

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Artesia

FORM APPROVED
OMB NO 1004-0135
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 reverse side.

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		5. Lease Serial No. NMNM103597 ✓
2. Name of Operator COG PRODUCTION LLC		6. If Indian, Allottee or Tribe Name
Contact: DEBORA WILBOURN E-Mail: dwilbourn@concho.com		7. If Unit or CA/Agreement, Name and/or No.
3a. Address 2208 W MAIN ST ARTESIA, NM 88210	3b. Phone No. (include area code) Ph: 575-748-6958	8. Well Name and No. LUCKY BAMBOO 5 FEDERAL 3H ✓
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 5 T26S R28E SESW 660FSL 2080FWL		9. API Well No. 30-015-39914 ✓
		10. Field and Pool, or Exploratory WILDCAT ✓
		11. County or Parish, and State EDDY COUNTY, NM ✓

RECEIVED

APR 16 2012

NMOCD ARTESIA

12. CHECK APPROPRIATE BOX(ES) 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	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ 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 of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with 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 Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

COG respectfully request the following changes:

See attached directional & anti-collision plan.

4-1/2" liner section:

Drill 6-1/8" lateral to 13,236' MD / 9345' TVD with 10.0 ? 14.0 ppg WBM system.

Run 4-1/2" 11.6# P-110 LTC and hang @ 8700' MD to 13,236' MD

Cmt to top of liner with:

Lead: 250 sx 50:50:2 H + Salt + GasStop + CFR-3 @ 14.4ppg/1.25 yield

Tail: 300 sx 50:50:2 H + Salt + GasStop + Super CBL + CFR-3 @ 14.4ppg/1.25 yield

Minimum tie back to TOL

35% excess on OH

Accepted for record

NMOCD 10/9/17/2012

APPROVED

APR 13 2012

/s/ Chris Walls

BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

14. I hereby certify that the foregoing is true and correct	
Electronic Submission #134942 verified by the BLM Well Information System For COG PRODUCTION LLC, sent to the Carlsbad	
Name (Printed/Typed) DEBORA WILBOURN	Title DRLG ENGINEERING TECH
Signature (Electronic Submission)	Date 04/09/2012

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By	Title	Date
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		

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

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****



COG Operating LLC

Eddy County(NAD83)

Lucky Bamboo 5 Fed

#3H

OH

Post Gyro Plan #4

Anticollision Report

04 April, 2012

PATHFINDER®

A Schlumberger Company



Pathfinder
Anticollision Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC	Local Co-ordinate Reference: Well #3H
Project: Eddy County(NAD83)	TVD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
Reference Site: Lucky Bamboo 5 Fed	MD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
Site Error: 0.0 usft	North Reference: Grid
Reference Well: #3H	Survey Calculation Method: Minimum Curvature
Well Error: 0.0 usft	Output errors are at: 2.00 sigma.
Reference Wellbore: OH	Database: EDM 5000.1 Single User Db
Reference Design: Post Gyro Plan #4	Offset TVD Reference: Offset Datum

Reference: Post Gyro Plan #4	
Filter type: NO GLOBAL FILTER: Using user defined selection & filtering criteria	
Interpolation Method: MD Interval 100.0usft	Error Model: ISCWSA
Depth Range: Unlimited	Scan Method: Closest Approach 3D
Results Limited by: Maximum center-center distance of 1,451.5 usft	Error Surface: Elliptical Conic
Warning Levels Evaluated at: 2.00 Sigma	Casing Method: Not applied

Survey Tool Program		Date 4/4/2012			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	8,701.0	Gyro #2 (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s	
8,755.0	8,800.0	MWD #3 (OH)	MWD	MWD - Standard	
8,800.0	13,236.3	Post Gyro Plan #4 (OH)			

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Basashi Federal						
1 - OH - OH	11,813.7	9,236.2	42.3	-30.1	0.584	Level 1, CC, ES, SF

Offset Design - Basashi Federal - 1 - OH - OH														Offset Site Error: 0.0 usft
Survey Program: 100-NS-GYRO-MS														Offset Well Error: 0.0 usft
Reference		Offset		Semi Major Axis			Distance					Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	Offset Wellbore Centre +E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor	
10,400.0	9,289.2	9,241.3	9,238.9	30.3	19.5	96.94	2,582.3	-47.4	1,414.3	1,365.0	49.37	28.649		
10,500.0	9,291.3	9,240.9	9,238.5	31.7	19.5	96.37	2,582.4	-47.4	1,314.4	1,263.5	50.86	25.844		
10,600.0	9,293.5	9,240.5	9,238.1	33.2	19.5	95.82	2,582.4	-47.4	1,214.4	1,162.0	52.39	23.183		
10,700.0	9,295.7	9,240.1	9,237.7	34.7	19.5	95.28	2,582.4	-47.4	1,114.5	1,060.6	53.94	20.662		
10,800.0	9,297.9	9,239.7	9,237.3	36.3	19.5	94.75	2,582.4	-47.4	1,014.6	959.1	55.52	18.273		
10,900.0	9,300.1	9,239.3	9,236.9	37.8	19.5	94.24	2,582.4	-47.4	914.7	857.6	57.13	16.012		
11,000.0	9,302.3	9,238.9	9,236.6	39.4	19.5	93.74	2,582.4	-47.4	814.8	756.1	58.75	13.869		
11,100.0	9,304.5	9,238.6	9,236.2	41.0	19.5	93.25	2,582.4	-47.4	715.0	654.6	60.39	11.840		
11,200.0	9,306.7	9,238.2	9,235.8	42.7	19.5	92.77	2,582.4	-47.4	615.2	553.1	62.04	9.916		
11,300.0	9,308.8	9,237.9	9,235.5	44.3	19.5	92.30	2,582.4	-47.4	515.4	451.7	63.70	8.091		
11,400.0	9,311.0	9,237.5	9,235.2	46.0	19.5	91.85	2,582.4	-47.4	415.9	350.6	65.38	6.361		
11,500.0	9,313.2	9,237.2	9,234.8	47.6	19.5	91.40	2,582.4	-47.4	316.5	249.5	67.06	4.720		
11,600.0	9,315.4	9,236.9	9,234.5	49.3	19.5	90.97	2,582.5	-47.4	217.8	149.1	68.76	3.168		
11,700.0	9,317.6	9,236.6	9,234.2	51.0	19.5	90.54	2,582.5	-47.4	121.3	50.9	70.45	1.722		
11,800.0	9,319.8	9,236.3	9,233.9	52.7	19.5	90.12	2,582.5	-47.4	44.5	-27.7	72.16	0.616	Level 1	
11,813.7	9,320.1	9,236.2	9,233.8	53.0	19.5	90.07	2,582.5	-47.4	42.3	-30.1	72.39	0.584	Level 1, CC, ES, SF	
11,900.0	9,321.9	9,235.9	9,233.6	54.4	19.5	89.64	2,582.5	-47.4	96.1	22.2	73.87	1.301	Level 3	
12,000.0	9,324.0	9,235.5	9,233.2	56.1	19.5	88.97	2,582.5	-47.4	191.0	115.6	75.58	2.528		
12,100.0	9,326.0	9,235.1	9,232.7	57.9	19.5	88.13	2,582.5	-47.4	289.4	212.1	77.28	3.745		
12,200.0	9,328.0	9,234.6	9,232.2	59.6	19.5	87.10	2,582.5	-47.4	388.6	309.6	78.96	4.922		
12,300.0	9,329.9	9,234.0	9,231.6	61.3	19.5	85.90	2,582.5	-47.4	488.1	407.5	80.60	6.056		
12,400.0	9,331.6	9,233.4	9,231.0	63.1	19.5	84.52	2,582.5	-47.4	587.8	505.6	82.20	7.151		
12,500.0	9,333.4	9,232.7	9,230.3	64.8	19.5	82.99	2,582.6	-47.4	687.6	603.9	83.73	8.212		
12,600.0	9,335.0	9,231.9	9,229.6	66.6	19.5	81.30	2,582.6	-47.4	787.4	702.2	85.18	9.244		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Pathfinder
Anticollision Report



A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD83)
Reference Site: Lucky Bamboo 5 Fed
Site Error: 0.0 usft
Reference Well: #3H
Well Error: 0.0 usft
Reference Wellbore: OH
Reference Design: Post Gyro Plan #4

Local Co-ordinate Reference: Well #3H
TVD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
MD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Basashi Federal - 1 - OH - OH														Offset Site Error:	0.0 usft
Survey Program: 100-NS-GYRO-MS														Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance		Warning							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
12,700.0	9,336.6	9,231.2	9,228.8	68.3	19.5	79.78	2,582.6	-47.4	887.3	800.7	86.60	10.246			
12,800.0	9,338.2	9,230.4	9,228.0	70.1	19.5	78.76	2,582.6	-47.4	987.2	899.1	88.08	11.208			
12,900.0	9,339.7	9,229.6	9,227.2	71.8	19.5	77.77	2,582.6	-47.4	1,087.1	997.6	89.54	12.140			
13,000.0	9,341.3	9,228.8	9,226.5	73.6	19.5	76.81	2,582.7	-47.4	1,187.0	1,096.0	90.98	13.047			
13,100.0	9,342.9	9,228.1	9,225.8	75.4	19.5	75.87	2,582.7	-47.4	1,287.0	1,194.6	92.40	13.928			
13,200.0	9,344.4	9,227.4	9,225.0	77.1	19.5	74.96	2,582.7	-47.4	1,386.9	1,293.1	93.80	14.785			
13,236.3	9,345.0	9,227.2	9,224.8	77.8	19.5	74.63	2,582.7	-47.4	1,423.2	1,328.9	94.31	15.092			

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



Pathfinder
Anticollision Report



A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD83)
Reference Site: Lucky Bamboo 5 Fed
Site Error: 0.0 usft
Reference Well: #3H
Well Error: 0.0 usft
Reference Wellbore: OH
Reference Design: Post Gyro Plan #4

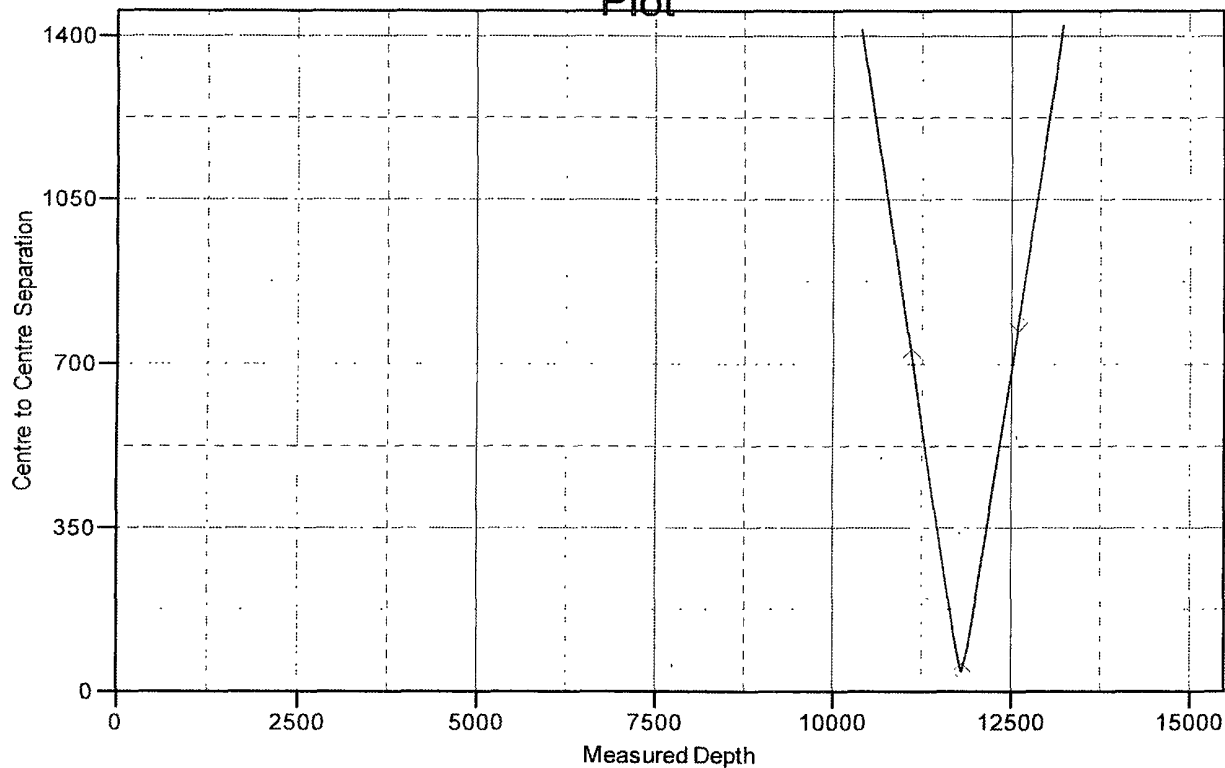
Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Output errors are at
Database:
Offset TVD Reference:

Well #3H
KB = 17' @ 3537.3usft (Original Well Elev)
KB = 17' @ 3537.3usft (Original Well Elev)
Gnd
Minimum Curvature
2.00 sigma
EDM 5000.1 Single User Db
Offset Datum

Reference Depths are relative to KB = 17' @ 3537.3usft (Original Well)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: #3H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.01°

Ladder Plot



LEGEND

◆ 1, OH, OHV0

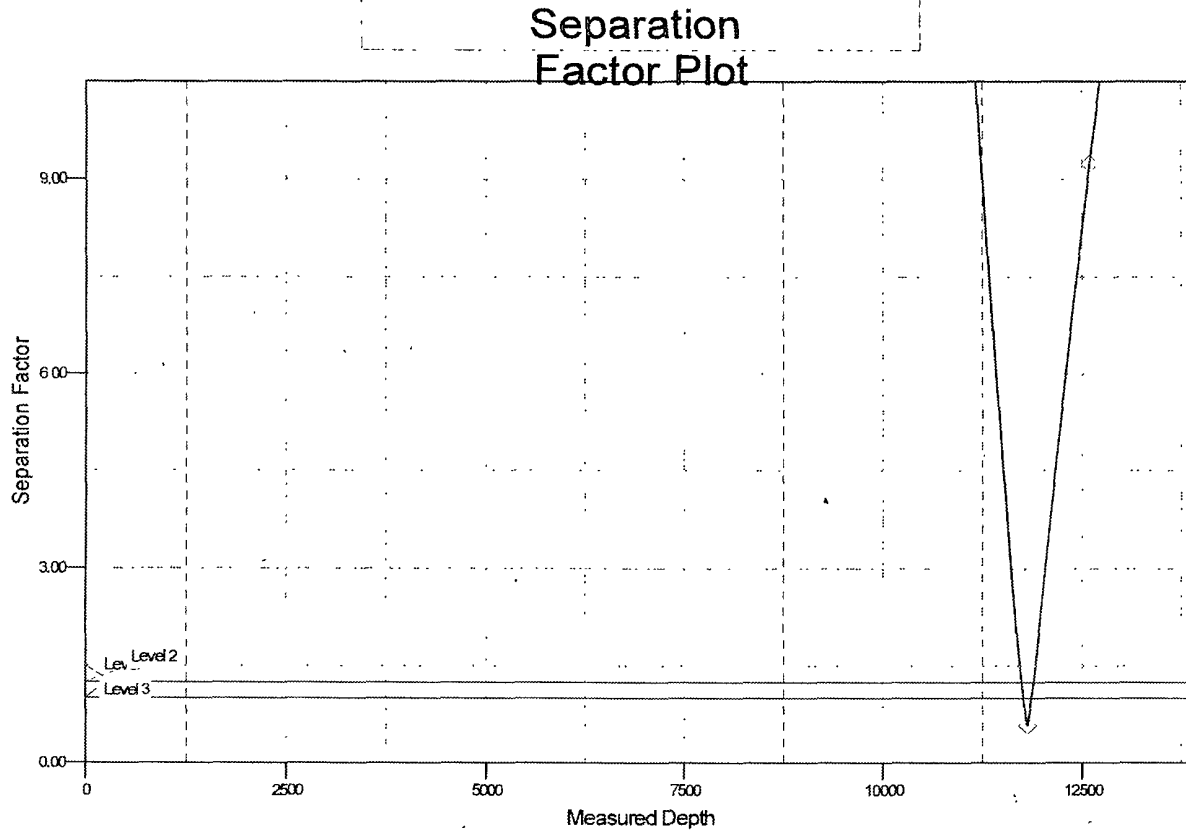
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company: COG Operating LLC
Project: Eddy County(NAD83)
Reference Site: Lucky Bamboo 5 Fed
Site Error: 0.0 usft
Reference Well: #3H
Well Error: 0.0 usft
Reference Wellbore: OH
Reference Design: Post Gyro Plan #4

Local Co-ordinate Reference: Well #3H
TVD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
MD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB = 17' @ 3537.3usft (Original Well)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to #3H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Gnd Convergence at Surface is. 0.01°



LEGEND

◆ 1.OH.OHW0



COG Operating LLC

Eddy County(NAD83)

Lucky Bamboo 5 Fed

#3H

OH

Plan: Post Gyro Plan #4

Pathfinder X & Y Report

04 April, 2012

PATHFINDER®

A Schlumberger Company



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD83)
Site: Lucky Bamboo 5 Fed
Well: #3H
Wellbore: OH
Design: Post Gyro Plan #4

Local Co-ordinate Reference: Well #3H
TVD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
MD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project Eddy County(NAD83)

Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site Lucky Bamboo 5 Fed

Site Position:		Northing:	387,833.840 usft	Latitude:	32° 3' 58.442 N
From:	Map	Easting:	546,380.330 usft	Longitude:	104° 19' 1.394 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.01 °

Well #3H

Well Position	+N/-S	0.0 usft	Northing:	387,833.840 usft	Latitude:	32° 3' 58.442 N
	+E/-W	0.0 usft	Easting:	546,380.330 usft	Longitude:	104° 19' 1.394 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,520.3 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	3/22/2012	7.61	59.92	48,401

Design Post Gyro Plan #4

Audit Notes:

Version: Phase: PLAN Tie On Depth: 8,800.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	358.83



Pathfinder
Pathfinder X & Y Report



A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD83)
Site: Lucky Bamboo 5 Fed
Well: #3H
Wellbore: OH
Design: Post Gyro Plan #4

Local Co-ordinate Reference: Well #3H
TVD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
MD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
North Reference: Grd
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey Tool Program Date 4/4/2012

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	8,701.0	Gyro #2 (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s
8,755.0	8,800.0	MWD #3 (OH)	MWD	MWD - Standard
8,800.0	13,236.3	Post Gyro Plan #4 (OH)		

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)
0.0	0.00	0.00	0.0	-3,537.3	0.0	0.0	0.0	0.00	387,833.84	546,380.33
100.0	0.15	346.91	100.0	-3,437.3	0.1	0.0	0.1	0.15	387,833.97	546,380.30
200.0	0.34	5.01	200.0	-3,337.3	0.6	0.0	0.6	0.20	387,834.39	546,380.30
300.0	0.40	4.70	300.0	-3,237.3	1.2	0.0	1.2	0.06	387,835.03	546,380.35
400.0	0.38	316.85	400.0	-3,137.3	1.8	-0.2	1.8	0.32	387,835.62	546,380.15
500.0	0.46	302.20	500.0	-3,037.3	2.2	-0.7	2.3	0.13	387,836.08	546,379.59
600.0	0.53	295.41	600.0	-2,937.3	2.7	-1.5	2.7	0.09	387,836.49	546,378.83
700.0	0.39	289.75	700.0	-2,837.3	3.0	-2.2	3.0	0.15	387,836.81	546,378.09
800.0	0.47	270.27	800.0	-2,737.3	3.1	-3.0	3.1	0.17	387,836.92	546,377.36
900.0	0.34	273.09	900.0	-2,637.3	3.1	-3.7	3.2	0.13	387,836.94	546,376.65
1,000.0	0.34	274.52	1,000.0	-2,537.3	3.1	-4.3	3.2	0.01	387,836.98	546,376.06
1,100.0	0.45	108.92	1,100.0	-2,437.3	3.0	-4.2	3.1	0.78	387,836.88	546,376.14
1,200.0	1.78	101.85	1,200.0	-2,337.3	2.6	-2.3	2.6	1.33	387,836.43	546,378.03
1,300.0	1.49	117.73	1,299.9	-2,237.4	1.7	0.4	1.7	0.54	387,835.51	546,380.70
1,400.0	2.16	110.26	1,399.9	-2,137.4	0.4	3.3	0.3	0.71	387,834.25	546,383.62
1,500.0	3.14	104.48	1,499.8	-2,037.5	-0.9	7.7	-1.1	1.01	387,832.91	546,388.04
1,600.0	3.11	103.51	1,599.6	-1,937.7	-2.2	13.0	-2.5	0.06	387,831.59	546,393.33
1,700.0	2.00	106.09	1,699.5	-1,837.8	-3.4	17.3	-3.7	1.12	387,830.47	546,397.64
1,800.0	1.49	112.32	1,799.5	-1,737.8	-4.3	20.2	-4.8	0.54	387,829.50	546,400.52
1,900.0	1.36	117.70	1,899.4	-1,637.9	-5.4	22.4	-5.8	0.19	387,828.45	546,402.78



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD83)
Site: Lucky Bamboo 5 Fed
Well: #3H
Wellbore: OH
Design: Post Gyro Plan #4

Local Co-ordinate Reference: Well #3H
TVD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
MD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
2,000.0	1.11	117.14	1,999.4	-1,537.9	-6.4	24.4	-6.9	0.25	387,827.46	546,404.69
2,100.0	0.85	125.60	2,099.4	-1,437.9	-7.3	25.8	-7.8	0.30	387,826.58	546,406.15
2,200.0	0.82	150.45	2,199.4	-1,337.9	-8.3	26.8	-8.9	0.36	387,825.53	546,407.11
2,300.0	0.66	160.48	2,299.4	-1,237.9	-9.5	27.3	-10.0	0.21	387,824.37	546,407.65
2,400.0	1.01	169.83	2,399.4	-1,137.9	-10.9	27.7	-11.4	0.37	387,822.95	546,408.00
2,500.0	0.99	172.61	2,499.3	-1,038.0	-12.6	27.9	-13.2	0.05	387,821.23	546,408.27
2,600.0	1.13	183.40	2,599.3	-938.0	-14.5	28.0	-15.0	0.24	387,819.39	546,408.32
2,700.0	1.05	176.77	2,699.3	-838.0	-16.3	28.0	-16.9	0.15	387,817.49	546,408.31
2,800.0	1.07	192.93	2,799.3	-738.0	-18.2	27.8	-18.7	0.30	387,815.67	546,408.16
2,900.0	1.16	197.93	2,899.3	-638.0	-20.0	27.3	-20.6	0.13	387,813.79	546,407.64
3,000.0	1.12	197.60	2,999.3	-538.0	-21.9	26.7	-22.5	0.04	387,811.90	546,407.03
3,100.0	0.98	197.96	3,099.2	-438.1	-23.7	26.1	-24.2	0.14	387,810.15	546,406.47
3,200.0	1.01	203.24	3,199.2	-338.1	-25.3	25.5	-25.8	0.10	387,808.53	546,405.86
3,300.0	1.05	203.44	3,299.2	-238.1	-27.0	24.8	-27.5	0.04	387,806.88	546,405.15
3,400.0	1.06	201.42	3,399.2	-138.1	-28.7	24.1	-29.1	0.04	387,805.18	546,404.44
3,500.0	0.98	202.35	3,499.2	-38.1	-30.3	23.5	-30.8	0.08	387,803.53	546,403.78
3,600.0	1.04	204.91	3,599.2	61.9	-31.9	22.7	-32.4	0.08	387,801.91	546,403.07
3,700.0	1.01	195.77	3,699.1	161.8	-33.6	22.1	-34.0	0.17	387,800.24	546,402.45
3,800.0	0.96	179.37	3,799.1	261.8	-35.3	21.9	-35.7	0.29	387,798.55	546,402.22
3,900.0	0.92	177.46	3,899.1	361.8	-36.9	21.9	-37.4	0.05	387,796.91	546,402.27
4,000.0	0.91	174.49	3,999.1	461.8	-38.5	22.0	-39.0	0.05	387,795.32	546,402.38
4,100.0	0.94	172.36	4,099.1	561.8	-40.1	22.2	-40.6	0.05	387,793.72	546,402.56
4,200.0	0.93	164.66	4,199.1	661.8	-41.7	22.6	-42.2	0.13	387,792.12	546,402.89
4,300.0	0.88	158.41	4,299.1	761.8	-43.2	23.1	-43.7	0.11	387,790.63	546,403.39
4,400.0	0.89	162.60	4,399.1	861.8	-44.7	23.6	-45.1	0.07	387,789.17	546,403.90
4,500.0	0.95	161.86	4,499.0	961.7	-46.2	24.1	-46.7	0.06	387,787.64	546,404.39
4,600.0	1.07	145.49	4,599.0	1,061.7	-47.8	24.8	-48.3	0.31	387,786.09	546,405.18



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD83)
Site: Lucky Bamboo 5 Fed
Well: #3H
Wellbore: OH
Design: Post Gyro Plan #4

Local Co-ordinate Reference: Well #3H
TVD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
MD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
4,700.0	1.25	134.52	4,699.0	1,161.7	-49.3	26.2	-49.8	0.29	387,784.55	546,406.48
4,800.0	1.19	144.16	4,799.0	1,261.7	-50.9	27.5	-51.4	0.21	387,782.94	546,407.87
4,900.0	1.26	145.06	4,899.0	1,361.7	-52.6	28.8	-53.2	0.07	387,781.20	546,409.11
5,000.0	1.21	146.82	4,998.9	1,461.6	-54.4	30.0	-55.0	0.06	387,779.42	546,410.31
5,100.0	1.22	146.44	5,098.9	1,561.6	-56.2	31.2	-56.8	0.01	387,777.65	546,411.48
5,200.0	1.39	159.64	5,198.9	1,661.6	-58.2	32.2	-58.9	0.34	387,775.62	546,412.49
5,300.0	1.59	164.65	5,298.9	1,761.6	-60.7	33.0	-61.4	0.24	387,773.15	546,413.28
5,400.0	2.23	159.97	5,398.8	1,861.5	-63.9	34.0	-64.5	0.66	387,769.98	546,414.31
5,500.0	2.37	157.94	5,498.7	1,961.4	-67.6	35.4	-68.3	0.16	387,766.24	546,415.76
5,600.0	2.31	160.95	5,598.6	2,061.3	-71.4	36.9	-72.2	0.14	387,762.42	546,417.19
5,700.0	1.94	168.52	5,698.6	2,161.3	-75.0	37.9	-75.7	0.46	387,758.85	546,418.19
5,800.0	1.80	176.71	5,798.5	2,261.2	-78.2	38.3	-79.0	0.30	387,755.62	546,418.61
5,900.0	1.35	182.18	5,898.5	2,361.2	-81.0	38.3	-81.7	0.47	387,752.88	546,418.66
6,000.0	1.00	250.99	5,998.5	2,461.2	-82.4	37.5	-83.2	1.36	387,751.42	546,417.79
6,100.0	1.59	279.72	6,098.4	2,561.1	-82.5	35.3	-83.2	0.86	387,751.37	546,415.60
6,200.0	1.59	279.25	6,198.4	2,661.1	-82.0	32.5	-82.7	0.01	387,751.83	546,412.86
6,300.0	1.65	283.48	6,298.4	2,761.1	-81.5	29.8	-82.0	0.13	387,752.38	546,410.09
6,400.0	1.42	287.77	6,398.3	2,861.0	-80.7	27.2	-81.3	0.26	387,753.10	546,407.51
6,500.0	0.63	287.18	6,498.3	2,961.0	-80.2	25.5	-80.7	0.79	387,753.64	546,405.81
6,600.0	0.67	130.12	6,598.3	3,061.0	-80.4	25.4	-80.9	1.27	387,753.42	546,405.73
6,700.0	1.37	139.77	6,698.3	3,161.0	-81.7	26.6	-82.2	0.72	387,752.13	546,406.95
6,800.0	1.57	161.29	6,798.2	3,260.9	-83.9	27.8	-84.5	0.58	387,749.92	546,408.16
6,900.0	1.54	160.61	6,898.2	3,360.9	-86.5	28.7	-87.0	0.04	387,747.36	546,409.04
7,000.0	2.12	174.17	6,998.2	3,460.9	-89.6	29.3	-90.2	0.72	387,744.25	546,409.68
7,100.0	2.27	173.72	7,098.1	3,560.8	-93.4	29.8	-94.0	0.15	387,740.44	546,410.08
7,200.0	1.82	181.55	7,198.0	3,660.7	-97.0	29.9	-97.5	0.53	387,736.89	546,410.26
7,300.0	1.14	232.24	7,298.0	3,760.7	-99.1	29.1	-99.7	1.41	387,734.69	546,409.43



Pathfinder
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A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD83)
Site: Lucky Bamboo 5 Fed
Well: #3H
Wellbore: OH
Design: Post Gyro Plan #4

Local Co-ordinate Reference: Well #3H
TVD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
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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)
7,400.0	1.89	234.56	7,398.0	3,860.7	-100.7	27.0	-101.2	0.75	387,733.13	546,407.30
7,500.0	2.03	231.82	7,497.9	3,960.6	-102.8	24.2	-103.2	0.17	387,731.07	546,404.56
7,600.0	2.64	226.67	7,597.8	4,060.5	-105.4	21.2	-105.8	0.64	387,728.40	546,401.49
7,700.0	2.72	209.89	7,697.7	4,160.4	-109.1	18.3	-109.4	0.79	387,724.76	546,398.64
7,800.0	2.16	203.30	7,797.6	4,260.3	-112.9	16.4	-113.2	0.63	387,720.97	546,396.71
7,900.0	1.75	195.53	7,897.6	4,360.3	-116.1	15.2	-116.4	0.49	387,717.77	546,395.55
8,000.0	1.62	195.64	7,997.5	4,460.2	-118.9	14.4	-119.2	0.13	387,714.94	546,394.76
8,100.0	1.77	196.14	8,097.5	4,560.2	-121.7	13.6	-122.0	0.15	387,712.09	546,393.95
8,200.0	1.87	194.75	8,197.4	4,660.1	-124.8	12.8	-125.0	0.11	387,709.03	546,393.11
8,300.0	1.92	194.00	8,297.4	4,760.1	-128.0	12.0	-128.2	0.06	387,705.83	546,392.29
8,400.0	1.84	191.43	8,397.3	4,860.0	-131.2	11.2	-131.4	0.12	387,702.63	546,391.56
8,500.0	1.99	188.06	8,497.3	4,960.0	-134.5	10.7	-134.7	0.19	387,699.34	546,391.00
8,600.0	1.76	177.33	8,597.2	5,059.9	-137.8	10.5	-137.9	0.42	387,696.08	546,390.83
8,700.0	1.75	187.57	8,697.2	5,159.9	-140.8	10.4	-141.0	0.31	387,693.04	546,390.70
8,701.0	1.65	186.95	8,698.2	5,160.9	-140.8	10.4	-141.0	10.17	387,693.01	546,390.70
8,755.0	1.93	190.52	8,752.1	5,214.8	-142.5	10.1	-142.7	0.56	387,691.34	546,390.44
8,800.0	1.93	190.52	8,797.1	5,259.8	-144.0	9.8	-144.2	0.00	387,689.85	546,390.16
8,825.0	1.49	321.88	8,822.1	5,284.8	-144.1	9.6	-144.3	12.49	387,689.69	546,389.88
8,850.0	4.50	340.68	8,847.1	5,309.8	-143.0	9.0	-143.1	12.49	387,690.88	546,389.36
8,875.0	7.60	344.32	8,871.9	5,334.6	-140.4	8.3	-140.6	12.49	387,693.39	546,388.59
8,900.0	10.71	345.85	8,896.6	5,359.3	-136.6	7.2	-136.7	12.49	387,697.24	546,387.57
8,925.0	13.83	346.70	8,921.0	5,383.7	-131.4	6.0	-131.5	12.49	387,702.40	546,386.32
8,950.0	16.95	347.24	8,945.1	5,407.8	-125.0	4.5	-125.0	12.49	387,708.87	546,384.82
8,975.0	20.07	347.62	8,968.8	5,431.5	-117.2	2.8	-117.3	12.49	387,716.61	546,383.10
9,000.0	23.19	347.90	8,992.1	5,454.8	-108.2	0.8	-108.2	12.49	387,725.62	546,381.15
9,025.0	26.32	348.12	9,014.8	5,477.5	-98.0	-1.4	-97.9	12.49	387,735.86	546,378.97
9,050.0	29.44	348.29	9,036.9	5,499.6	-86.5	-3.7	-86.4	12.49	387,747.30	546,376.58



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD83)
Site: Lucky Bamboo 5 Fed
Well: #3H
Wellbore: OH
Design: Post Gyro Plan #4

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:
Well #3H
KB = 17' @ 3537.3usft (Original Well Elev)
KB = 17' @ 3537.3usft (Original Well Elev)
Grid
Minimum Curvature
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)
9,075.0	32.56	348.43	9,058.3	5,521.0	-73.9	-6.3	-73.8	12.49	387,759.91	546,373.99
9,100.0	35.68	348.55	9,079.0	5,541.7	-60.2	-9.1	-60.0	12.49	387,773.65	546,371.19
9,125.0	38.81	348.65	9,098.9	5,561.6	-45.4	-12.1	-45.1	12.49	387,788.48	546,368.20
9,150.0	41.93	348.74	9,117.9	5,580.6	-29.5	-15.3	-29.2	12.49	387,804.36	546,365.03
9,175.0	45.05	348.82	9,136.1	5,598.8	-12.6	-18.6	-12.2	12.49	387,821.23	546,361.68
9,200.0	48.17	348.90	9,153.2	5,615.9	5.2	-22.2	5.7	12.49	387,839.06	546,358.17
9,225.0	51.30	348.96	9,169.4	5,632.1	23.9	-25.8	24.5	12.49	387,857.78	546,354.51
9,250.0	54.42	349.02	9,184.5	5,647.2	43.5	-29.6	44.1	12.49	387,877.33	546,350.71
9,275.0	57.54	349.07	9,198.5	5,661.2	63.8	-33.6	64.5	12.49	387,897.68	546,346.77
9,300.0	60.67	349.13	9,211.3	5,674.0	84.9	-37.6	85.6	12.49	387,918.74	546,342.71
9,325.0	63.79	349.17	9,222.9	5,685.6	106.6	-41.8	107.4	12.49	387,940.46	546,338.55
9,350.0	66.91	349.22	9,233.4	5,696.1	128.9	-46.0	129.8	12.49	387,962.78	546,334.29
9,375.0	70.04	349.26	9,242.5	5,705.2	151.8	-50.4	152.8	12.49	387,985.62	546,329.95
9,400.0	73.16	349.31	9,250.4	5,713.1	175.1	-54.8	176.2	12.49	388,008.93	546,325.54
9,425.0	76.28	349.35	9,257.0	5,719.7	198.8	-59.3	199.9	12.49	388,032.62	546,321.08
9,450.0	79.40	349.39	9,262.3	5,725.0	222.8	-63.8	224.1	12.49	388,056.64	546,316.57
9,475.0	82.53	349.42	9,266.2	5,728.9	247.1	-68.3	248.4	12.49	388,080.91	546,312.03
9,500.0	85.65	349.46	9,268.8	5,731.5	271.5	-72.9	272.9	12.49	388,105.35	546,307.47
9,524.8	88.75	349.50	9,270.0	5,732.7	295.9	-77.4	297.4	12.49	388,129.71	546,302.95
9,600.0	88.74	352.51	9,271.6	5,734.3	370.1	-89.1	371.8	4.00	388,203.95	546,291.20
9,700.0	88.74	356.51	9,273.8	5,736.5	469.6	-98.7	471.5	4.00	388,303.45	546,281.63
9,795.5	88.75	0.33	9,275.9	5,738.6	565.1	-101.3	567.0	4.00	388,398.89	546,279.00
9,800.0	88.75	0.33	9,276.0	5,738.7	569.5	-101.3	571.5	0.00	388,403.37	546,279.02
9,900.0	88.75	0.33	9,278.2	5,740.9	669.5	-100.7	671.4	0.00	388,503.34	546,279.60
10,000.0	88.75	0.33	9,280.4	5,743.1	769.5	-100.2	771.4	0.00	388,603.32	546,280.18
10,100.0	88.75	0.33	9,282.6	5,745.3	869.5	-99.6	871.3	0.00	388,703.29	546,280.76
10,200.0	88.75	0.33	9,284.8	5,747.5	969.4	-99.0	971.2	0.00	388,803.27	546,281.33



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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
10,300.0	88.75	0.33	9,287.0	5,749.7	1,069.4	-98.4	1,071.2	0.00	388,903.24	546,281.91
10,400.0	88.75	0.33	9,289.2	5,751.9	1,169.4	-97.8	1,171.1	0.00	389,003.21	546,282.49
10,500.0	88.75	0.33	9,291.3	5,754.0	1,269.3	-97.3	1,271.1	0.00	389,103.19	546,283.07
10,600.0	88.75	0.33	9,293.5	5,756.2	1,369.3	-96.7	1,371.0	0.00	389,203.16	546,283.64
10,700.0	88.75	0.33	9,295.7	5,758.4	1,469.3	-96.1	1,470.9	0.00	389,303.14	546,284.22
10,800.0	88.75	0.33	9,297.9	5,760.6	1,569.3	-95.5	1,570.9	0.00	389,403.11	546,284.80
10,900.0	88.75	0.33	9,300.1	5,762.8	1,669.2	-95.0	1,670.8	0.00	389,503.09	546,285.38
11,000.0	88.75	0.33	9,302.3	5,765.0	1,769.2	-94.4	1,770.8	0.00	389,603.06	546,285.95
11,100.0	88.75	0.33	9,304.5	5,767.2	1,869.2	-93.8	1,870.7	0.00	389,703.04	546,286.53
11,200.0	88.75	0.33	9,306.7	5,769.4	1,969.2	-93.2	1,970.7	0.00	389,803.01	546,287.11
11,300.0	88.75	0.33	9,308.8	5,771.5	2,069.1	-92.6	2,070.6	0.00	389,902.98	546,287.69
11,400.0	88.75	0.33	9,311.0	5,773.7	2,169.1	-92.1	2,170.5	0.00	390,002.96	546,288.26
11,500.0	88.75	0.33	9,313.2	5,775.9	2,269.1	-91.5	2,270.5	0.00	390,102.93	546,288.84
11,600.0	88.75	0.33	9,315.4	5,778.1	2,369.1	-90.9	2,370.4	0.00	390,202.91	546,289.42
11,700.0	88.75	0.33	9,317.6	5,780.3	2,469.0	-90.3	2,470.4	0.00	390,302.88	546,290.00
11,809.7	88.75	0.33	9,320.0	5,782.7	2,578.7	-89.7	2,580.0	0.00	390,412.54	546,290.63
11,900.0	88.78	0.33	9,321.9	5,784.6	2,669.0	-89.2	2,670.3	0.04	390,502.83	546,291.15
12,000.0	88.83	0.33	9,324.0	5,786.7	2,769.0	-88.6	2,770.2	0.04	390,602.81	546,291.73
12,100.0	88.87	0.33	9,326.0	5,788.7	2,868.9	-88.0	2,870.1	0.04	390,702.79	546,292.31
12,200.0	88.91	0.33	9,328.0	5,790.7	2,968.9	-87.4	2,970.1	0.04	390,802.77	546,292.88
12,300.0	88.95	0.33	9,329.9	5,792.6	3,068.9	-86.9	3,070.0	0.04	390,902.75	546,293.46
12,400.0	88.99	0.33	9,331.6	5,794.3	3,168.9	-86.3	3,170.0	0.04	391,002.73	546,294.03
12,500.0	89.03	0.33	9,333.4	5,796.1	3,268.9	-85.7	3,269.9	0.04	391,102.71	546,294.61
12,600.0	89.08	0.33	9,335.0	5,797.7	3,368.9	-85.1	3,369.9	0.04	391,202.70	546,295.18
12,662.0	89.10	0.33	9,336.0	5,798.7	3,430.9	-84.8	3,431.9	0.04	391,264.70	546,295.54
12,700.0	89.10	0.33	9,336.6	5,799.3	3,468.8	-84.6	3,469.8	0.00	391,302.68	546,295.76
12,800.0	89.10	0.33	9,338.2	5,800.9	3,568.8	-84.0	3,569.8	0.00	391,402.67	546,296.33



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

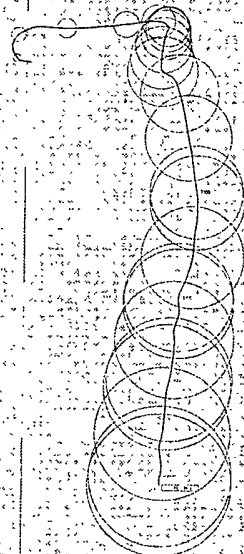
Company: COG Operating LLC
Project: Eddy County(NAD83)
Site: Lucky Bamboo 5 Fed
Well: #3H
Wellbore: OH
Design: Post Gyro Plan #4

Local Co-ordinate Reference: Well #3H
TVD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
MD Reference: KB = 17' @ 3537.3usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
12,900.0	89.10	0.33	9,339.7	5,802.4	3,668.8	-83.4	3,669.8	0.00	391,502.65	546,296.91
13,000.0	89.10	0.33	9,341.3	5,804.0	3,768.8	-82.8	3,769.7	0.00	391,602.64	546,297.48
13,100.0	89.10	0.33	9,342.9	5,805.6	3,868.8	-82.3	3,869.7	0.00	391,702.63	546,298.06
13,200.0	89.10	0.33	9,344.4	5,807.1	3,968.8	-81.7	3,969.6	0.00	391,802.61	546,298.63
13,236.3	89.10	0.33	9,345.0	5,807.7	4,005.1	-81.5	4,005.9	0.00	391,838.95	546,298.84

Checked By: _____ Approved By: _____ Date: _____



South (North + 1) [in]

West (East + 1) [in]