

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Hobbs

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

2. Name of Operator
COG Production LLC

3a. Address
2208 W. Main Street
Artesia, NM 88210

3b. Phone No. (include area code)
575-748-6940

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
440' FNL & 440' FEL Unit Letter A (NENE) Sec 27-24S-32E

Lat.

Long.

5. Lease Serial No.
NMNM120907
6. If Indian, Allottee, or Tribe Name
7. If Unit or CA. Agreement Name and/or No.
8. Well Name and No.
Dos XX 27 Federal Com #1H
9. API Well No.
30-025-40090
10. Field and Pool or Exploratory Area
WC-025 G-06 S253201M:BS
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	Change to original APD	
	☐ 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 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 casing, cement, hole size and formation changes to the original APD.

Formation

From: Wildcat; Bone Spring
To: Lower Avalon Shale

Casing, Cement & Hole Size

See attached.

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JAN 09 2013

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

Name (Printed/ Typed)

Mayte Reyes

Title: Regulatory Analyst

Date: 12/26/12

Signature: *Mayte Reyes*

APPROVED

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by:

Title: Petroleum Engineer

Date: JAN 4 2013

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:

/s/ Chris Walls

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 false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

Casing, cement, and hole size changes to the original APD for the Dos XX 27 Federal Com #1H.

1. Surface csg changed to 13-3/8" 54.5# J-55 STC.
2. Intermediate hole size changed to 12-1/4"
3. Intermediate csg changed to 9-5/8" J-55 40# BTC from 0' to 4500'. 9-5/8" 40# N-80 BTC from 4500' to 4700'.
4. Production csg changed to 5-1/2" P-110 17# LTC from 0-13,774 MD.
5. TD changed to 13,774 MD/ 9520' TVD. BHP= 4450 psi
 - a. Attached is the new well plan.
6. Geo tops for deeper TVD:
 - a. Upper Avalon Shale = 9111' TVD
 - b. Lower Avalon Shale = 9298' TVD
7. Cement
 - a. 13-3/8" Surface
 - Lead: 475 sx Class C + 4% Gel + 2% CaCl₂
(13.5 ppg / 1.75 cuft/sx)
 - Tail: 250 sx Class C + 2% CaCl₂
(14.8 ppg / 1.34 cuft/sx)
 - **Calculated w/50% excess on OH volumes
 - b. 9 5/8" Intermediate:
 - Lead: 900 sx 35:65:6 Class C
(12.7 ppg / 1.89 cuft/sx)
 - Tail: 250 sx Class C + 2% CaCl₂
(14.8 ppg / 1.34 cuft/sx)
 - **Calculated w/35% excess on OH volumes
 - d. 5 1/2" Production
 - Lead: 925 sx 50:50:10 H + Salt+Gilsonite+CFR-3+ HR601
(11.8 ppg / 2.5 cuft/sx)
 - Tail: 925 sx 50:50:2 H +Salt+GasStop +HR601 +CFR-3
(14.4 ppg / 1.25 cuft/sx)
 - **Calculated w/35% excess on OH volumes

DISTRICT I
1825 N. French Dr., Hobbs, NM 88240

DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

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JAN 09 2013

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised October 15, 2009

Submit one copy to appropriate
District Office

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CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number 30-025-40090	Pool Code 97784	Pool Name WC-025 G-06 5253201M; AS UP 514
Property Code	Property Name DOS XX "27" FEDERAL COM	Well Number 1H
OGRID No. 217955	Operator Name COG Production LLC	Elevation 3582'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	27	24 S	32 E		440	NORTH	440	EAST	LEA

Bottom Hole Location If Different From Surface

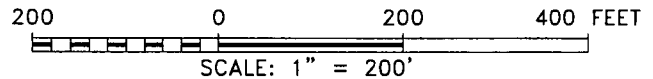
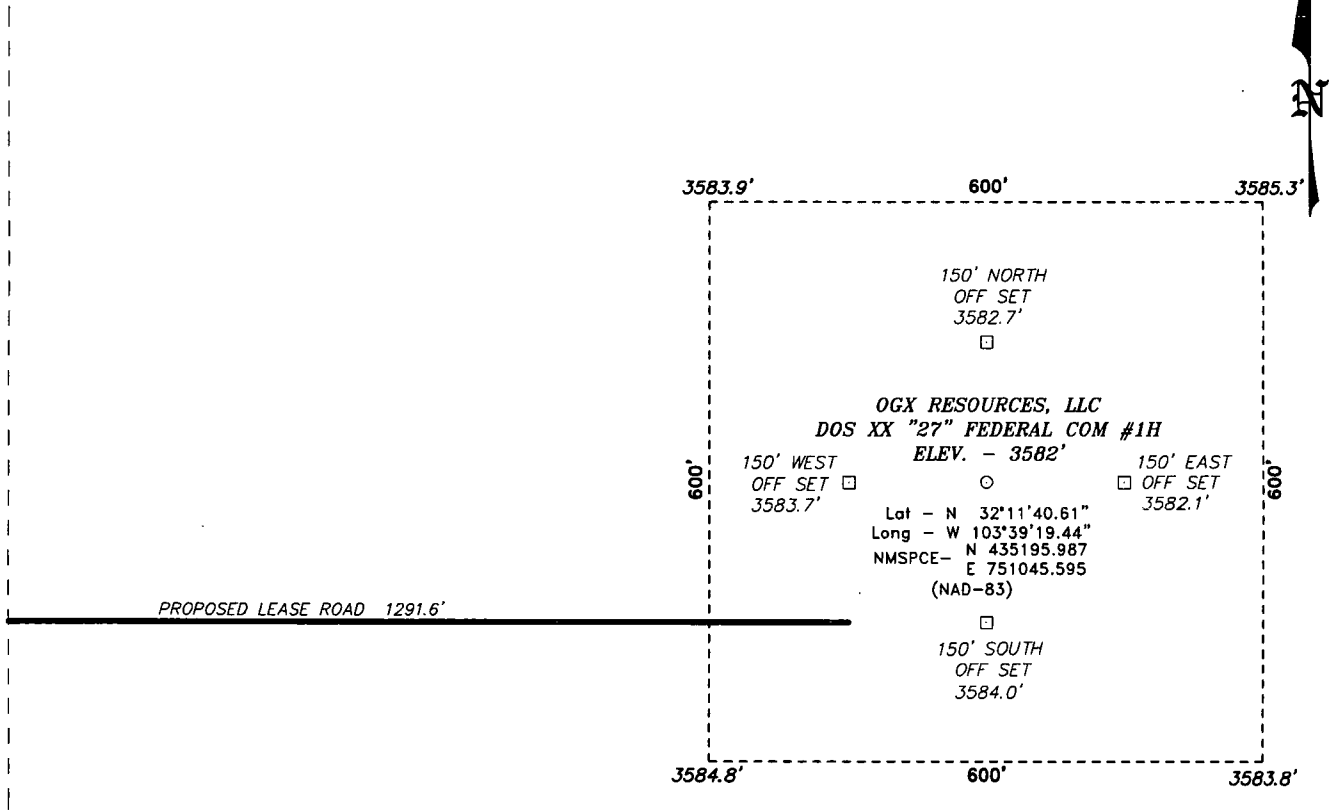
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	27	24 S	32 E		330	SOUTH	330	EAST	LEA

Dedicated Acres 160	Joint or Infill	Consolidation Code	Order No.
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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

SURFACE LOCATION Lat - N 32°11'40.61" Long - W 103°39'19.44" NMSPCE- N 435195.987 E 751045.595 (NAD-83) SURFACE LOCATION Lat - N 32°11'40.16" Long - W 103°39'17.72" NMSPCE- N 435137.405 E 709860.925 (NAD-27)	3583.9' 440' 3585.3' 440' 3584.8' 3583.8' 4500.0' 330' BH	OPERATOR CERTIFICATION I hereby certify that the information contained 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Mayte Reyes</i> 12-26-12 Signature Date MAYTE REYES 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. GARY L. JONES Date Surveyed Signature & Seal of Professional Surveyor Certificate No. Gary L. Jones 7977 BASIN SURVEYS
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SECTION 27, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.



Directions to Location:

FROM THE JUNCTION OF HWY 128 AND ORLA, GO
EAST ON HWY 128 0.6 MILES TO LEASE ROAD, ON
LEASE ROAD GO SOUTH 1.4 MILES TO PROPOSED
LEASE ROAD.

BASIN SURVEYS P.O. BOX 1786-HOBBS, NEW MEXICO

W.O. Number: 23508 Drawn By: J. SMALL

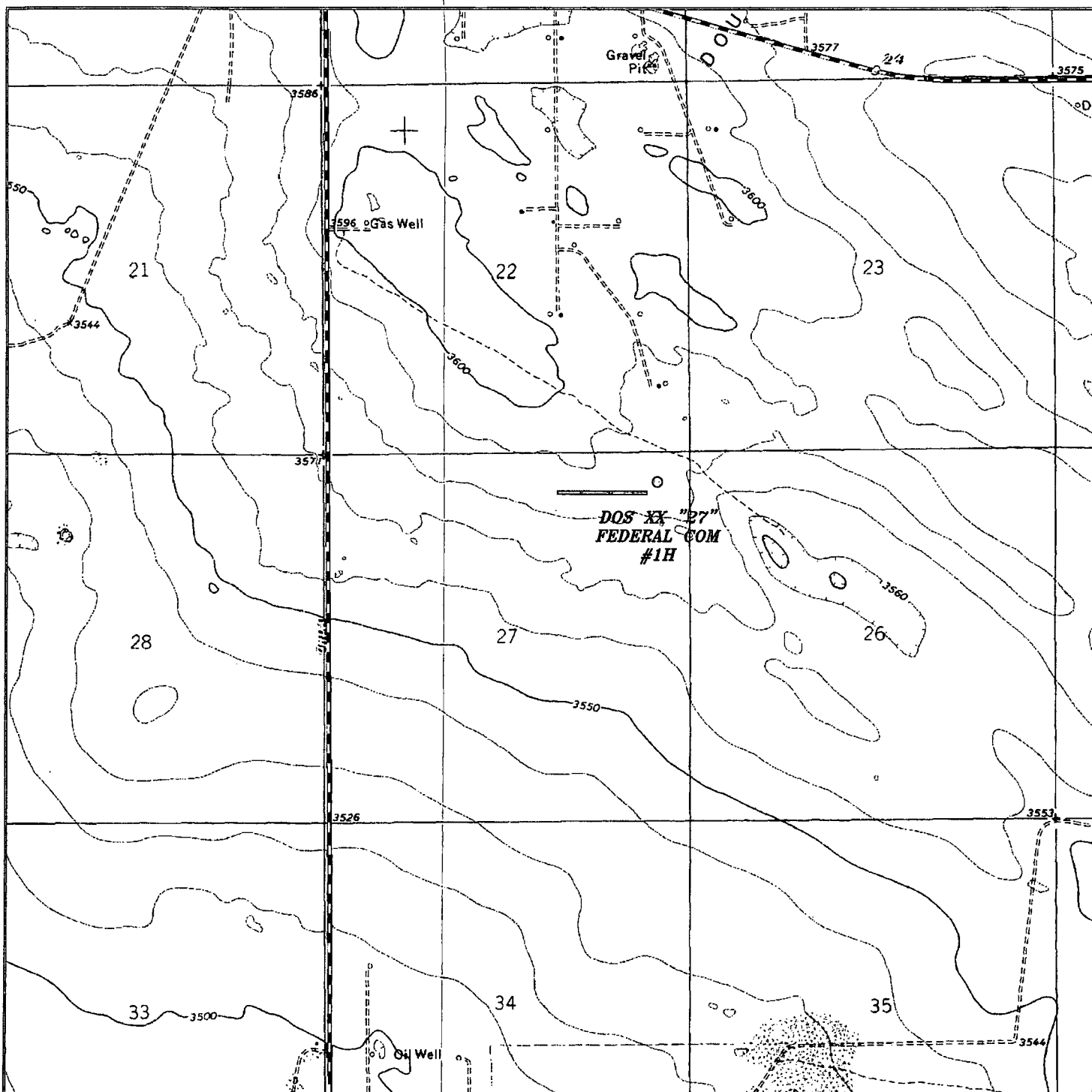
Date: 10-12-2010 Disk: JMS 23508

COG PRODUCTION LLC

REF: DOS XX "27" FEDERAL COM #1H / WELL PAD TOPO

THE DOS XX "27" FEDERAL COM #1H LOCATED 440'
FROM THE NORTH LINE AND 440' FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 24 SOUTH, RANGE 32 EAST,
N.M.P.M., LEA COUNTY, NEW MEXICO.

Survey Date: 10-06-2010 Sheet 1 of 1 Sheets



DOS XX "27" FEDERAL COM #1H
 Located 440' FNL and 440' FEL
 Section 27, Township 24 South, Range 32 East,
 N.M.P.M., Lea County, New Mexico.



focused on excellence
in the oilfield

P.O. Box 1786
 1120 N. West County Rd.
 Hobbs, New Mexico 88241
 (575) 393-7316 - Office
 (575) 392-2206 - Fax
 basinsurveys.com

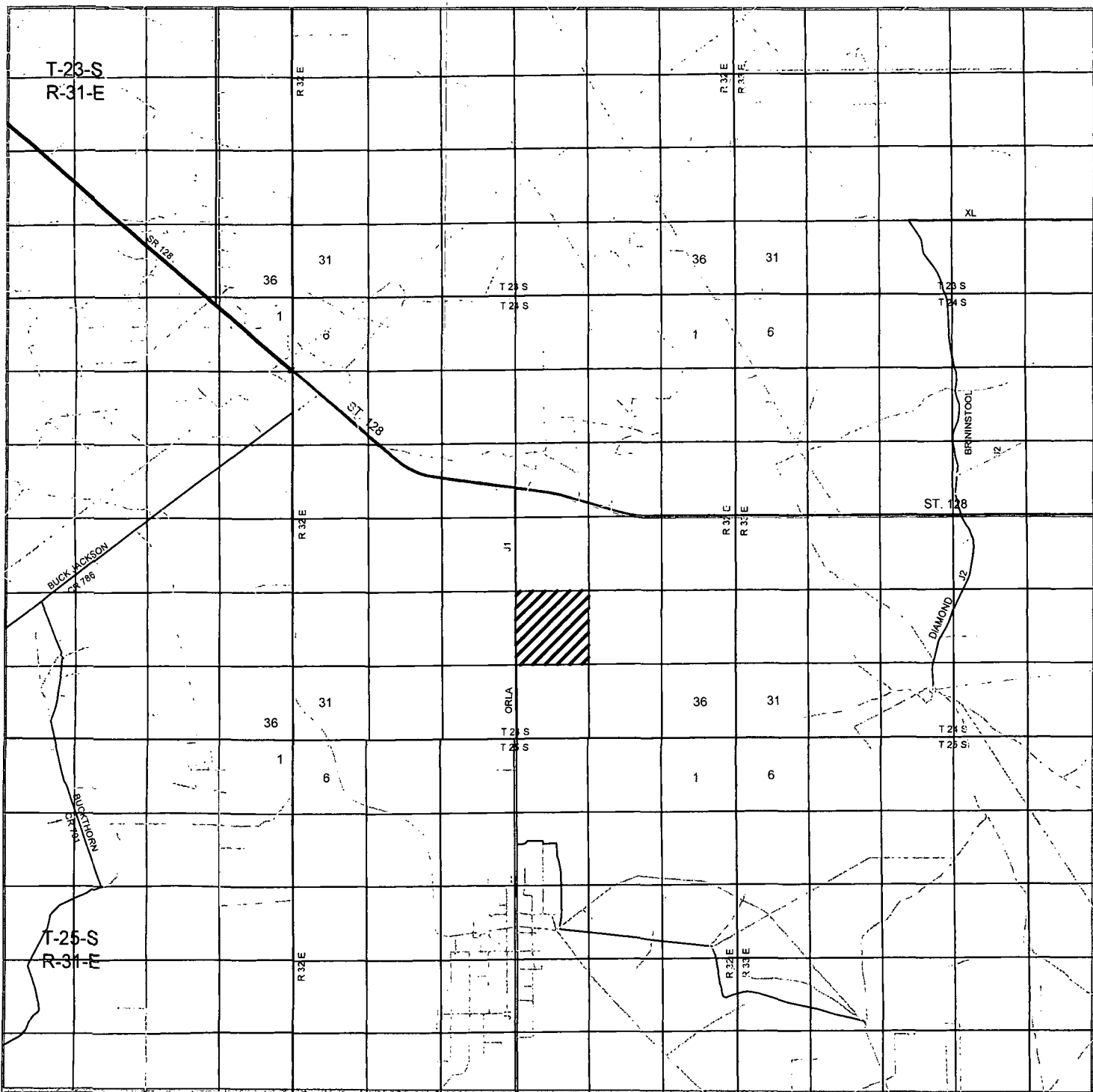
W.O. Number: JMS 23508

Survey Date: 10-06-2010

Scale: 1" = 2000'

Date: 10-12-2010

COG PRODUCTION LLC



DOS XX "27" FEDERAL COM #1H
 Located 440' FNL and 440' FEL
 Section 27, Township 24 South, Range 32 East,
 N.M.P.M., Lea County, New Mexico.



P.O. Box 1786
 1120 N. West County Rd.
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W.O. Number: JMS 23508

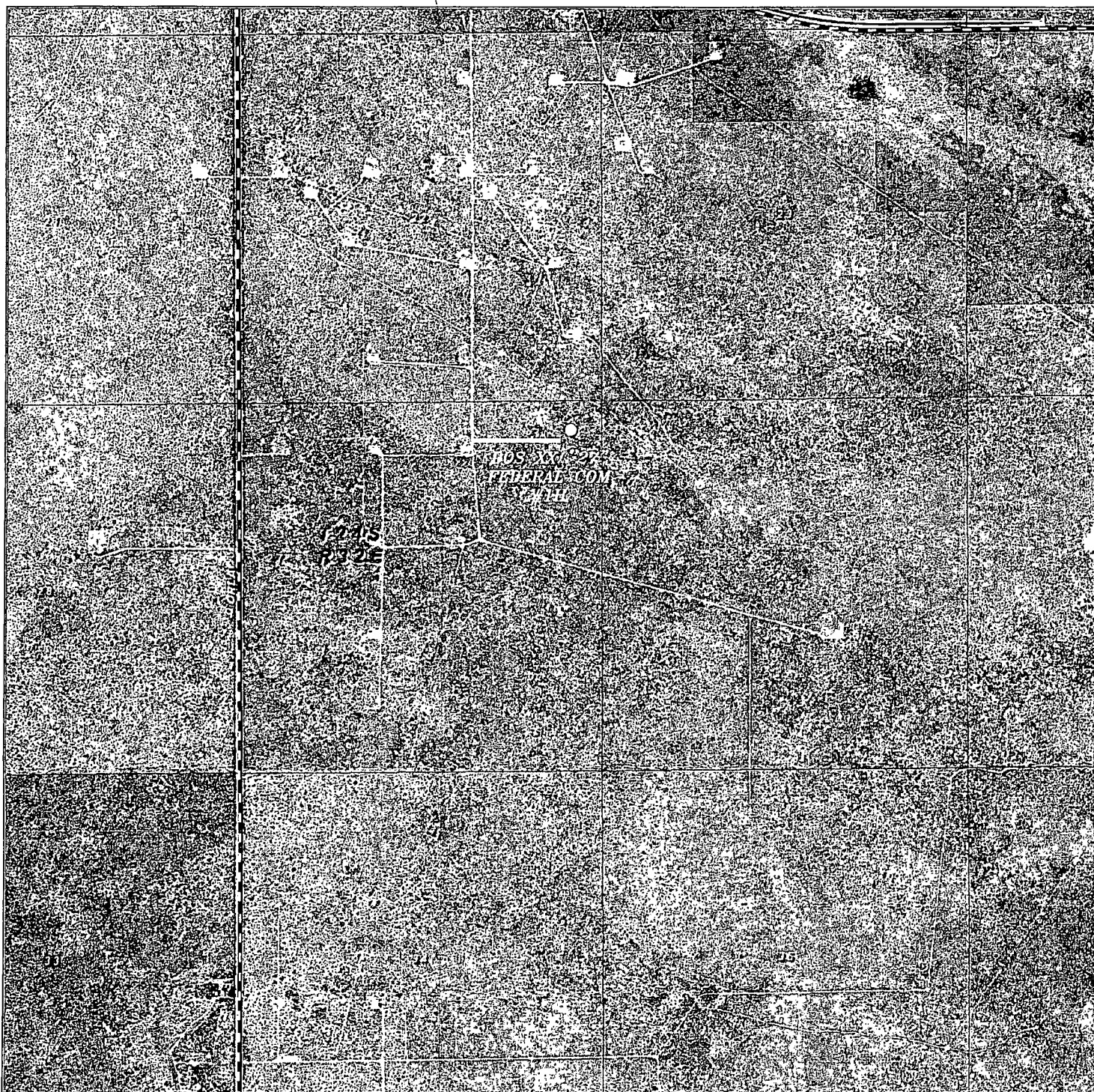
Survey Date: 10-06-2010

Scale: 1" = 2 Miles

Date: 10-12-2010



COG PRODUCTION LLC



DOS XX "27" FEDERAL COM #1H
Located 440' FNL and 440' FEL
Section 27, Township 24 South, Range 32 East,
N.M.P.M., Lea County, New Mexico.



P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
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(575) 392-2206 - Fax
basinsurveys.com

W.O. Number: JMS 23508

Scale: 1" = 2000'

YELLOW TINT - USA LAND
BLUE TINT - STATE LAND
NATURAL COLOR - FEE LAND

COG PRODUCTION LLC



COG PRODUCTION LLC
Lea County, NM
Dos XX 27 Federal om
#1H

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OH

Plan: Plan #1

Standard Planning Report

21 December, 2012





Planning Report



Database: Houston R5000 Database
 Company: COG PRODUCTION LLC
 Project: Lea County, NM
 Site: Dos XX 27 Federal om
 Well: #1H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #1H
 TVD Reference: WELL @ 3599.5usft (Silver Oak #7 - 17.5' KB)
 MD Reference: WELL @ 3599.5usft (Silver Oak #7 - 17.5' KB)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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	Dos XX 27 Federal om				
Site Position:		Northing:	435,137.40 usft	Latitude:	32° 11' 40.164 N
From:	Map	Easting:	709,860.93 usft	Longitude:	103° 39' 17.719 W
Position Uncertainty:	2.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.36 °

Well	#1H				
Well Position	+N/-S	0.0 usft	Northing:	435,137.40 usft	Latitude: 32° 11' 40.164 N
	+E/-W	0.0 usft	Easting:	709,860.93 usft	Longitude: 103° 39' 17.719 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level: 3,582.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/21/2012	7.44	60.11	48,436

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	178.28	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
9,002.5	0.00	0.00	9,002.5	0.0	0.0	0.00	0.00	0.00	0.00	
9,747.8	89.43	178.28	9,480.0	-472.6	14.2	12.00	12.00	0.00	178.28	
13,774.4	89.43	178.28	9,520.1	-4,497.1	135.0	0.00	0.00	0.00	0.00	PBHL (DXX#1H)



Planning Report



Database: Houston R5000 Database
Company: COG PRODUCTION LLC

Project: Lea County, NM

Site: Dos XX 27 Federal om
Well: #1H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3599.5usft (Silver Oak #7 - 17.5' KB)
MD Reference: WELL @ 3599.5usft (Silver Oak #7 - 17.5' KB)
North Reference: Grid
Survey Calculation Method: 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)
0.0	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



Planning Report



Database: Houston R5000 Database
Company: COG PRODUCTION LLC

Project: Lea County, NM

Site: Dos XX 27 Federal om

Well: #1H

Wellbore: OH

Design: Plan #1

Local Co-ordinate Reference:

TVD Reference:

MD Reference:

North Reference:

Survey Calculation Method:

Well #1H

WELL @ 3599.5usft (Silver Oak #7 - 17.5' KB)

WELL @ 3599.5usft (Silver Oak #7 - 17.5' KB)

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)
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
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
9,002.5	0.00	0.00	9,002.5	0.0	0.0	0.0	0.00	0.00	0.00
KOP - 9002.5' MD, 9002.5' TVD, 0.00° INC, 0.00° AZI, 0.0° VS									
9,025.0	2.70	178.28	9,025.0	-0.5	0.0	0.5	12.00	12.00	0.00
9,050.0	5.70	178.28	9,049.9	-2.4	0.1	2.4	12.00	12.00	0.00
9,075.0	8.70	178.28	9,074.7	-5.5	0.2	5.5	12.00	12.00	0.00
9,100.0	11.70	178.28	9,099.3	-9.9	0.3	9.9	12.00	12.00	0.00
9,125.0	14.70	178.28	9,123.7	-15.6	0.5	15.6	12.00	12.00	0.00
9,150.0	17.70	178.28	9,147.7	-22.6	0.7	22.6	12.00	12.00	0.00
9,175.0	20.70	178.28	9,171.3	-30.8	0.9	30.8	12.00	12.00	0.00
9,200.0	23.70	178.28	9,194.4	-40.2	1.2	40.3	12.00	12.00	0.00
9,225.0	26.70	178.28	9,217.0	-50.9	1.5	50.9	12.00	12.00	0.00
9,250.0	29.70	178.28	9,239.1	-62.7	1.9	62.7	12.00	12.00	0.00
9,275.0	32.70	178.28	9,260.4	-75.6	2.3	75.7	12.00	12.00	0.00
9,300.0	35.70	178.28	9,281.1	-89.7	2.7	89.7	12.00	12.00	0.00



Planning Report



Database: Houston R5000 Database
 Company: COGPRODUCTION LLC
 Project: Lea County, NM
 Site: Dos XX 27 Federal om
 Well: #1H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #1H
 TVD Reference: WELL @ 3599.5usft (Silver Oak #7 - 17.5' KB)
 MD Reference: WELL @ 3599.5usft (Silver Oak #7 - 17.5' KB)
 North Reference: Grid
 Survey Calculation Method: 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)
9,325.0	38.70	178.28	9,301.0	-104.8	3.1	104.8	12.00	12.00	0.00
9,350.0	41.69	178.28	9,320.1	-120.9	3.6	121.0	12.00	12.00	0.00
9,375.0	44.69	178.28	9,338.4	-138.0	4.1	138.1	12.00	12.00	0.00
9,400.0	47.69	178.28	9,355.7	-156.0	4.7	156.1	12.00	12.00	0.00
9,425.0	50.69	178.28	9,372.0	-175.0	5.3	175.0	12.00	12.00	0.00
9,450.0	53.69	178.28	9,387.3	-194.7	5.8	194.8	12.00	12.00	0.00
9,475.0	56.69	178.28	9,401.6	-215.2	6.5	215.3	12.00	12.00	0.00
9,500.0	59.69	178.28	9,414.8	-236.4	7.1	236.5	12.00	12.00	0.00
9,525.0	62.69	178.28	9,426.8	-258.3	7.8	258.5	12.00	12.00	0.00
9,550.0	65.69	178.28	9,437.7	-280.8	8.4	281.0	12.00	12.00	0.00
9,575.0	68.69	178.28	9,447.4	-303.9	9.1	304.0	12.00	12.00	0.00
9,600.0	71.69	178.28	9,455.8	-327.4	9.8	327.5	12.00	12.00	0.00
9,625.0	74.69	178.28	9,463.1	-351.3	10.5	351.4	12.00	12.00	0.00
9,650.0	77.69	178.28	9,469.0	-375.5	11.3	375.7	12.00	12.00	0.00
9,675.0	80.69	178.28	9,473.7	-400.1	12.0	400.3	12.00	12.00	0.00
9,700.0	83.69	178.28	9,477.1	-424.8	12.8	425.0	12.00	12.00	0.00
9,725.0	86.69	178.28	9,479.2	-449.7	13.5	449.9	12.00	12.00	0.00
9,747.8	89.42	178.28	9,480.0	-472.5	14.2	472.7	12.00	12.00	0.00
EOC - 9747.8' MD, 9480.0' TVD, 89.42° INC, 178.28° AZI, 472.7' VS									
9,800.0	89.43	178.28	9,480.5	-524.7	15.8	524.9	0.01	0.01	0.00
9,900.0	89.43	178.28	9,481.5	-624.6	18.8	624.9	0.00	0.00	0.00
10,000.0	89.43	178.28	9,482.5	-724.6	21.8	724.9	0.00	0.00	0.00
10,100.0	89.43	178.28	9,483.5	-824.5	24.8	824.9	0.00	0.00	0.00
10,200.0	89.43	178.28	9,484.5	-924.5	27.8	924.9	0.00	0.00	0.00
10,300.0	89.43	178.28	9,485.5	-1,024.4	30.8	1,024.9	0.00	0.00	0.00
10,400.0	89.43	178.28	9,486.5	-1,124.4	33.8	1,124.9	0.00	0.00	0.00
10,500.0	89.43	178.28	9,487.5	-1,224.3	36.8	1,224.9	0.00	0.00	0.00
10,600.0	89.43	178.28	9,488.5	-1,324.3	39.8	1,324.9	0.00	0.00	0.00
10,700.0	89.43	178.28	9,489.5	-1,424.2	42.8	1,424.9	0.00	0.00	0.00
10,800.0	89.43	178.28	9,490.5	-1,524.2	45.8	1,524.9	0.00	0.00	0.00
10,900.0	89.43	178.28	9,491.5	-1,624.1	48.8	1,624.9	0.00	0.00	0.00
11,000.0	89.43	178.28	9,492.5	-1,724.1	51.8	1,724.9	0.00	0.00	0.00
11,100.0	89.43	178.28	9,493.5	-1,824.0	54.8	1,824.9	0.00	0.00	0.00
11,200.0	89.43	178.28	9,494.4	-1,924.0	57.8	1,924.9	0.00	0.00	0.00
11,300.0	89.43	178.28	9,495.4	-2,023.9	60.8	2,024.9	0.00	0.00	0.00
11,400.0	89.43	178.28	9,496.4	-2,123.9	63.8	2,124.8	0.00	0.00	0.00
11,500.0	89.43	178.28	9,497.4	-2,223.8	66.8	2,224.8	0.00	0.00	0.00
11,600.0	89.43	178.28	9,498.4	-2,323.8	69.8	2,324.8	0.00	0.00	0.00
11,700.0	89.43	178.28	9,499.4	-2,423.7	72.8	2,424.8	0.00	0.00	0.00
11,800.0	89.43	178.28	9,500.4	-2,523.7	75.8	2,524.8	0.00	0.00	0.00
11,900.0	89.43	178.28	9,501.4	-2,623.6	78.8	2,624.8	0.00	0.00	0.00
12,000.0	89.43	178.28	9,502.4	-2,723.6	81.8	2,724.8	0.00	0.00	0.00
12,100.0	89.43	178.28	9,503.4	-2,823.5	84.8	2,824.8	0.00	0.00	0.00
12,200.0	89.43	178.28	9,504.4	-2,923.5	87.8	2,924.8	0.00	0.00	0.00
12,300.0	89.43	178.28	9,505.4	-3,023.4	90.8	3,024.8	0.00	0.00	0.00
12,400.0	89.43	178.28	9,506.4	-3,123.4	93.8	3,124.8	0.00	0.00	0.00
12,500.0	89.43	178.28	9,507.4	-3,223.3	96.8	3,224.8	0.00	0.00	0.00
12,600.0	89.43	178.28	9,508.4	-3,323.3	99.8	3,324.8	0.00	0.00	0.00
12,700.0	89.43	178.28	9,509.4	-3,423.2	102.8	3,424.8	0.00	0.00	0.00
12,800.0	89.43	178.28	9,510.4	-3,523.2	105.8	3,524.8	0.00	0.00	0.00
12,900.0	89.43	178.28	9,511.4	-3,623.1	108.8	3,624.8	0.00	0.00	0.00
13,000.0	89.43	178.28	9,512.4	-3,723.1	111.8	3,724.8	0.00	0.00	0.00



Planning Report



Database: Houston R5000 Database
Company: COG PRODUCTION LLC

Project: Lea County, NM

Site: Dos XX 27 Federal om
Well: #1H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3599.5usft (Silver Oak #7 - 17.5' KB)
MD Reference: WELL @ 3599.5usft (Silver Oak #7 - 17.5' KB)
North Reference: Grid
Survey Calculation Method: 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)
13,100.0	89.43	178.28	9,513.3	-3,823.0	114.8	3,824.8	0.00	0.00	0.00
13,200.0	89.43	178.28	9,514.3	-3,923.0	117.8	3,924.8	0.00	0.00	0.00
13,300.0	89.43	178.28	9,515.3	-4,022.9	120.8	4,024.8	0.00	0.00	0.00
13,400.0	89.43	178.28	9,516.3	-4,122.9	123.8	4,124.8	0.00	0.00	0.00
13,500.0	89.43	178.28	9,517.3	-4,222.8	126.8	4,224.7	0.00	0.00	0.00
13,600.0	89.43	178.28	9,518.3	-4,322.8	129.8	4,324.7	0.00	0.00	0.00
13,700.0	89.43	178.28	9,519.3	-4,422.7	132.8	4,424.7	0.00	0.00	0.00
13,774.4	89.43	178.28	9,520.1	-4,497.1	135.0	4,499.1	0.00	0.00	0.00

TD @ 13774.4' MD, 9520.1' TVD

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
- Shape									
PBHL (DXX#1H)	0.00	0.00	9,520.0	-4,497.1	134.6	430,640.31	709,995.55	32° 10' 55.654 N	103° 39' 16.483 W
- plan misses target center by 0.4usft at 13774.4usft MD (9520.1 TVD, -4497.1 N, 135.0 E)									
- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,002.5	9,002.5	0.0	0.0	KOP - 9002.5' MD, 9002.5' TVD, 0.00° INC, 0.00° AZI, 0.0' VS
9,747.8	9,480.0	-472.5	14.2	EOC - 9747.8' MD, 9480.0' TVD, 89.42° INC, 178.28° AZI, 472.7' VS
13,774.4	9,520.1	-4,497.1	135.0	TD @ 13774.4' MD, 9520.1' TVD

COG PRODUCTION LLC
 Project: Lea County, NM
 Site: Dos XX 27 Federal om
 Well: #1H
 Wellbore: OH
 Plan: Plan #1 (#1H/OH)



Azimuths to Grid North
 True North: -0.36°
 Magnetic North: 7.08°
 Magnetic Field
 Strength: 48436.5nT
 Dip Angle: 60.11°
 Date: 12/21/2012
 Model: IGRF2010

WELL DETAILS: #1H

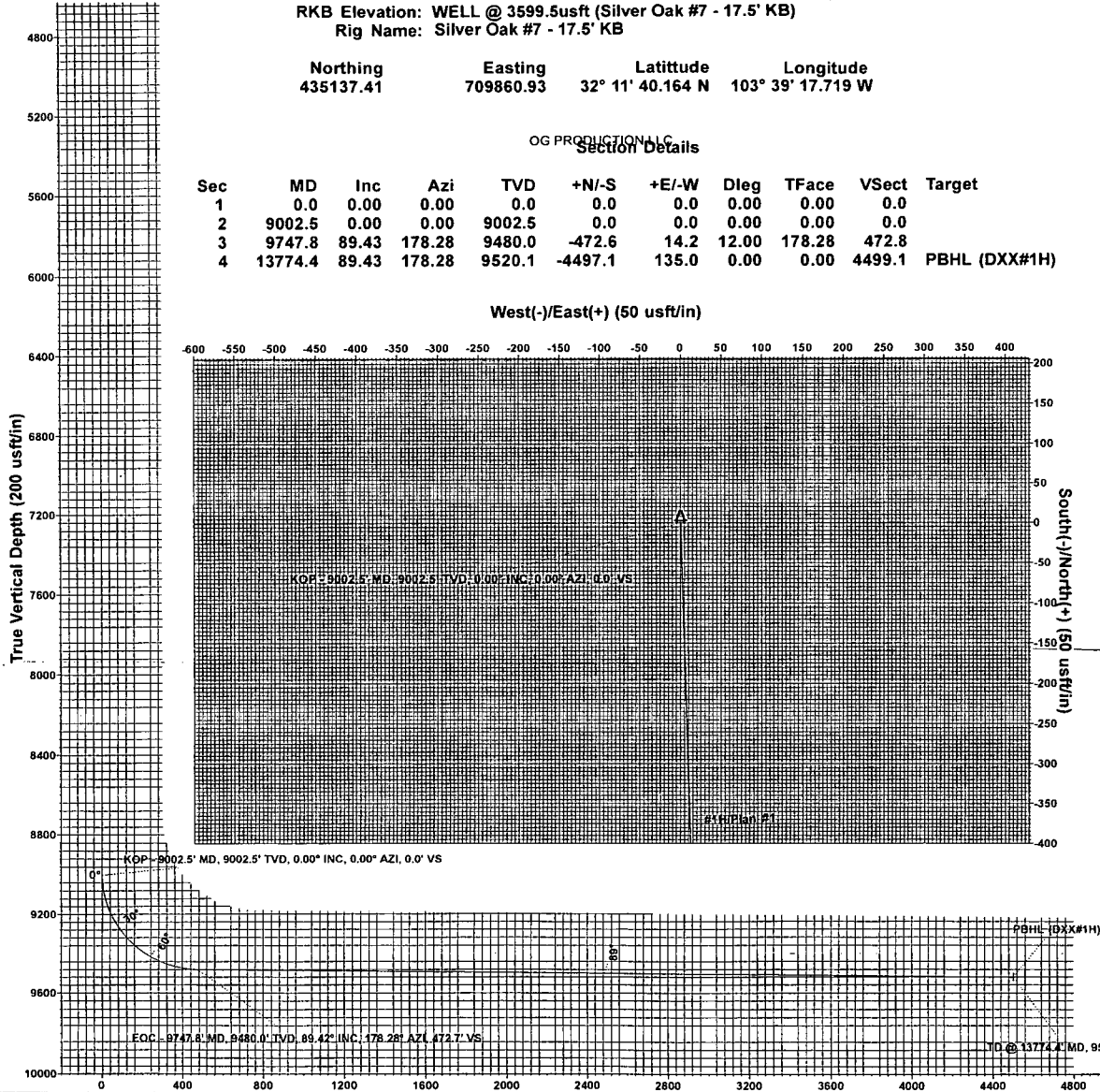
Ground Elevation:: 3582.0
 RKB Elevation: WELL @ 3599.5usft (Silver Oak #7 - 17.5' KB)
 Rig Name: Silver Oak #7 - 17.5' KB

Northing 435137.41 Easting 709860.93 Latitude 32° 11' 40.164 N Longitude 103° 39' 17.719 W

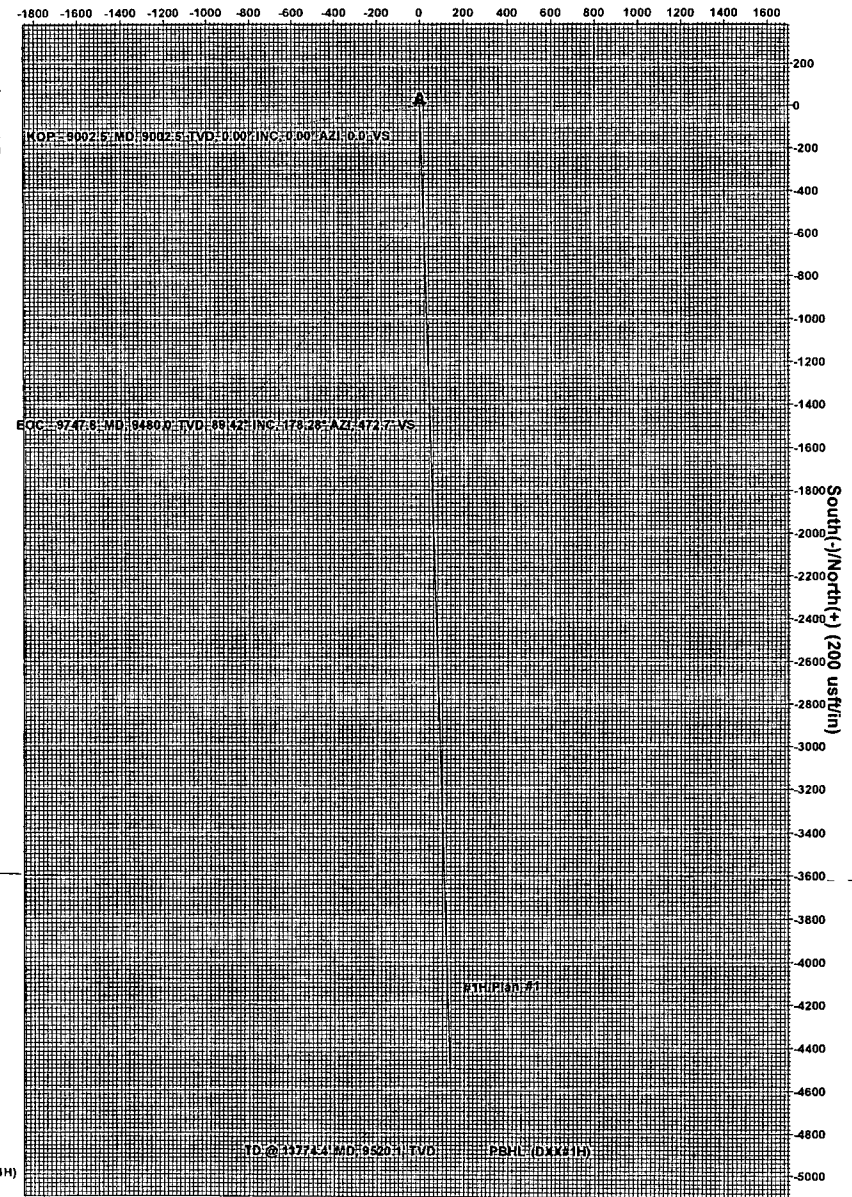
OG PRODUCTION LLC
 Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	9002.5	0.00	0.00	9002.5	0.0	0.0	0.00	0.00	0.0	
3	9747.8	89.43	178.28	9480.0	-472.6	14.2	12.00	178.28	472.8	
4	13774.4	89.43	178.28	9520.1	-4497.1	135.0	0.00	0.00	4499.1	PBHL (DXX#1H)

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



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



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



Crescent Directional Drilling
 7715 West Industrial Ave. Midland, Tx 79706
 Phone: 432-618-1135

Plan: Plan #1 (#1H/OH)
 Created By: Matt Higgins Date: 15:31, December 21 2012