

OCD Artesia

ATS-11-648

R-111-POTASH

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

a. Type of Work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM059383
b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name
Name of Operator COG Operating LLC.		7. If Unit or CA Agreement, Name and No.
a. Address 2208 West Main Street Artesia, NM 88210	3b. Phone No. (include area code) 575-748-6940	8. Lease Name and Well No. Road Lizard 5 Federal Com #2H
Location of Well (Report location clearly and in accordance with any State requirements *) At surface 1715' FNL & 1980' FEL Unit Letter G (SWNE) Sec. 5 - T23S - R29E SHL At proposed prod. Zone 330' FSL & 1980' FEL Unit Letter O (SWSE) Sec. 8-T23S-R29E BHL		9. API Well No. 30-015-39283
4. Distance in miles and direction from nearest town or post office* About 10 miles from Carlsbad		10. Field and Pool, or Exploratory 15011 Culebra Bluff; Bone Springs
5. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drg. Unit line, if any) 1980'	16. No. of acres in lease 602.12	11. Sec., T.R.M. or Blk and Survey or Area Sec. 5 - T23S - R29E
3. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. 120'	19. Proposed Depth TVD: 8660' MD. 16642'	12. County or Parish Eddy County
1. Elevations (Show whether DF, KDB, RT, GL, etc.) 3000.3	22. Approximate date work will start* 5/19/2011	13. State NM
17. Spacing Unit dedicated to this well 280		
20. BLM/BIA Bond No on file NMB000740 + 215		
23. Estimated duration 30 days		

24. Attachments

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

Well plat certified by a registered surveyor.

A Drilling Plan

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.

Signature <i>Mayte Reyes</i>	Name (Printed/Typed) Mayte Reyes	Date 4/18/2011
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Regulatory Analyst provided by Signature <i>Jose J. Juarez</i>	Name (Printed/Typed) Jose J. Juarez	Date 8/3/11
le Acting STATE DIRECTOR	Office NM STATE OFFICE	

plication 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
nduct operations thereon.

ditions of approval, if any, are attached.

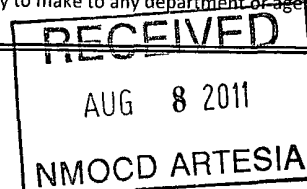
APPROVAL FOR TWO YEARS

e 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
tes any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

ntinued on page 2)

Carlsbad Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVAL



Approval Subject to General Requirements
& Special Stipulations Attached

*(Instructions on page 2)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD-ARTESIA

FORM APPROVED
OMB No 1004-0137
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other Instructions on page 2.

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		5. Lease Serial No NMNM059383
2. Name of Operator COG Operating LLC		6. If Indian, Allottee, or Tribe Name
3a. Address 2208 W. Main Street Artesia, NM 88210	3b. Phone No (include area code) 575-748-6940	7. If Unit or CA Agreement Name and/or No.
4. Location of Well (Footage, Sec, T, R, M, or Survey Description) 2130' FNL & 1980' FEL, Unit G (SWNE) Sec5-T23S-R29E 330' FSL & 1980 FEL, Unit O (SWSE) Sec8-T23S-R29E		8. Well Name and No Road Lizard 5 Federal Com #2H
Lat. Long.		9. API Well No 30-015-39283
		10. Field and Pool, or Exploratory Area 15011 Culebra Bluff; Bone Spring
		11. County or Parish, State Eddy County NM

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

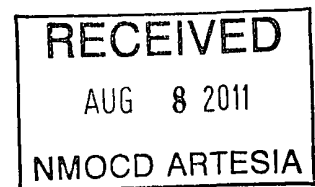
TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/ Resume)	☐ Water Shut-off
☐ Subsequent Report	☐ Altering Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and abandon	☐ Temporarily Abandon	Name Change
	☐ Convert to Injection	☐ Plug back	☐ Water Disposal	

13 Describe Proposed or Completed Operation (clearly state all pertinent details including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths or pertinent markers and sands. Attach the Bond under which the work will performed or provide the Bond No on file with the BLM/ BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notice shall be filed only after all requirements, including reclamantion, have been completed, and the operator has determined that the site is ready for final inspection.)

COG Operating LLC respectfully request approval for the following name change:

From: Road Lizard 5 Federal #2H

To: Road Lizard 5 Federal Com #2H



14 I hereby certify that the foregoing is true and correct	
Name (Printed/ Typed) Mayte Reyes	Title Regulatory Analyst
Signature <i>Mayte Reyes</i>	Date 5/31/11

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by <i>Jim J. Gray</i>	Acting Title: STATE DIRECTOR	Date 8/3/11
Conditions of approval, if any are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.		
Office: NM STATE OFFICE		

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 any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction

(Instructions on page 2)

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: April 18, 2011

Lease #: NMNM059383
Road Lizard 5 Federal #2H

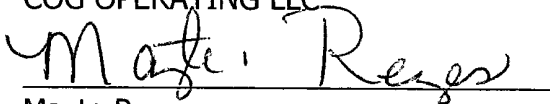
Legal Description: Sec. 5 - T23S – R29E
Eddy County, New Mexico

Formation(s): Bone Springs

Bond Coverage: Statewide

BLM Bond File #: NMB00215

COG OPERATING LLC

A handwritten signature in cursive script, reading "Mayte Reyes", is written over a horizontal line.

Mayte Reyes
Regulatory Analyst

COG Operating LLC
DRILLING AND OPERATIONS PROGRAM

Road Lizard 5 Federal #2H
SHL: 2130' FNL & 1980' FEL of Section 5
BHL: 330' FSL & 1980' FEL of Section 8
T23S R29E
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	~ 65'	
Rustler	24'	
Top of Salt	321'	
Base of Salt	2849'	
Delaware	2931'	Oil
Bone Spring	6572'	
Avalon Shale	6831'	Oil/Gas
1 st BSS	7628'	
2 nd BSS	8368'	
TD TVD	8660'	
TMD	16,642'	17,062'

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 300' and circulating cement back to surface. All intervals will be isolated by setting 5 1/2" casing to total depth and tying back cement to 200' inside 9-5/8" shoe. ~~surface~~
See COA

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

Hole Size	<i>See COA</i> Depths	Section	OD Casing	New/Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 1/2"	0' - 300' ^{250'} _{275'}	Surface	13 3/8"	New	48#	STC	J-55	1.125	1.125	1.6
12 1/4"	0' - 2950'	Intrmd	9 5/8"	New	36#	STC	J-55	1.125	1.125	1.6
7 7/8"	0' - 16,642' _{17,062'}	Production Curve & Lateral	5 1/2"	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: 400 sx Class C + 2% CaCl₂
(14.8 ppg / 1.35 cuft/sx)
**Calculated w/50% excess on OH volumes
- b. 9 5/8" Intermediate Lead: 600 sx Class C + 4% Gel
(13.5 ppg / 1.75 cuft/sx)
Tail: 250 sx Class C + 1% CaCl₂
(14.8 ppg / 1.35 cuft/sx)
**Calculated w/35% excess on OH volumes
- d. 5 1/2" Production 1st Stage:
Lead: 800 sx Class H + Acid soluble
(15.0 ppg / 2.6 cuft/sx)
2nd Stage:
Lead: 800 sx Class H + Bentonite + HALAD-322
(12.7 ppg / 1.89 cuft/sx)
Tail: 100 sx Class H
(15.6 ppg / 1.19 cuft/sx)
DVT @ 8175' (approx depth)
**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 is designed to circulate cement to surface.
- The production string TOC is designed to reach surface.

5. Minimum Specifications for Pressure Control:

Nipple up on 13 3/8 with 2M system (Hydril) tested to 2000# by independent tester, Nipple up on 9 5/8 with 3m system tested to 3000# 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 3000 psi WP rating.

6. Estimated BHP:

- a. Lateral TD = 3755 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'	Fresh Water	8.4	29	N.C.
300' – 2900'	Brine	10	29	N.C.
2900' – 16,642' (Lateral)	Cut Brine	8.9 – 9.2	29	N.C.

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

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 1/2" 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:

- 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. No coring program is planned
 - iv. Additional testing will be initiated subsequent to setting the 5 1/2" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

10. Potential Hazards:

- 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. No lost circulation is expected to occur. 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 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 Operating LLC

Eddy County(NAD83)

Road Lizard 5 Fed

#2H

OH

Plan: Plan #2

Pathfinder X&Y Report

25 July, 2011

PATHFINDER®

A Schlumberger Company



Pathfinder
Pathfinder X&Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County(NAD83)	TVD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Site:	Road Lizard 5 Fed	MD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	EDM 5000.1 Single-User Db

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:	Road Lizard 5 Fed
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Site Position:	From:	Map	Position Uncertainty:	0.00 usft	Northing:	486,501.470 usft	Easting:	642,576.230 usft	Slot Radius:	13-3/16 "	Latitude:	32° 20' 13.338 N	Longitude:	104° 0' 19.945 W	Grid Convergence:	0.18 °
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Well:	#2H					
Well Position	+N-S	0 00 usft	Northing:	486,501.470 usft	Latitude:	32° 20' 13.338 N
	+E-W	0 00 usft	Easting:	642,576.230 usft	Longitude:	104° 0' 19.945 W
Position Uncertainty	0 00 usft	Wellhead Elevation:	usft	Ground Level:	3,000.30 usft	

Wellbore:	OH
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	4/19/2011	7.80	60.24	48,691

Design:	Plan #2
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Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00

Vertical Section	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)
	0.00	0.00	0.00	178.00

Survey Tool Program:	Date	7/25/2011		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	17,062.29	Plan #2 (OH)	MWD	MWD - Standard



Pathfinder
Pathfinder X&Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County(NAD83)	TVD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Site:	Road Lizard 5 Fed	MD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Well:	#2H	North Reference:	Grid :
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	EDM:5000.1 Single User Db

Planned Survey												
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)		
0.00	0.00	0.00	0.00	-3,017.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
100.00	0.00	0.00	100.00	-2,917.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
200.00	0.00	0.00	200.00	-2,817.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
300.00	0.00	0.00	300.00	-2,717.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
400.00	0.00	0.00	400.00	-2,617.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
500.00	0.00	0.00	500.00	-2,517.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
600.00	0.00	0.00	600.00	-2,417.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
700.00	0.00	0.00	700.00	-2,317.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
800.00	0.00	0.00	800.00	-2,217.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
900.00	0.00	0.00	900.00	-2,117.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
1,000.00	0.00	0.00	1,000.00	-2,017.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
1,100.00	0.00	0.00	1,100.00	-1,917.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
1,200.00	0.00	0.00	1,200.00	-1,817.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
1,300.00	0.00	0.00	1,300.00	-1,717.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
1,400.00	0.00	0.00	1,400.00	-1,617.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
1,500.00	0.00	0.00	1,500.00	-1,517.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
1,600.00	0.00	0.00	1,600.00	-1,417.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
1,700.00	0.00	0.00	1,700.00	-1,317.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
1,800.00	0.00	0.00	1,800.00	-1,217.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
1,900.00	0.00	0.00	1,900.00	-1,117.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
2,000.00	0.00	0.00	2,000.00	-1,017.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
2,100.00	0.00	0.00	2,100.00	-917.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
2,200.00	0.00	0.00	2,200.00	-817.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
2,300.00	0.00	0.00	2,300.00	-717.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
2,400.00	0.00	0.00	2,400.00	-617.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
2,500.00	0.00	0.00	2,500.00	-517.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		
2,600.00	0.00	0.00	2,600.00	-417.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23		



Pathfinder
Pathfinder X&Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County(NAD83)	TVD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Site:	Road Lizard 5 Fed	MD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	EDM,5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
2,700.00	0.00	0.00	2,700.00	-317.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
2,800.00	0.00	0.00	2,800.00	-217.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
2,900.00	0.00	0.00	2,900.00	-117.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
3,000.00	0.00	0.00	3,000.00	-17.30	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
3,100.00	0.00	0.00	3,100.00	82.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
3,200.00	0.00	0.00	3,200.00	182.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
3,300.00	0.00	0.00	3,300.00	282.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
3,400.00	0.00	0.00	3,400.00	382.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
3,500.00	0.00	0.00	3,500.00	482.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
3,600.00	0.00	0.00	3,600.00	582.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
3,700.00	0.00	0.00	3,700.00	682.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
3,800.00	0.00	0.00	3,800.00	782.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
3,900.00	0.00	0.00	3,900.00	882.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
4,000.00	0.00	0.00	4,000.00	982.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
4,100.00	0.00	0.00	4,100.00	1,082.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
4,200.00	0.00	0.00	4,200.00	1,182.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
4,300.00	0.00	0.00	4,300.00	1,282.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
4,400.00	0.00	0.00	4,400.00	1,382.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
4,500.00	0.00	0.00	4,500.00	1,482.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
4,600.00	0.00	0.00	4,600.00	1,582.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
4,700.00	0.00	0.00	4,700.00	1,682.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
4,800.00	0.00	0.00	4,800.00	1,782.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
4,900.00	0.00	0.00	4,900.00	1,882.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
5,000.00	0.00	0.00	5,000.00	1,982.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
5,100.00	0.00	0.00	5,100.00	2,082.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
5,200.00	0.00	0.00	5,200.00	2,182.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
5,300.00	0.00	0.00	5,300.00	2,282.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	



Pathfinder
Pathfinder X&Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H:
Project:	Eddy County(NAD83)	TVD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Site:	Road Lizard 5 Fed	MD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	EDM:5000.1;Single User,Db

Planned Survey:											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
5,400.00	0.00	0.00	5,400.00	2,382.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
5,500.00	0.00	0.00	5,500.00	2,482.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
5,600.00	0.00	0.00	5,600.00	2,582.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
5,700.00	0.00	0.00	5,700.00	2,682.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
5,800.00	0.00	0.00	5,800.00	2,782.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
5,900.00	0.00	0.00	5,900.00	2,882.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
6,000.00	0.00	0.00	6,000.00	2,982.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
6,100.00	0.00	0.00	6,100.00	3,082.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
6,200.00	0.00	0.00	6,200.00	3,182.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
6,300.00	0.00	0.00	6,300.00	3,282.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
6,400.00	0.00	0.00	6,400.00	3,382.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
6,500.00	0.00	0.00	6,500.00	3,482.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
6,600.00	0.00	0.00	6,600.00	3,582.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
6,700.00	0.00	0.00	6,700.00	3,682.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
6,800.00	0.00	0.00	6,800.00	3,782.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
6,900.00	0.00	0.00	6,900.00	3,882.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
7,000.00	0.00	0.00	7,000.00	3,982.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
7,100.00	0.00	0.00	7,100.00	4,082.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
7,200.00	0.00	0.00	7,200.00	4,182.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
7,300.00	0.00	0.00	7,300.00	4,282.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
7,400.00	0.00	0.00	7,400.00	4,382.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
7,500.00	0.00	0.00	7,500.00	4,482.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
7,600.00	0.00	0.00	7,600.00	4,582.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
7,700.00	0.00	0.00	7,700.00	4,682.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
7,800.00	0.00	0.00	7,800.00	4,782.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
7,900.00	0.00	0.00	7,900.00	4,882.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
8,000.00	0.00	0.00	8,000.00	4,982.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	



Pathfinder
Pathfinder X&Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County(NAD83)	TVD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Site:	Road Lizard 5 Fed	MD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
8,100.00	0.00	0.00	8,100.00	5,082.70	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
8,172.54	0.00	0.00	8,172.54	5,155.24	0.00	0.00	0.00	0.00	486,501.47	642,576.23	
8,175.00	0.30	178.00	8,175.00	5,157.70	-0.01	0.00	0.01	12.00	486,501.46	642,576.23	
8,200.00	3.30	178.00	8,199.98	5,182.68	-0.79	0.03	0.79	12.00	486,500.68	642,576.26	
8,225.00	6.30	178.00	8,224.89	5,207.59	-2.88	0.10	2.88	12.00	486,498.59	642,576.33	
8,250.00	9.30	178.00	8,249.66	5,232.36	-6.27	0.22	6.27	12.00	486,495.20	642,576.45	
8,275.00	12.30	178.00	8,274.22	5,256.92	-10.94	0.38	10.95	12.00	486,490.53	642,576.61	
8,300.00	15.30	178.00	8,298.49	5,281.19	-16.90	0.59	16.91	12.00	486,484.57	642,576.82	
8,325.00	18.30	178.00	8,322.42	5,305.12	-24.12	0.84	24.13	12.00	486,477.35	642,577.07	
8,350.00	21.30	178.00	8,345.94	5,328.64	-32.58	1.14	32.60	12.00	486,468.89	642,577.37	
8,375.00	24.30	178.00	8,368.99	5,351.69	-42.26	1.48	42.29	12.00	486,459.21	642,577.71	
8,400.00	27.30	178.00	8,391.49	5,374.19	-53.13	1.86	53.16	12.00	486,448.34	642,578.09	
8,425.00	30.30	178.00	8,413.40	5,396.10	-65.16	2.28	65.20	12.00	486,436.31	642,578.51	
8,450.00	33.30	178.00	8,434.65	5,417.35	-78.33	2.74	78.37	12.00	486,423.14	642,578.97	
8,475.00	36.30	178.00	8,455.17	5,437.87	-92.58	3.24	92.64	12.00	486,408.89	642,579.47	
8,500.00	39.30	178.00	8,474.93	5,457.63	-107.89	3.78	107.96	12.00	486,393.58	642,580.01	
8,525.00	42.30	178.00	8,493.85	5,476.55	-124.21	4.35	124.29	12.00	486,377.26	642,580.58	
8,550.00	45.30	178.00	8,511.89	5,494.59	-141.50	4.95	141.59	12.00	486,359.97	642,581.18	
8,575.00	48.30	178.00	8,529.01	5,511.71	-159.71	5.59	159.81	12.00	486,341.76	642,581.82	
8,600.00	51.30	178.00	8,545.14	5,527.84	-178.79	6.26	178.90	12.00	486,322.68	642,582.49	
8,625.00	54.30	178.00	8,560.26	5,542.96	-198.69	6.95	198.81	12.00	486,302.78	642,583.18	
8,650.00	57.30	178.00	8,574.31	5,557.01	-219.35	7.68	219.49	12.00	486,282.12	642,583.91	
8,675.00	60.30	178.00	8,587.26	5,569.96	-240.72	8.42	240.87	12.00	486,260.75	642,584.65	
8,700.00	63.30	178.00	8,599.08	5,581.78	-262.73	9.19	262.90	12.00	486,238.74	642,585.42	
8,725.00	66.30	178.00	8,609.72	5,592.42	-285.34	9.98	285.51	12.00	486,216.13	642,586.21	
8,750.00	69.30	178.00	8,619.17	5,601.87	-308.47	10.79	308.66	12.00	486,193.00	642,587.02	
8,775.00	72.30	178.00	8,627.39	5,610.09	-332.06	11.62	332.26	12.00	486,169.41	642,587.85	



Pathfinder
Pathfinder X&Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County(NAD83)	TVD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Site:	Road Lizard 5 Fed	MD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	EDM 5000:1:Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V Sec (usft)	D Leg (°/100usft)	Northing (usft)	Easting (usft)	
8,800.00	75.30	178.00	8,634.37	5,617.07	-356.05	12.46	356.27	12.00	486,145.42	642,588.69	
8,825.00	78.30	178.00	8,640.08	5,622.78	-380.37	13.31	380.60	12.00	486,121.10	642,589.54	
8,850.00	81.30	178.00	8,644.51	5,627.21	-404.96	14.17	405.20	12.00	486,096.51	642,590.40	
8,875.00	84.30	178.00	8,647.64	5,630.34	-429.74	15.04	430.00	12.00	486,071.73	642,591.27	
8,900.00	87.30	178.00	8,649.47	5,632.17	-454.65	15.91	454.93	12.00	486,046.82	642,592.14	
8,921.95	89.93	178.00	8,650.00	5,632.70	-476.59	16.68	476.88	12.00	486,024.88	642,592.91	
9,000.00	89.93	178.00	8,650.10	5,632.80	-554.59	19.41	554.92	0.00	485,946.88	642,595.64	
9,100.00	89.93	178.00	8,650.22	5,632.92	-654.52	22.90	654.92	0.00	485,846.95	642,599.13	
9,200.00	89.93	178.00	8,650.35	5,633.05	-754.46	26.40	754.92	0.00	485,747.01	642,602.63	
9,300.00	89.93	178.00	8,650.47	5,633.17	-854.40	29.90	854.92	0.00	485,647.07	642,606.13	
9,344.97	89.93	178.00	8,650.52	5,633.22	-899.34	31.47	899.89	0.00	485,602.13	642,607.70	
LP (Road Lizard #2)											
9,400.00	89.93	178.00	8,650.59	5,633.29	-954.34	33.39	954.92	0.00	485,547.13	642,609.62	
9,500.00	89.93	178.00	8,650.71	5,633.41	-1,054.28	36.89	1,054.92	0.00	485,447.19	642,613.12	
9,600.00	89.93	178.00	8,650.84	5,633.54	-1,154.22	40.39	1,154.92	0.00	485,347.25	642,616.62	
9,700.00	89.93	178.00	8,650.96	5,633.66	-1,254.16	43.88	1,254.92	0.00	485,247.31	642,620.11	
9,800.00	89.93	178.00	8,651.08	5,633.78	-1,354.10	47.38	1,354.92	0.00	485,147.37	642,623.61	
9,900.00	89.93	178.00	8,651.21	5,633.91	-1,454.03	50.88	1,454.92	0.00	485,047.44	642,627.11	
10,000.00	89.93	178.00	8,651.33	5,634.03	-1,553.97	54.37	1,554.92	0.00	484,947.50	642,630.60	
10,100.00	89.93	178.00	8,651.45	5,634.15	-1,653.91	57.87	1,654.92	0.00	484,847.56	642,634.10	
10,200.00	89.93	178.00	8,651.57	5,634.27	-1,753.85	61.37	1,754.92	0.00	484,747.62	642,637.60	
10,300.00	89.93	178.00	8,651.70	5,634.40	-1,853.79	64.87	1,854.92	0.00	484,647.68	642,641.10	
10,400.00	89.93	178.00	8,651.82	5,634.52	-1,953.73	68.36	1,954.92	0.00	484,547.74	642,644.59	
10,500.00	89.93	178.00	8,651.94	5,634.64	-2,053.67	71.86	2,054.92	0.00	484,447.80	642,648.09	
10,600.00	89.93	178.00	8,652.06	5,634.76	-2,153.61	75.36	2,154.92	0.00	484,347.86	642,651.59	
10,700.00	89.93	178.00	8,652.19	5,634.89	-2,253.54	78.85	2,254.92	0.00	484,247.93	642,655.08	
10,800.00	89.93	178.00	8,652.31	5,635.01	-2,353.48	82.35	2,354.92	0.00	484,147.99	642,658.58	



Pathfinder
Pathfinder X&Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County(NAD83)	TVD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Site:	Road Lizard 5 Fed	MD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
10,900.00	89.93	178.00	8,652.43	5,635.13	-2,453.42	85.85	2,454.92	0.00	484,048.05	642,662.08	
11,000.00	89.93	178.00	8,652.56	5,635.26	-2,553.36	89.34	2,554.92	0.00	483,948.11	642,665.57	
11,100.00	89.93	178.00	8,652.68	5,635.38	-2,653.30	92.84	2,654.92	0.00	483,848.17	642,669.07	
11,200.00	89.93	178.00	8,652.80	5,635.50	-2,753.24	96.34	2,754.92	0.00	483,748.23	642,672.57	
11,300.00	89.93	178.00	8,652.92	5,635.62	-2,853.18	99.84	2,854.92	0.00	483,648.29	642,676.07	
11,400.00	89.93	178.00	8,653.05	5,635.75	-2,953.12	103.33	2,954.92	0.00	483,548.35	642,679.56	
11,500.00	89.93	178.00	8,653.17	5,635.87	-3,053.05	106.83	3,054.92	0.00	483,448.42	642,683.06	
11,600.00	89.93	178.00	8,653.29	5,635.99	-3,152.99	110.33	3,154.92	0.00	483,348.48	642,686.56	
11,700.00	89.93	178.00	8,653.42	5,636.12	-3,252.93	113.82	3,254.92	0.00	483,248.54	642,690.05	
11,800.00	89.93	178.00	8,653.54	5,636.24	-3,352.87	117.32	3,354.92	0.00	483,148.60	642,693.55	
11,900.00	89.93	178.00	8,653.66	5,636.36	-3,452.81	120.82	3,454.92	0.00	483,048.66	642,697.05	
12,000.00	89.93	178.00	8,653.78	5,636.48	-3,552.75	124.31	3,554.92	0.00	482,948.72	642,700.54	
12,100.00	89.93	178.00	8,653.91	5,636.61	-3,652.69	127.81	3,654.92	0.00	482,848.78	642,704.04	
12,200.00	89.93	178.00	8,654.03	5,636.73	-3,752.63	131.31	3,754.92	0.00	482,748.84	642,707.54	
12,300.00	89.93	178.00	8,654.15	5,636.85	-3,852.56	134.80	3,854.92	0.00	482,648.91	642,711.03	
12,400.00	89.93	178.00	8,654.28	5,636.98	-3,952.50	138.30	3,954.92	0.00	482,548.97	642,714.53	
12,500.00	89.93	178.00	8,654.40	5,637.10	-4,052.44	141.80	4,054.92	0.00	482,449.03	642,718.03	
12,600.00	89.93	178.00	8,654.52	5,637.22	-4,152.38	145.30	4,154.92	0.00	482,349.09	642,721.53	
12,700.00	89.93	178.00	8,654.64	5,637.34	-4,252.32	148.79	4,254.92	0.00	482,249.15	642,725.02	
12,800.00	89.93	178.00	8,654.77	5,637.47	-4,352.26	152.29	4,354.92	0.00	482,149.21	642,728.52	
12,900.00	89.93	178.00	8,654.89	5,637.59	-4,452.20	155.79	4,454.92	0.00	482,049.27	642,732.02	
13,000.00	89.93	178.00	8,655.01	5,637.71	-4,552.14	159.28	4,554.92	0.00	481,949.33	642,735.51	
13,100.00	89.93	178.00	8,655.13	5,637.83	-4,652.07	162.78	4,654.92	0.00	481,849.40	642,739.01	
13,200.00	89.93	178.00	8,655.26	5,637.96	-4,752.01	166.28	4,754.92	0.00	481,749.46	642,742.51	
13,300.00	89.93	178.00	8,655.38	5,638.08	-4,851.95	169.77	4,854.92	0.00	481,649.52	642,746.00	
13,400.00	89.93	178.00	8,655.50	5,638.20	-4,951.89	173.27	4,954.92	0.00	481,549.58	642,749.50	
13,500.00	89.93	178.00	8,655.63	5,638.33	-5,051.83	176.77	5,054.92	0.00	481,449.64	642,753.00	



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Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County(NAD83)	TVD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Site:	Road Lizard 5 Fed	MD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
13,600.00	89.93	178.00	8,655.75	5,638.45	-5,151.77	180.27	5,154.92	0.00	481,349.70	642,756.50	
13,700.00	89.93	178.00	8,655.87	5,638.57	-5,251.71	183.76	5,254.92	0.00	481,249.76	642,759.99	
13,800.00	89.93	178.00	8,655.99	5,638.69	-5,351.65	187.26	5,354.92	0.00	481,149.82	642,763.49	
13,900.00	89.93	178.00	8,656.12	5,638.82	-5,451.58	190.76	5,454.92	0.00	481,049.89	642,766.99	
14,000.00	89.93	178.00	8,656.24	5,638.94	-5,551.52	194.25	5,554.92	0.00	480,949.95	642,770.48	
14,100.00	89.93	178.00	8,656.36	5,639.06	-5,651.46	197.75	5,654.92	0.00	480,850.01	642,773.98	
14,200.00	89.93	178.00	8,656.49	5,639.19	-5,751.40	201.25	5,754.92	0.00	480,750.07	642,777.48	
14,300.00	89.93	178.00	8,656.61	5,639.31	-5,851.34	204.74	5,854.92	0.00	480,650.13	642,780.97	
14,400.00	89.93	178.00	8,656.73	5,639.43	-5,951.28	208.24	5,954.92	0.00	480,550.19	642,784.47	
14,500.00	89.93	178.00	8,656.85	5,639.55	-6,051.22	211.74	6,054.92	0.00	480,450.25	642,787.97	
14,600.00	89.93	178.00	8,656.98	5,639.68	-6,151.16	215.23	6,154.92	0.00	480,350.31	642,791.46	
14,700.00	89.93	178.00	8,657.10	5,639.80	-6,251.09	218.73	6,254.92	0.00	480,250.38	642,794.96	
14,800.00	89.93	178.00	8,657.22	5,639.92	-6,351.03	222.23	6,354.92	0.00	480,150.44	642,798.46	
14,900.00	89.93	178.00	8,657.34	5,640.04	-6,450.97	225.73	6,454.92	0.00	480,050.50	642,801.96	
15,000.00	89.93	178.00	8,657.47	5,640.17	-6,550.91	229.22	6,554.92	0.00	479,950.56	642,805.45	
15,100.00	89.93	178.00	8,657.59	5,640.29	-6,650.85	232.72	6,654.92	0.00	479,850.62	642,808.95	
15,200.00	89.93	178.00	8,657.71	5,640.41	-6,750.79	236.22	6,754.92	0.00	479,750.68	642,812.45	
15,300.00	89.93	178.00	8,657.84	5,640.54	-6,850.73	239.71	6,854.92	0.00	479,650.74	642,815.94	
15,400.00	89.93	178.00	8,657.96	5,640.66	-6,950.67	243.21	6,954.92	0.00	479,550.80	642,819.44	
15,500.00	89.93	178.00	8,658.08	5,640.78	-7,050.60	246.71	7,054.92	0.00	479,450.87	642,822.94	
15,600.00	89.93	178.00	8,658.20	5,640.90	-7,150.54	250.20	7,154.92	0.00	479,350.93	642,826.43	
15,700.00	89.93	178.00	8,658.33	5,641.03	-7,250.48	253.70	7,254.92	0.00	479,250.99	642,829.93	
15,800.00	89.93	178.00	8,658.45	5,641.15	-7,350.42	257.20	7,354.92	0.00	479,151.05	642,833.43	
15,900.00	89.93	178.00	8,658.57	5,641.27	-7,450.36	260.70	7,454.92	0.00	479,051.11	642,836.93	
16,000.00	89.93	178.00	8,658.70	5,641.40	-7,550.30	264.19	7,554.92	0.00	478,951.17	642,840.42	
16,100.00	89.93	178.00	8,658.82	5,641.52	-7,650.24	267.69	7,654.92	0.00	478,851.23	642,843.92	
16,200.00	89.93	178.00	8,658.94	5,641.64	-7,750.18	271.19	7,754.92	0.00	478,751.29	642,847.42	



Pathfinder
Pathfinder X&Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County(NAD83)	TVD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Site:	Road Lizard 5 Fed	MD Reference:	KB=17 @ 3017.30usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	EDM 5000.1 Single User Db

Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
16,300.00	89.93	178.00	8,659.06	5,641.76	-7,850.12	274.68	7,854.92	0.00	478,651.35	642,850.91
16,400.00	89.93	178.00	8,659.19	5,641.89	-7,950.05	278.18	7,954.92	0.00	478,551.42	642,854.41
16,500.00	89.93	178.00	8,659.31	5,642.01	-8,049.99	281.68	8,054.92	0.00	478,451.48	642,857.91
16,600.00	89.93	178.00	8,659.43	5,642.13	-8,149.93	285.17	8,154.92	0.00	478,351.54	642,861.40
16,700.00	89.93	178.00	8,659.56	5,642.26	-8,249.87	288.67	8,254.92	0.00	478,251.60	642,864.90
16,800.00	89.93	178.00	8,659.68	5,642.38	-8,349.81	292.17	8,354.92	0.00	478,151.66	642,868.40
16,900.00	89.93	178.00	8,659.80	5,642.50	-8,449.75	295.66	8,454.92	0.00	478,051.72	642,871.89
17,000.00	89.93	178.00	8,659.92	5,642.62	-8,549.69	299.16	8,554.92	0.00	477,951.78	642,875.39
17,062.29	89.93	178.00	8,660.00	5,642.70	-8,611.94	301.34	8,617.21	0.00	477,889.53	642,877.57
BHL (Road Lizard #2)										

Checked By: _____	Approved By: _____	Date: _____
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Project: Eddy County(NAD83)
Site: Road Lizard 5 Fed
Well: #2H
Wellbore: OH
Plan: Plan #2 (#2H/OH)



A Schlumberger Company

West(-)/East(+) (400 usft/in)

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

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	8172.54	0.00	0.00	8172.54	0.00	0.00	0.00	0.00	0.00	
3	8921.95	89.93	178.00	8650.00	-476.59	16.58	12.00	178.00	476.88	
4	17062.29	89.93	178.00	8660.00	-8611.94	301.34	0.00	0.00	8617.21	BHL (Road Lizard #2)

WELL DETAILS #2H

Ground Elevation 3000.30
RKB Elevation KB=17 @ 3017.30usft (Original Well Elev)
Rig Name Original Well Elev

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	486501.470	642576.230	32° 20' 13.338 N	104° 0' 19.945 W	

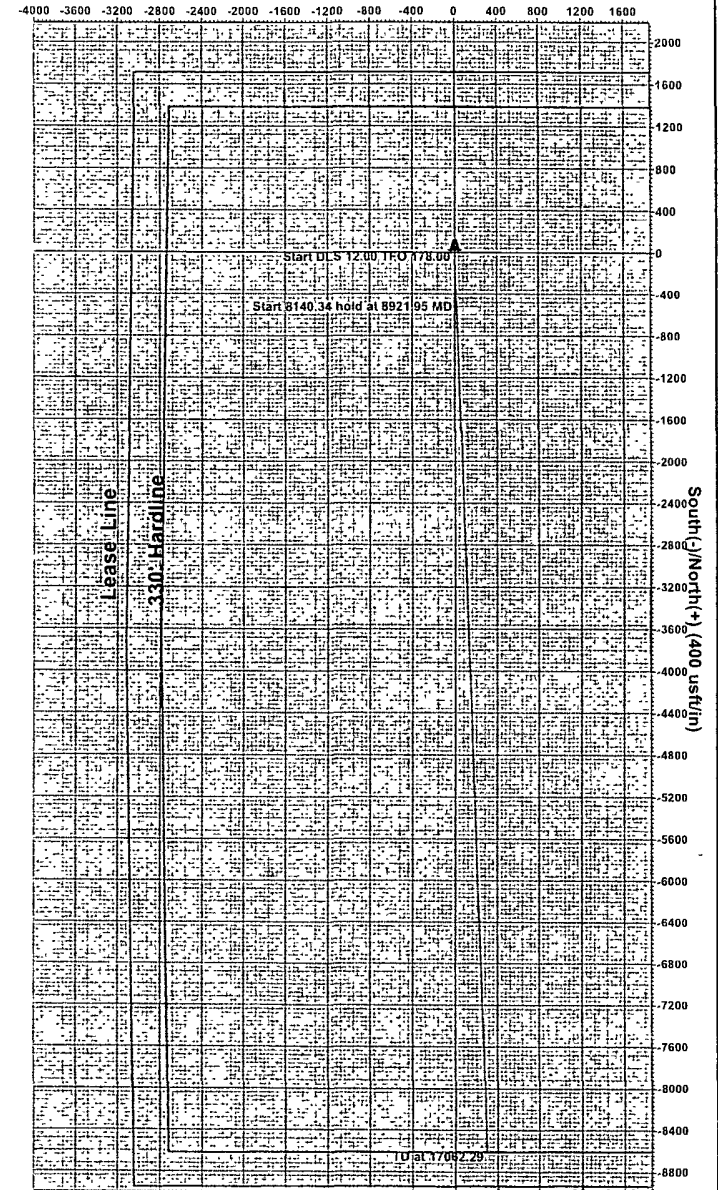
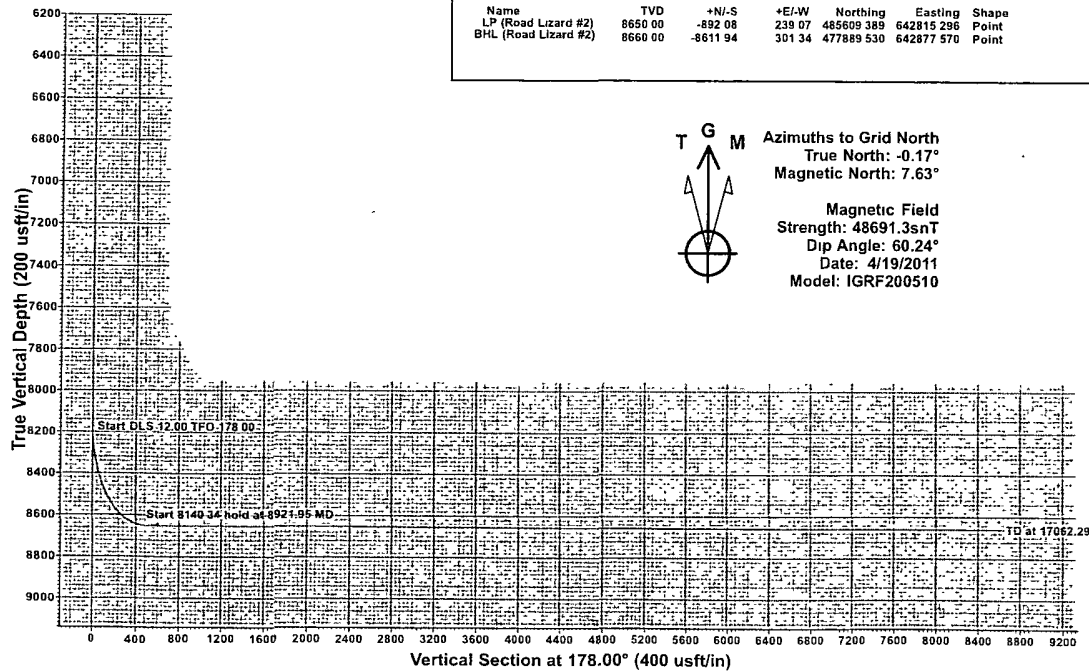
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
LP (Road Lizard #2)	8650.00	-892.08	239.07	485609.389	642815.296	Point
BHL (Road Lizard #2)	8660.00	-8611.94	301.34	477889.530	642877.570	Point



Azimuths to Grid North
True North: -0.17°
Magnetic North: 7.63°

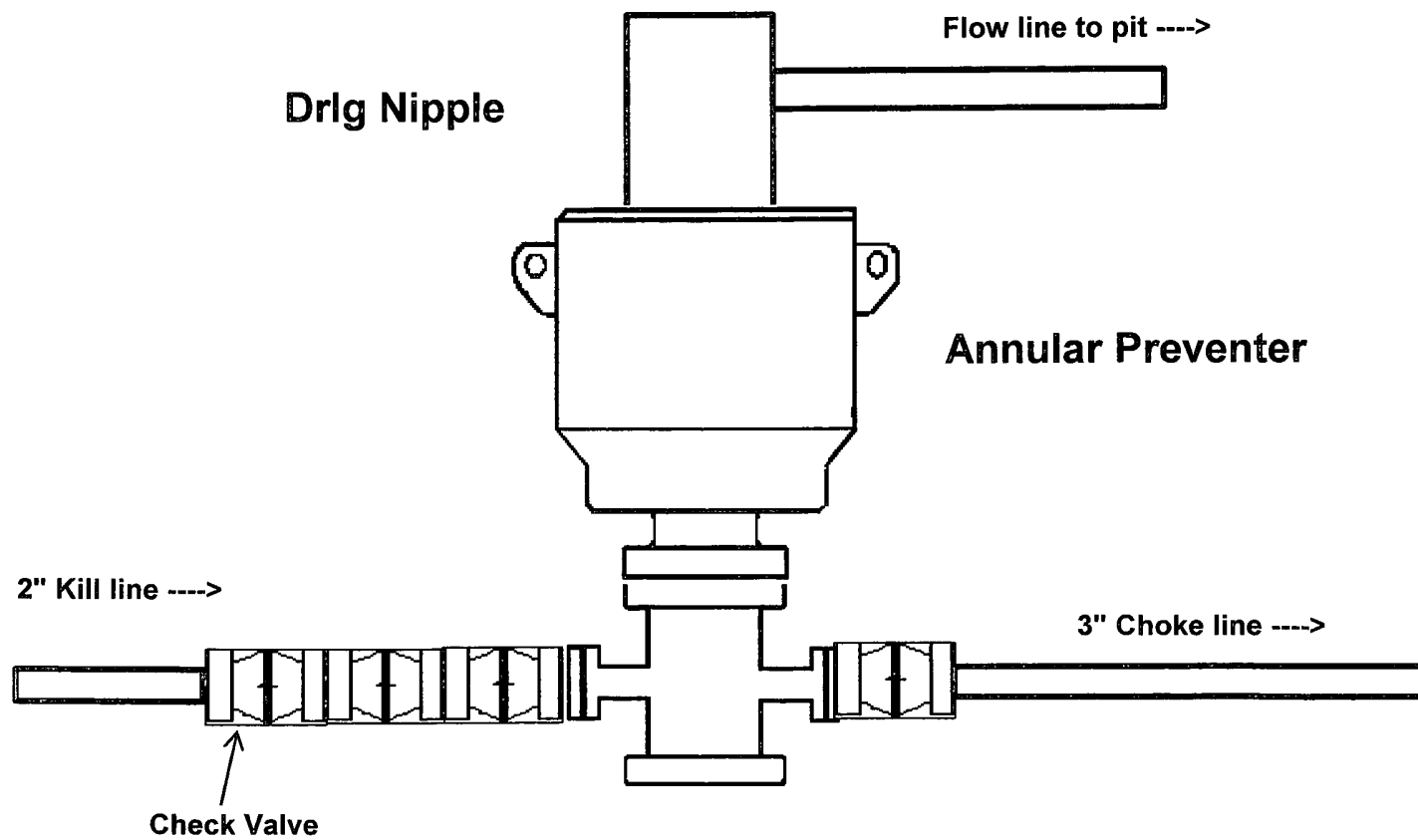
Magnetic Field
Strength: 48691.3snT
Dip Angle: 60.24°
Date: 4/19/2011
Model: IGRF200510



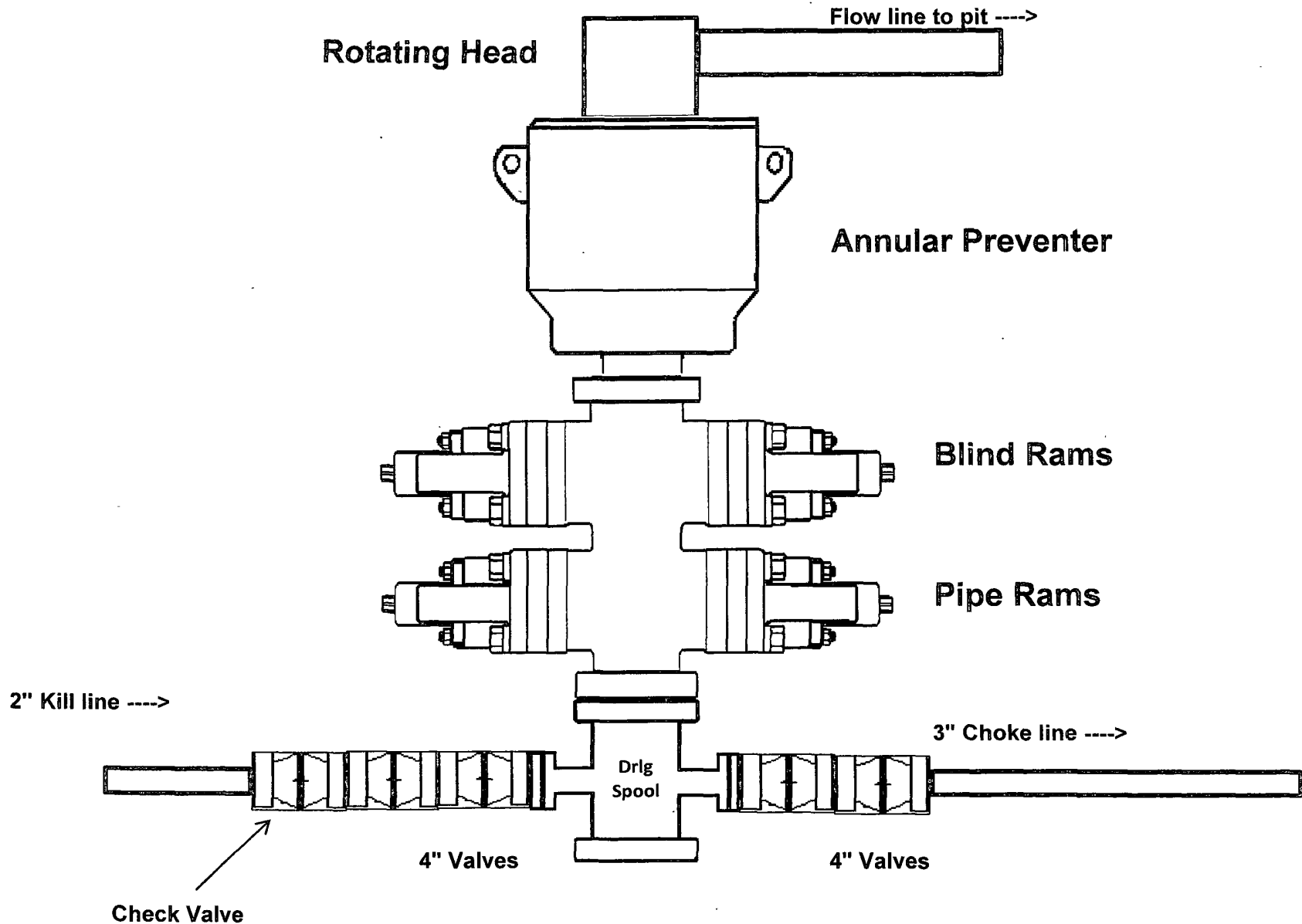
Plan: Plan #2 (#2H/OH)

Created By: Nata Bingham Date: 16.33, July 25 2011

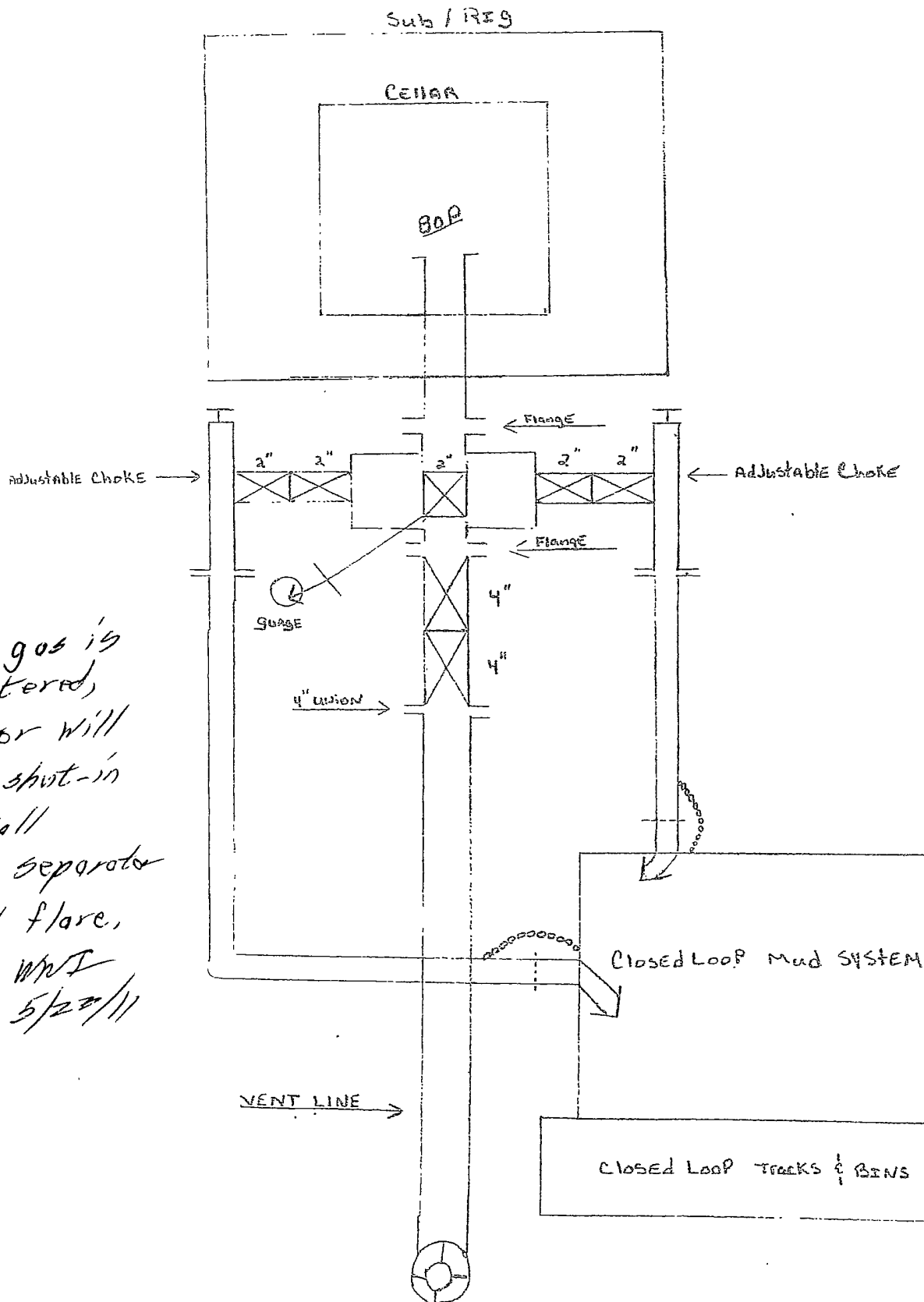
2,000 psi BOP Schematic



3,000 psi BOP Schematic

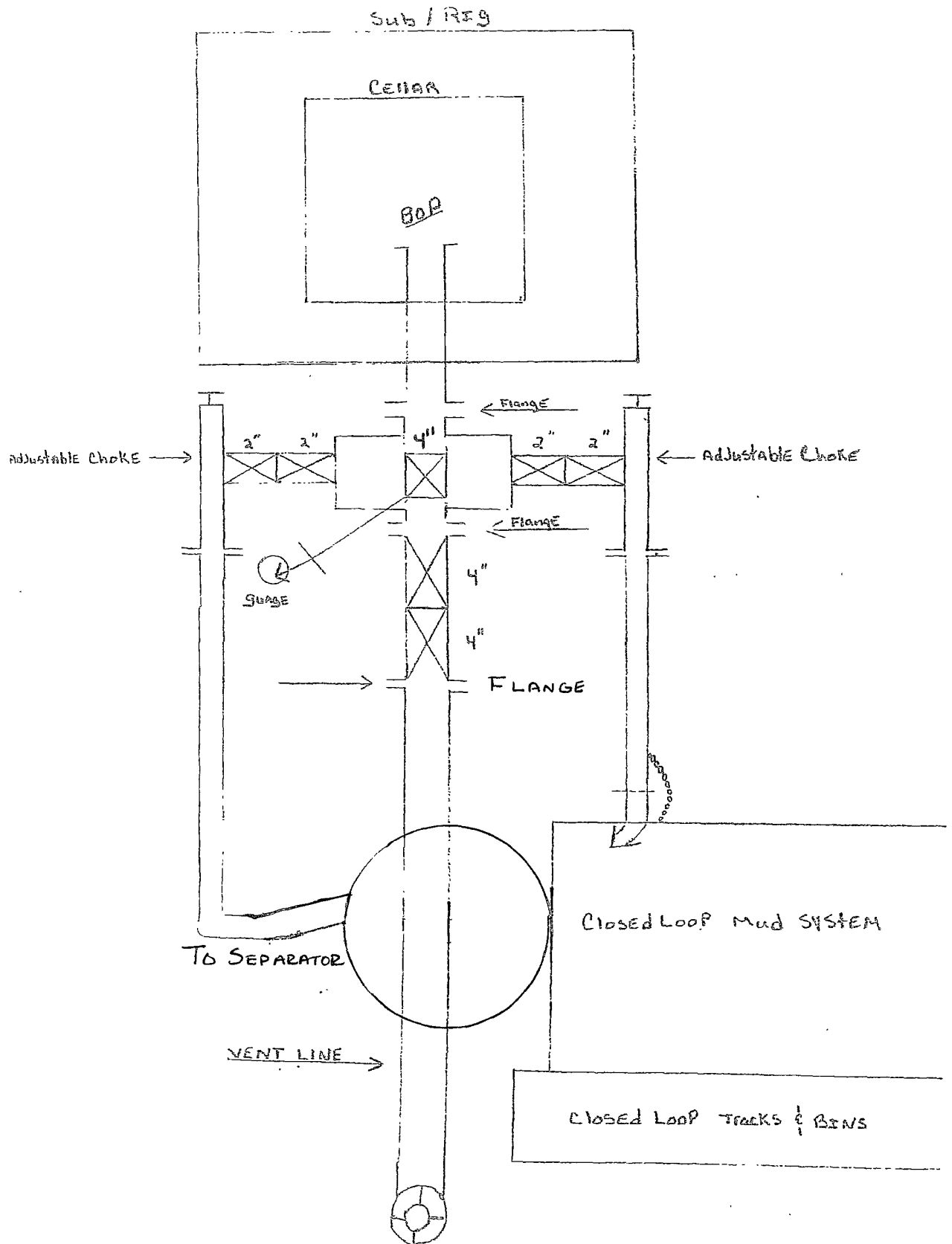


2M Choke Manifold Equipment



If any gas is encountered,
operator will either shut-in
to install
mud gas separator
or will flare.
WWT
5/22/11

3M Choke Manifold Equipment



150' TO FLARE PIT