

OCD-ARTESIA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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 NMNM114979
2. Name of Operator COG Production 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) 330' FNL & 480' FWL, Unit D (NWNW) Sec13-T24S-R31E 330' FSL & 480' FWL, Unit M (SWSW) Sec13-T24S-R31E		8. Well Name and No Canvasback 13 Federal #1H
Lat. Long.		9. API Well No 30-015-39191
10. Field and Pool, or Exploratory Area Cotton Draw East; Bone Spring		11. County or Parish, State Eddy County NM

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

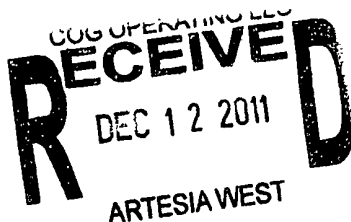
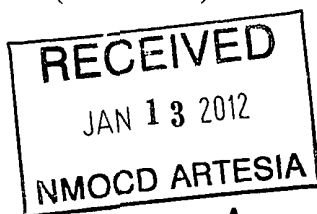
TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/ Resume)	☐ Water Shut-off
☐ Subsequent Report	☐ Altering Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other _____
	☐ Change Plans	☐ Plug and abandon	☐ Temporarily Abandon	
	☐ 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 reclamanation, have been completed, and the operator has determined that the site is ready for final inspection.)

COG Operating LLC respectfully requests approval for the following changes to the original approved APD.

Directional Plan. (See Attached)

Casing Program. (See Attached)



*Approval Subject to General Requirements
& Special Stipulations Attached*

Accepted for record
NMOC D *12/21/2011*

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

14 I hereby certify that the foregoing is true and correct
Name (Printed/ Typed)

Mayte Reyes

Signature

Mayte Reyes

Title

Regulatory Analyst

Date

12/7/11

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

PETROLEUM ENGINEER

Office



Approved by:

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

Title 18 USC Section 1001 AND Title 43 USC 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)

Canvasback 13 Federal #1H Sundry

COG respectfully request the following changes:

Surface Casing setting depth will be @ 865' as per COA.

Cmt to sfc with:

Lead: 450sx Class C + 4% Gel + 2% CaCl₂ @ 13.5 ppg/1.75 yield

Tail: 250 sx Class C + 2% CaCl₂ @ 14.8/1.35 yield

50% excess on OH

Intermediate casing section:

Drill 12-1/4" hole to 4500'

Run 9-5/8" 40# J-55 STC csg to 4500'

Cmt to surface in 1 stg with:

Lead: 950 sx Class C + 4% Gel @ 13.5 ppg/1.75 yield

Tail: 250 sx Class C + 2% CaCl₂ @ 14.8/1.35 yield

35% excess on OH

Production casing section:

See updated directional plan.

Drill 7-7/8" vertical, curve & lateral to 13,581' MD (9165' TVD). No PH.

Run 5-1/2" 17# P-110 LTC csg to TD

Cmt in 1 state with:

Lead: 1200 sx 35:65:6 H + Salt + Gilsomite + CF + CFR-3 @ 12.7 ppg/1.89 yield

Tail: 900 sx 50:50:2 H + Salt + GasStop + CFR-3 @ 14.4/1.25 yield

Minimum tie back to 4000' (designed to circ cmt to sfc)

35% excess on OH



Project: Eddy County(NAD27)
 Site: Canvasback 13 Federal
 Well: #1H
 Wellbore: OH
 Plan: Plan #1 (#1H/OH)



Azimuths to Grid North
 True North: -0.32°
 Magnetic North: 7.29°

Magnetic Field
 Strength: 48550.2snT
 Dip Angle: 60.15°
 Date: 12/2/2011
 Model: IGRF2010

PATHFINDER

A Schlumberger Company

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

WELL DETAILS: #1H

Ground Elevation: 3569.0
 RKB Elevation: KB + 18' @ 3587.0usft (Original Well Elev)
 Rig Name Original Well Elev

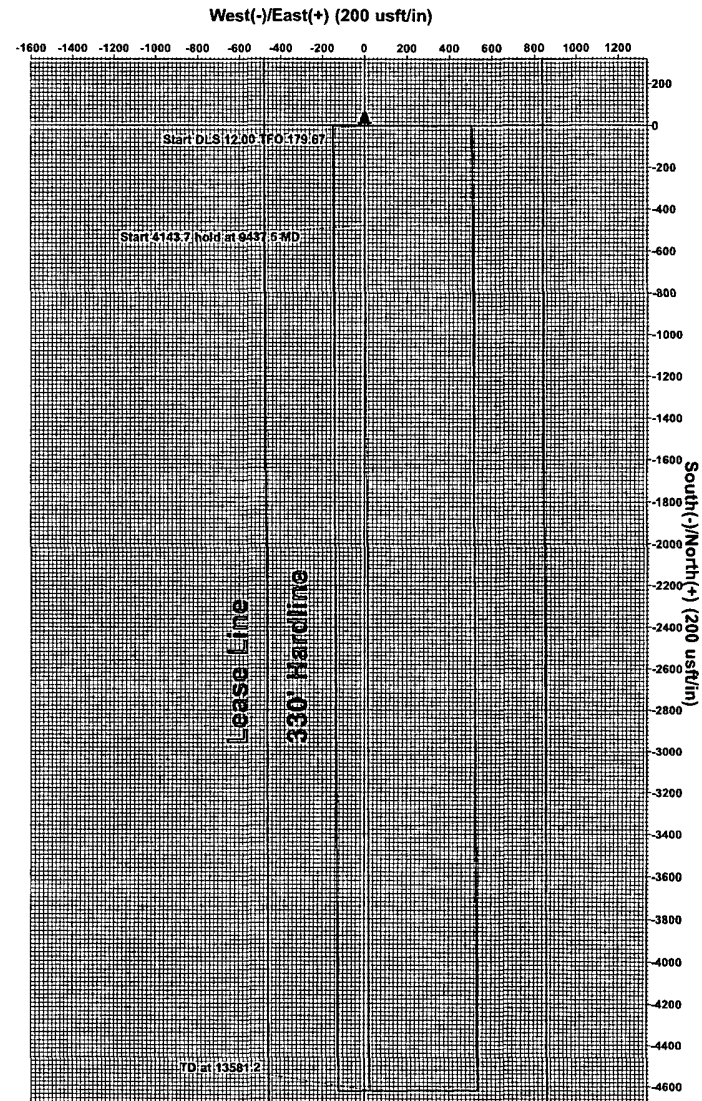
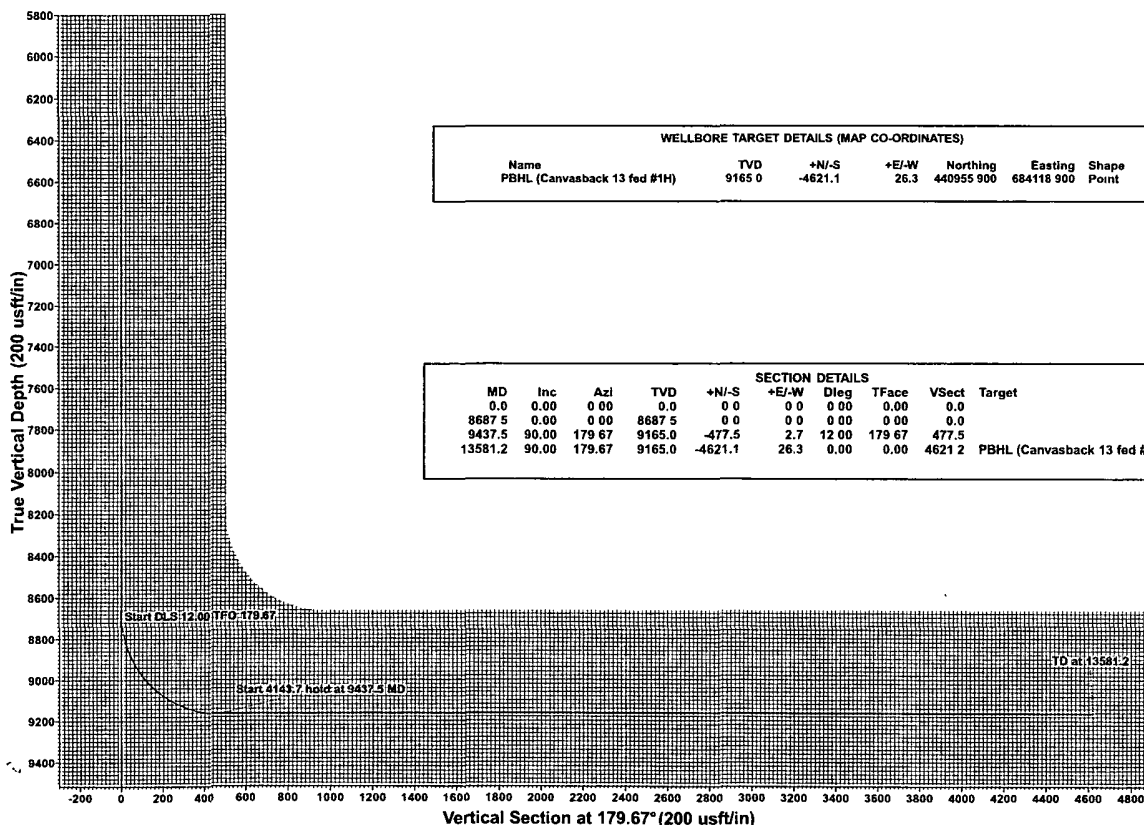
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	445577.000	684092.600	32°13' 24.983 N	103°44' 16.913 W	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL (Canvasback 13 fed #1H)	9165.0	-4621.1	26.3	440955.900	684118.900	Point

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
8687.5	0.00	0.00	8687.5	0.0	0.0	0.00	0.00	0.0	
9437.5	90.00	179.67	9165.0	-477.5	2.7	12.00	179.67	477.5	
13581.2	90.00	179.67	9165.0	-4621.1	26.3	0.00	4621.2		PBHL (Canvasback 13 fed #1H)



Plan: Plan #1 (#1H/OH)

Created By: Michael Trout Date: 15 20, December 05 2011

Checked: _____ Date: _____

COO Operating LLC
 Eddy County(NAD27)
 Canvasback 13 Federal
 #1H
 Original Well Elev
 Plan #1



COG Operating LLC

Eddy County(NAD27)

Canvasback 13 Federal

#1H

OH

Plan: Plan #1

Pathfinder X & Y Report

05 December, 2011

PATHFINDER®
A Schlumberger Company



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County(NAD27)	TVD Reference:	KB = 18' @ 3587.0usft (Original Well Elev)
Site:	Canvasback 13 Federal	MD Reference:	KB = 18' @ 3587.0usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

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		Canvasback 13 Federal				
Site Position:		Northing:	445,577.000	usft	Latitude:	32° 13' 24 983 N
From:	Map	Easting:	684,092.600	usft	Longitude:	103° 44' 16 913 W
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16	"	Grid Convergence:	0 32 °

Well:	#1H					
Well Position	+N/-S	0 0 usft	Northing:	445,577.000 usft	Latitude:	32° 13' 24 983 N
	+E/-W	0 0 usft	Easting:	684,092 600 usft	Longitude:	103° 44' 16 913 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,569 0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/2/2011	7.61	60.15	48,550

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0 0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 0	0 0	0.0	179.67

Survey Tool Program		Date 12/2/2011		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0 0	13,581.2	Plan #1 (OH)	MWD	MWD - Standard



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: Canvasback 13 Federal
Well: #1H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference:

TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well #1H

KB = 18' @ 3587.0usft (Original Well Elev)
KB = 18' @ 3587.0usft (Original Well Elev)
Grd
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)
0 0	0.00	0 00	0 0	-3,587.0	0.0	0 0	0.0	0 00	445,577.00	684,092.60
100 0	0 00	0 00	100 0	-3,487.0	0.0	0 0	0 0	0 00	445,577.00	684,092.60
200.0	0.00	0.00	200.0	-3,387.0	0.0	0 0	0 0	0 00	445,577.00	684,092.60
300.0	0 00	0 00	300 0	-3,287.0	0 0	0 0	0 0	0.00	445,577.00	684,092.60
400.0	0.00	0.00	400.0	-3,187.0	0.0	0 0	0 0	0 00	445,577.00	684,092.60
500 0	0.00	0 00	500 0	-3,087.0	0 0	0 0	0.0	0.00	445,577.00	684,092.60
600 0	0 00	0 00	600 0	-2,987.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60
700.0	0.00	0.00	700.0	-2,887.0	0 0	0 0	0.0	0.00	445,577.00	684,092.60
800.0	0.00	0.00	800 0	-2,787.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60
900.0	0.00	0 00	900 0	-2,687.0	0 0	0 0	0 0	0.00	445,577.00	684,092.60
1,000.0	0.00	0 00	1,000 0	-2,587.0	0 0	0 0	0.0	0 00	445,577.00	684,092.60
1,100 0	0 00	0 00	1,100.0	-2,487.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60
1,200 0	0 00	0.00	1,200.0	-2,387.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60
1,300 0	0.00	0.00	1,300.0	-2,287.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60
1,400 0	0.00	0 00	1,400.0	-2,187.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60
1,500 0	0 00	0 00	1,500 0	-2,087.0	0 0	0 0	0 0	0.00	445,577.00	684,092.60
1,600 0	0.00	0.00	1,600.0	-1,987.0	0.0	0 0	0.0	0 00	445,577.00	684,092.60
1,700 0	0.00	0 00	1,700.0	-1,887.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60
1,800.0	0.00	0.00	1,800.0	-1,787.0	0.0	0 0	0.0	0.00	445,577.00	684,092.60
1,900 0	0 00	0.00	1,900.0	-1,687.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60
2,000 0	0.00	0 00	2,000 0	-1,587.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60
2,100 0	0.00	0 00	2,100.0	-1,487.0	0 0	0 0	0 0	0.00	445,577.00	684,092.60
2,200 0	0.00	0 00	2,200.0	-1,387.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60
2,300 0	0 00	0.00	2,300 0	-1,287.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60
2,400 0	0.00	0 00	2,400 0	-1,187.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60
2,500 0	0 00	0 00	2,500.0	-1,087.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60
2,600 0	0.00	0 00	2,600.0	-987.0	0 0	0 0	0 0	0.00	445,577.00	684,092.60



Pathfinder
Pathfinder X & Y Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County(NAD27)	TVD Reference:	KB = 18' @ 3587.0usft (Original Well Elev)
Site:	Canvasback 13 Federal	MD Reference:	KB = 18' @ 3587.0usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	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)		
2,700.0	0.00	0.00	2,700.0	-887.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
2,800.0	0.00	0.00	2,800.0	-787.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
2,900.0	0.00	0.00	2,900.0	-687.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
3,000.0	0.00	0.00	3,000.0	-587.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
3,100.0	0.00	0.00	3,100.0	-487.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
3,200.0	0.00	0.00	3,200.0	-387.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
3,300.0	0.00	0.00	3,300.0	-287.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
3,400.0	0.00	0.00	3,400.0	-187.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
3,500.0	0.00	0.00	3,500.0	-87.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
3,600.0	0.00	0.00	3,600.0	13.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
3,700.0	0.00	0.00	3,700.0	113.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
3,800.0	0.00	0.00	3,800.0	213.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
3,900.0	0.00	0.00	3,900.0	313.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
4,000.0	0.00	0.00	4,000.0	413.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
4,100.0	0.00	0.00	4,100.0	513.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
4,200.0	0.00	0.00	4,200.0	613.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
4,300.0	0.00	0.00	4,300.0	713.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
4,400.0	0.00	0.00	4,400.0	813.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
4,500.0	0.00	0.00	4,500.0	913.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
4,600.0	0.00	0.00	4,600.0	1,013.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
4,700.0	0.00	0.00	4,700.0	1,113.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
4,800.0	0.00	0.00	4,800.0	1,213.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
4,900.0	0.00	0.00	4,900.0	1,313.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
5,000.0	0.00	0.00	5,000.0	1,413.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
5,100.0	0.00	0.00	5,100.0	1,513.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
5,200.0	0.00	0.00	5,200.0	1,613.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
5,300.0	0.00	0.00	5,300.0	1,713.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County(NAD27)	TVD Reference:	KB = 18' @ 3587.0usft (Original Well Elev)
Site:	Canvasback 13 Federal	MD Reference:	KB = 18' @ 3587.0usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	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)		
5,400.0	0.00	0 00	5,400.0	1,813.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60		
5,500.0	0 00	0 00	5,500.0	1,913.0	0.0	0.0	0 0	0.00	445,577.00	684,092.60		
5,600.0	0 00	0 00	5,600.0	2,013.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60		
5,700.0	0 00	0 00	5,700.0	2,113.0	0 0	0.0	0 0	0 00	445,577.00	684,092.60		
5,800.0	0.00	0 00	5,800.0	2,213.0	0.0	0 0	0 0	0 00	445,577.00	684,092.60		
5,900.0	0.00	0.00	5,900.0	2,313.0	0.0	0 0	0.0	0.00	445,577.00	684,092.60		
6,000.0	0.00	0 00	6,000.0	2,413.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60		
6,100.0	0 00	0.00	6,100.0	2,513.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60		
6,200.0	0 00	0.00	6,200.0	2,613.0	0.0	0 0	0.0	0 00	445,577.00	684,092.60		
6,300.0	0 00	0 00	6,300.0	2,713.0	0.0	0 0	0 0	0 00	445,577.00	684,092.60		
6,400.0	0 00	0 00	6,400.0	2,813.0	0.0	0 0	0.0	0.00	445,577.00	684,092.60		
6,500.0	0.00	0.00	6,500.0	2,913.0	0 0	0.0	0 0	0 00	445,577.00	684,092.60		
6,600.0	0 00	0.00	6,600.0	3,013.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60		
6,700.0	0.00	0 00	6,700.0	3,113.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
6,800.0	0 00	0 00	6,800.0	3,213.0	0.0	0 0	0 0	0 00	445,577.00	684,092.60		
6,900.0	0.00	0.00	6,900.0	3,313.0	0.0	0 0	0.0	0 00	445,577.00	684,092.60		
7,000.0	0.00	0.00	7,000.0	3,413.0	0.0	0 0	0 0	0 00	445,577.00	684,092.60		
7,100.0	0 00	0 00	7,100.0	3,513.0	0 0	0 0	0 0	0.00	445,577.00	684,092.60		
7,200.0	0.00	0 00	7,200.0	3,613.0	0 0	0 0	0 0	0 00	445,577.00	684,092.60		
7,300.0	0 00	0.00	7,300.0	3,713.0	0.0	0 0	0 0	0 00	445,577.00	684,092.60		
7,400.0	0.00	0 00	7,400.0	3,813.0	0.0	0 0	0 0	0 00	445,577.00	684,092.60		
7,500.0	0.00	0.00	7,500.0	3,913.0	0 0	0 0	0 0	0.00	445,577.00	684,092.60		
7,600.0	0.00	0 00	7,600.0	4,013.0	0.0	0 0	0 0	0 00	445,577.00	684,092.60		
7,700.0	0.00	0 00	7,700.0	4,113.0	0.0	0.0	0 0	0 00	445,577.00	684,092.60		
7,800.0	0.00	0 00	7,800.0	4,213.0	0.0	0 0	0 0	0.00	445,577.00	684,092.60		
7,900.0	0 00	0.00	7,900.0	4,313.0	0.0	0 0	0 0	0.00	445,577.00	684,092.60		
8,000.0	0.00	0.00	8,000.0	4,413.0	0.0	0.0	0 0	0.00	445,577.00	684,092.60		



Pathfinder
Pathfinder X & Y Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County(NAD27)	TVD Reference:	KB = 18' @ 3587.0usft (Original Well Elev)
Site:	Canvasback 13 Federal	MD Reference:	KB = 18' @ 3587.0usft (Original Well Elev)
Well:	#1H	North Reference:	Grd
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	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)		
8,100.0	0.00	0.00	8,100.0	4,513.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
8,200.0	0.00	0.00	8,200.0	4,613.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
8,300.0	0.00	0.00	8,300.0	4,713.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
8,400.0	0.00	0.00	8,400.0	4,813.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
8,500.0	0.00	0.00	8,500.0	4,913.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
8,600.0	0.00	0.00	8,600.0	5,013.0	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
8,687.5	0.00	0.00	8,687.5	5,100.5	0.0	0.0	0.0	0.00	445,577.00	684,092.60		
8,700.0	1.50	179.67	8,700.0	5,113.0	-0.2	0.0	0.2	12.00	445,576.84	684,092.60		
8,725.0	4.50	179.67	8,725.0	5,138.0	-1.5	0.0	1.5	12.00	445,575.53	684,092.61		
8,750.0	7.50	179.67	8,749.8	5,162.8	-4.1	0.0	4.1	12.00	445,572.92	684,092.62		
8,775.0	10.50	179.67	8,774.5	5,187.5	-8.0	0.0	8.0	12.00	445,569.00	684,092.65		
8,800.0	13.50	179.67	8,799.0	5,212.0	-13.2	0.1	13.2	12.00	445,563.81	684,092.68		
8,825.0	16.50	179.67	8,823.1	5,236.1	-19.7	0.1	19.7	12.00	445,557.34	684,092.71		
8,850.0	19.50	179.67	8,846.9	5,259.9	-27.4	0.2	27.4	12.00	445,549.61	684,092.76		
8,875.0	22.50	179.67	8,870.2	5,283.2	-36.3	0.2	36.3	12.00	445,540.66	684,092.81		
8,900.0	25.50	179.67	8,893.1	5,306.1	-46.5	0.3	46.5	12.00	445,530.49	684,092.86		
8,925.0	28.50	179.67	8,915.3	5,328.3	-57.9	0.3	57.9	12.00	445,519.14	684,092.93		
8,950.0	31.50	179.67	8,937.0	5,350.0	-70.4	0.4	70.4	12.00	445,506.64	684,093.00		
8,975.0	34.50	179.67	8,957.9	5,370.9	-84.0	0.5	84.0	12.00	445,493.03	684,093.08		
9,000.0	37.50	179.67	8,978.2	5,391.2	-98.7	0.6	98.7	12.00	445,478.34	684,093.16		
9,025.0	40.50	179.67	8,997.6	5,410.6	-114.4	0.7	114.4	12.00	445,462.60	684,093.25		
9,050.0	43.50	179.67	9,016.2	5,429.2	-131.1	0.7	131.1	12.00	445,445.88	684,093.35		
9,075.0	46.50	179.67	9,033.8	5,446.8	-148.8	0.8	148.8	12.00	445,428.20	684,093.45		
9,100.0	49.50	179.67	9,050.6	5,463.6	-167.4	1.0	167.4	12.00	445,409.63	684,093.55		
9,125.0	52.50	179.67	9,066.3	5,479.3	-186.8	1.1	186.8	12.00	445,390.20	684,093.66		
9,150.0	55.50	179.67	9,081.0	5,494.0	-207.0	1.2	207.0	12.00	445,369.98	684,093.78		
9,175.0	58.50	179.67	9,094.6	5,507.6	-228.0	1.3	228.0	12.00	445,349.01	684,093.90		



Pathfinder
Pathfinder X & Y Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County(NAD27)	TVD Reference:	KB = 18' @ 3587.0usft (Original Well Elev)
Site:	Canvasback 13 Federal	MD Reference:	KB = 18' @ 3587.0usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	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)		
9,200.0	61.50	179.67	9,107.1	5,520.1	-249.6	1.4	249.6	12.00	445,327.37	684,094.02		
9,225.0	64.50	179.67	9,118.5	5,531.5	-271.9	1.5	271.9	12.00	445,305.09	684,094.15		
9,250.0	67.50	179.67	9,128.6	5,541.6	-294.7	1.7	294.7	12.00	445,282.26	684,094.28		
9,275.0	70.50	179.67	9,137.6	5,550.6	-318.1	1.8	318.1	12.00	445,258.92	684,094.41		
9,300.0	73.50	179.67	9,145.3	5,558.3	-341.9	1.9	341.9	12.00	445,235.15	684,094.55		
9,325.0	76.50	179.67	9,151.8	5,564.8	-366.0	2.1	366.0	12.00	445,211.00	684,094.68		
9,350.0	79.50	179.67	9,157.0	5,570.0	-390.4	2.2	390.5	12.00	445,186.55	684,094.82		
9,375.0	82.50	179.67	9,160.9	5,573.9	-415.1	2.4	415.1	12.00	445,161.86	684,094.96		
9,400.0	85.50	179.67	9,163.5	5,576.5	-440.0	2.5	440.0	12.00	445,137.00	684,095.10		
9,425.0	88.50	179.67	9,164.8	5,577.8	-465.0	2.6	465.0	12.00	445,112.04	684,095.25		
9,437.5	90.00	179.67	9,165.0	5,578.0	-477.5	2.7	477.5	12.00	445,099.55	684,095.32		
9,500.0	90.00	179.67	9,165.0	5,578.0	-540.0	3.1	540.0	0.00	445,037.04	684,095.67		
9,600.0	90.00	179.67	9,165.0	5,578.0	-640.0	3.6	640.0	0.00	444,937.05	684,096.24		
9,700.0	90.00	179.67	9,165.0	5,578.0	-740.0	4.2	740.0	0.00	444,837.05	684,096.81		
9,800.0	90.00	179.67	9,165.0	5,578.0	-840.0	4.8	840.0	0.00	444,737.05	684,097.38		
9,900.0	90.00	179.67	9,165.0	5,578.0	-939.9	5.3	940.0	0.00	444,637.05	684,097.95		
10,000.0	90.00	179.67	9,165.0	5,578.0	-1,039.9	5.9	1,040.0	0.00	444,537.05	684,098.52		
10,100.0	90.00	179.67	9,165.0	5,578.0	-1,139.9	6.5	1,140.0	0.00	444,437.05	684,099.09		
10,200.0	90.00	179.67	9,165.0	5,578.0	-1,239.9	7.1	1,240.0	0.00	444,337.06	684,099.66		
10,300.0	90.00	179.67	9,165.0	5,578.0	-1,339.9	7.6	1,340.0	0.00	444,237.06	684,100.23		
10,400.0	90.00	179.67	9,165.0	5,578.0	-1,439.9	8.2	1,440.0	0.00	444,137.06	684,100.80		
10,500.0	90.00	179.67	9,165.0	5,578.0	-1,539.9	8.8	1,540.0	0.00	444,037.06	684,101.36		
10,600.0	90.00	179.67	9,165.0	5,578.0	-1,639.9	9.3	1,640.0	0.00	443,937.06	684,101.93		
10,700.0	90.00	179.67	9,165.0	5,578.0	-1,739.9	9.9	1,740.0	0.00	443,837.06	684,102.50		
10,800.0	90.00	179.67	9,165.0	5,578.0	-1,839.9	10.5	1,840.0	0.00	443,737.06	684,103.07		
10,900.0	90.00	179.67	9,165.0	5,578.0	-1,939.9	11.0	1,940.0	0.00	443,637.07	684,103.64		
11,000.0	90.00	179.67	9,165.0	5,578.0	-2,039.9	11.6	2,040.0	0.00	443,537.07	684,104.21		



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: Canvasback 13 Federal
Well: #1H
Wellbore: OH
Design: Plan #1

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

Well #1H
KB = 18' @ 3587.0usft (Original Well Elev)
KB = 18' @ 3587.0usft (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)
11,100.0	90.00	179.67	9,165.0	5,578.0	-2,139.9	12.2	2,140.0	0.00	443,437.07	684,104.78
11,200.0	90.00	179.67	9,165.0	5,578.0	-2,239.9	12.7	2,240.0	0.00	443,337.07	684,105.35
11,300.0	90.00	179.67	9,165.0	5,578.0	-2,339.9	13.3	2,340.0	0.00	443,237.07	684,105.92
11,400.0	90.00	179.67	9,165.0	5,578.0	-2,439.9	13.9	2,440.0	0.00	443,137.07	684,106.49
11,500.0	90.00	179.67	9,165.0	5,578.0	-2,539.9	14.5	2,540.0	0.00	443,037.08	684,107.06
11,600.0	90.00	179.67	9,165.0	5,578.0	-2,639.9	15.0	2,640.0	0.00	442,937.08	684,107.62
11,700.0	90.00	179.67	9,165.0	5,578.0	-2,739.9	15.6	2,740.0	0.00	442,837.08	684,108.19
11,800.0	90.00	179.67	9,165.0	5,578.0	-2,839.9	16.2	2,840.0	0.00	442,737.08	684,108.76
11,900.0	90.00	179.67	9,165.0	5,578.0	-2,939.9	16.7	2,940.0	0.00	442,637.08	684,109.33
12,000.0	90.00	179.67	9,165.0	5,578.0	-3,039.9	17.3	3,040.0	0.00	442,537.08	684,109.90
12,100.0	90.00	179.67	9,165.0	5,578.0	-3,139.9	17.9	3,140.0	0.00	442,437.09	684,110.47
12,200.0	90.00	179.67	9,165.0	5,578.0	-3,239.9	18.4	3,240.0	0.00	442,337.09	684,111.04
12,300.0	90.00	179.67	9,165.0	5,578.0	-3,339.9	19.0	3,340.0	0.00	442,237.09	684,111.61
12,400.0	90.00	179.67	9,165.0	5,578.0	-3,439.9	19.6	3,440.0	0.00	442,137.09	684,112.18
12,500.0	90.00	179.67	9,165.0	5,578.0	-3,539.9	20.1	3,540.0	0.00	442,037.09	684,112.75
12,600.0	90.00	179.67	9,165.0	5,578.0	-3,639.9	20.7	3,640.0	0.00	441,937.09	684,113.32
12,700.0	90.00	179.67	9,165.0	5,578.0	-3,739.9	21.3	3,740.0	0.00	441,837.10	684,113.88
12,800.0	90.00	179.67	9,165.0	5,578.0	-3,839.9	21.9	3,840.0	0.00	441,737.10	684,114.45
12,900.0	90.00	179.67	9,165.0	5,578.0	-3,939.9	22.4	3,940.0	0.00	441,637.10	684,115.02
13,000.0	90.00	179.67	9,165.0	5,578.0	-4,039.9	23.0	4,040.0	0.00	441,537.10	684,115.59
13,100.0	90.00	179.67	9,165.0	5,578.0	-4,139.9	23.6	4,140.0	0.00	441,437.10	684,116.16
13,200.0	90.00	179.67	9,165.0	5,578.0	-4,239.9	24.1	4,240.0	0.00	441,337.10	684,116.73
13,300.0	90.00	179.67	9,165.0	5,578.0	-4,339.9	24.7	4,340.0	0.00	441,237.11	684,117.30
13,400.0	90.00	179.67	9,165.0	5,578.0	-4,439.9	25.3	4,440.0	0.00	441,137.11	684,117.87
13,500.0	90.00	179.67	9,165.0	5,578.0	-4,539.9	25.8	4,540.0	0.00	441,037.11	684,118.44
13,581.2	90.00	179.67	9,165.0	5,578.0	-4,621.1	26.3	4,621.2	0.00	440,955.90	684,118.90



Pathfinder
Pathfinder X & Y Report

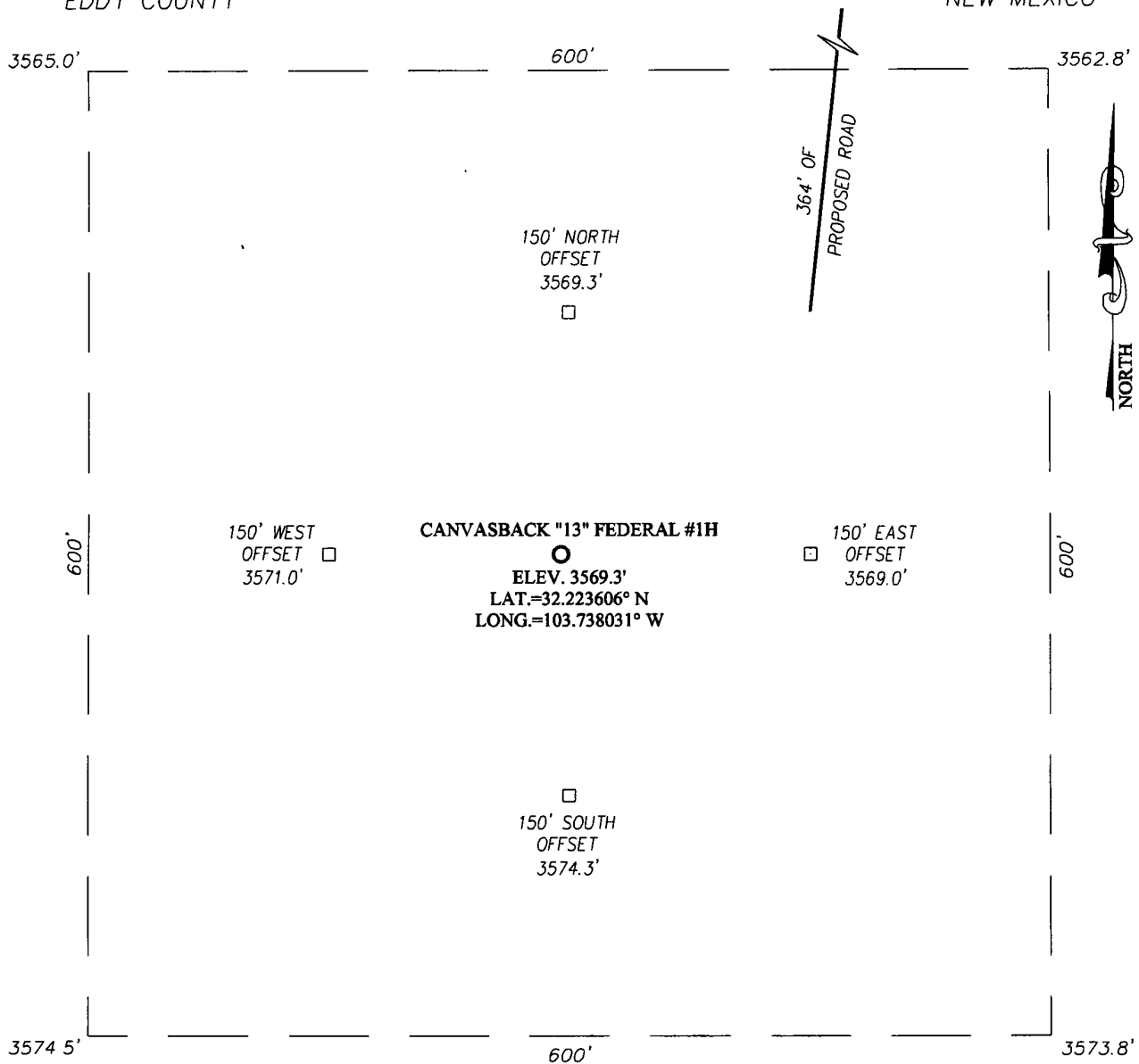
PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County(NAD27)	TVD Reference:	KB = 18' @ 3587.0usft (Original Well Elev)
Site:	Canvasback 13 Federal	MD Reference:	KB = 18' @ 3587 0usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1 Single User Db

Checked By: _____ Approved By: _____ Date: _____

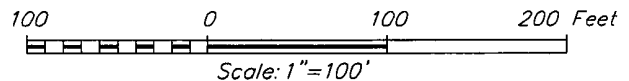
SECTION 13, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.

EDDY COUNTY NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF ST. HWY #128 AND CO. RD. #786 (BUCK JACKSON RD.), GO SOUTHWEST ON CO. RD. 786 APPROX. 1 MILE TURN RIGHT AND GO NORTHWEST APPROX. 0.28 MILES. TURN LEFT AND GO SOUTH APPROX. 0.22 MILES. TURN RIGHT AND GO WEST APPROX. 0.25 MILES TO THE EXISTING SEABISCUIT FEDERAL COM #1 WELL. FROM THE SOUTHEAST CORNER OF THE EXISTING SEABISCUIT FEDERAL COM #1 WELL PAD, FOLLOW PROPOSED ROAD SURVEY STAKES SOUTH APPROX. 364 FEET. THIS LOCATION STAKE IS APPROX 212 FEET SOUTHWEST



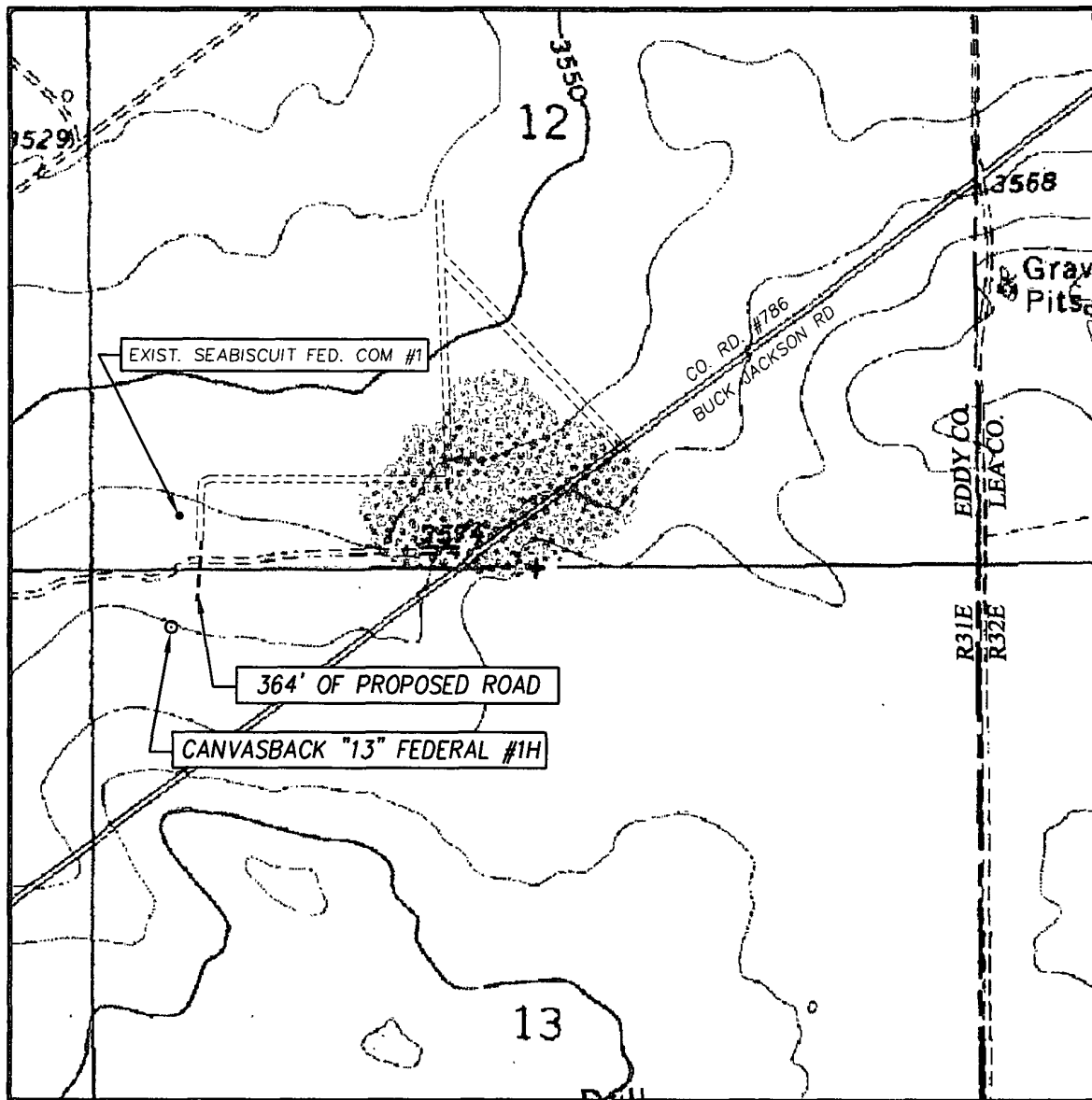
PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

COG PRODUCTION LLC

CANVASBACK "13" FEDERAL #1H WELL
LOCATED 330 FEET FROM THE NORTH LINE
AND 480 FEET FROM THE WEST LINE OF SECTION 13,
TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

Survey Date: 11/5/10	Sheet 1 of 1 Sheets
W.O. Number: 11.13.2561	Dr. By: DSS
Date: 12/2/11	Rel. W.O.: 11132561
	Scale: 1"=100'

LOCATION VERIFICATION MAP



SCALE: 1" = 1000'

CONTOUR INTERVAL:
PADUCA BREAKS NW, N.M. - 10'

SEC. 13 TWP. 24-S RGE. 31-E

SURVEY N M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 330' FNL & 480' FWL

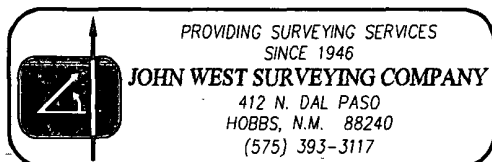
ELEVATION 3569'

OPERATOR COG PRODUCTION LLC

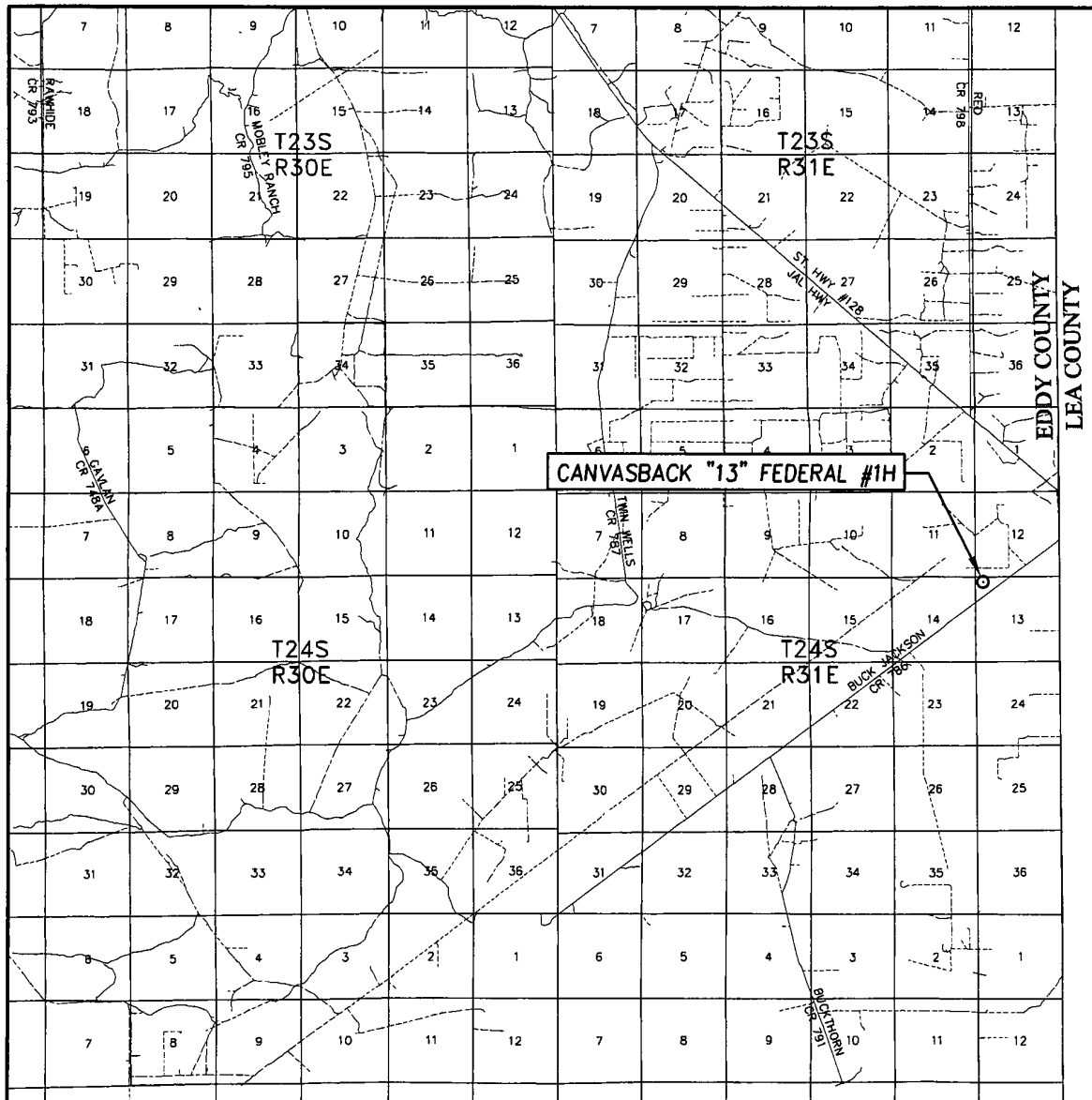
LEASE CANVASBACK "13" FEDERAL

U.S.G.S. TOPOGRAPHIC MAP

PADUCA BREAKS NW, N.M.

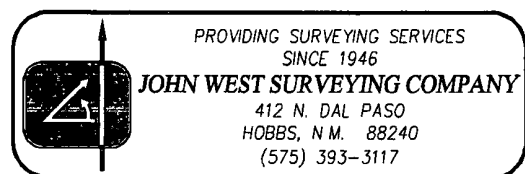


VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 13 TWP. 24-S RGE. 31-E
 SURVEY N.M.P.M
 COUNTY EDDY STATE NEW MEXICO
 DESCRIPTION 330' FNL & 480' FWL
 ELEVATION 3569'
 OPERATOR COG PRODUCTION LLC
 LEASE CANVASBACK "13" FEDERAL



Canvasback 13 Federal 1H
COG Operating LLC
30-015-39191
11 Jan 2012
Conditions of Approval

Sundry Request:

COG requests approval to revise the well directional plan and the casing program for this well in the Secretary's Potash area.

	<u>APD</u>	<u>REVISED</u>
Surface Casing	13-3/8" 48# H-40 STC	SAME
Intermediate Casing	8-5/8" 32# J-55 STC	9-5/8" 40# J-55 STC
Production Casing	5-1/2" 17# P-110 LTC/BTC	5-1/2" 17# P-110 LTC
Production Casing Point	12600' MD	13581' MD
Production Casing TOC	4000' MD	4000' MD
Pilot Hole	NO	NO
KOP MD	7792' MD	8687' MD
EOC MD	8512' MD	9437' MD
EOC TVD	8250' TVD	9165' TVD
DHTD TVD	8250' TVD	9165' TVD

Conditions of Approval:

- 1. Revised Directional Plan – Approved.** The drainhole will now be 915' deeper than originally planned, however will still remain in the Bone Springs. (The top 1st Bone Springs is estimated at 9457' TVD.)
- 2. Revised Casing Program – Approved.** Excess slurry volume based on TOC to surface is only 23%, and therefore will need to be increased to meet the intended 35% excess stated in the sundry.
- 3. Estimated Formation Pressure –** Based on the BHP of 3550 psi at 8250' stated in the original APD (0.43 psi/ft) , the estimated BHP will now be increased by ± 394 psi. **The 3M psi BOPE Pressure Control requirements of the original COA shall remain applicable.**