD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Site:	Lucky Bamboo 5 Fed Com	**MD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Well:	#3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	1 Smith Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
11,000.00	89.68	358.83	9,606.40	6,069.10	1,604.58	-32.65	1,604.91	0.00	389,438.42	546,347.68
11,100.00	89.68	358.83	9,606.96	6,069.66	1,704.55	-34.68	1,704.91	0.00	389,538.39	546,345.65
11,200.00	89.68	358.83	9,607.53	6,070.23	1,804.53	-36.72	1,804.90	0.00	389,638.37	546,343.61
11,300.00	89.68	358.83	9,608.10	6,070.80	1,904.51	-38.75	1,904.90	0.00	389,738.35	546,341.58
11,400.00	89.68	358.83	9,608.66	6,071.36	2,004.49	-40.78	2,004.90	0.00	389,838.33	546,339.55
11,500.00	89.68	358.83	9,609.23	6,071.93	2,104.46	-42.82	2,104.90	0.00	389,938.30	546,337.51
11,600.00	89.68	358.83	9,609.80	6,072.50	2,204.44	-44.85	2,204.90	0.00	390,038.28	546,335.48
11,700.00	89.68	358.83	9,610.36	6,073.06	2,304.42	-46.89	2,304.90	0.00	390,138.26	546,333.44
11,800.00	89.68	358.83	9,610.93	6,073.63	2,404.40	-48.92	2,404.89	0.00	390,238.24	546,331.41
11,900.00	89.68	358.83	9,611.50	6,074.20	2,504.37	-50.96	2,504.89	0.00	390,338.21	546,329.37
12,000.00	89.68	358.83	9,612.06	6,074.76	2,604.35	-52.99	2,604.89	0.00	390,438.19	546,327.34
12,100.00	89.68	358.83	9,612.63	6,075.33	2,704.33	-55.02	2,704.89	0.00	390,538.17	546,325.31
12,200.00	89.68	358.83	9,613.20	6,075.90	2,804.31	-57.06	2,804.89	0.00	390,638.15	546,323.27
12,300.00	89.68	358.83	9,613.76	6,076.46	2,904.29	-59.09	2,904.89	0.00	390,738.13	546,321.24
12,400.00	89.68	358.83	9,614.33	6,077.03	3,004.26	-61.13	3,004.88	0.00	390,838.10	546,319.20
12,500.00	89.68	358.83	9,614.90	6,077.60	3,104.24	-63.16	3,104.88	0.00	390,938.08	546,317.17
12,600.00	89.68	358.83	9,615.46	6,078.16	3,204.22	-65.19	3,204.88	0.00	391,038.06	546,315.14
12,700.00	89.68	358.83	9,616.03	6,078.73	3,304.20	-67.23	3,304.88	0.00	391,138.04	546,313.10
12,800.00	89.68	358.83	9,616.60	6,079.30	3,404.17	-69.26	3,404.88	0.00	391,238.01	546,311.07
12,900.00	89.68	358.83	9,617.16	6,079.86	3,504.15	-71.30	3,504.88	0.00	391,337.99	546,309.03
13,000.00	89.68	358.83	9,617.73	6,080.43	3,604.13	-73.33	3,604.88	0.00	391,437.97	546,307.00
13,100.00	89.68	358.83	9,618.29	6,080.99	3,704.11	-75.37	3,704.87	0.00	391,537.95	546,304.96
13,200.00	89.68	358.83	9,618.86	6,081.56	3,804.08	-77.40	3,804.87	0.00	391,637.92	546,302.93
13,300.00	89.68	358.83	9,619.43	6,082.13	3,904.06	-79.43	3,904.87	0.00	391,737.90	546,300.90
13,401.07	89.68	358.83	9,620.00	6,082.70	4,005.11	-81.49	4,005.94	0.00	391,838.95	546,298.84
BHL (LB #3H)										

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #3H
Project:	Eddy County (NAD83)	**TVD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Site:	Lucky Bamboo 5 Fed Com	**MD Reference:**	WELL @ 3537.30ft (Original Well Elev)
Well:	#3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	1 Smith Database

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
BHL (LB #3H) - plan hits target center - Point	0.00	0.00	9,620.00	4,005.11	-81.49	391,838.95	546,298.84	32° 4' 38.0781851 N	4° 19' 2.3338233 W

Checked By: _____ Approved By: _____ Date: _____

CONCHO

Project: Eddy County (NAD83)
Site: Lucky Bamboo 5 Fed Com
Well: #3H
Wellbore: OH
Plan: Plan #1 (#3H/OH)

PATHFINDER
A Schlumberger Company

PROJECT DETAILS: Eddy County (NAD83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level
Local North: Grid

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9122.54	0.00	0.00	9122.54	0.00	0.00	0.00	0.00	0.00	
9869.83	89.68	358.83	9600.00	474.66	-9.66	12.00	358.83	474.76	
13401.07	89.68	358.83	9620.00	4005.11	-81.49	0.00	0.00	4005.94	BHL (LB #3H)

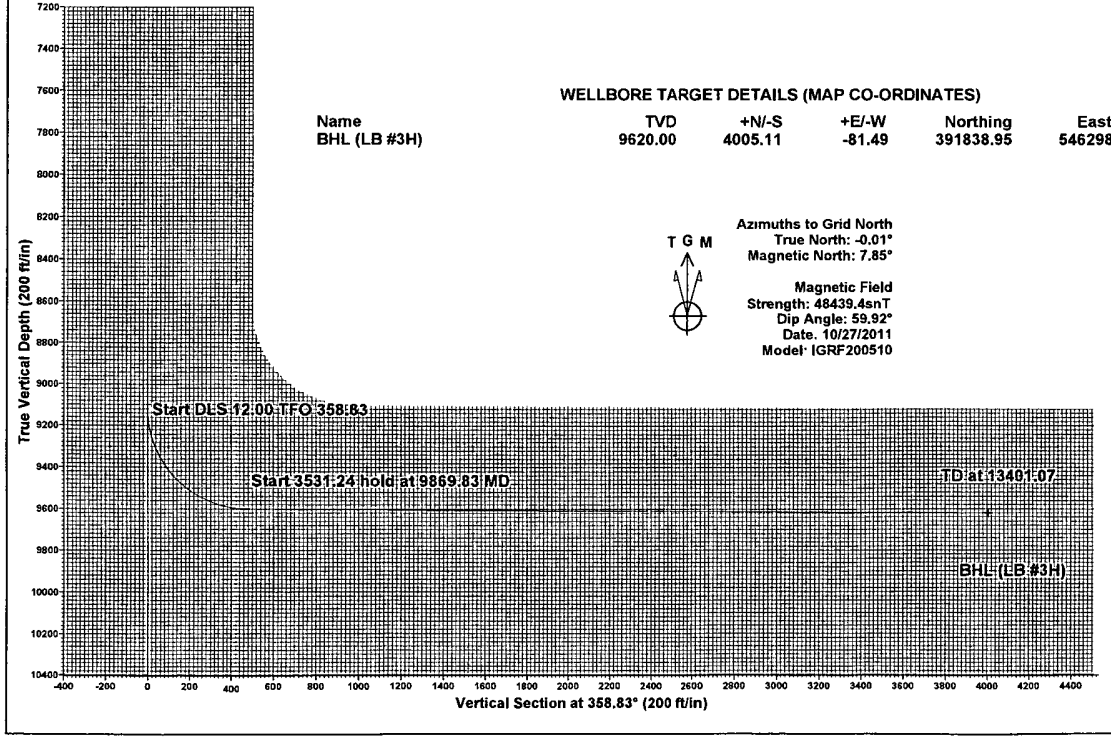
WELL DETAILS: #3H

Ground Elevation: 3520.30
RKB Elevation: WELL @ 3537.30ft (Original Well Elev)
Rig Name: Original Well Elev

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	387833.84	546380.33	32° 3' 58.4422817 N	104° 19' 1.3936797 W

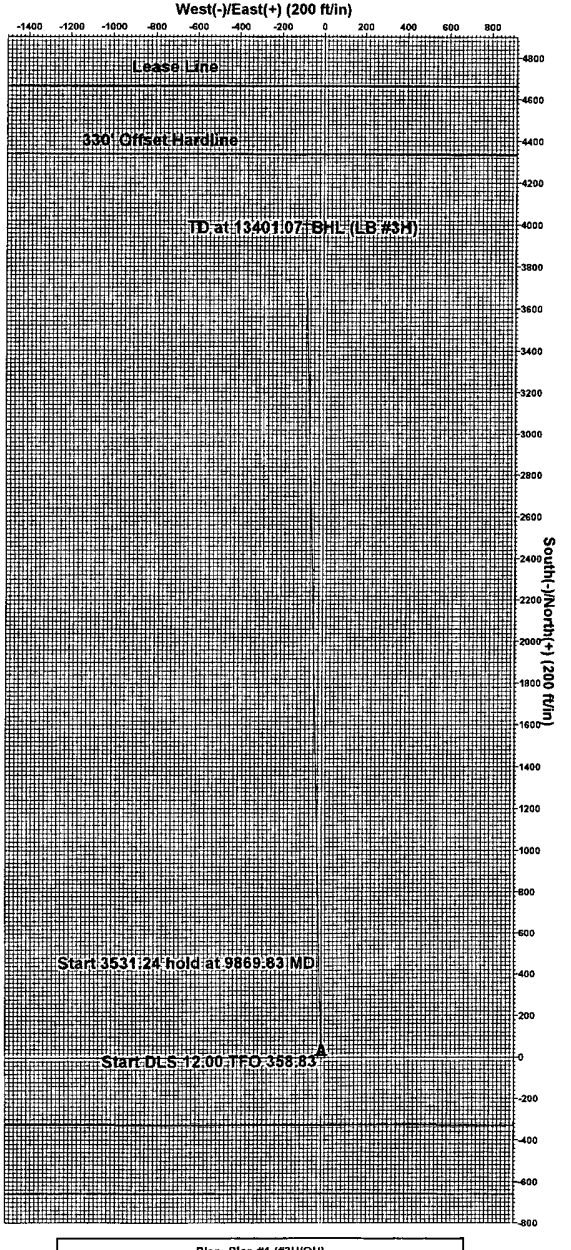
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
BHL (LB #3H)	9620.00	4005.11	-81.49	391838.95	546298.84	Point



Azimuths to Grid North
True North: -0.01°
Magnetic North: 7.85°

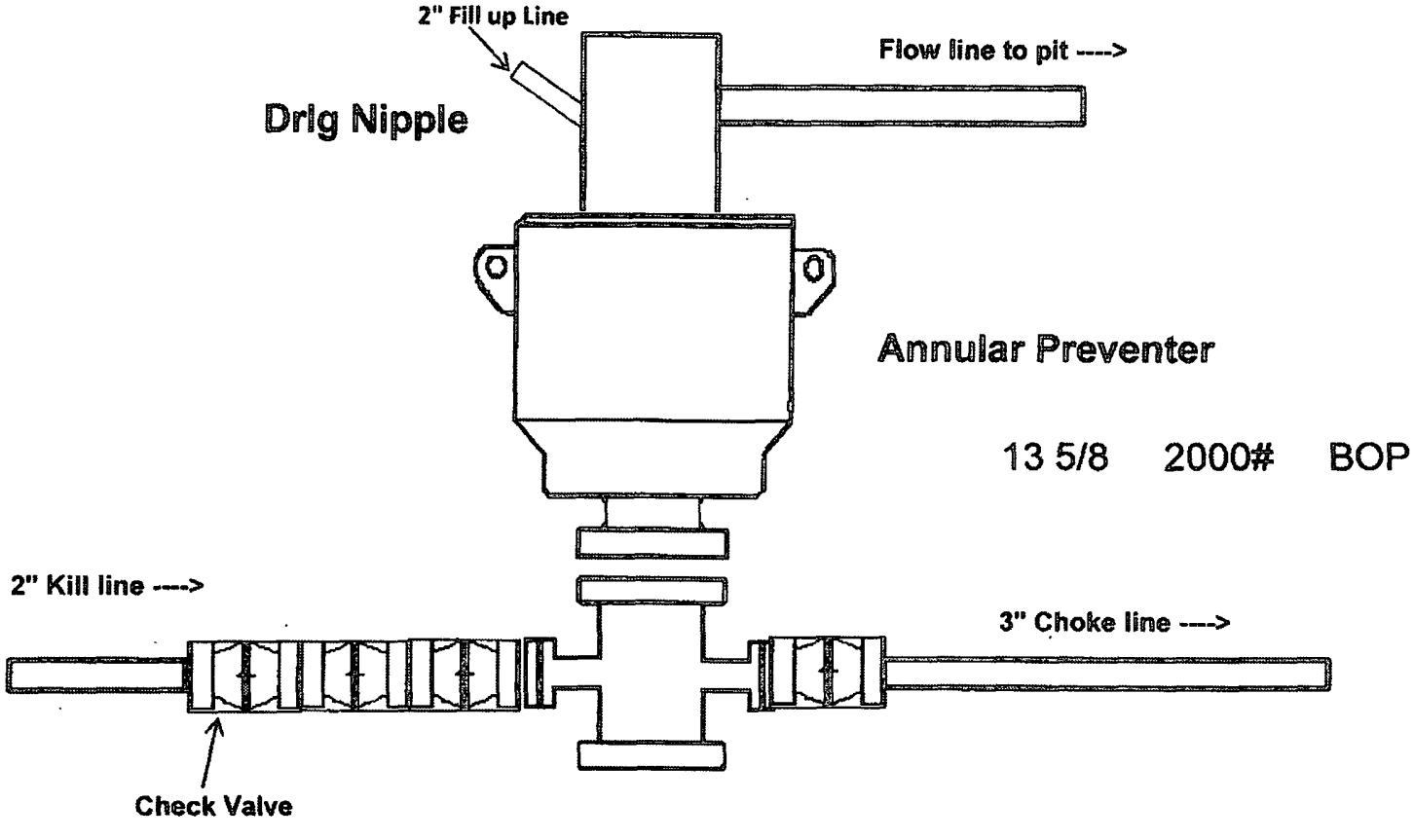
Magnetic Field
Strength: 48439.4snT
Dip Angle: 59.92°
Date. 10/27/2011
Model: IGRF200510



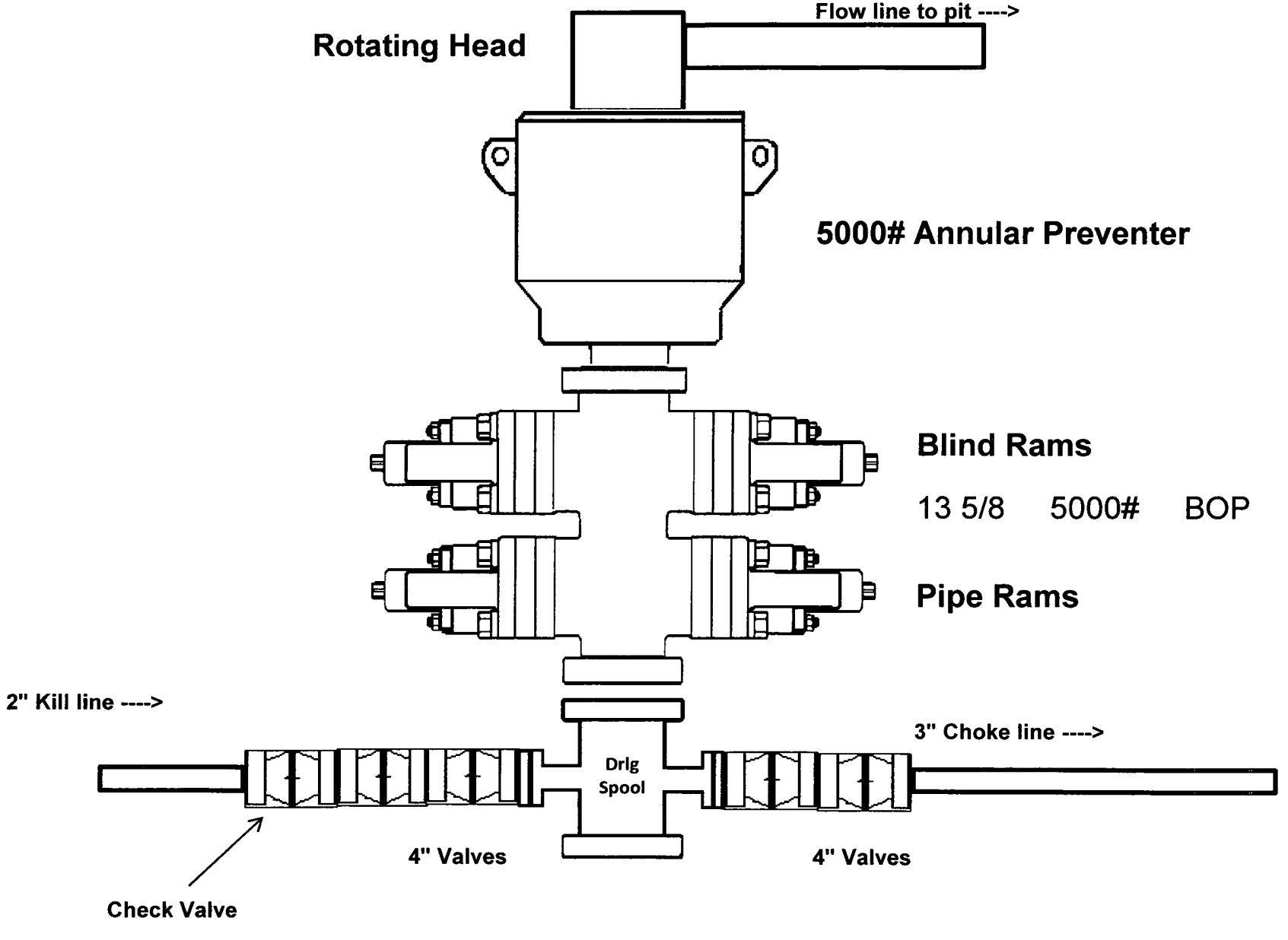
Plan Plan #1 (#3H/OH)
Created By. Sherman Sholars Date 14.10, October 27 2011

Nominal OD	Nominal Wall	Pipe Grade	Weight (lbs./ft.)	Coupling Grade	COLLAPSE-NO AXIAL LOAD: Collapse Resistance (psi)	COLLAPSE-NO AXIAL LOAD: Setting Depth for Collapse (ft.) Mud wt. Of 9.6525lb/gal., 1.125 S.F.)	JOINT STRENGTH (SHORT/LONG) (Buttress on Request): Joint Strength Round Threads (1000#)	JOINT STRENGTH: Joint Strength Setting Depth (ft.) (1.8 S.F.)	JOINT STRENGTH: Minimum Pipe Body Yield Strength (1000#)	INTERNAL PRESSURES: Minimum Internal Yield Pressure (psi)	INTERNAL PRESSURES: Mill Test Pressure (psi)
9 5/8	.352	J-55	36.0	K-55	2020	3890	394/-	5090	564	3520	3200
	.352	J-55	36.0	K-55	2020	3890	-/453	6990	564	3520	3200
	.352	K-55	36.0	K-55	2020	3890	423/-	6530	564	3520	3200
	.352	K-55	36.0	K-55	2020	3890	-/489	7550	564	3520	3200
	.352	M80	36.0	K-55	2980	5300	423/-	8130	564	3520	3200
	.352	M80	36.0	K-55	2980	5300	-/489	8540	564	3520	3200
	.395	J-55	40.0	K-55	2570	4570	452/-	8880	630	3950	3600
	.395	J-55	40.0	K-55	2570	4570	-/520	7220	630	3950	3600
	.395	M80	40.0	K-55	4230	7520	-/561	9840	630	3950	3600
	.395	K-55	40.0	K-55	2570	4570	-/561	7790	630	3950	3600
	.395	L-80	40.0	L-80	3090	5490	-/727	10100	916	5750	5300
	.395	N-80	40.0	N-80	3090	5490	-/737	12240	916	5750	5300
	.395	MAV95/110	40.0	P110	4230	7520	-/968	13720	1260	7900	7200
	.395	C-95	40.0	C-95	3330	5920	-/847	11780	1088	6820	6200
	.395	MAV-95	40.0	P110	4230	7520	-/847	11920	1088	6820	6200
	.435	L-80	43.5	L-80	3810	6770	-/813	10380	1005	6330	5800
	.435	N-80	43.5	N-80	3810	6770	-/825	10540	1005	6330	5800
	.435	MAV-95/P110	43.5	P110	5600	9960	-/1106	14110	1381	8700	8000
	.435	C-95	43.5	C-95	4130	7340	-/948	12110	1193	7510	6900
	.435	P110	43.5	P110	4420	7860	-/1106	14110	1381	8700	8000
	.435	MAV-95	43.5	P110	5600	9960	-/948	12260	1193	7510	6900
	.472	L-80	47.0	L-80	4750	8440	-/893	10550	1086	6870	6300
	.472	N-80	47.0	N-80	4750	8440	-/905	10700	1086	6870	6300
	.472	MAV-95/P110	47.0	P110	7100	12620	-/1213	14340	1493	9440	8600
	.472	C-95	47.0	C-95	5090	9050	-/1040	12290	1289	8150	7500
	.472	MAV-95	47.0	P110	7100	12620	-/1040	12450	1289	8150	7500
	.472	P110	47.0	P110	5300	9420	-/1213	14340	1493	9440	8600
	.545	L-80	53.5	L-80	6620	11770	-/1047	10670	1244	7930	7300
	.545	N-80	53.5	N-80	6620	11770	-/1062	11040	1244	7930	7300
	.545	MAV-95	53.5	P110	8850	15730	-/1219	12920	1477	9410	8600
	.545	C-95	53.5	C-95	7340	13050	-/1220	12070	1477	8460	8500
	.545	MAV-95/P110	53.5	P110	8650	15380	-/1422	14770	1710	9710	9700
	.545	P110	53.5	P110	7930	14130	-/1422	14770	1710	9710	9700
10 3/4	.279	M80	32.8	K-55	880	1630	245/-	4120	459	2270	2100
	.350	M80	40.5	K-55	1580	2720	370/-	5080	672	2850	2600
	.350	M80	40.5	K-55	2100	3730	450/-	6170	629	3130	2900
	.450	M80	51.0	K-55	4420	7860	605/-	6690	801	4030	3700
	.450	MAV-95/P110	51.0	P110	4400	7830	1078/-	11750	1602	7620	7400
	.450	MAV-95	51.0	P110	4460	7930	927/-	10100	1383	6880	6400
	.450	P110	51.0	P110	3880	6910	1078/-	11750	1602	7620	7400
	.495	M80	55.5	K-55	5320	9460	676/-	6760	877	4430	4100
	.495	MAV-95	55.5	P110	5950	10580	1032/-	10930	1515	6880	6900
	.495	P110	55.5	P110	4610	8200	1202/-	13030	1754	7590	7000
	.495	MAV-95/P110	55.5	P110	5960	10580	1202/-	13030	1754	7590	7000
	.545	MAV-95	60.7	P110	7580	13420	1149/-	10610	1696	6980	6900
	.545	P110	60.7	P110	5880	10450	1337/-	12240	1922	7590	7900
	.545	MAV-95/P110	60.7	P110	7580	13420	1337/-	12240	1922	7590	7800
11 3/4	.333	M80	42.0	K-55	410	730	254/-	4050	410	1770	1800

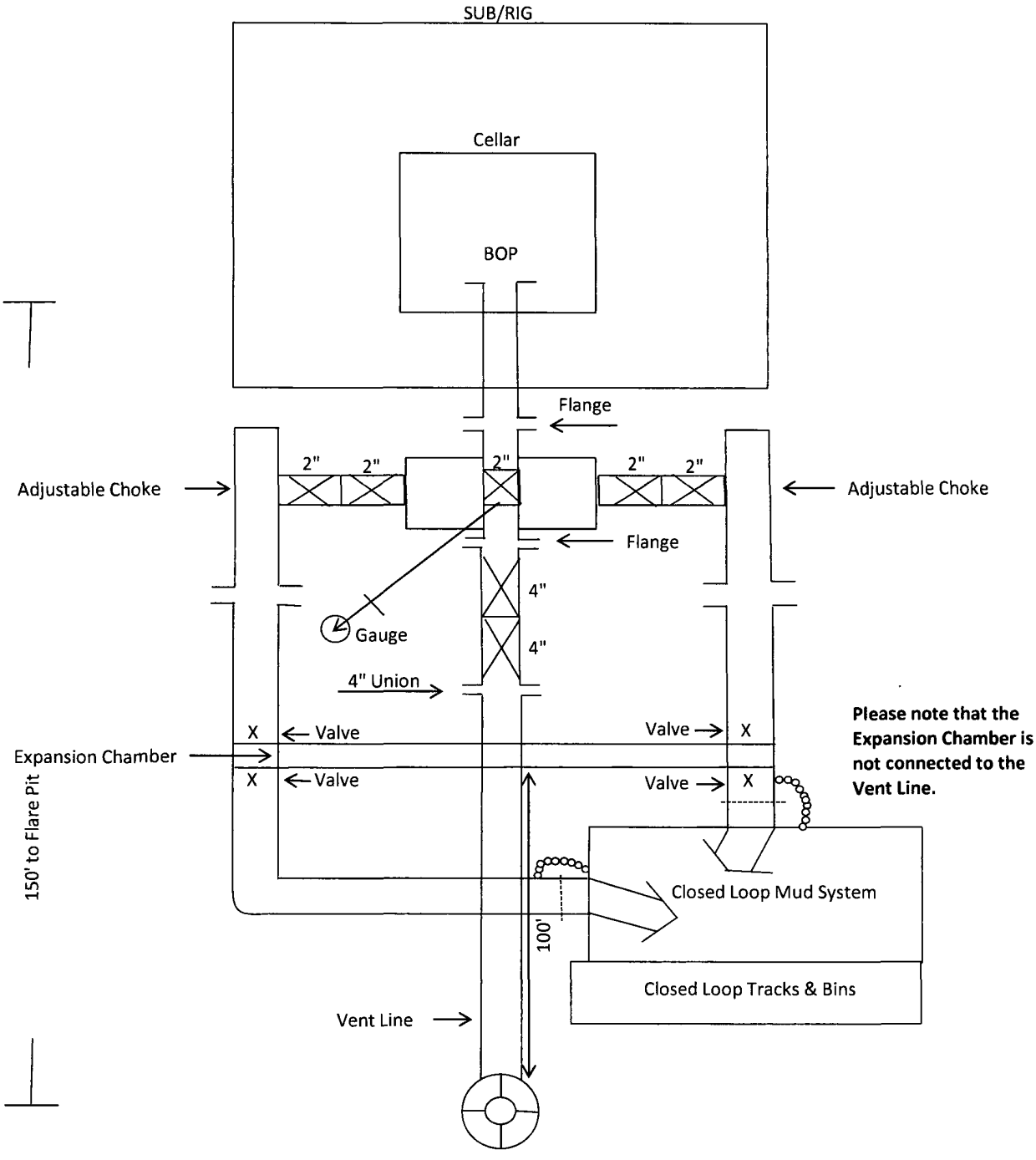
2,000 psi BOP Schematic



5,000 psi BOP Schematic



2M Choke Manifold Equipment



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.

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 animal. 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	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

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

No records found.

PLSS Search:

Section(s): 5 **Township:** 26S **Range:** 26E

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating
LEASE NO.:	NM103597
WELL NAME & NO.:	3H Lucky Bamboo 5 Federal
SURFACE HOLE FOOTAGE:	660' FSL & 2080' FWL
BOTTOM HOLE FOOTAGE	660' FNL & 1980' FWL
LOCATION:	Section 5, T.26 S., R.26 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)

Cave and Karst

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production.

Construction:
In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

No Blasting:
No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

Pad Berming:
The pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the pad. All sides will be bermed.

Tank Battery Liners and Berms:
Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

Leak Detection System:
A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

Automatic Shut-off Systems:
Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and ground water concerns:

Rotary Drilling with Fresh Water:

Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

Directional Drilling:
Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

Lost Circulation:
ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:
Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Pressure Testing:
Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

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.

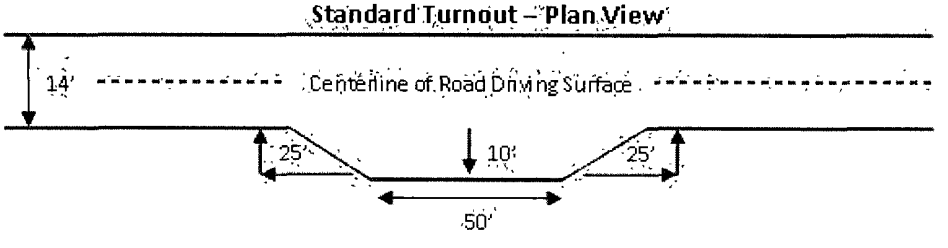
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing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

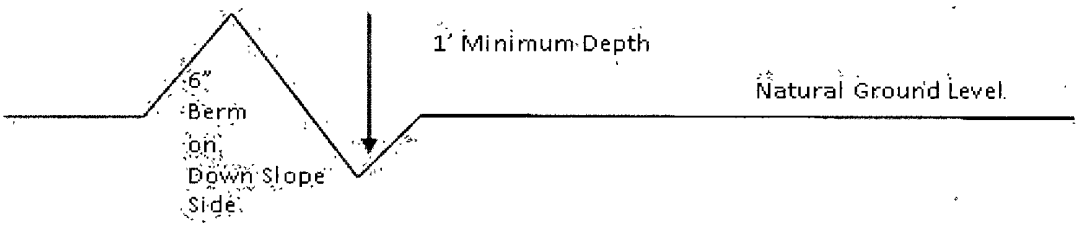
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



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:

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

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

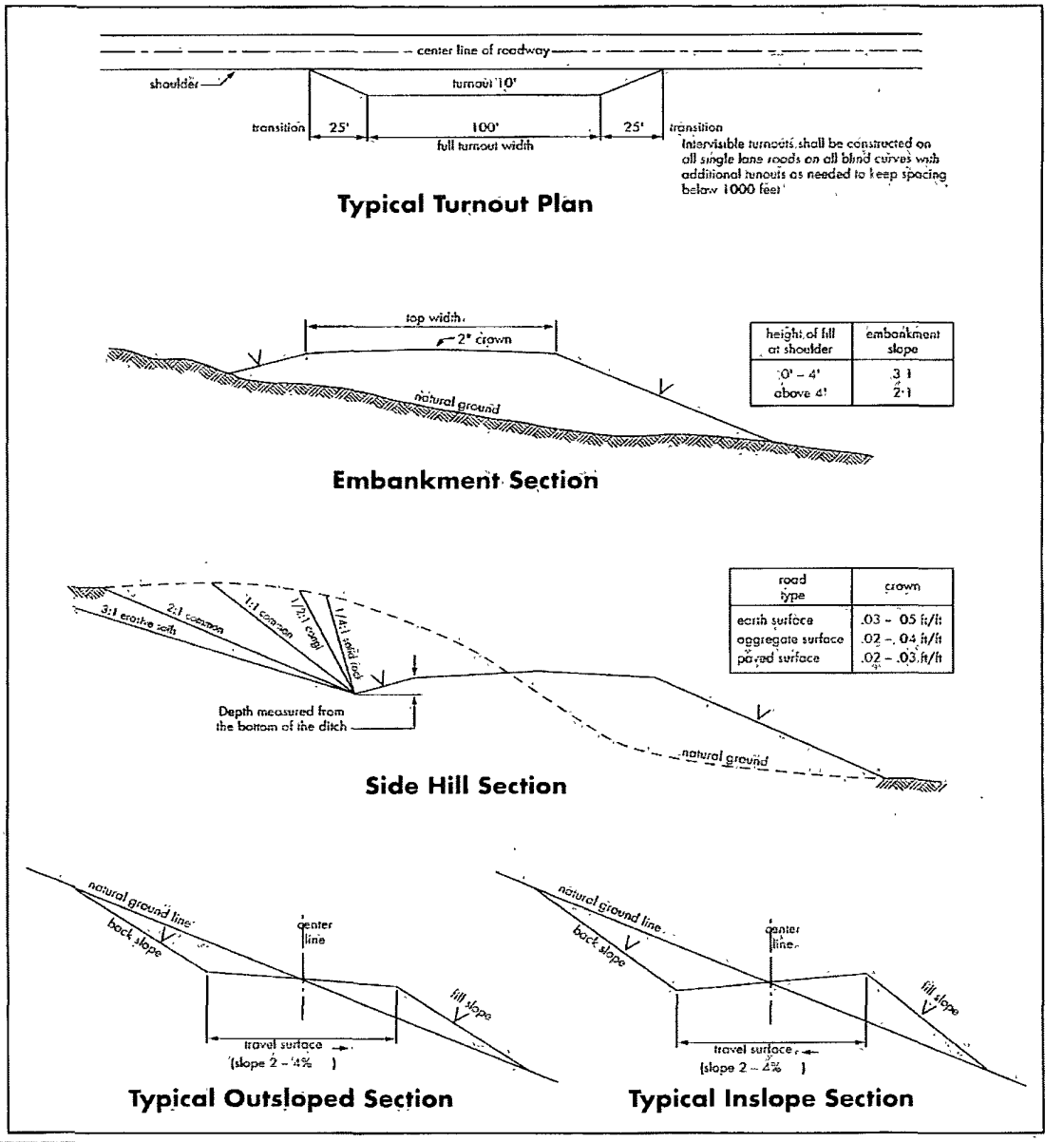
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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 a minimum of 4 hours in advance for a representative to witness:

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

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

1. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, please report measured amounts 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.**

B. CASING

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

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

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

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

CRITICAL CAVE/KARST
Possible lost circulation in the Delaware.
Possible high pressure in the Wolfcamp formation.

1. The **13-3/8** inch surface casing shall be set at **approximately 355 feet (a minimum of 25 feet above the salt)** and cemented to the surface.

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

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

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

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

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is: **(Ensure casing is set in the Bone Spring limestone at approximately 5350')**

    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. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.
Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

Pilot hole is required to have a plug at the bottom of the hole. If two plugs are set, the BLM is to be contacted (575-361-2822) prior to tag of bottom plug, which must be a minimum of 210' in length. Operator can set one plug from bottom of pilot hole to kick-off point and save the WOC time for tagging the first plug.

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

   ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

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. 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 **9-5/8** inch intermediate casing shoe shall be **5000 (5M)** psi. **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

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

    d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

    e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

    f. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp** formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

D. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

Proposed mud weight may not be adequate for drilling through Wolfcamp.

E. DRILL STEM TEST

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

F. 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.

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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 4, for Gypsum 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
Alkali Sacaton (Sporobolus airoides)	1.0
DWS Four-wing saltbush (Atriplex canescens)	5.0

DWS: DeWinged Seed

*Pounds of pure live seed:

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