

OCD-ARTESIA

Form 3160-5
(April 2004)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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.*FORM APPROVED
OMB No. 1004-0137
Expires March 31, 2007**RECEIVED**
JUL 23 2010
NMOCD ARTESIA

SUBMIT IN TRIPLICATE- Other instructions on reverse side.		5 Lease Serial No NMNM-86025
1 Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		6 If Indian, Allottee or Tribe Name N/A
2 Name of Operator COG Operating LLC		7 If Unit or CA/Agreement, Name and/or No N/A
3a Address 550 W. Texas Ave., Suite 1300 Midland, TX 79701	3b Phone No (include area code) 432-685-4385	8 Well Name and No McIntyre DK Federal #17
4 Location of Well (Footage, Sec., T., R., M., or Survey Description) SHL: 940' FSL & 380' FWL Sec. 17, T17S, R30E, Unit M BHL: 990' FSL & 660' FEL Sec. 17, T17S, R30E, Unit P		9 API Well No 30-015-37821
		10 Field and Pool, or Exploratory Area Loco Hills; Glorieta-Yeso
		11 County or Parish, State Eddy, NM

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 Location & Total Depth
	☐ 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.)

Original BHL : 990' FSL & 660' FEL Sec. 17, T17S, R30E, Unit P

COG respectfully requests to change the Bottom Hole Location to: 990' FSL & 330' FEL Sec. 17, T17S, R30E, Unit P

An amended plat is attached.

APD Total Depth: 8985' MD; 4950' TVD

COG Operating LLC respectfully requests permission to change the approved TD to: 9275' MD; 4950' TVD

An amended Directional Plan is attached.

14 I hereby certify that the foregoing is true and correct Name (Printed/Typed) Robyn M. Odom		Title Regulatory Analyst
Signature <i>Robyn M. Odom</i>	Date 07/12/2010	APPROVED Petroleum Engineer JUL 12 2010 <i>Robyn M. Odom</i> BUREAU OF LAND MANAGEMENT CARLSBAD FIELD OFFICE

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 USC Section 1001 and Title 43 USC 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.

(Instructions on page 2)

m2

COH

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102

Revised October 12, 2005

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

DISTRICT II
1301 W. GRAND AVENUE, ARTESIA, NM 88210

DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410

DISTRICT IV
11885 S. ST. FRANCIS DR., SANTA FE, NM 87505

OIL CONSERVATION DIVISION
11885 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

APT Number 30-015-37821	Pool Code 96718	Pool Name LOCO HILLS; GLORIETA-YESO
Property Code 302524	Property Name McINTYRE DK FEDERAL	Well Number 17H
OGRID No 229137	Operator Name COG OPERATING, LLC	Elevation 3646'

Surface Location

UL or lot No. M	Section 17	Township 17-S	Range 30-E	Lot Idn	Feet from the 940	North/South line SOUTH	Feet from the 380	East/West line WEST	County EDDY
--------------------	---------------	------------------	---------------	---------	----------------------	---------------------------	----------------------	------------------------	----------------

Bottom Hole Location If Different From Surface

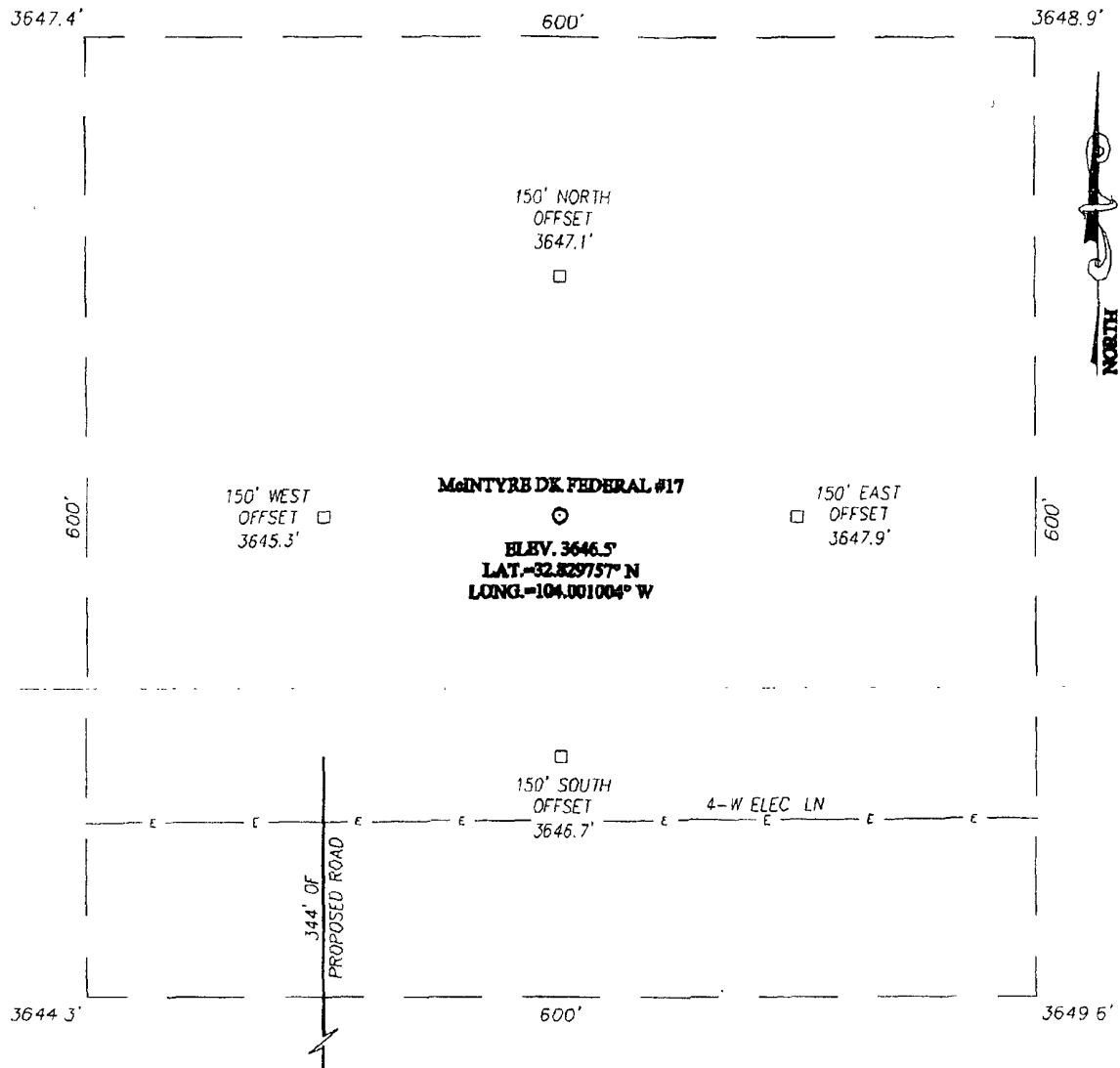
UL or lot No. P	Section 17	Township 17-S	Range 30-E	Lot Idn	Feet from the 990	North/South line SOUTH	Feet from the 330	East/West line EAST	County EDDY
--------------------	---------------	------------------	---------------	---------	----------------------	---------------------------	----------------------	------------------------	----------------

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

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

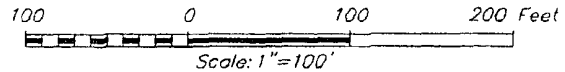
GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION Y=665737.2 N X=602082.1 E LAT.=32.829757° N LONG.=104.001004° W BOTTOM HOLE LOCATION Y=665801.0 N X=606651.8 E		DETAIL 3647.4' 3643.9' 600' 3644.3' 3649.6' GRID AZ.=89°11'57" HORZ. DIST.=4571.2' S.L. SEE DETAIL 380' 330'	OPERATOR CERTIFICATION I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. Signature _____ Date _____ Printed Name _____
		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. RONALD J. EIDSON FEBRUARY 1956 - 2010 NEW MEXICO DATE SURVEYED: 07/12/2010 SIGNATURE & SEAL OF PROFESSIONAL SURVEYOR Certificate No. CARY G EIDSON 12641 RONALD J EIDSON 3239	

SECTION 17, TOWNSHIP 17 SOUTH, RANGE 30 EAST, N.M.P.M.,
 EDDY COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

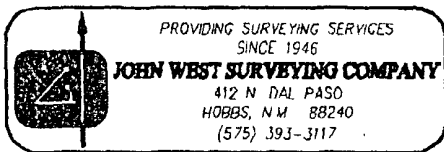
FROM THE INTERSECTION OF U.S. HWY #82 AND CO. RD. #217 (HAGERMAN CUTOFF), GO NORTH ON CO. RD. #217 APPROX 0.7 MILES. TURN LEFT AND GO WEST APPROX 1.0 MILE TO THE EXISTING COG OPERATING, LLC, McINTYRE DK FEDERAL #7 WELL FOLLOW PROPOSED ROAD SURVEY FROM THE NORTHWEST CORNER OF THE WELL PAD NORTH APPROX. 334 FEET. THIS LOCATION STAKE IS APPROX 212 FEET NORTHEAST



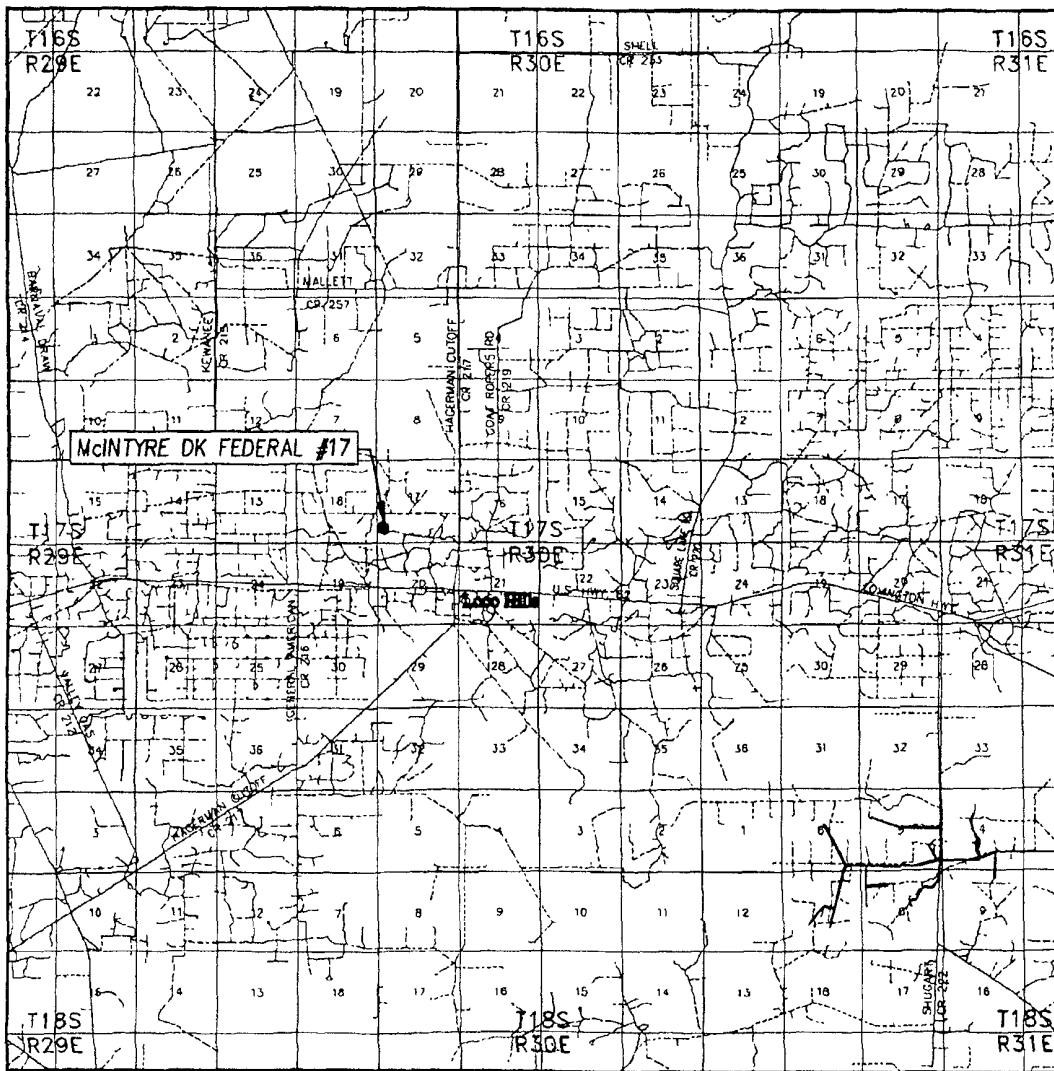
COG OPERATING. LLC

McINTYRE DK FEDERAL #17 WELL
 LOCATED 940 FEET FROM THE SOUTH LINE
 AND 380 FEET FROM THE WEST LINE OF SECTION 17,
 TOWNSHIP 17 SOUTH, RANGE 30 EAST, N.M.P.M.,
 EDDY COUNTY, NEW MEXICO

Survey Date 02/16/10	Sheet 1 of 1 Sheets
W.O. Number: 09.11.1215	Dr By: DSS
Date: 02/20/10	09111215
	Scale: 1"=100'



VICINITY MAP



SCALE: 1" = 2 MILES

SEC 17 TWP 17-S RGE. 30-E

SURVEY N.M.P.M.

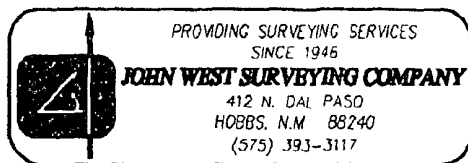
COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 940' FSL & 380' FWL

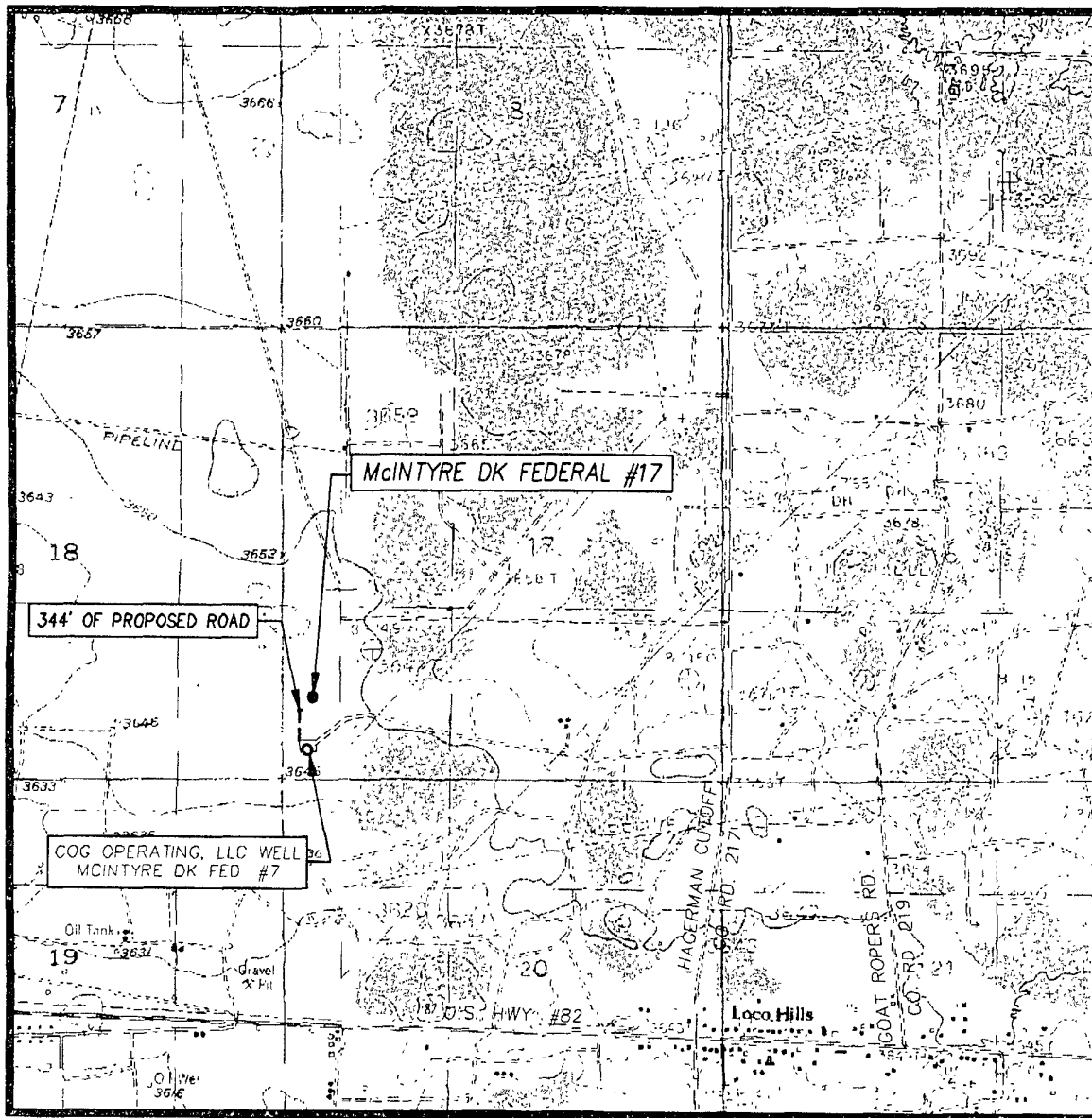
ELEVATION 3646'

OPERATOR COG OPERATING. LLC

EDDYSE MCINTYRE DK FEDERAL



LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL
 LOCO HILLS, N.M. - 10'
 RED LAKE SE, N.M. - 10'

SEC 17 TWP 17-S RGE 30-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 940' FSL & 380' FWL

ELEVATION 3646'

OPERATOR COG OPERATING, INC

EDDYSE McINTYRE DK FEDERAL

U.S.G.S. TOPOGRAPHIC MAP

LOCO HILLS, N.M.

PROVIDING SURVEYING SERVICES
 SINCE 1946
JOHN WEST SURVEYING COMPANY
 412 N. DAL PASO
 HOBBS, N.M. 88240
 (575) 393-3117



COG Operating LLC

Eddy County(NAD27)

McIntyre DK Federal

#17

OH

Plan: Plan #5

Pathfinder X & Y Planning Report

12 July, 2010





Pathfinder

Pathfinder X & Y Planning Report



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: McIntyre DK Federal
Well: #17
Wellbore: OH
Design: Plan #5

Local Co-ordinate Reference: Well #17
TVD Reference: WELL @ 3671.00ft (Original Well Elev)
MD Reference: WELL @ 3671.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Project	Eddy County(NAD27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	McIntyre DK Federal		
Site Position:		Northing:	665,737.200 ft
From: Map		Easting:	602,082.100 ft
Position Uncertainty:	0.00 ft	Slot Radius:	"
		Latitude:	32° 49' 47.125 N
		Longitude:	104° 0' 3.614 W
		Grid Convergence:	0.18 °

Well	#17		
Well Position	+N/-S	0.00 ft	Northing:
	+E/-W	0.00 ft	Easting:
Position Uncertainty		0.00 ft	Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
	IGRF200510	04/06/2010	(°)
			Dip Angle
			(°)
			Field Strength
			(nT)

Design	Plan #5		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			8,378.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.00	0.00	0.00
			Direction
			(°)
			89.49



Pathfinder
Pathfinder X & Y Planning Report



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: McIntyre DK Federal
Well: #17
Wellbore: OH
Design: Plan #5

Local Co-ordinate Reference: Well #17
TVD Reference: WELL @ 3671.00ft (Original Well Elev)
MD Reference: WELL @ 3671.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Survey Tool Program Date 07/12/2010

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	4,300.00	GYRO (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s
4,346.00	8,378.00	MWD #1 (OH)	MWD	MWD - Standard
8,378.00	9,275.10	Plan #5 (OH)	MWD	MWD - Standard

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	-3,671.00	0.00	0.00	0.00	0.00	665,737.20	602,082.10
25.00	0.18	352.57	25.00	-3,646.00	0.04	-0.01	0.00	0.72	665,737.24	602,082.09
50.00	0.36	352.57	50.00	-3,621.00	0.16	-0.02	-0.02	0.72	665,737.36	602,082.08
75.00	0.54	352.57	75.00	-3,596.00	0.35	-0.05	-0.04	0.72	665,737.55	602,082.05
100.00	0.72	352.57	100.00	-3,571.00	0.62	-0.08	-0.08	0.72	665,737.82	602,082.02
125.00	0.73	345.09	125.00	-3,546.00	0.93	-0.14	-0.13	0.38	665,738.13	602,081.96
150.00	0.75	337.89	149.99	-3,521.01	1.24	-0.24	-0.23	0.38	665,738.44	602,081.86
175.00	0.78	331.17	174.99	-3,496.01	1.54	-0.39	-0.37	0.38	665,738.74	602,081.71
200.00	0.82	325.04	199.99	-3,471.01	1.83	-0.57	-0.56	0.38	665,739.03	602,081.53
225.00	1.05	328.21	224.99	-3,446.01	2.17	-0.80	-0.78	0.92	665,739.37	602,081.30
250.00	1.27	330.25	249.98	-3,421.02	2.61	-1.05	-1.03	0.92	665,739.81	602,081.05
275.00	1.50	331.67	274.97	-3,396.03	3.14	-1.35	-1.32	0.92	665,740.34	602,080.75
300.00	1.73	332.72	299.96	-3,371.04	3.76	-1.67	-1.64	0.92	665,740.96	602,080.43
325.00	1.77	331.14	324.95	-3,346.05	4.43	-2.03	-1.99	0.25	665,741.63	602,080.07
350.00	1.81	329.63	349.94	-3,321.06	5.11	-2.42	-2.37	0.25	665,742.31	602,079.68
375.00	1.86	328.19	374.93	-3,296.07	5.80	-2.83	-2.78	0.25	665,743.00	602,079.27
400.00	1.90	326.82	399.91	-3,271.09	6.49	-3.27	-3.22	0.25	665,743.69	602,078.83
425.00	1.84	326.33	424.90	-3,246.10	7.17	-3.72	-3.66	0.23	665,744.37	602,078.38
450.00	1.79	325.81	449.89	-3,221.11	7.83	-4.17	-4.10	0.23	665,745.03	602,077.93
475.00	1.73	325.26	474.88	-3,196.12	8.46	-4.60	-4.53	0.23	665,745.66	602,077.50



Pathfinder
Pathfinder X & Y Planning Report



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: McIntyre DK Federal
Well: #17
Wellbore: OH
Design: Plan #5

Local Co-ordinate Reference: Well #17
TVD Reference: WELL @ 3671.00ft (Original Well Elev)
MD Reference: WELL @ 3671.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland 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)
500.00	1.68	324.67	499.86	-3,171.14	9.07	-5.03	-4.95	0.23	665,746.27	602,077.07
525.00	1.69	325.74	524.85	-3,146.15	9.68	-5.45	-5.36	0.13	665,746.88	602,076.65
550.00	1.70	326.80	549.84	-3,121.16	10.29	-5.86	-5.77	0.13	665,747.49	602,076.24
575.00	1.72	327.84	574.83	-3,096.17	10.92	-6.26	-6.17	0.13	665,748.12	602,075.84
600.00	1.73	328.87	599.82	-3,071.18	11.56	-6.66	-6.55	0.13	665,748.76	602,075.44
625.00	1.76	331.20	624.81	-3,046.19	12.22	-7.04	-6.93	0.30	665,749.42	602,075.06
650.00	1.78	333.47	649.80	-3,021.20	12.90	-7.40	-7.28	0.30	665,750.10	602,074.70
675.00	1.82	335.66	674.78	-2,996.22	13.61	-7.73	-7.61	0.30	665,750.81	602,074.37
700.00	1.85	337.77	699.77	-2,971.23	14.35	-8.05	-7.92	0.30	665,751.55	602,074.05
725.00	1.83	342.55	724.76	-2,946.24	15.10	-8.32	-8.19	0.62	665,752.30	602,073.78
750.00	1.82	347.41	749.75	-2,921.25	15.87	-8.53	-8.39	0.62	665,753.07	602,073.57
775.00	1.82	352.28	774.73	-2,896.27	16.65	-8.67	-8.52	0.62	665,753.85	602,073.43
800.00	1.84	357.10	799.72	-2,871.28	17.44	-8.74	-8.58	0.62	665,754.64	602,073.36
825.00	1.88	2.12	824.71	-2,846.29	18.26	-8.75	-8.58	0.67	665,755.46	602,073.35
850.00	1.93	6.90	849.69	-2,821.31	19.08	-8.68	-8.51	0.67	665,756.28	602,073.42
875.00	2.00	11.38	874.68	-2,796.32	19.93	-8.54	-8.37	0.67	665,757.13	602,073.56
900.00	2.08	15.56	899.66	-2,771.34	20.80	-8.33	-8.15	0.67	665,758.00	602,073.77
925.00	2.07	17.48	924.65	-2,746.35	21.66	-8.08	-7.88	0.28	665,758.86	602,074.02
950.00	2.06	19.43	949.63	-2,721.37	22.52	-7.79	-7.59	0.28	665,759.72	602,074.31
975.00	2.05	21.39	974.61	-2,696.39	23.36	-7.48	-7.27	0.28	665,760.56	602,074.62
1,000.00	2.05	23.36	999.60	-2,671.40	24.19	-7.14	-6.92	0.28	665,761.39	602,074.96
1,025.00	1.95	24.26	1,024.58	-2,646.42	24.98	-6.79	-6.56	0.42	665,762.18	602,075.31
1,050.00	1.85	25.26	1,049.57	-2,621.43	25.74	-6.44	-6.21	0.42	665,762.94	602,075.66
1,075.00	1.75	26.38	1,074.56	-2,596.44	26.44	-6.10	-5.86	0.42	665,763.64	602,076.00
1,100.00	1.65	27.63	1,099.55	-2,571.45	27.10	-5.76	-5.52	0.42	665,764.30	602,076.34
1,125.00	1.64	27.33	1,124.54	-2,546.46	27.74	-5.43	-5.18	0.04	665,764.94	602,076.67
1,150.00	1.64	27.04	1,149.53	-2,521.47	28.38	-5.10	-4.85	0.04	665,765.58	602,077.00



Pathfinder

Pathfinder X & Y Planning Report



Company: COG Operating LLC
 Project: Eddy County(NAD27)
 Site: McIntyre DK Federal
 Well: #17
 Wellbore: OH
 Design: Plan #5

Local Co-ordinate Reference: Well #17
 TVD Reference: WELL @ 3671.00ft (Original Well Elev)
 MD Reference: WELL @ 3671.00ft (Original Well Elev)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland 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)
1,175.00	1.63	26.74	1,174.51	-2,496.49	29.02	-4.78	-4.52	0.04	665,766.22	602,077.32
1,200.00	1.63	26.45	1,199.50	-2,471.50	29.65	-4.46	-4.20	0.04	665,766.85	602,077.64
1,225.00	1.57	26.05	1,224.49	-2,446.51	30.28	-4.15	-3.88	0.23	665,767.48	602,077.95
1,250.00	1.51	25.62	1,249.49	-2,421.51	30.89	-3.86	-3.58	0.23	665,768.09	602,078.24
1,275.00	1.46	25.15	1,274.48	-2,396.52	31.47	-3.58	-3.30	0.23	665,768.67	602,078.52
1,300.00	1.40	24.65	1,299.47	-2,371.53	32.04	-3.32	-3.03	0.23	665,769.24	602,078.78
1,325.00	1.29	26.23	1,324.46	-2,346.54	32.57	-3.07	-2.78	0.46	665,769.77	602,079.03
1,350.00	1.18	28.10	1,349.46	-2,321.54	33.05	-2.82	-2.53	0.46	665,770.25	602,079.28
1,375.00	1.07	30.35	1,374.45	-2,296.55	33.48	-2.58	-2.28	0.46	665,770.68	602,079.52
1,400.00	0.97	33.10	1,399.45	-2,271.55	33.86	-2.35	-2.05	0.46	665,771.06	602,079.75
1,425.00	0.88	33.46	1,424.44	-2,246.56	34.19	-2.13	-1.82	0.37	665,771.39	602,079.97
1,450.00	0.78	33.92	1,449.44	-2,221.56	34.49	-1.92	-1.62	0.37	665,771.69	602,080.18
1,475.00	0.69	34.49	1,474.44	-2,196.56	34.76	-1.74	-1.43	0.37	665,771.96	602,080.36
1,500.00	0.60	35.25	1,499.44	-2,171.56	34.99	-1.58	-1.27	0.37	665,772.19	602,080.52
1,525.00	0.58	34.40	1,524.44	-2,146.56	35.20	-1.44	-1.12	0.09	665,772.40	602,080.66
1,550.00	0.56	33.50	1,549.44	-2,121.56	35.41	-1.30	-0.98	0.09	665,772.61	602,080.80
1,575.00	0.54	32.52	1,574.43	-2,096.57	35.61	-1.17	-0.85	0.09	665,772.81	602,080.93
1,600.00	0.52	31.48	1,599.43	-2,071.57	35.81	-1.04	-0.73	0.09	665,773.01	602,081.06
1,625.00	0.53	30.63	1,624.43	-2,046.57	36.00	-0.92	-0.60	0.07	665,773.20	602,081.18
1,650.00	0.55	29.84	1,649.43	-2,021.57	36.21	-0.81	-0.48	0.07	665,773.41	602,081.29
1,675.00	0.56	29.08	1,674.43	-1,996.57	36.42	-0.69	-0.36	0.07	665,773.62	602,081.41
1,700.00	0.58	28.37	1,699.43	-1,971.57	36.64	-0.57	-0.24	0.07	665,773.84	602,081.53
1,725.00	0.60	30.01	1,724.43	-1,946.57	36.86	-0.44	-0.11	0.11	665,774.06	602,081.66
1,750.00	0.62	31.54	1,749.43	-1,921.57	37.09	-0.30	0.03	0.11	665,774.29	602,081.80
1,775.00	0.65	32.96	1,774.42	-1,896.58	37.33	-0.16	0.18	0.11	665,774.53	602,081.94
1,800.00	0.67	34.29	1,799.42	-1,871.58	37.57	0.00	0.34	0.11	665,774.77	602,082.10
1,825.00	0.65	33.64	1,824.42	-1,846.58	37.81	0.16	0.50	0.09	665,775.01	602,082.26



Pathfinder
Pathfinder X & Y Planning Report



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: McIntyre DK Federal
Well: #17
Wellbore: OH
Design: Plan #5

Local Co-ordinate Reference: Well #17
TVD Reference: WELL @ 3671.00ft (Original Well Elev)
MD Reference: WELL @ 3671.00ft (Original Well Elev)
North Reference: Grd
Survey Calculation Method: Minimum Curvature
Database: Midland 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)
1,850.00	0.63	32.95	1,849.42	-1,821.58	38.04	0.32	0.66	0.09	665,775.24	602,082.42
1,875.00	0.61	32.21	1,874.42	-1,796.58	38.27	0.46	0.80	0.09	665,775.47	602,082.56
1,900.00	0.59	31.43	1,899.42	-1,771.58	38.49	0.60	0.94	0.09	665,775.69	602,082.70
1,925.00	0.60	33.22	1,924.42	-1,746.58	38.71	0.74	1.09	0.09	665,775.91	602,082.84
1,950.00	0.62	34.93	1,949.41	-1,721.59	38.93	0.89	1.24	0.09	665,776.13	602,082.99
1,975.00	0.63	36.56	1,974.41	-1,696.59	39.15	1.05	1.40	0.09	665,776.35	602,083.15
2,000.00	0.65	38.11	1,999.41	-1,671.59	39.38	1.22	1.57	0.09	665,776.58	602,083.32
2,025.00	0.65	39.29	2,024.41	-1,646.59	39.60	1.40	1.75	0.05	665,776.80	602,083.50
2,050.00	0.64	40.49	2,049.41	-1,621.59	39.81	1.58	1.93	0.05	665,777.01	602,083.68
2,075.00	0.64	41.69	2,074.41	-1,596.59	40.02	1.76	2.12	0.05	665,777.22	602,083.86
2,100.00	0.64	42.91	2,099.40	-1,571.60	40.23	1.95	2.31	0.05	665,777.43	602,084.05
2,125.00	0.63	44.67	2,124.40	-1,546.60	40.43	2.14	2.50	0.09	665,777.63	602,084.24
2,150.00	0.62	46.48	2,149.40	-1,521.60	40.62	2.34	2.70	0.09	665,777.82	602,084.44
2,175.00	0.62	48.34	2,174.40	-1,496.60	40.81	2.54	2.90	0.09	665,778.01	602,084.64
2,200.00	0.61	50.24	2,199.40	-1,471.60	40.98	2.74	3.10	0.09	665,778.18	602,084.84
2,225.00	0.63	50.31	2,224.40	-1,446.60	41.15	2.95	3.31	0.10	665,778.35	602,085.05
2,250.00	0.66	50.37	2,249.40	-1,421.60	41.34	3.17	3.53	0.10	665,778.54	602,085.27
2,275.00	0.68	50.43	2,274.39	-1,396.61	41.52	3.39	3.76	0.10	665,778.72	602,085.49
2,300.00	0.71	50.49	2,299.39	-1,371.61	41.72	3.63	4.00	0.10	665,778.92	602,085.73
2,325.00	0.71	48.29	2,324.39	-1,346.61	41.92	3.86	4.23	0.11	665,779.12	602,085.96
2,350.00	0.70	46.08	2,349.39	-1,321.61	42.13	4.09	4.46	0.11	665,779.33	602,086.19
2,375.00	0.70	43.85	2,374.39	-1,296.61	42.34	4.30	4.68	0.11	665,779.54	602,086.40
2,400.00	0.70	41.61	2,399.38	-1,271.62	42.57	4.51	4.89	0.11	665,779.77	602,086.61
2,425.00	0.63	40.86	2,424.38	-1,246.62	42.79	4.70	5.08	0.26	665,779.99	602,086.80
2,450.00	0.57	39.93	2,449.38	-1,221.62	42.99	4.87	5.25	0.26	665,780.19	602,086.97
2,475.00	0.50	38.77	2,474.38	-1,196.62	43.17	5.02	5.41	0.26	665,780.37	602,087.12
2,500.00	0.44	37.27	2,499.38	-1,171.62	43.33	5.15	5.53	0.26	665,780.53	602,087.25



Pathfinder
Pathfinder X & Y Planning Report



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: McIntyre DK Federal
Well: #17
Wellbore: OH
Design: Plan #5

Local Co-ordinate Reference: Well #17
TVD Reference: WELL @ 3671.00ft (Original Well Elev)
MD Reference: WELL @ 3671 00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland 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)
2,525.00	0.39	40.22	2,524.38	-1,146.62	43.47	5.26	5.65	0.23	665,780.67	602,087.36
2,550.00	0.34	44.09	2,549.38	-1,121.62	43.59	5.37	5.75	0.23	665,780.79	602,087.47
2,575.00	0.29	49.33	2,574.38	-1,096.62	43.68	5.47	5.85	0.23	665,780.88	602,087.57
2,600.00	0.24	56.67	2,599.38	-1,071.62	43.75	5.56	5.94	0.23	665,780.95	602,087.66
2,625.00	0.29	57.63	2,624.38	-1,046.62	43.81	5.65	6.04	0.19	665,781.01	602,087.75
2,650.00	0.33	58.32	2,649.38	-1,021.62	43.88	5.77	6.16	0.19	665,781.08	602,087.87
2,675.00	0.38	58.83	2,674.38	-996.62	43.97	5.90	6.29	0.19	665,781.17	602,088.00
2,700.00	0.43	59.24	2,699.38	-971.62	44.06	6.05	6.45	0.19	665,781.26	602,088.15
2,725.00	0.40	54.85	2,724.38	-946.62	44.16	6.21	6.60	0.17	665,781.36	602,088.31
2,750.00	0.38	49.86	2,749.38	-921.62	44.26	6.34	6.73	0.17	665,781.46	602,088.44
2,775.00	0.36	44.23	2,774.37	-896.63	44.37	6.46	6.85	0.17	665,781.57	602,088.56
2,800.00	0.34	37.97	2,799.37	-871.63	44.48	6.56	6.95	0.17	665,781.68	602,088.66
2,825.00	0.32	41.05	2,824.37	-846.63	44.59	6.65	7.05	0.10	665,781.79	602,088.75
2,850.00	0.30	44.51	2,849.37	-821.63	44.69	6.74	7.14	0.10	665,781.89	602,088.84
2,875.00	0.29	48.41	2,874.37	-796.63	44.78	6.84	7.23	0.10	665,781.98	602,088.94
2,900.00	0.27	52.77	2,899.37	-771.63	44.86	6.93	7.33	0.10	665,782.06	602,089.03
2,925.00	0.27	43.35	2,924.37	-746.63	44.94	7.02	7.41	0.18	665,782.14	602,089.12
2,950.00	0.27	33.97	2,949.37	-721.63	45.03	7.09	7.49	0.18	665,782.23	602,089.19
2,975.00	0.28	25.12	2,974.37	-696.63	45.13	7.15	7.55	0.18	665,782.33	602,089.25
3,000.00	0.30	17.12	2,999.37	-671.63	45.25	7.19	7.60	0.18	665,782.45	602,089.29
3,025.00	0.27	21.58	3,024.37	-646.63	45.37	7.23	7.64	0.15	665,782.57	602,089.33
3,050.00	0.24	27.18	3,049.37	-621.63	45.47	7.28	7.68	0.15	665,782.67	602,089.38
3,075.00	0.21	34.26	3,074.37	-596.63	45.55	7.33	7.73	0.15	665,782.75	602,089.43
3,100.00	0.19	43.19	3,099.37	-571.63	45.62	7.38	7.79	0.15	665,782.82	602,089.48
3,125.00	0.20	31.81	3,124.37	-546.63	45.69	7.44	7.84	0.17	665,782.89	602,089.54
3,150.00	0.22	22.20	3,149.37	-521.63	45.77	7.48	7.88	0.17	665,782.97	602,089.58
3,175.00	0.25	14.39	3,174.37	-496.63	45.87	7.51	7.92	0.17	665,783.07	602,089.61



Pathfinder
Pathfinder X & Y Planning Report



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: McIntyre DK Federal
Well: #17
Wellbore: OH
Design: Plan #5

Local Co-ordinate Reference: Well #17
TVD Reference: WELL @ 3671.00ft (Original Well Elev)
MD Reference: WELL @ 3671.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland 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)
3,200.00	0.28	8.14	3,199.37	-471.63	45.99	7.53	7.94	0.17	665,783.19	602,089.63
3,225.00	0.32	21.87	3,224.37	-446.63	46.11	7.57	7.98	0.32	665,783.31	602,089.67
3,250.00	0.37	32.33	3,249.37	-421.63	46.24	7.63	8.05	0.32	665,783.44	602,089.73
3,275.00	0.43	40.09	3,274.37	-396.63	46.38	7.74	8.15	0.32	665,783.58	602,089.84
3,300.00	0.49	45.88	3,299.37	-371.63	46.53	7.87	8.29	0.32	665,783.73	602,089.97
3,325.00	0.46	47.63	3,324.37	-346.63	46.67	8.02	8.44	0.14	665,783.87	602,090.12
3,350.00	0.43	49.64	3,349.37	-321.63	46.80	8.17	8.59	0.14	665,784.00	602,090.27
3,375.00	0.40	51.95	3,374.37	-296.63	46.91	8.31	8.73	0.14	665,784.11	602,090.41
3,400.00	0.37	54.63	3,399.36	-271.64	47.01	8.44	8.86	0.14	665,784.21	602,090.54
3,425.00	0.43	54.07	3,424.36	-246.64	47.11	8.59	9.00	0.25	665,784.31	602,090.69
3,450.00	0.49	53.65	3,449.36	-221.64	47.23	8.75	9.17	0.25	665,784.43	602,090.85
3,475.00	0.56	53.33	3,474.36	-196.64	47.37	8.93	9.35	0.25	665,784.57	602,091.03
3,500.00	0.62	53.07	3,499.36	-171.64	47.52	9.14	9.56	0.25	665,784.72	602,091.24
3,525.00	0.58	54.00	3,524.36	-146.64	47.68	9.35	9.77	0.17	665,784.88	602,091.45
3,550.00	0.54	55.06	3,549.36	-121.64	47.82	9.55	9.97	0.17	665,785.02	602,091.65
3,575.00	0.50	56.30	3,574.36	-96.64	47.95	9.74	10.16	0.17	665,785.15	602,091.84
3,600.00	0.46	57.76	3,599.36	-71.64	48.06	9.91	10.34	0.17	665,785.26	602,092.01
3,625.00	0.48	56.09	3,624.36	-46.64	48.17	10.08	10.51	0.10	665,785.37	602,092.18
3,650.00	0.50	54.58	3,649.35	-21.65	48.30	10.26	10.69	0.10	665,785.50	602,092.36
3,675.00	0.53	53.19	3,674.35	3.35	48.43	10.44	10.87	0.10	665,785.63	602,092.54
3,700.00	0.55	51.92	3,699.35	28.35	48.57	10.63	11.06	0.10	665,785.77	602,092.73
3,725.00	0.56	44.77	3,724.35	53.35	48.73	10.81	11.24	0.28	665,785.93	602,092.91
3,750.00	0.57	37.87	3,749.35	78.35	48.92	10.97	11.40	0.28	665,786.12	602,093.07
3,775.00	0.59	31.39	3,774.35	103.35	49.12	11.11	11.55	0.28	665,786.32	602,093.21
3,800.00	0.62	25.44	3,799.35	128.35	49.36	11.24	11.68	0.28	665,786.56	602,093.34
3,825.00	0.57	33.78	3,824.35	153.35	49.58	11.37	11.81	0.41	665,786.78	602,093.47
3,850.00	0.52	43.64	3,849.35	178.35	49.77	11.51	11.96	0.41	665,786.97	602,093.61



Pathfinder
Pathfinder X & Y Planning Report



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: McIntyre DK Federal
Well: #17
Wellbore: OH
Design: Plan #5

Local Co-ordinate Reference: Well #17
TVD Reference: WELL @ 3671.00ft (Original Well Elev)
MD Reference: WELL @ 3671.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland 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)
3,875.00	0.50	54.76	3,874.34	203.34	49.91	11.68	12.13	0.41	665,787.11	602,093.78
3,900.00	0.50	66.44	3,899.34	228.34	50.02	11.87	12.32	0.41	665,787.22	602,093.97
3,925.00	0.46	74.79	3,924.34	253.34	50.09	12.07	12.51	0.33	665,787.29	602,094.17
3,950.00	0.43	84.58	3,949.34	278.34	50.12	12.26	12.70	0.33	665,787.32	602,094.36
3,975.00	0.41	95.51	3,974.34	303.34	50.12	12.44	12.88	0.33	665,787.32	602,094.54
4,000.00	0.41	106.90	3,999.34	328.34	50.09	12.61	13.06	0.33	665,787.29	602,094.71
4,025.00	0.41	112.75	4,024.34	353.34	50.03	12.78	13.23	0.17	665,787.23	602,094.88
4,050.00	0.41	118.59	4,049.34	378.34	49.95	12.94	13.39	0.17	665,787.15	602,095.04
4,075.00	0.42	124.28	4,074.34	403.34	49.86	13.10	13.54	0.17	665,787.06	602,095.20
4,100.00	0.43	129.73	4,099.34	428.34	49.75	13.24	13.69	0.17	665,786.95	602,095.34
4,125.00	0.45	127.16	4,124.34	453.34	49.63	13.39	13.83	0.10	665,786.83	602,095.49
4,150.00	0.46	124.78	4,149.34	478.34	49.51	13.56	13.99	0.10	665,786.71	602,095.66
4,175.00	0.48	122.57	4,174.34	503.34	49.40	13.73	14.17	0.10	665,786.60	602,095.83
4,200.00	0.50	120.53	4,199.33	528.33	49.28	13.91	14.35	0.10	665,786.48	602,096.01
4,225.00	0.54	135.21	4,224.33	553.33	49.15	14.09	14.52	0.56	665,786.35	602,096.19
4,250.00	0.61	147.16	4,249.33	578.33	48.95	14.24	14.68	0.56	665,786.15	602,096.34
4,275.00	0.70	156.31	4,274.33	603.33	48.70	14.38	14.81	0.56	665,785.90	602,096.48
4,300.00	0.81	163.22	4,299.33	628.33	48.39	14.49	14.92	0.56	665,785.59	602,096.59
4,325.00	0.93	161.04	4,324.33	653.33	48.03	14.61	15.03	0.49	665,785.23	602,096.71
4,350.00	1.06	159.04	4,349.32	678.32	47.62	14.75	15.18	0.53	665,784.82	602,096.85
4,375.00	1.26	154.68	4,374.32	703.32	47.16	14.94	15.36	0.88	665,784.36	602,097.04
4,400.00	2.21	132.67	4,399.31	728.31	46.58	15.42	15.83	4.57	665,783.78	602,097.52
4,425.00	4.06	120.66	4,424.27	753.27	45.81	16.49	16.90	7.83	665,783.01	602,098.59
4,450.00	6.15	116.80	4,449.17	778.17	44.77	18.46	18.86	8.44	665,781.97	602,100.56
4,475.00	8.24	116.23	4,473.97	802.97	43.39	21.25	21.64	8.37	665,780.59	602,103.35
4,500.00	10.72	117.51	4,498.63	827.63	41.52	24.92	25.29	9.97	665,778.72	602,107.02
4,525.00	13.52	119.16	4,523.07	852.07	39.03	29.54	29.88	11.28	665,776.23	602,111.64



Pathfinder
Pathfinder X & Y Planning Report



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: McIntyre DK Federal
Well: #17
Wellbore: OH
Design: Plan #5

Local Co-ordinate Reference: Well #17
TVD Reference: WELL @ 3671.00ft (Original Well Elev)
MD Reference: WELL @ 3671.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland 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)
4,550.00	16.15	120.03	4,547.23	876.23	35.85	35.11	35.43	10.55	665,773.05	602,117.21
4,575.00	18.72	120.24	4,571.08	900.08	32.08	41.57	41.86	10.29	665,769.28	602,123.67
4,600.00	21.38	119.85	4,594.57	923.57	27.79	48.98	49.23	10.65	665,764.99	602,131.08
4,625.00	24.35	118.72	4,617.60	946.60	23.05	57.45	57.66	12.03	665,760.25	602,139.55
4,650.00	27.02	117.70	4,640.13	969.13	17.92	67.01	67.17	10.80	665,755.12	602,149.11
4,675.00	29.72	116.67	4,662.12	991.12	12.50	77.57	77.68	10.99	665,749.70	602,159.67
4,700.00	32.44	115.44	4,683.53	1,012.53	6.81	89.16	89.21	11.18	665,744.01	602,171.26
4,725.00	35.13	113.88	4,704.31	1,033.31	1.02	101.79	101.80	11.30	665,738.22	602,183.89
4,750.00	37.88	112.15	4,724.40	1,053.40	-4.79	115.48	115.43	11.74	665,732.41	602,197.58
4,775.00	40.42	110.39	4,743.78	1,072.78	-10.52	130.19	130.09	11.09	665,726.68	602,212.29
4,800.00	42.90	107.82	4,762.46	1,091.46	-16.00	145.88	145.73	12.07	665,721.20	602,227.98
4,825.00	45.44	104.88	4,780.39	1,109.39	-20.89	162.59	162.40	13.04	665,716.31	602,244.69
4,850.00	48.15	102.35	4,797.52	1,126.52	-25.15	180.29	180.06	13.10	665,712.05	602,262.39
4,875.00	51.99	101.74	4,813.56	1,142.56	-29.15	199.04	198.77	15.49	665,708.05	602,281.14
4,900.00	55.73	99.83	4,828.30	1,157.30	-32.96	218.86	218.56	16.20	665,704.24	602,300.96
4,925.00	58.73	98.04	4,841.76	1,170.76	-36.20	239.67	239.34	13.42	665,701.00	602,321.77
4,950.00	60.95	96.42	4,854.32	1,183.32	-38.96	261.11	260.75	10.49	665,698.24	602,343.21
4,975.00	63.22	93.81	4,866.03	1,195.03	-40.92	283.11	282.73	12.92	665,696.28	602,365.21
5,000.00	65.61	90.60	4,876.82	1,205.82	-41.80	305.63	305.25	15.04	665,695.40	602,387.73
5,025.00	68.03	88.61	4,886.66	1,215.66	-41.57	328.61	328.23	12.13	665,695.63	602,410.71
5,050.00	70.22	87.59	4,895.54	1,224.54	-40.74	351.97	351.59	9.56	665,696.46	602,434.07
5,075.00	71.97	87.23	4,903.62	1,232.62	-39.66	375.60	375.23	7.13	665,697.54	602,457.70
5,100.00	73.07	87.06	4,911.13	1,240.13	-38.47	399.42	399.06	4.45	665,698.73	602,481.52
5,125.00	74.74	86.58	4,918.06	1,247.06	-37.14	423.40	423.05	6.93	665,700.06	602,505.50
5,150.00	76.10	86.28	4,924.33	1,253.33	-35.62	447.55	447.22	5.58	665,701.58	602,529.65
5,175.00	77.44	86.26	4,930.07	1,259.07	-34.02	471.83	471.51	5.34	665,703.18	602,553.93
5,200.00	79.00	86.50	4,935.16	1,264.16	-32.48	496.25	495.95	6.33	665,704.72	602,578.35



Pathfinder Pathfinder X & Y Planning Report



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: McIntyre DK Federal
Well: #17
Wellbore: OH
Design: Plan #5

Local Co-ordinate Reference: Well #17
TVD Reference: WELL @ 3671.00ft (Original Well Elev)
MD Reference: WELL @ 3671.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland 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)
5,225.00	80.03	86.66	4,939.71	1,268.71	-31.01	520.79	520.50	4.18	665,706.19	602,602.89
5,250.00	81.98	86.36	4,943.65	1,272.65	-29.53	545.44	545.15	7.89	665,707.67	602,627.54
5,275.00	84.23	85.91	4,946.66	1,275.66	-27.86	570.20	569.93	9.16	665,709.34	602,652.30
5,300.00	86.53	85.43	4,948.67	1,277.67	-25.97	595.04	594.79	9.39	665,711.23	602,677.14
5,325.00	88.67	85.01	4,949.70	1,278.70	-23.89	619.93	619.70	8.76	665,713.31	602,702.03
5,350.00	89.28	84.65	4,950.15	1,279.15	-21.64	644.83	644.61	2.83	665,715.56	602,726.93
5,375.00	89.43	84.57	4,950.40	1,279.40	-19.27	669.71	669.51	0.66	665,717.93	602,751.81
5,400.00	89.46	84.50	4,950.65	1,279.65	-16.90	694.60	694.42	0.31	665,720.30	602,776.70
5,425.00	89.59	84.66	4,950.86	1,279.86	-14.49	719.48	719.32	0.79	665,722.71	602,801.58
5,450.00	89.87	85.81	4,950.98	1,279.98	-12.41	744.39	744.25	4.75	665,724.79	602,826.49
5,475.00	89.70	86.45	4,951.08	1,280.08	-10.73	769.34	769.21	2.67	665,726.47	602,851.44
5,500.00	89.53	87.10	4,951.24	1,280.24	-9.32	794.30	794.18	2.67	665,727.88	602,876.40
5,525.00	89.43	87.44	4,951.48	1,280.48	-8.17	819.27	819.16	1.40	665,729.03	602,901.37
5,550.00	89.43	87.38	4,951.73	1,280.73	-7.04	844.24	844.15	0.22	665,730.16	602,926.34
5,575.00	89.43	87.33	4,951.98	1,280.98	-5.88	869.21	869.13	0.22	665,731.32	602,951.31
5,600.00	89.64	87.97	4,952.19	1,281.19	-4.84	894.19	894.11	2.69	665,732.36	602,976.29
5,625.00	89.88	88.70	4,952.29	1,281.29	-4.11	919.18	919.11	3.09	665,733.09	603,001.28
5,650.00	90.06	89.43	4,952.30	1,281.30	-3.70	944.18	944.11	3.01	665,733.50	603,026.28
5,675.00	90.13	90.15	4,952.25	1,281.25	-3.61	969.18	969.11	2.89	665,733.59	603,051.28
5,700.00	90.20	90.87	4,952.18	1,281.18	-3.83	994.17	994.10	2.89	665,733.37	603,076.27
5,725.00	90.27	91.09	4,952.08	1,281.08	-4.29	1,019.17	1,019.09	0.93	665,732.91	603,101.27
5,750.00	90.35	91.15	4,951.94	1,280.94	-4.77	1,044.17	1,044.08	0.38	665,732.43	603,126.27
5,775.00	90.42	91.19	4,951.78	1,280.78	-5.29	1,069.16	1,069.07	0.32	665,731.91	603,151.26
5,800.00	90.48	91.16	4,951.58	1,280.58	-5.80	1,094.15	1,094.06	0.29	665,731.40	603,176.25
5,825.00	90.55	91.13	4,951.35	1,280.35	-6.30	1,119.15	1,119.05	0.29	665,730.90	603,201.25
5,850.00	90.66	91.09	4,951.09	1,280.09	-6.79	1,144.14	1,144.04	0.49	665,730.41	603,226.24
5,875.00	90.80	91.04	4,950.77	1,279.77	-7.25	1,169.13	1,169.02	0.59	665,729.95	603,251.23



Pathfinder

Pathfinder X & Y Planning Report



Company: COG Operating LLC
 Project: Eddy County(NAD27)
 Site: McIntyre DK Federal
 Well: #17
 Wellbore: OH
 Design: Plan #5

Local Co-ordinate Reference: Well #17
 TVD Reference: WELL @ 3671 00ft (Original Well Elev)
 MD Reference: WELL @ 3671 00ft (Original Well Elev)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland 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)
5,900.00	90.94	90.99	4,950.39	1,279.39	-7.69	1,194.13	1,194.01	0.58	665,729.51	603,276.23
5,925.00	91.05	90.93	4,949.96	1,278.96	-8.11	1,219.12	1,219.00	0.52	665,729.09	603,301.22
5,950.00	91.17	90.87	4,949.47	1,278.47	-8.51	1,244.11	1,243.99	0.52	665,728.69	603,326.21
5,975.00	91.29	90.81	4,948.94	1,277.94	-8.87	1,269.10	1,268.98	0.52	665,728.33	603,351.20
6,000.00	91.21	90.86	4,948.37	1,277.37	-9.22	1,294.10	1,293.96	0.36	665,727.98	603,376.20
6,025.00	90.80	91.10	4,947.93	1,276.93	-9.65	1,319.09	1,318.95	1.92	665,727.55	603,401.19
6,050.00	90.39	91.35	4,947.67	1,276.67	-10.18	1,344.08	1,343.94	1.92	665,727.02	603,426.18
6,075.00	89.98	91.59	4,947.59	1,276.59	-10.82	1,369.07	1,368.92	1.92	665,726.38	603,451.17
6,100.00	89.85	91.68	4,947.65	1,276.65	-11.55	1,394.06	1,393.90	0.62	665,725.65	603,476.16
6,125.00	89.99	91.63	4,947.69	1,276.69	-12.28	1,419.05	1,418.89	0.59	665,724.92	603,501.15
6,150.00	90.13	91.57	4,947.66	1,276.66	-12.97	1,444.04	1,443.87	0.59	665,724.23	603,526.14
6,175.00	90.27	91.52	4,947.58	1,276.58	-13.65	1,469.03	1,468.85	0.59	665,723.55	603,551.13
6,200.00	90.00	91.46	4,947.49	1,276.49	-14.30	1,494.02	1,493.84	1.10	665,722.90	603,576.12
6,225.00	89.53	91.41	4,947.60	1,276.60	-14.93	1,519.02	1,518.82	1.86	665,722.27	603,601.12
6,250.00	89.07	91.36	4,947.90	1,276.90	-15.53	1,544.01	1,543.81	1.86	665,721.67	603,626.11
6,275.00	88.61	91.31	4,948.41	1,277.41	-16.11	1,568.99	1,568.79	1.86	665,721.09	603,651.09
6,300.00	88.71	91.30	4,949.01	1,278.01	-16.68	1,593.98	1,593.77	0.42	665,720.52	603,676.08
6,325.00	88.89	91.31	4,949.53	1,278.53	-17.25	1,618.97	1,618.75	0.73	665,719.95	603,701.07
6,350.00	89.07	91.32	4,949.97	1,278.97	-17.82	1,643.96	1,643.73	0.73	665,719.38	603,726.06
6,375.00	89.25	91.31	4,950.34	1,279.34	-18.40	1,668.95	1,668.72	0.71	665,718.80	603,751.05
6,400.00	89.34	91.10	4,950.64	1,279.64	-18.92	1,693.94	1,693.71	0.94	665,718.28	603,776.04
6,425.00	89.44	90.88	4,950.91	1,279.91	-19.35	1,718.94	1,718.70	0.94	665,717.85	603,801.04
6,450.00	89.53	90.66	4,951.14	1,280.14	-19.69	1,743.93	1,743.69	0.94	665,717.51	603,826.03
6,475.00	89.61	90.46	4,951.32	1,280.32	-19.93	1,768.93	1,768.68	0.87	665,717.27	603,851.03
6,500.00	89.69	90.33	4,951.48	1,280.48	-20.10	1,793.93	1,793.68	0.61	665,717.10	603,876.03
6,525.00	89.76	90.19	4,951.60	1,280.60	-20.22	1,818.93	1,818.68	0.61	665,716.98	603,901.03
6,550.00	89.83	90.06	4,951.69	1,280.69	-20.27	1,843.93	1,843.68	0.61	665,716.93	603,926.03



Pathfinder
Pathfinder X & Y Planning Report



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: McIntyre DK Federal
Well: #17
Wellbore: OH
Design: Plan #5

Local Co-ordinate Reference: Well #17
TVD Reference: WELL @ 3671.00ft (Original Well Elev)
MD Reference: WELL @ 3671 00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland 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)
6,575.00	90.01	90.07	4,951.74	1,280.74	-20.28	1,868.93	1,868.68	0.73	665,716.92	603,951.03
6,600.00	90.36	90.30	4,951.66	1,280.66	-20.37	1,893.93	1,893.67	1.66	665,716.83	603,976.03
6,625.00	90.70	90.53	4,951.43	1,280.43	-20.55	1,918.93	1,918.67	1.66	665,716.65	604,001.03
6,650.00	91.05	90.76	4,951.04	1,280.04	-20.83	1,943.92	1,943.66	1.66	665,716.37	604,026.02
6,675.00	90.98	90.60	4,950.56	1,279.56	-21.16	1,968.92	1,968.65	0.71	665,716.04	604,051.02
6,700.00	90.63	90.17	4,950.21	1,279.21	-21.32	1,993.91	1,993.64	2.19	665,715.88	604,076.01
6,725.00	90.29	89.75	4,950.01	1,279.01	-21.31	2,018.91	2,018.64	2.19	665,715.89	604,101.01
6,750.00	89.94	89.32	4,949.96	1,278.96	-21.10	2,043.91	2,043.64	2.19	665,716.10	604,126.01
6,775.00	89.89	89.06	4,950.01	1,279.01	-20.75	2,068.91	2,068.64	1.08	665,716.45	604,151.01
6,800.00	89.91	88.83	4,950.06	1,279.06	-20.29	2,093.90	2,093.64	0.91	665,716.91	604,176.00
6,825.00	89.94	88.61	4,950.09	1,279.09	-19.73	2,118.90	2,118.64	0.91	665,717.47	604,201.00
6,850.00	89.96	88.38	4,950.11	1,279.11	-19.07	2,143.89	2,143.63	0.91	665,718.13	604,225.99
6,875.00	90.16	88.30	4,950.09	1,279.09	-18.34	2,168.88	2,168.63	0.86	665,718.86	604,250.98
6,900.00	90.37	88.23	4,949.97	1,278.97	-17.59	2,193.87	2,193.62	0.88	665,719.61	604,275.97
6,925.00	90.58	88.16	4,949.77	1,278.77	-16.80	2,218.85	2,218.62	0.88	665,720.40	604,300.95
6,950.00	90.73	88.11	4,949.47	1,278.47	-15.98	2,243.84	2,243.61	0.64	665,721.22	604,325.94
6,975.00	90.59	88.21	4,949.19	1,278.19	-15.18	2,268.82	2,268.60	0.67	665,722.02	604,350.92
7,000.00	90.45	88.30	4,948.96	1,277.96	-14.42	2,293.81	2,293.59	0.67	665,722.78	604,375.91
7,025.00	90.31	88.39	4,948.79	1,277.79	-13.70	2,318.80	2,318.59	0.67	665,723.50	604,400.90
7,050.00	90.35	88.52	4,948.68	1,277.68	-13.02	2,343.79	2,343.58	0.52	665,724.18	604,425.89
7,075.00	90.69	88.70	4,948.45	1,277.45	-12.41	2,368.78	2,368.58	1.58	665,724.79	604,450.88
7,100.00	91.04	88.89	4,948.07	1,277.07	-11.89	2,393.77	2,393.57	1.58	665,725.31	604,475.87
7,125.00	91.39	89.08	4,947.54	1,276.54	-11.44	2,418.76	2,418.57	1.58	665,725.76	604,500.86
7,150.00	91.36	89.04	4,946.91	1,275.91	-11.05	2,443.75	2,443.56	0.17	665,726.15	604,525.85
7,175.00	91.04	88.84	4,946.38	1,275.38	-10.59	2,468.74	2,468.55	1.52	665,726.61	604,550.84
7,200.00	90.72	88.63	4,946.00	1,275.00	-10.04	2,493.73	2,493.55	1.52	665,727.16	604,575.83
7,225.00	90.40	88.43	4,945.75	1,274.75	-9.40	2,518.72	2,518.54	1.52	665,727.80	604,600.82



Pathfinder

Pathfinder X & Y Planning Report



Company: COG Operating LLC
 Project: Eddy County(NAD27)
 Site: McIntyre DK Federal
 Well: #17
 Wellbore: OH
 Design: Plan #5

Local Co-ordinate Reference: Well #17
 TVD Reference: WELL @ 3671.00ft (Original Well Elev)
 MD Reference: WELL @ 3671.00ft (Original Well Elev)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland 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)
7,250.00	90.08	88.39	4,945.65	1,274.65	-8.70	2,543.71	2,543.54	1.30	665,728.50	604,625.81
7,275.00	89.75	88.41	4,945.69	1,274.69	-8.00	2,568.70	2,568.53	1.30	665,729.20	604,650.80
7,300.00	89.43	88.43	4,945.87	1,274.87	-7.30	2,593.69	2,593.53	1.30	665,729.90	604,675.79
7,325.00	89.11	88.45	4,946.19	1,275.19	-6.62	2,618.68	2,618.52	1.30	665,730.58	604,700.78
7,350.00	89.16	88.58	4,946.57	1,275.57	-5.97	2,643.67	2,643.51	0.57	665,731.23	604,725.77
7,375.00	89.26	88.72	4,946.91	1,275.91	-5.38	2,668.66	2,668.51	0.67	665,731.82	604,750.76
7,400.00	89.35	88.86	4,947.22	1,276.22	-4.85	2,693.65	2,693.51	0.67	665,732.35	604,775.75
7,425.00	89.44	88.96	4,947.48	1,276.48	-4.38	2,718.65	2,718.50	0.57	665,732.82	604,800.75
7,450.00	89.56	88.83	4,947.70	1,276.70	-3.90	2,743.64	2,743.50	0.72	665,733.30	604,825.74
7,475.00	89.67	88.69	4,947.87	1,276.87	-3.36	2,768.64	2,768.50	0.72	665,733.84	604,850.74
7,500.00	89.79	88.55	4,947.98	1,276.98	-2.76	2,793.63	2,793.49	0.72	665,734.44	604,875.73
7,525.00	89.84	88.46	4,948.06	1,277.06	-2.10	2,818.62	2,818.49	0.40	665,735.10	604,900.72
7,550.00	89.72	88.51	4,948.15	1,277.15	-1.44	2,843.61	2,843.49	0.50	665,735.76	604,925.71
7,575.00	89.61	88.56	4,948.30	1,277.30	-0.80	2,868.60	2,868.48	0.50	665,736.40	604,950.70
7,600.00	89.49	88.60	4,948.49	1,277.49	-0.18	2,893.59	2,893.48	0.50	665,737.02	604,975.69
7,625.00	89.24	88.66	4,948.75	1,277.75	0.42	2,918.59	2,918.47	1.05	665,737.62	605,000.69
7,650.00	88.80	88.73	4,949.18	1,278.18	0.99	2,943.58	2,943.47	1.78	665,738.19	605,025.68
7,675.00	88.36	88.80	4,949.80	1,278.80	1.53	2,968.56	2,968.46	1.78	665,738.73	605,050.66
7,700.00	87.92	88.87	4,950.61	1,279.61	2.04	2,993.54	2,993.44	1.78	665,739.24	605,075.64
7,725.00	87.85	88.94	4,951.57	1,280.57	2.52	3,018.52	3,018.42	0.39	665,739.72	605,100.62
7,750.00	87.99	89.01	4,952.48	1,281.48	2.97	3,043.50	3,043.41	0.63	665,740.17	605,125.60
7,775.00	88.13	89.08	4,953.32	1,282.32	3.39	3,068.48	3,068.39	0.63	665,740.59	605,150.58
7,800.00	88.27	89.15	4,954.11	1,283.11	3.77	3,093.47	3,093.38	0.63	665,740.97	605,175.57
7,825.00	88.60	89.24	4,954.80	1,283.80	4.12	3,118.46	3,118.37	1.36	665,741.32	605,200.56
7,850.00	88.96	89.33	4,955.33	1,284.33	4.44	3,143.45	3,143.36	1.50	665,741.64	605,225.55
7,875.00	89.33	89.42	4,955.71	1,284.71	4.71	3,168.44	3,168.36	1.50	665,741.91	605,250.54
7,900.00	89.69	89.51	4,955.92	1,284.92	4.94	3,193.44	3,193.36	1.50	665,742.14	605,275.54



Pathfinder
Pathfinder X & Y Planning Report



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: McIntyre DK Federal
Well: #17
Wellbore: OH
Design: Plan #5

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well #17
WELL @ 3671.00ft (Original Well Elev)
WELL @ 3671.00ft (Original Well Elev)
Gnd
Minimum Curvature
Midland 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)
7,925.00	89.67	89.49	4,956.06	1,285.06	5.16	3,218.44	3,218.36	0.13	665,742.36	605,300.54
7,950.00	89.64	89.46	4,956.21	1,285.21	5.39	3,243.44	3,243.36	0.13	665,742.59	605,325.54
7,975.00	89.62	89.44	4,956.37	1,285.37	5.63	3,268.44	3,268.36	0.13	665,742.83	605,350.54
8,000.00	89.62	89.37	4,956.54	1,285.54	5.88	3,293.43	3,293.36	0.26	665,743.08	605,375.53
8,025.00	89.71	89.14	4,956.69	1,285.69	6.21	3,318.43	3,318.36	1.00	665,743.41	605,400.53
8,050.00	89.81	88.91	4,956.79	1,285.79	6.63	3,343.43	3,343.36	1.00	665,743.83	605,425.53
8,075.00	89.90	88.68	4,956.86	1,285.86	7.16	3,368.42	3,368.35	1.00	665,744.36	605,450.52
8,100.00	89.91	88.46	4,956.88	1,285.88	7.79	3,393.41	3,393.35	0.89	665,744.99	605,475.51
8,125.00	89.80	88.25	4,956.95	1,285.95	8.50	3,418.40	3,418.34	0.94	665,745.70	605,500.50
8,150.00	89.68	88.05	4,957.06	1,286.06	9.31	3,443.39	3,443.34	0.94	665,746.51	605,525.49
8,175.00	89.57	87.84	4,957.22	1,286.22	10.21	3,468.37	3,468.33	0.94	665,747.41	605,550.47
8,200.00	89.58	87.70	4,957.42	1,286.42	11.19	3,493.35	3,493.32	0.57	665,748.39	605,575.45
8,225.00	89.70	87.61	4,957.58	1,286.58	12.21	3,518.33	3,518.30	0.59	665,749.41	605,600.43
8,250.00	89.81	87.52	4,957.68	1,286.68	13.27	3,543.31	3,543.29	0.59	665,750.47	605,625.41
8,275.00	89.93	87.43	4,957.74	1,286.74	14.38	3,568.29	3,568.27	0.59	665,751.58	605,650.39
8,300.00	90.24	87.71	4,957.71	1,286.71	15.46	3,593.26	3,593.26	1.70	665,752.66	605,675.36
8,325.00	90.63	88.15	4,957.52	1,286.52	16.36	3,618.24	3,618.25	2.33	665,753.56	605,700.34
8,350.00	91.02	88.58	4,957.17	1,286.17	17.08	3,643.23	3,643.24	2.33	665,754.28	605,725.33
8,375.00	91.40	89.02	4,956.64	1,285.64	17.60	3,668.22	3,668.23	2.33	665,754.80	605,750.32
8,378.00	91.45	89.07	4,956.56	1,285.56	17.65	3,671.22	3,671.23	2.33	665,754.85	605,753.32
8,400.00	91.06	88.87	4,956.08	1,285.08	18.04	3,693.21	3,693.23	2.00	665,755.24	605,775.31
8,425.00	90.62	88.64	4,955.72	1,284.72	18.59	3,718.20	3,718.22	2.00	665,755.79	605,800.30
8,438.10	90.38	88.52	4,955.60	1,284.60	18.92	3,731.30	3,731.32	2.00	665,756.12	605,813.40
8,450.00	90.38	88.52	4,955.52	1,284.52	19.22	3,743.19	3,743.22	0.00	665,756.42	605,825.29
8,475.00	90.38	88.52	4,955.36	1,284.36	19.87	3,768.18	3,768.21	0.00	665,757.07	605,850.28
8,500.00	90.38	88.52	4,955.19	1,284.19	20.52	3,793.18	3,793.21	0.00	665,757.72	605,875.28
8,525.00	90.38	88.52	4,955.02	1,284.02	21.17	3,818.17	3,818.20	0.00	665,758.37	605,900.27



Pathfinder
Pathfinder X & Y Planning Report



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: McIntyre DK Federal
Well: #17
Wellbore: OH
Design: Plan #5

Local Co-ordinate Reference: Well #17
TVD Reference: WELL @ 3671.00ft (Original Well Elev)
MD Reference: WELL @ 3671.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland 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)
8,550.00	90.38	88.52	4,954.85	1,283.85	21.81	3,843.16	3,843.20	0.00	665,759.01	605,925.26
8,575.00	90.38	88.52	4,954.69	1,283.69	22.46	3,868.15	3,868.20	0.00	665,759.66	605,950.25
8,600.00	90.38	88.52	4,954.52	1,283.52	23.11	3,893.14	3,893.19	0.00	665,760.31	605,975.24
8,625.00	90.38	88.52	4,954.35	1,283.35	23.76	3,918.13	3,918.19	0.00	665,760.96	606,000.23
8,650.00	90.38	88.52	4,954.18	1,283.18	24.40	3,943.12	3,943.18	0.00	665,761.60	606,025.22
8,675.00	90.38	88.52	4,954.02	1,283.02	25.05	3,968.11	3,968.18	0.00	665,762.25	606,050.21
8,700.00	90.38	88.52	4,953.85	1,282.85	25.70	3,993.10	3,993.17	0.00	665,762.90	606,075.20
8,725.00	90.38	88.52	4,953.68	1,282.68	26.35	4,018.09	4,018.17	0.00	665,763.55	606,100.19
8,750.00	90.38	88.52	4,953.51	1,282.51	27.00	4,043.09	4,043.17	0.00	665,764.20	606,125.19
8,775.00	90.38	88.52	4,953.35	1,282.35	27.64	4,068.08	4,068.16	0.00	665,764.84	606,150.18
8,800.00	90.38	88.52	4,953.18	1,282.18	28.29	4,093.07	4,093.16	0.00	665,765.49	606,175.17
8,825.00	90.38	88.52	4,953.01	1,282.01	28.94	4,118.06	4,118.15	0.00	665,766.14	606,200.16
8,850.00	90.38	88.52	4,952.85	1,281.85	29.59	4,143.05	4,143.15	0.00	665,766.79	606,225.15
8,875.00	90.38	88.52	4,952.68	1,281.68	30.23	4,168.04	4,168.15	0.00	665,767.43	606,250.14
8,900.00	90.38	88.52	4,952.51	1,281.51	30.88	4,193.03	4,193.14	0.00	665,768.08	606,275.13
8,925.00	90.38	88.52	4,952.34	1,281.34	31.53	4,218.02	4,218.14	0.00	665,768.73	606,300.12
8,950.00	90.38	88.52	4,952.18	1,281.18	32.18	4,243.01	4,243.13	0.00	665,769.38	606,325.11
8,975.00	90.38	88.52	4,952.01	1,281.01	32.83	4,268.01	4,268.13	0.00	665,770.03	606,350.11
9,000.00	90.38	88.52	4,951.84	1,280.84	33.47	4,293.00	4,293.12	0.00	665,770.67	606,375.10
9,025.00	90.38	88.52	4,951.67	1,280.67	34.12	4,317.99	4,318.12	0.00	665,771.32	606,400.09
9,050.00	90.38	88.52	4,951.51	1,280.51	34.77	4,342.98	4,343.12	0.00	665,771.97	606,425.08
9,075.00	90.38	88.52	4,951.34	1,280.34	35.42	4,367.97	4,368.11	0.00	665,772.62	606,450.07
9,100.00	90.38	88.52	4,951.17	1,280.17	36.06	4,392.96	4,393.11	0.00	665,773.26	606,475.06
9,125.00	90.38	88.52	4,951.00	1,280.00	36.71	4,417.95	4,418.10	0.00	665,773.91	606,500.05
9,150.00	90.38	88.52	4,950.84	1,279.84	37.36	4,442.94	4,443.10	0.00	665,774.56	606,525.04
9,175.00	90.38	88.52	4,950.67	1,279.67	38.01	4,467.93	4,468.09	0.00	665,775.21	606,550.03
9,200.00	90.38	88.52	4,950.50	1,279.50	38.65	4,492.92	4,493.09	0.00	665,775.85	606,575.02



Pathfinder
Pathfinder X & Y Planning Report



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: McIntyre DK Federal
Well: #17
Wellbore: OH
Design: Plan #5

Local Co-ordinate Reference: Well #17
TVD Reference: WELL @ 3671.00ft (Original Well Elev)
MD Reference: WELL @ 3671.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland 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)
9,225.00	90.38	88.52	4,950.34	1,279.34	39.30	4,517.92	4,518.09	0.00	665,776.50	606,600.02
9,250.00	90.38	88.52	4,950.17	1,279.17	39.95	4,542.91	4,543.08	0.00	665,777.15	606,625.01
9,275.00	90.38	88.52	4,950.00	1,279.00	40.60	4,567.90	4,568.08	0.00	665,777.80	606,650.00
9,275.10	90.38	88.52	4,950.00	1,279.00	40.60	4,568.00	4,568.18	0.00	665,777.80	606,650.10

PBHLMC#17)

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
PBHLMC#17) - plan hits target center - Point	0.00	359.93	4,950.00	40.60	4,568.00	665,777.800	606,650.100	32° 49' 47.381 N	103° 59' 10.077 W

Checked By: _____ Approved By: _____ Date: _____



Azimuths to Grid North
True North: -0.18°
Magnetic North: 7.84°

Magnetic Field
Strength 49067.3snT
Dip Angle: 60.70°
Date 04/06/2010
Model: IGRF200510



Project: Eddy County(NAD27)
Site: McIntyre DK Federal
Well: #17
Wellbore: OH
Plan: Plan #5 (#17/OH)

WELL DETAILS #17

Ground Elevation 3646.00
RKB Elevation WELL @ 3571.00m (Original Well Elev)
Rig Name Original Well Elev

+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slor
0.00	0.00	665737.200	602082.100	32° 49' 47.125 N	104° 0' 3.614 W	

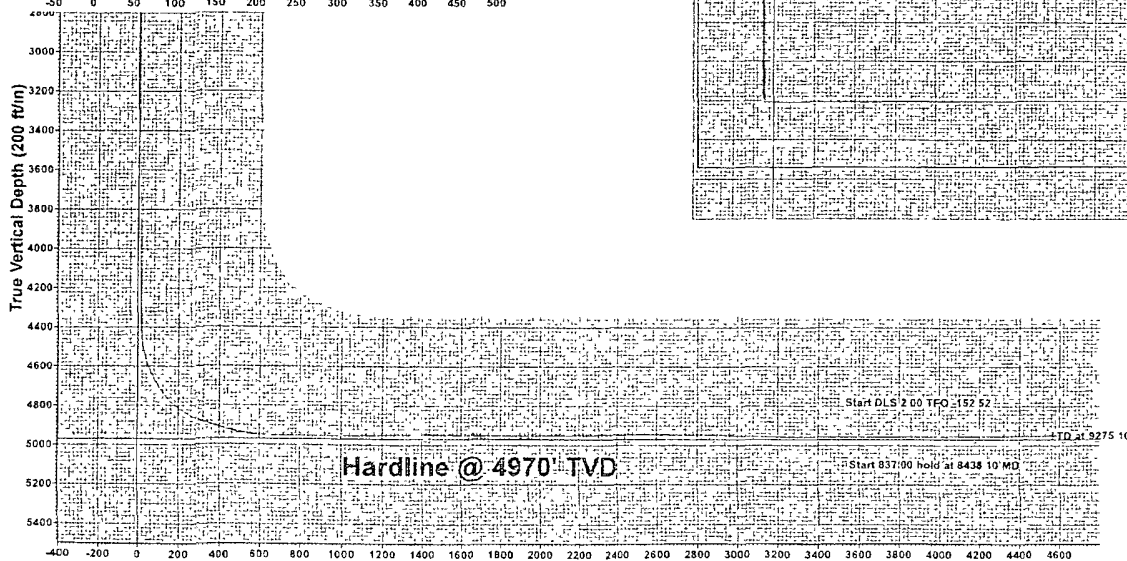
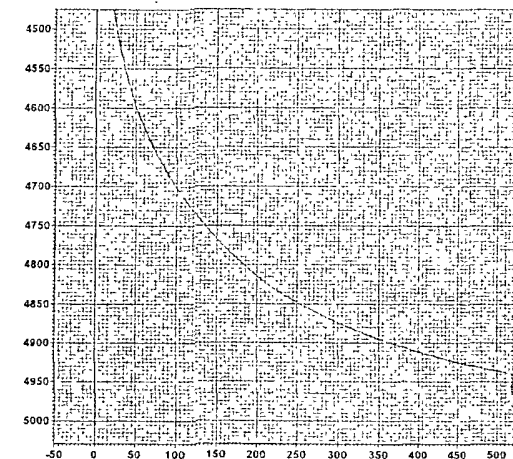
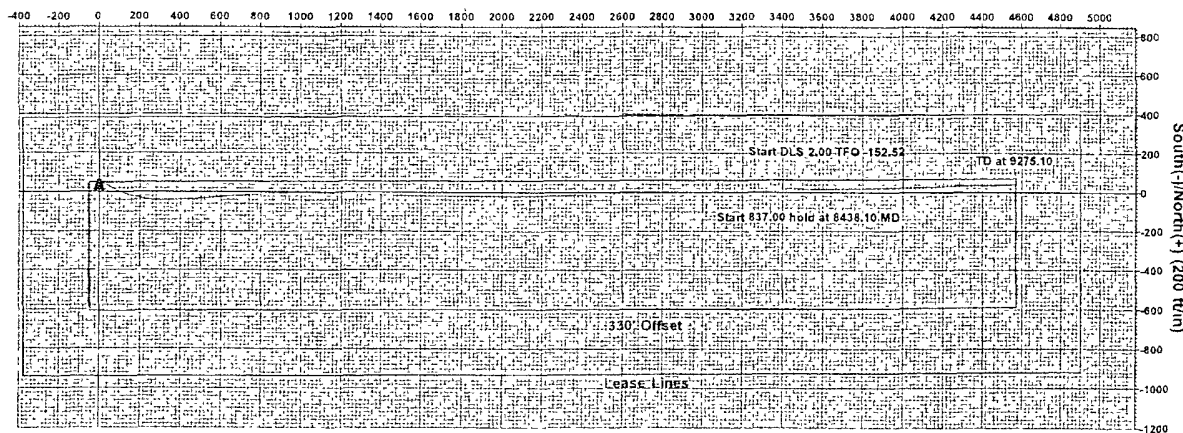
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	DLeg	TFace	VSec	Target
1	8378.00	91.45	89.07	4956.56	17.65	3671.22	0.00	0.00	3671.23	
2	8438.10	90.38	88.52	4955.80	18.92	3731.30	2.00	-152.52	3731.32	
3	9275.10	90.38	88.52	4950.00	40.60	4568.00	0.00	0.00	4568.18	PBHLMC#17

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting	Shape
PBHLMC#17	4950.00	40.60	4568.00	665777.600	606650.100	Point

West(-)/East(+) (200 ft/in)



PROJECT DETAILS Eddy County(NAD27)
Geodetic System US State Plane 1927 (Exact solution)
Datum NAD 1927 (NADCON CONUS)
Ellipsoid Clarke 1866
Zone New Mexico East 3001
System Datum Mean Sea Level
Local North Grid

Plan Plan #5 (#17/OH)

Created By Nate Bingham Date 14.12. July 12 2010

Checked _____ Date _____