

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Hobbs

FORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2014

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.

HOBBS OCD
MAR 25 2014

SUBMIT IN TRIPLICATE - Other Instructions on page 2.

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		RECEIVED	5. Lease Serial No. NMNM120908
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) 190' FSL & 1650' FEL Unit Letter O (SWSE) Sec 29-24S-32E 330' FNL & 1840' FEL Unit Letter B (NWNE) Sec 29-24S-32E		Lat. Long.	8. Well Name and No. Azores Federal #2H
			9. API Well No. 30-06-41534
			10. Field and Pool, or Exploratory Area WC-025 G06 S253206M; Bone Spring
			11. County or Parish, State Lea 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 be performed or provide the Bond No. on file with the BLM/ BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notice shall be filed only after all requirements, including reclamantion, have been completed, and the operator has determined that the site is ready for final inspection.)

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

- TD to 15,155' MD / 10,615' TVD
- We will drill out intermediate with an 8.75" bit. We will drill the vertical section and curve with 8.75" hole to ~11,000' MD. We will drill the lateral section from EOC to TD with 7.875" hole size.

14. I hereby certify that the foregoing is true and correct.

Name (Printed/ Typed)

Mayte Reyes

Title:

Regulatory Analyst

Signature:

Date:

2/28/14

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

APPROVED

Approved by:

Title:

Date:

MAR 20 2014

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:

Is/ Chris Wells

Title 18 U.S.C. Section 1001 AND Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

MAR 26 2014



COG Production LLC

Lea County, NM

Azores Federal

#2H

OH

HOBBS OCD

MAR 25 2014

RECEIVED

Plan: Plan #2

Standard Planning Report

05 February, 2014



Wellplanning Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #2H
Company:	COG Production LLC	TVD Reference:	WELL @ 3520.1usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3520.1usft (Original Well Elev)
Site:	Azores Federal	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Project:	Lea County, NM		
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:	Azores Federal		
Site Position:	Map	Northing:	430,370.30 usft
From:		Easting:	698,107.40 usft
Position Uncertainty:	2.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 10' 53.703 N
		Longitude:	103° 41' 34.825 W
		Grid Convergence:	0.34 °

Well:	#2H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	2.0 usft	Wellhead Elevation:	Ground Level:

Wellbore:	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	2/5/2014	7.31
			Dip Angle
			(°)
			Field Strength
			(nT)
			60.06
			48,313

Design:	Plan #2		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			357.29

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)		
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
10,117.5	0.00	0.00	10,117.5	0.0	0.0	0.00	0.00	0.00	0.00	
10,865.3	89.73	357.29	10,595.0	474.7	-22.5	12.00	12.00	0.00	357.29	
15,155.1	89.73	357.29	10,615.2	4,759.7	-225.3	0.00	0.00	0.00	0.00	PBHL(Azores#2H)



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Site:	Azores Federal	North Reference:	Grid
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Wellbore:	OH		
Design:	Plan #2		

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00



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5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
8,800.0	0.00	0.00	8,800.0	0.0	0.0	0.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,900.0	0.0	0.0	0.0	0.00	0.00	0.00
9,000.0	0.00	0.00	9,000.0	0.0	0.0	0.0	0.00	0.00	0.00
9,100.0	0.00	0.00	9,100.0	0.0	0.0	0.0	0.00	0.00	0.00
9,200.0	0.00	0.00	9,200.0	0.0	0.0	0.0	0.00	0.00	0.00
9,300.0	0.00	0.00	9,300.0	0.0	0.0	0.0	0.00	0.00	0.00
9,400.0	0.00	0.00	9,400.0	0.0	0.0	0.0	0.00	0.00	0.00
9,500.0	0.00	0.00	9,500.0	0.0	0.0	0.0	0.00	0.00	0.00
9,600.0	0.00	0.00	9,600.0	0.0	0.0	0.0	0.00	0.00	0.00
9,700.0	0.00	0.00	9,700.0	0.0	0.0	0.0	0.00	0.00	0.00
9,800.0	0.00	0.00	9,800.0	0.0	0.0	0.0	0.00	0.00	0.00
9,900.0	0.00	0.00	9,900.0	0.0	0.0	0.0	0.00	0.00	0.00
10,000.0	0.00	0.00	10,000.0	0.0	0.0	0.0	0.00	0.00	0.00
10,100.0	0.00	0.00	10,100.0	0.0	0.0	0.0	0.00	0.00	0.00
10,117.5	0.00	0.00	10,117.5	0.0	0.0	0.0	0.00	0.00	0.00
KOP - 10117.5 'MD, 0.00° INC, 0.00° AZI									
10,125.0	0.90	357.29	10,125.0	0.1	0.0	0.1	12.00	12.00	0.00
10,150.0	3.90	357.29	10,150.0	1.1	-0.1	1.1	12.00	12.00	0.00
10,175.0	6.90	357.29	10,174.9	3.5	-0.2	3.5	12.00	12.00	0.00



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Wellbore:	OH		
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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)
10,200.0	9.90	357.29	10,199.6	7.1	-0.3	7.1	12.00	12.00	0.00
10,225.0	12.90	357.29	10,224.1	12.0	-0.6	12.0	12.00	12.00	0.00
10,250.0	15.90	357.29	10,248.3	18.2	-0.9	18.3	12.00	12.00	0.00
10,275.0	18.90	357.29	10,272.2	25.7	-1.2	25.7	12.00	12.00	0.00
10,300.0	21.90	357.29	10,295.6	34.4	-1.6	34.5	12.00	12.00	0.00
10,325.0	24.90	357.29	10,318.5	44.3	-2.1	44.4	12.00	12.00	0.00
10,350.0	27.90	357.29	10,340.9	55.4	-2.6	55.5	12.00	12.00	0.00
10,375.0	30.90	357.29	10,362.7	67.7	-3.2	67.8	12.00	12.00	0.00
10,400.0	33.90	357.29	10,383.8	81.1	-3.8	81.2	12.00	12.00	0.00
10,425.0	36.90	357.29	10,404.2	95.5	-4.5	95.6	12.00	12.00	0.00
10,450.0	39.90	357.29	10,423.8	111.0	-5.3	111.2	12.00	12.00	0.00
10,475.0	42.90	357.29	10,442.5	127.5	-6.0	127.7	12.00	12.00	0.00
10,500.0	45.90	357.29	10,460.4	145.0	-6.9	145.2	12.00	12.00	0.00
10,525.0	48.90	357.29	10,477.3	163.4	-7.7	163.6	12.00	12.00	0.00
10,550.0	51.90	357.29	10,493.2	182.6	-8.6	182.8	12.00	12.00	0.00
10,575.0	54.90	357.29	10,508.1	202.7	-9.6	202.9	12.00	12.00	0.00
10,600.0	57.90	357.29	10,522.0	223.5	-10.6	223.7	12.00	12.00	0.00
10,625.0	60.89	357.29	10,534.7	245.0	-11.6	245.2	12.00	12.00	0.00
10,650.0	63.89	357.29	10,546.3	267.1	-12.6	267.4	12.00	12.00	0.00
10,675.0	66.89	357.29	10,556.7	289.8	-13.7	290.1	12.00	12.00	0.00
10,700.0	69.89	357.29	10,565.9	313.0	-14.8	313.4	12.00	12.00	0.00
10,725.0	72.89	357.29	10,573.9	336.7	-15.9	337.1	12.00	12.00	0.00
10,750.0	75.89	357.29	10,580.6	360.7	-17.1	361.1	12.00	12.00	0.00
10,775.0	78.89	357.29	10,586.1	385.1	-18.2	385.5	12.00	12.00	0.00
10,800.0	81.89	357.29	10,590.2	409.7	-19.4	410.2	12.00	12.00	0.00
10,825.0	84.89	357.29	10,593.1	434.5	-20.6	435.0	12.00	12.00	0.00
10,850.0	87.89	357.29	10,594.7	459.4	-21.7	459.9	12.00	12.00	0.00
10,865.3	89.73	357.29	10,595.0	474.7	-22.5	475.3	12.00	12.00	0.00
EOC- 10865.3 'MD, 89.73° INC, 357.29° AZI									
10,900.0	89.73	357.29	10,595.2	509.4	-24.1	509.9	0.00	0.00	0.00
11,000.0	89.73	357.29	10,595.6	609.3	-28.8	609.9	0.00	0.00	0.00
11,100.0	89.73	357.29	10,596.1	709.1	-33.6	709.9	0.00	0.00	0.00
11,200.0	89.73	357.29	10,596.6	809.0	-38.3	809.9	0.00	0.00	0.00
11,300.0	89.73	357.29	10,597.0	908.9	-43.0	909.9	0.00	0.00	0.00
11,400.0	89.73	357.29	10,597.5	1,008.8	-47.8	1,009.9	0.00	0.00	0.00
11,500.0	89.73	357.29	10,598.0	1,108.7	-52.5	1,109.9	0.00	0.00	0.00
11,600.0	89.73	357.29	10,598.5	1,208.6	-57.2	1,209.9	0.00	0.00	0.00
11,700.0	89.73	357.29	10,598.9	1,308.5	-61.9	1,309.9	0.00	0.00	0.00
11,800.0	89.73	357.29	10,599.4	1,408.4	-66.7	1,409.9	0.00	0.00	0.00
11,900.0	89.73	357.29	10,599.9	1,508.2	-71.4	1,509.9	0.00	0.00	0.00
12,000.0	89.73	357.29	10,600.3	1,608.1	-76.1	1,609.9	0.00	0.00	0.00
12,100.0	89.73	357.29	10,600.8	1,708.0	-80.8	1,709.9	0.00	0.00	0.00
12,200.0	89.73	357.29	10,601.3	1,807.9	-85.6	1,809.9	0.00	0.00	0.00
12,300.0	89.73	357.29	10,601.8	1,907.8	-90.3	1,909.9	0.00	0.00	0.00
12,400.0	89.73	357.29	10,602.2	2,007.7	-95.0	2,009.9	0.00	0.00	0.00
12,500.0	89.73	357.29	10,602.7	2,107.6	-99.8	2,109.9	0.00	0.00	0.00
12,600.0	89.73	357.29	10,603.2	2,207.5	-104.5	2,209.9	0.00	0.00	0.00
12,700.0	89.73	357.29	10,603.6	2,307.3	-109.2	2,309.9	0.00	0.00	0.00
12,800.0	89.73	357.29	10,604.1	2,407.2	-113.9	2,409.9	0.00	0.00	0.00
12,900.0	89.73	357.29	10,604.6	2,507.1	-118.7	2,509.9	0.00	0.00	0.00
13,000.0	89.73	357.29	10,605.1	2,607.0	-123.4	2,609.9	0.00	0.00	0.00
13,100.0	89.73	357.29	10,605.5	2,706.9	-128.1	2,709.9	0.00	0.00	0.00
13,200.0	89.73	357.29	10,606.0	2,806.8	-132.9	2,809.9	0.00	0.00	0.00
13,300.0	89.73	357.29	10,606.5	2,906.7	-137.6	2,909.9	0.00	0.00	0.00



Wellplanning Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #2H
Company:	COG Production LLC	TVD Reference:	WELL @ 3520.1usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3520.1usft (Original Well Elev)
Site:	Azores Federal	North Reference:	Grid
Well:	#2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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)
13,400.0	89.73	357.29	10,606.9	3,006.5	-142.3	3,009.9	0.00	0.00	0.00
13,500.0	89.73	357.29	10,607.4	3,106.4	-147.0	3,109.9	0.00	0.00	0.00
13,600.0	89.73	357.29	10,607.9	3,206.3	-151.8	3,209.9	0.00	0.00	0.00
13,700.0	89.73	357.29	10,608.4	3,306.2	-156.5	3,309.9	0.00	0.00	0.00
13,800.0	89.73	357.29	10,608.8	3,406.1	-161.2	3,409.9	0.00	0.00	0.00
13,900.0	89.73	357.29	10,609.3	3,506.0	-166.0	3,509.9	0.00	0.00	0.00
14,000.0	89.73	357.29	10,609.8	3,605.9	-170.7	3,609.9	0.00	0.00	0.00
14,100.0	89.73	357.29	10,610.2	3,705.8	-175.4	3,709.9	0.00	0.00	0.00
14,200.0	89.73	357.29	10,610.7	3,805.6	-180.1	3,809.9	0.00	0.00	0.00
14,300.0	89.73	357.29	10,611.2	3,905.5	-184.9	3,909.9	0.00	0.00	0.00
14,400.0	89.73	357.29	10,611.7	4,005.4	-189.6	4,009.9	0.00	0.00	0.00
14,500.0	89.73	357.29	10,612.1	4,105.3	-194.3	4,109.9	0.00	0.00	0.00
14,600.0	89.73	357.29	10,612.6	4,205.2	-199.0	4,209.9	0.00	0.00	0.00
14,700.0	89.73	357.29	10,613.1	4,305.1	-203.8	4,309.9	0.00	0.00	0.00
14,800.0	89.73	357.29	10,613.5	4,405.0	-208.5	4,409.9	0.00	0.00	0.00
14,900.0	89.73	357.29	10,614.0	4,504.9	-213.2	4,509.9	0.00	0.00	0.00
15,000.0	89.73	357.29	10,614.5	4,604.7	-218.0	4,609.9	0.00	0.00	0.00
15,100.0	89.73	357.29	10,615.0	4,704.6	-222.7	4,709.9	0.00	0.00	0.00
15,155.1	89.73	357.29	10,615.2	4,759.7	-225.3	4,765.0	0.00	0.00	0.00
TD at 15155.1 - PBHL(Azores#2H)									

Design Targets									
Target-Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL(Azores#2H)	0.00	0.00	10,615.0	4,759.7	-225.5	435,130.00	697,881.90	32° 11' 40.817 N	103° 41' 37.119 W
- plan misses target center by 0.3usft at 15155.1usft MD (10615.2 TVD, 4759.7 N, -225.3 E)									
- Point									

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
10,117.5	10,117.5	0.0	0.0	KOP - 10117.5 'MD, 0.00° INC, 0.00° AZI	
10,865.3	10,595.0	474.7	-22.5	EOC- 10865.3 'MD, 89.73° INC, 357.29° AZI	
15,155.1	10,615.2	4,759.7	-225.3	TD at 15155.1	



COG Production LLC
Project: Lea County, NM
Site: Azores Federal
Well: #2H
Wellbore: OH
Plan: Plan #2 (#2H/OH)

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	10117.5	0.00	0.00	10117.5	0.0	0.0	0.00	0.00	0.0	
3	10865.3	89.73	357.29	10595.0	474.7	-22.5	12.00	357.29	475.3	
4	15155.1	89.73	357.29	10615.2	4759.7	-225.3	0.00	0.00	4765.0	PBHL(Azores#2H)

WELL DETAILS: #2H

Ground Elevation:: 3498.1
RKB Elevation: WELL @ 3520.1usft (Original Well Elev)
Rig Name: Original Well Elev

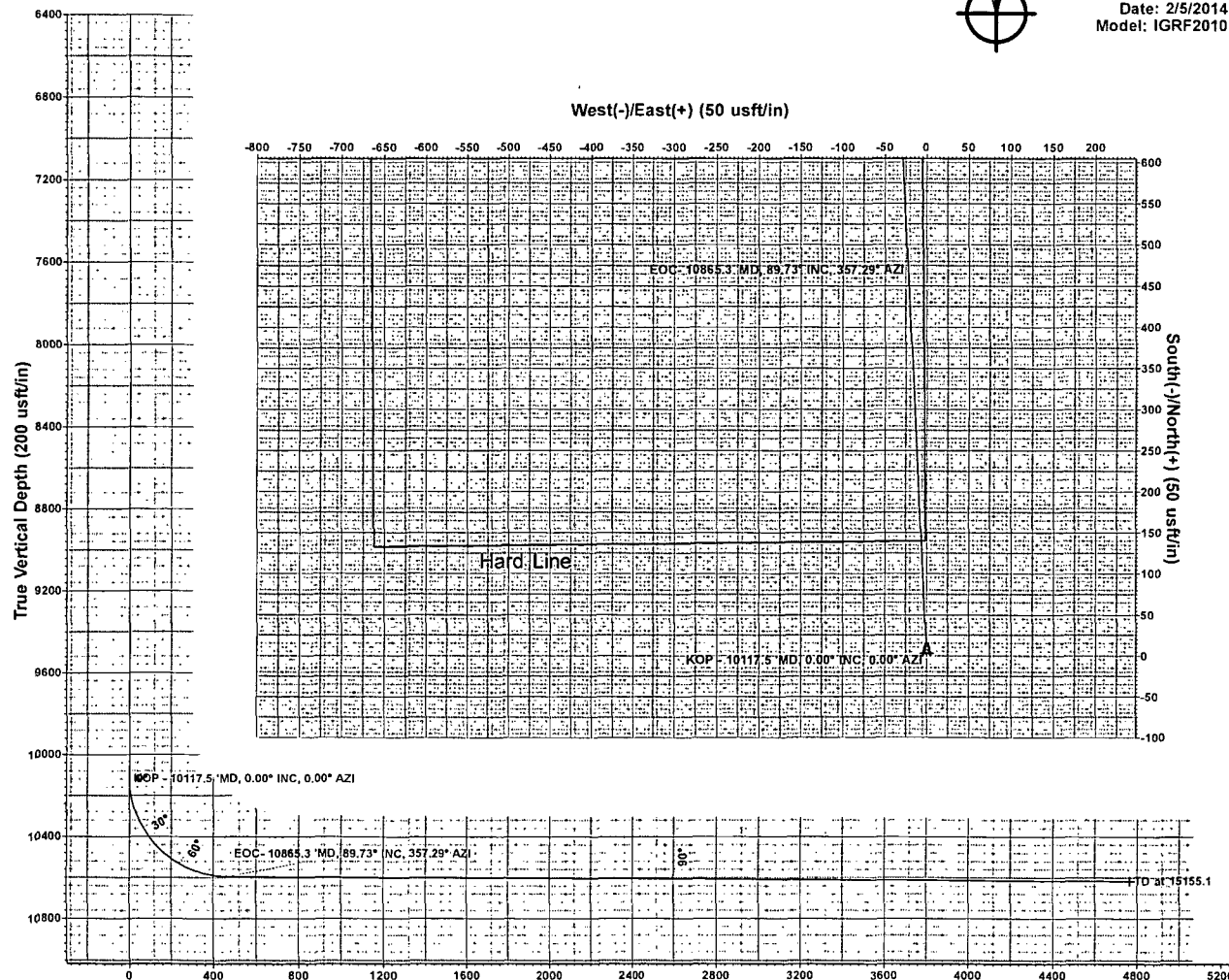
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	430370.30	698107.40	32° 10' 53.703 N	103° 41' 34.825 W



Azimuths to Grid North
True North: -0.34°
Magnetic North: 6.97°

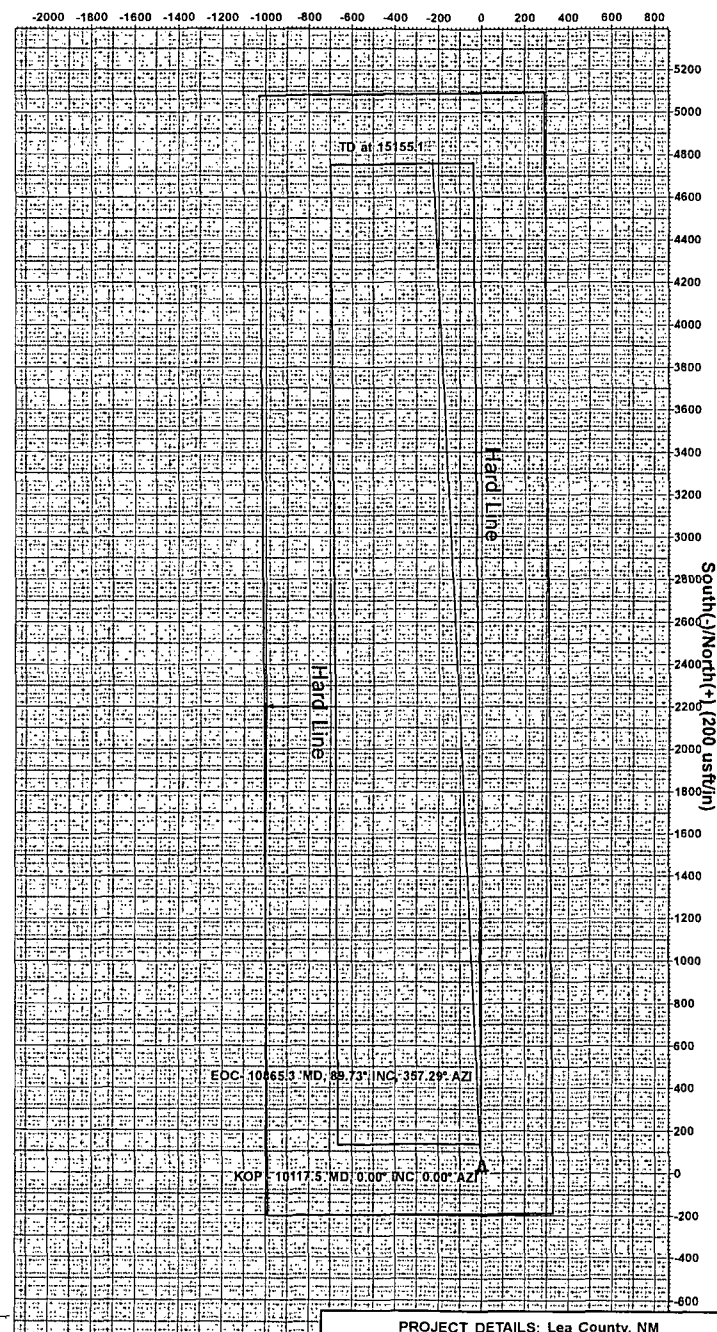
Magnetic Field
Strength: 48312.6snT
Dip Angle: 60.06°
Date: 2/5/2014
Model: IGRF2010

West(-)/East(+) (50 usft/in)



Vertical Section at 357.29° (200 usft/in)

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



Plan: Plan #2 (#2H/OH)
Created By: Well Planner Date: 20:32, February 05 2014

Terra Directional Services
322 Spring Hill Drive, Suite A100, Spring, Texas 77386
432.425.7532

PROJECT DETAILS: Lea County, NM
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