

Form 3160-5
(April 2004)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No. 1004-0137
Expires March 31, 2007

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. NMLC-029415B*
2. Name of Operator COG Operating LLC		6. If Indian, Allottee or Tribe Name N/A
3a. Address 550 W. Texas Ave., Suite 1300 Midland, TX 79701	3b. Phone No (include area code) 432-685-4385	7. If Unit or CA/Agreement, Name and/or No. N/A
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) 990' FSL & 2310' FWL Sec.13, T17S, R31E, Unit N		8. Well Name and No. Puckett 13 #58
		9. API Well No. 30-015-39182
		10. Field and Pool, or Exploratory Area Fren; Glorieta-Yeso 26770
		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 Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change Name &
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	Location

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 requests permission to change the name of this well to:
Puckett 13 Federal #3H

Original Location :
990' FSL & 2310' FWL Sec.13, T17S, R31E, Unit N

COG respectfully requests to change the Location to:
SHL: 143' FSL & 1464' FWL Sec.13, T17S, R31E, Unit N
BHL: 330' FNL & 1650' FWL Sec.13, T17S, R31E, Unit C

This move is requested to drill this well as a horizontal.

A revised C-102, Directional Plan and Drilling Plan are attached for your review.

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

RECEIVED
NOV 18 2011
SUBJECT TO LIKE
NMOCD ARTESIA
APPROVAL DATE 11-16-2011
API NO. 30-015-39182

PROPERTY NO. 38922
STATE 26770

Accepted for record
NMOC

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 08/03/2011

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

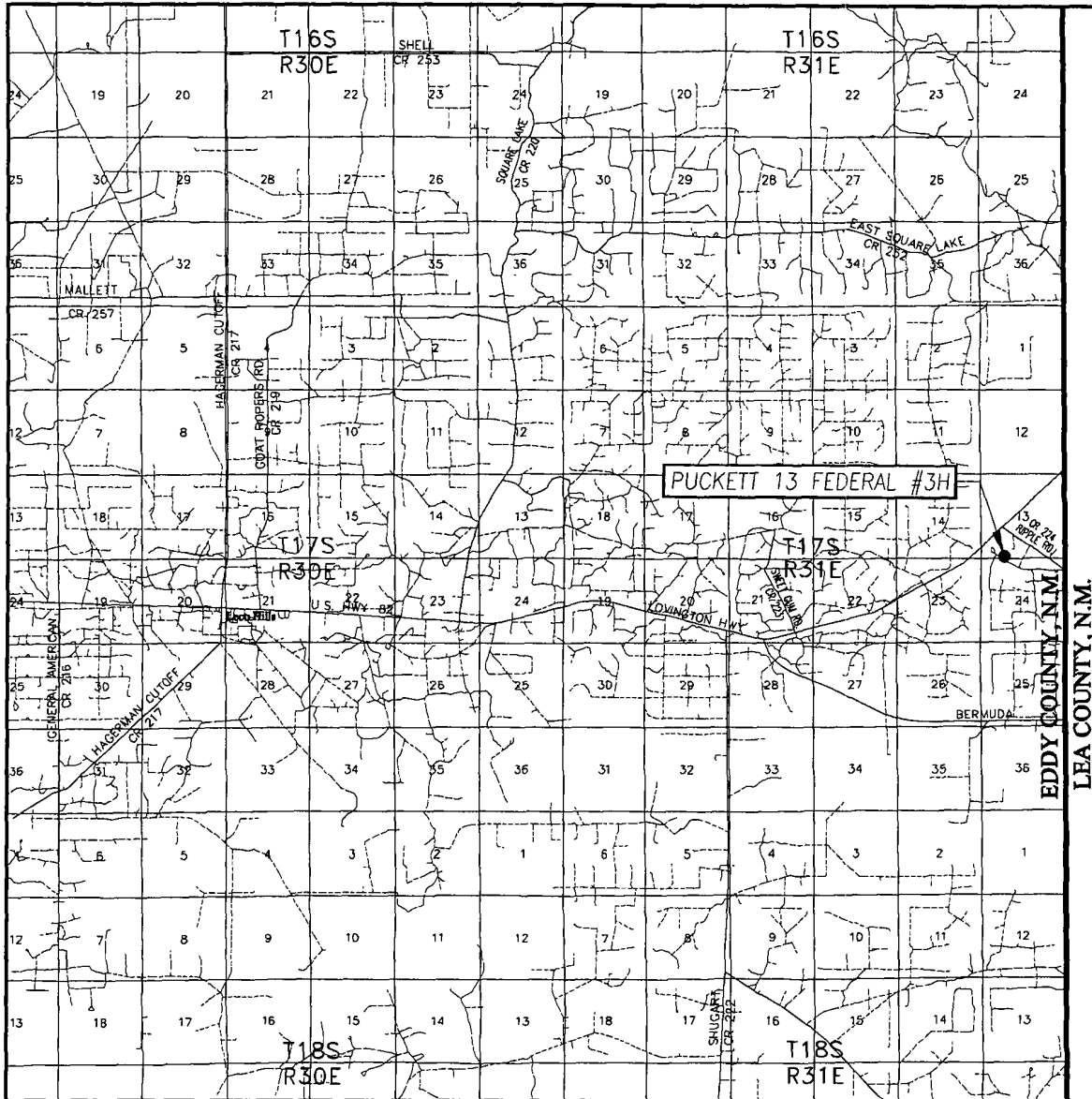
Approved by /s/ Don Peterson	Title Date NOV 16 2011
Conditions of approval, if any, are attached Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon	Office CARLSBAD FIELD 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

(Instructions on page 2)

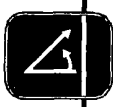
COK

VICINITY MAP



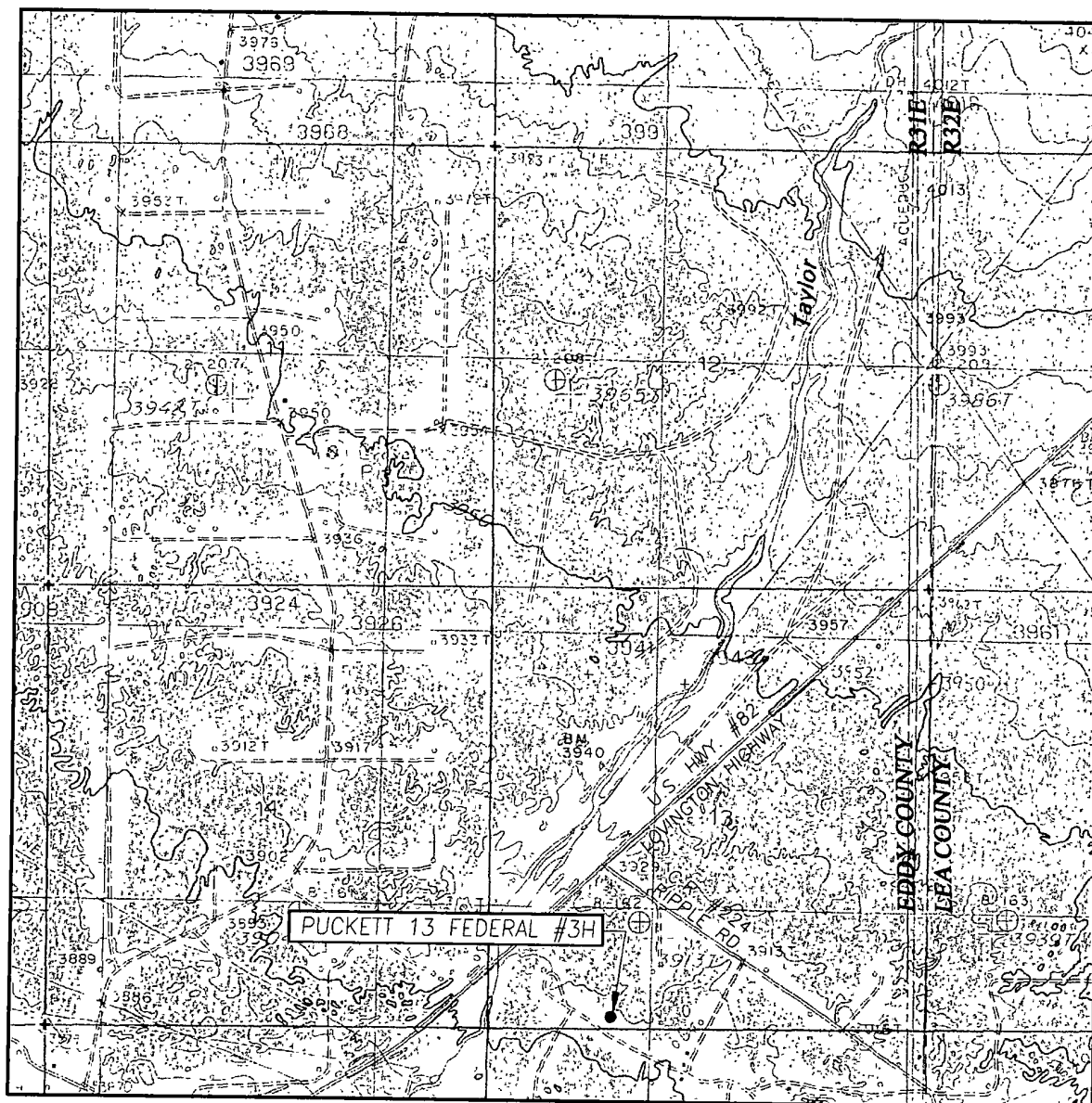
SCALE: 1" = 2 MILES

SEC. 13 TWP 17-S RGE. 31-E
 SURVEY N.M.P.M.
 COUNTY EDDY STATE NEW MEXICO
 DESCRIPTION 143' FSL & 1464' FWL
 ELEVATION 3907'
 OPERATOR COG OPERATING, LLC
 LEASE PUCKETT 13 FEDERAL



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

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
MALJAMAR, N.M. - 10'

SEC 13 TWP 17-S RGE. 31-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

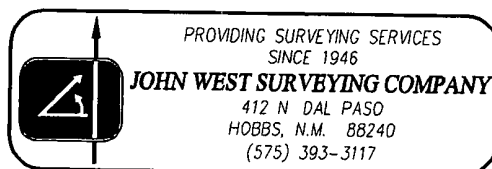
DESCRIPTION 143' FSL & 1464' FWL

ELEVATION 3907'

OPERATOR COG OPERATING, INC.

LEASE PUCKETT 13 FEDERAL

U.S.G.S. TOPOGRAPHIC MAP
MALJAMAR, N.M.





COG Operating LLC

Eddy County, NM (NAN27 NME)

Puckett 13 Federal #3H

Puckett 13 Federal #3H

OH

Plan: Plan #1 8-3/4" Hole

SHL = 143' FSL & 1464' FWL

BHL = 330' FNL & 1650' FWL

Standard Planning Report

12 July, 2011





Scientific Drilling Planning Report



Database: EDM-Julio
Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Puckett 13 #3H
Well: Puckett 13 #3H
Wellbore: OH
Design: Plan #1 8-3/4" Hole

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Site Puckett 13 #3H
GL Elev @ 3907 00usft
GL Elev @ 3907 00usft
Grid
Minimum Curvature

Project	Eddy County, NM (NAN27 NME)		
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	Puckett 13 #3H		
Site Position:	Map	Northings:	665,196 40 usft
From:		Easting:	655,713 40 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 49' 39 667 N
		Longitude:	103° 49' 35 112 W
		Grid Convergence:	0 27 °

Well	Puckett 13 #3H		
Well Position	+N-S	0 00 usft	Northings:
	+E-W	0 00 usft	Easting:
Position Uncertainty	0 00 usft	Wellhead Elevation:	Ground Level:
			3,907 00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	2011/07/12	7 74
			Dip Angle
			60 70
			Field Strength
			48,941

Design	Plan #1 8-3/4" Hole		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N-S	+E-W
	(usft)	(usft)	(usft)
	0.00	0 00	0 00
			Direction
			1 89

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N-S	+E-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(%)	
(usft)			(usft)			(%/100usft)	(%/100usft)	(%/100usft)		
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
6,122 54	0 00	0 00	6,122 54	0 00	0 00	0 00	0 00	0 00	0 00	
6,872 54	90 00	1 89	6,600 00	477 20	15 77	12 00	12 00	0 00	1 89	
11,205 60	90 00	1 89	6,600 00	4,807 90	158 90	0 00	0 00	0 00	0 00	PBHL-Puckett 13 #3H



Scientific Drilling
Planning Report



Database: EDM-Julio
Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Puckett 13 #3H
Well: Puckett 13 #3H
Wellbore: OH
Design: Plan #1 8-3/4" Hole

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

Site Puckett 13 #3H
GL Elev @ 3907 00usft
GL Elev @ 3907 00usft
Grid
Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	N-S (usft)	E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
6,122 54	0 00	0 00	6,122 54	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start Build 12.00°/100'									
6,200 00	9 30	1 89	6,199 66	6 27	0 21	6 27	12 00	12 00	0 00
6,300 00	21 30	1 89	6,295 94	32 58	1 08	32 60	12 00	12 00	0 00
6,400 00	33 30	1 89	6,384 65	78 33	2 59	78 38	12 00	12 00	0 00
6,500 00	45 30	1 89	6,461 89	141 52	4 68	141 59	12 00	12 00	0 00
6,600 00	57 30	1 89	6,524 31	219 37	7 25	219 49	12 00	12 00	0 00
6,700 00	69 30	1 89	6,569 16	308 49	10 20	308 66	12 00	12 00	0 00
6,800 00	81 30	1 89	6,594 50	404 99	13 38	405 21	12 00	12 00	0 00
6,872 54	90 00	1 89	6,600 00	477 21	15 77	477 47	12 00	12 00	0 00
Land EOC hold 90.00°									
6,900 00	90 00	1 89	6,600 00	504 65	16 68	504 93	0 00	0 00	0 00
7,000 00	90 00	1 89	6,600 00	604 60	19 98	604 93	0 00	0 00	0 00
7,100 00	90 00	1 89	6,600 00	704 54	23 29	704 93	0 00	0 00	0 00
7,200 00	90 00	1 89	6,600 00	804 49	26 59	804 93	0 00	0 00	0 00
7,300 00	90 00	1 89	6,600 00	904 44	29 89	904 93	0 00	0 00	0 00
7,400 00	90 00	1 89	6,600 00	1,004 38	33 19	1,004 93	0 00	0 00	0 00
7,500 00	90 00	1 89	6,600 00	1,104 33	36 50	1,104 93	0 00	0 00	0 00
7,600 00	90 00	1 89	6,600 00	1,204 27	39 80	1,204 93	0 00	0 00	0 00
7,700 00	90 00	1 89	6,600 00	1,304 22	43 10	1,304 93	0 00	0 00	0 00
7,800 00	90 00	1 89	6,600 00	1,404 16	46 41	1,404 93	0 00	0 00	0 00
7,900 00	90 00	1 89	6,600 00	1,504 11	49 71	1,504 93	0 00	0 00	0 00
8,000 00	90 00	1 89	6,600 00	1,604 05	53 01	1,604 93	0 00	0 00	0 00
8,100 00	90 00	1 89	6,600 00	1,704 00	56 32	1,704 93	0 00	0 00	0 00
8,200 00	90 00	1 89	6,600 00	1,803 94	59 62	1,804 93	0 00	0 00	0 00
8,300 00	90 00	1 89	6,600 00	1,903 89	62 92	1,904 93	0 00	0 00	0 00
8,400 00	90 00	1 89	6,600 00	2,003 84	66 23	2,004 93	0 00	0 00	0 00
8,500 00	90 00	1 89	6,600 00	2,103 78	69 53	2,104 93	0 00	0 00	0 00
8,600 00	90 00	1 89	6,600 00	2,203 73	72 83	2,204 93	0 00	0 00	0 00
8,700 00	90 00	1 89	6,600 00	2,303 67	76 14	2,304 93	0 00	0 00	0 00
8,800 00	90 00	1 89	6,600 00	2,403 62	79 44	2,404 93	0 00	0 00	0 00
8,900 00	90 00	1 89	6,600 00	2,503 56	82 74	2,504 93	0 00	0 00	0 00
9,000 00	90 00	1 89	6,600 00	2,603 51	86 05	2,604 93	0 00	0 00	0 00
9,100 00	90 00	1 89	6,600 00	2,703 45	89 35	2,704 93	0 00	0 00	0 00
9,200 00	90 00	1 89	6,600 00	2,803 40	92 65	2,804 93	0 00	0 00	0 00
9,300 00	90 00	1 89	6,600 00	2,903 34	95 95	2,904 93	0 00	0 00	0 00
9,400 00	90 00	1 89	6,600 00	3,003 29	99 26	3,004 93	0 00	0 00	0 00
9,500 00	90 00	1 89	6,600 00	3,103 24	102 56	3,104 93	0 00	0 00	0 00
9,600 00	90 00	1 89	6,600 00	3,203 18	105 86	3,204 93	0 00	0 00	0 00
9,700 00	90 00	1 89	6,600 00	3,303 13	109 17	3,304 93	0 00	0 00	0 00
9,800 00	90 00	1 89	6,600 00	3,403 07	112 47	3,404 93	0 00	0 00	0 00
9,900 00	90 00	1 89	6,600 00	3,503 02	115 77	3,504 93	0 00	0 00	0 00
10,000 00	90 00	1 89	6,600 00	3,602 96	119 08	3,604 93	0 00	0 00	0 00
10,100 00	90 00	1 89	6,600 00	3,702 91	122 38	3,704 93	0 00	0 00	0 00
10,200 00	90 00	1 89	6,600 00	3,802 85	125 68	3,804 93	0 00	0 00	0 00
10,300 00	90 00	1 89	6,600 00	3,902 80	128 99	3,904 93	0 00	0 00	0 00
10,400 00	90 00	1 89	6,600 00	4,002 74	132 29	4,004 93	0 00	0 00	0 00
10,500 00	90 00	1 89	6,600 00	4,102 69	135 59	4,104 93	0 00	0 00	0 00
10,600 00	90 00	1 89	6,600 00	4,202 64	138 90	4,204 93	0 00	0 00	0 00
10,700 00	90 00	1 89	6,600 00	4,302 58	142 20	4,304 93	0 00	0 00	0 00
10,800 00	90 00	1 89	6,600 00	4,402 53	145 50	4,404 93	0 00	0 00	0 00
10,900 00	90 00	1 89	6,600 00	4,502 47	148 81	4,504 93	0 00	0 00	0 00
11,000 00	90 00	1 89	6,600 00	4,602 42	152 11	4,604 93	0 00	0 00	0 00



Scientific Drilling
Planning Report



Database: EDM-Julio
Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Puckett 13 #3H
Well: Puckett 13 #3H
Wellbore: OH
Design: Plan #1 8-3/4" Hole

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

Site Puckett 13 #3H
GL Elev @ 3907.00usft
GL Elev @ 3907 00usft
Grid
Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,100 00	90 00	1 89	6,600 00	4,702 36	155 41	4,704 93	0 00	0 00	0 00
11,200 00	90 00	1 89	6,600 00	4,802 31	158 72	4,804 93	0 00	0 00	0 00
11,205 60	90.00	1 89	6,600 00	4,807.90	158.90	4,810 53	0 00	0 00	0 00

PBHL-Puckett 13 #3H

Design Targets

Target Name	hit/miss target	Dip/Angle (°)	Dip Dir (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL-Puckett 13 #3H	- plan hits target center	0 00	0 00	6,600 00	4,807.90	158 90	670,004 30	655,872 30	32° 50' 27 233 N	103° 49' 32 979 W
	- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
6,122 54	6,122.54	0 00	0 00	KOP Start Build 12 00°/100°
6,872 54	6,600.00	477 21	15.77	Land EOC hold 90 00°



Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Puckett 13 #3H
Wellbore: OH
Design: Plan #1 8-3/4" Hole



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	6122.54	0.00	0.00	6122.54	0.00	0.00	0.00	0.00	0.00	
3	6872.54	90.00	1.89	6600.00	477.20	15.77	12.00	1.89	477.46	
4	11205.60	90.00	1.89	6600.00	4807.90	158.90	0.00	0.00	4810.53	PBHL-Puckett 13 #3H

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL-Puckett 13 #3H	6600.00	4807.90	158.90	670004.30	655872.30	32°50' 27.233 N 103°49' 32.979 W		Point

WELL DETAILS: Puckett 13 #3H

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	665196.40	655713.40	32°49' 39.667 N	103°49' 35.112 W

Puckett 13 #3H

Created By: Julio Pina Date: 12-Jul-11

Checked: Date:

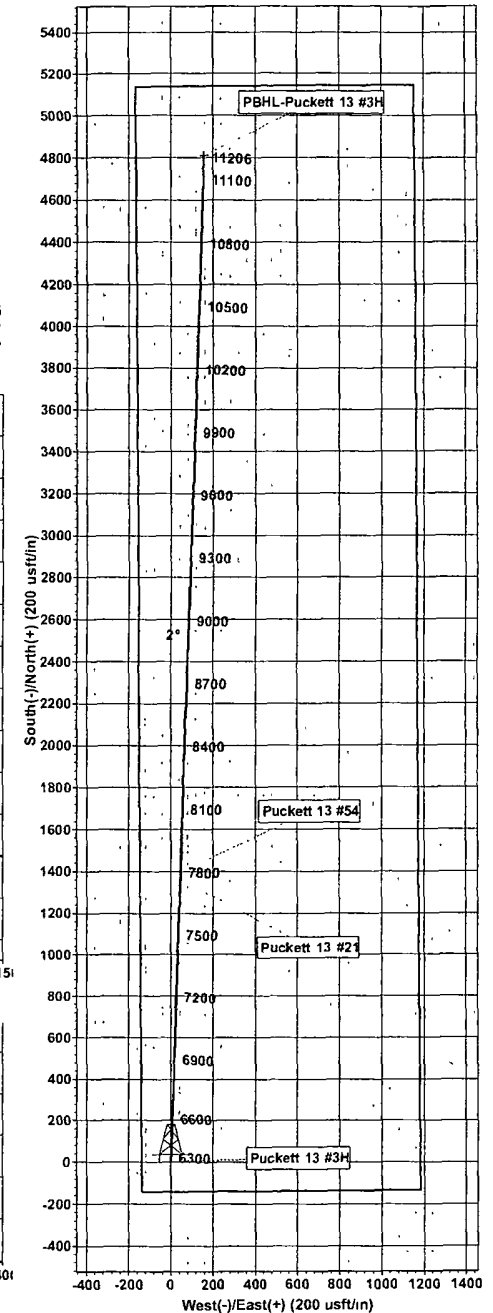
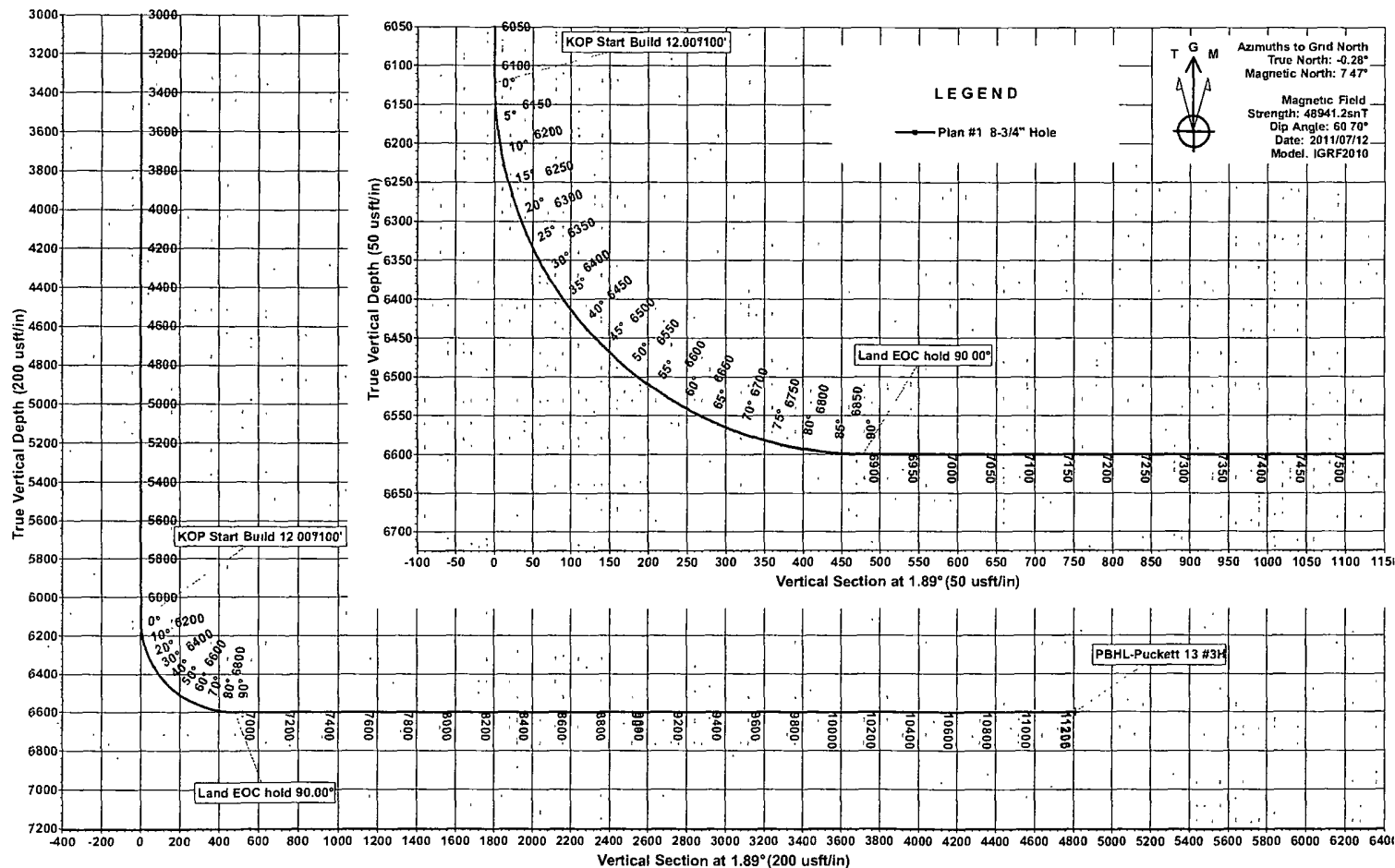
Reviewed: Date:

PROJECT DETAILS Eddy County, NM (NAN27 NME)

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

AZIMUTH CORRECTIONS

ALL AZIMUTHS MUST BE CORRECTED TO GRID
GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTTING
To convert a Magnetic Direction to a Grid Direction, Add 7.47°
To convert a True Direction to a Grid Direction, Subtract 0.27°



ATTACHMENT TO FORM 3160-3
COG Operating, LLC
Puckett 13 Federal #3H
SHL: 143' FSL & 1464' FWL, Unit N
BHL: 330' FNL & 1650' FWL, Unit C
Sec 13, T17S, R31E
Eddy County, NM

1. Proration Unit Spacing: 160 Acres
2. Ground Elevation: 3907'
3. Proposed Depths: Horizontal TVD = 6,600', MD = 11464'
4. Estimated tops of geological markers:

Quaternary	Surface
Rustler	682'
Top of Salt	900'
Base of Salt	1923'
Yates	2028'
Seven Rivers	2356'
Queen	2980'
Grayburg	3415'
San Andres	3739'
Glorieta	5247'
Paddock	5317'
Blinberry	5745'
Tubb	6700'

5. Possible mineral bearing formations:

Water Sand	150'	Fresh Water
Grayburg	3415'	Oil/Gas
San Andres	3739'	Oil/Gas
Glorieta	5247'	Oil/Gas
Paddock	5317'	Oil/Gas
Blinberry	5745'	Oil/Gas
Tubb	6700'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 600' and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be protected by setting 9 5/8" casing to 2000' and circulating cement, in a single or multi-stage job and/or with an ECP, back to the surface. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them. This will be achieved by cementing, with a single or multi-stage job, the 5 1/2" production casing back 200' into the intermediate casing (although cement volume is actually calculated to surface), to be run at TD. If wellbore conditions arise that require immediate action and/or a change to this program, COG Operating LLC personnel will always react to protect the wellbore and/or environment.

see
COA

see
COA

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
Puckett 13 Federal #3H
Page 2 of 4

6. Casing Program - Proposed

Hole size	Interval	OD of Casing	Weight	Cond.	Collar	Grade
17-1/2"	0' - +/- 600'	13-3/8"	48#	New	STC	H-40 or J/K-55
Collapse sf - 3.87, Burst sf - 8.70, Tension sf - 14.91						
12-1/4"	0' - +/- 2000'	9-5/8"	36#	New	STC	J/K-55
Collapse sf - 2.88, Burst sf - 5.01, Tension sf - 8.11						
8-3/4"	0' - 11464'	7" x 5-1/2"	26#/17#	New	LTC	L-80
Collapse sf - 1.87, Burst sf - 2.48, Tension sf - 2.08						

Production string will be a tapered string with 7" 26# L-80 LTC ran from surface to kick off point and then crossed over to 5 1/2" 17# L-80 LTC.

7. Cement Program

13 3/8" Surface Csg: Set at +/- 600'MD, Lead Slurry: 450sx Class "C" w/ 2% CaCl₂ & .25 pps CF, 1.32 yield. 45% excess, calculated to surface.

9 5/8" Intrmd. Csg: Set at +/- 2000'MD. **Single Stage:** Lead Slurry: 300 sx 50:50:10:C:Poz:Gel w/ 5% salt, 5 pps LCM-1 .25 pps CF, 2.45 yield. Tail Slurry: 200 sx Class "C" w/ 2% CaCl₂, 1.32 yield. 76% excess, calculated to surface.

Multi Stage: **Stage 1:** 200 sx Class "C" w/ 2% CaCl₂, 1.32 yield. 76% excess. **Stage 2:** 300 sx 50:50:10:C:Poz:Gel w/ 5% salt, 5 pps LCM-1 .25 pps CF, 2.45 yield, back to surface, 176% excess; assumption for tool is lost circulation. Multi stage tool to be set at approximately, depending on hole conditions, 500' (50' below the surface casing). Cement volumes will be adjusted proportionately for depth changes of multi stage tool.

7 x 5 1/2" Production Csg: Set at +/- 11464'MD. **Single Stage:** Lead Slurry: 400 sx 35:65:6:C:Poz:Gel w/ 5% salt, 5 pps LCM, .2% SMS, .3% FL-52A, .125 pps CF, 2.01 yd. Inter. Slurry: 300 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, .6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, .3% FL-52A; 1.37 yield Tail Slurry: 450 sx Class "H" SOLUCEM-H w/ .7% HR-601, 2.62 yield 53% excess in open hole, calculated to surface. **This is a minimum volume and will be adjusted up after caliper is run.**

Multi Stage: **Stage 1:** (Assumed TD of 11464'MD to DV at 3550') Lead Slurry: 450 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, .6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, .3% FL-52A; 1.37 yield Tail Slurry: 450 sx Class "H" SOLUCEM-H w/ .7% HR-601, 2.62 yield; 3% excess. **This is a minimum volume and will be adjusted up after caliper is run.** **Stage 2:** Lead Slurry: 350 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, .6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, .3% FL-52A; 1.37 yield. Tail Slurry: 150 sx Class C w/ 0.3% R-3 + 1.5% CD-32, 1.02 yield. 28% excess calculated back to surface (no need for excess in casing overlap). **This is a minimum volume and will be adjusted up after caliper is run.**

Multi stage tool to be set at approximately, depending on hole conditions, 3550'. Cement volumes will be adjusted proportionately for depth changes of multi stage tool; assumption for use of tool is water flow.

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8. Pressure Control Equipment:

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (2000 psi WP) preventer, and in some cases possibly a 2000 psi Hydril type annular preventer as provided for in Onshore Order #2. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on the bottom. A 13-5/8" will be used during the drilling of the well. The BOP will be nipped up on the 13 3/8" surface casing with BOP equipment and tested to 2000 psi. After setting 9-5/8" the BOP will then be nipped up on the 9-5/8" intermediate casing and tested by a third party to 2000 psi and used continuously until total depth is reached. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment (Exhibit #10) will include a Kelly cock and floor safety valve, choke lines and a choke manifold (Exhibit #11) with a 2000 psi WP rating.

9. Proposed Mud Circulating System

Interval	Mud Wt.	Visc.	FL	Type Mud System
0' - 600' 650	8.5	28	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH.
600' - 2000'	10	30	NC	Brine mud, lime for PH and paper for seepage and sweeps.
2000' - 11464'	9.1	29	NC	Drill section with fresh water/cut brine circulating the reserve utilizing periodic sweeps of paper as needed for seepage control and solids removal.

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the well site at all times.

10. Production Hole Drilling Summary:

Drill 8 3/4" hole and kick off at +/- 6123', building curve over +/- 750' to horizontal at 6600' TVD. Drill horizontal section in a Northerly direction for +/-4592' lateral to TD at +/-11464' MD, 6600' TVD. Run 7" x 5-1/2" production casing in Open hole lateral and cement to surface.

11. Auxiliary Well Control and Monitoring Equipment

- A. Kelly cock will be kept in the drill string at all times.
- B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

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12. Logging, Testing and Coring Program:

- See COA*
- A. No electric logging to be performed on this well.
 - B. The mud logging program will consist of lagged 10' samples from intermediate casing point to T.D. in vertical pilot hole and from Kick off point to TD in Horizontal hole.
 - C. Drill Stem test is not anticipated.
 - D. No conventional coring is anticipated.
 - E. Further testing procedures will be determined after the 7" x 5 1/2" production casing has been cemented at TD based on drill shows and log evaluation.

13. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 90 degrees and estimated maximum bottom hole pressure is 1800 psig. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, however an H2S plan is attached to the Drilling Program. No major loss of circulation zones has been reported in offsetting wells.

14. Anticipated Starting Date

Drilling operations will commence approximately on October 30, 2011 with drilling and completion operations lasting approximately 90 days.

