

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTNMOCD
HobbsFORM APPROVED
OMB NO. 1004-0135
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.*5. Lease Serial No.
NMNM0315712

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

8. Well Name and No.
SNEED 9 FEDERAL COM 1H9. API Well No.
30-025-4148910. Field and Pool, or Exploratory
MALJAMAR; YESO WEST11. County or Parish, and State
LEA COUNTY, NM**SUBMIT IN TRIPLICATE - Other instructions on reverse side.**

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other2. Name of Operator
COG OPERATING LLCContact: KELLY J HOLLY
E-Mail: kholly@concho.com3a. Address
600 W ILLINOIS AVE
MIDLAND, TX 797013b. Phone No. (include area code)
Ph: 432-685-4384

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 9 T17S R32E NWNW 330FNL 150FWL

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 to Original A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

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 recomple 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 recomple 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 Operating LLC respectfully requests permission to change the well number, TVD and BHL of this well as follows:

FROM: Sneed 9 Federal Com #1H
TO: Sneed 9 Federal Com #21H

FROM: 6626' TVD; 11,272' MD
TO: 6400' TVD; 12,288' MD

FROM: SHL: 330' FNL & 150' FWL, Sec 9 T17S R32E, UL D
BHL: 330' FNL & 330' FEL, Sec 9 T17S R32E, UL A
TO: SHL: 330' FNL & 150' FWL, Sec 9 T17S R32E, UL D

**SUBJECT TO LIKE
APPROVAL BY STATE***SHL will remain the same**Original COG Still
Stand.*

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

**Electronic Submission #291131 verified by the BLM Well Information System
For COG OPERATING LLC, sent to the Hobbs
Committed to AFMSS for processing by LINDA JIMENEZ on 03/17/2015 ()**

Name (Printed/Typed) KELLY J HOLLY

Title PERMITTING TECH

Signature (Electronic Submission)

Date 02/10/2015

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

JAN 8 2016

Approved By

Title

Date

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

Title 18 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.

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED *****MSB/ocd 2/3/2016***FEB 03 2016***ny*

Additional data for EC transaction #291131 that would not fit on the form

32. Additional remarks, continued

BHL: 330' FNL & 988' FWL, Sec 10 T17S R32E, UL D

A revised C-102, directional plan & updated production casing and cement program are attached.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

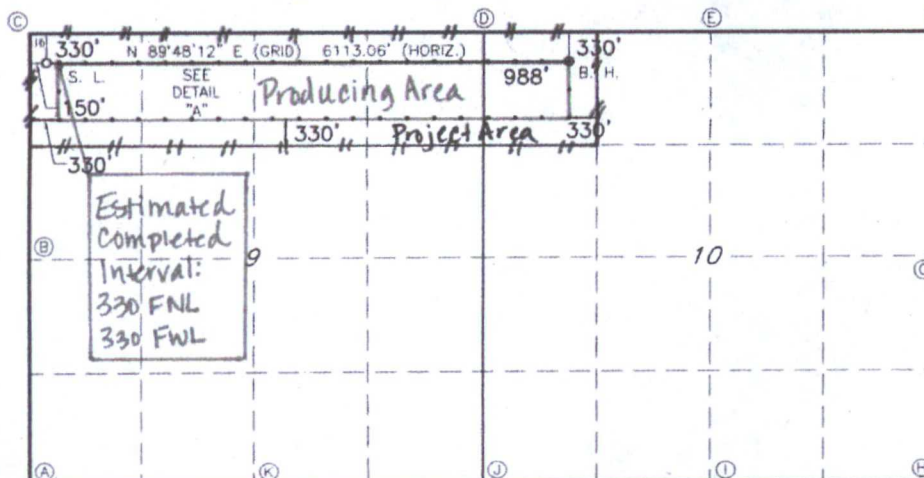
1 API Number 30-025-41489		2 Pool Code 44500		3 Pool Name Maljamar; Yeso West	
4 Property Code 40134		5 Property Name SNEED 9 FEDERAL COM			6 Well Number 21H
7 UGOLD NO. 229137		8 Operator Name COG OPERATING, LLC			9 Elevation 4089'

10 Surface Location									
UL or lot no. D	Section 9	Township 17S	Range 32E	Lot Idn	Feet from the 330	North/South line NORTH	Feet From the 150	East/West line WEST	County LEA

11 Bottom Hole Location If Different From Surface									
UL or lot no. D	Section 10	Township 17S	Range 32E	Lot Idn	Feet from the 330	North/South line NORTH	Feet from the 988	East/West line WEST	County LEa

12 Dedicated Acres 200	13 Joint or Infill	14 Consolidation Code	15 Order No.
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No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.



17 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 hereafter entered by the division.

Signature: *[Signature]* Date: **2-5-15**
Printed Name: **Kelly J. Holly**
E-mail Address: **kholly@concho.com**

GEODETIC DATA NAD 27 GRID - NM EAST SURFACE LOCATION N 675348.2 - E 670215.8 LAT: 32.855388° N LONG: 103.779037° W BOTTOM LOCATION N 675369.2 - E 676327.4 DETAIL "A" 	CORNER DATA NAD 27 GRID - NM EAST A: FOUND BRASS CAP "1912" N 670400.2 - E 670086.3 B: FOUND BRASS CAP "1913" N 673038.1 - E 670068.2 C: FOUND PK NAIL IN ROAD N 675677.6 - E 670065.6 D: CALCULATED CORNER N 675698.0 - E 675338.3 E: FOUND 3/4" IRON PIPE N 675700.9 - E 677972.8 F: FOUND BRASS CAP "1913" N 675706.5 - E 680608.1 G: FOUND BRASS CAP "1913" N 673071.1 - E 680625.4	CORNER DATA NAD 27 GRID - NM EAST H: FOUND BRASS CAP "1913" N 670433.3 - E 680638.7 I: FOUND BRASS CAP "1913" N 670430.0 - E 678005.6 J: FOUND BRASS CAP "1913" N 670415.5 - E 675366.5 K: FOUND 1" IRON PIPE N 670407.8 - E 672725.7
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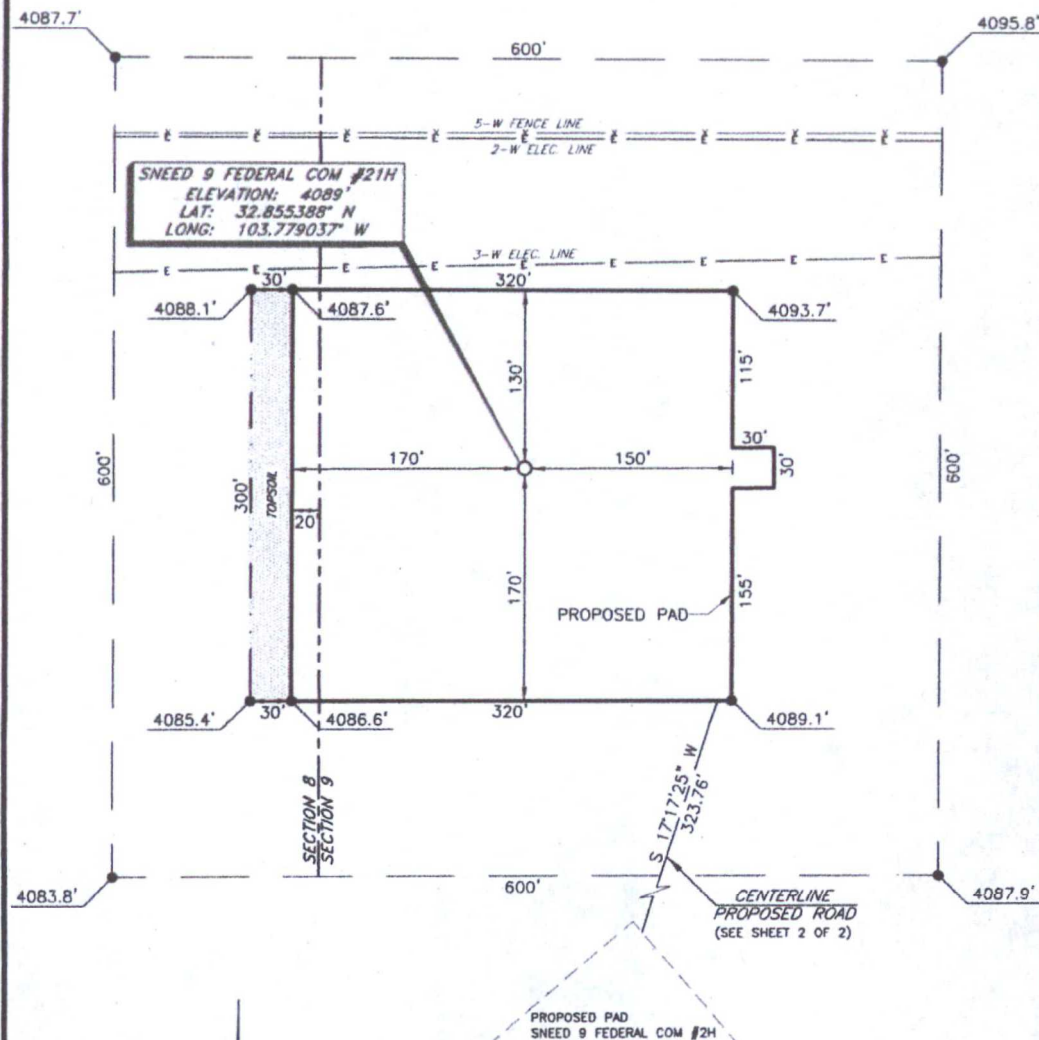
18 SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date of Survey: **5/31/13**
Signature and Seal of Professional Surveyor: *[Signature]*
Certificate Number: **19680**

RRC - Firm No.: TX 10193838 NM 4655451 - Job No.: LS130060

COG OPERATING, LLC

Sneed 9 Federal Com #21H
(330' FNL & 150' FWL)
Section 9, T-17-S, R-32-E,
N. M. P. M., Lea Co., New Mexico



DIRECTIONS TO LOCATION

From U.S. Hwy. #82 and L-126 (Maljamar Rd.):

Go South on L-126 (Maljamar Rd.) approx. 0.6 mile.

Turn right on a lease road and go Southwest approx. 0.8 mile.

Turn right and go North approx. 0.6 mile to the proposed road.

Follow proposed road 0.15 mile West then continue following survey North for approx. 0.4 mile to this location.

SCALE: 1" = 100'
0 50 100
BEARINGS ARE
NAD 27 - NW EAST
DISTANCES ARE
GROUND.

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NO.	REVISION	DATE
JOB NO.:	LS130060	
DWG. NO.:	130060PAD	

PROSPERITY CONSULTANTS, LLC



2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664

o (512) 992-2087 f (512) 251-2518

SCALE: 1" = 100'
DATE: 5/31/13
SURVEYED BY: GB/SM
DRAWN BY: AF
APPROVED BY: LWB
SHEET : 1 OF 2

VICINITY MAP

NOT TO SCALE



*SECTION 9, TWP. 17 SOUTH, RGE. 32 EAST,
N. M. P. M., LEA COUNTY, NEW MEXICO*

OPERATOR: COG Operating, LLC
LEASE: Sneed 9 Federal Com
WELL NO.: 21H

LOCATION: 330' FNL & 150' FWL
ELEVATION: 4089'

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NO.	REVISION	DATE
JOB NO.: LS130060		
DWG. NO.: 130060VM		

PROSPERITY CONSULTANTS, LLC



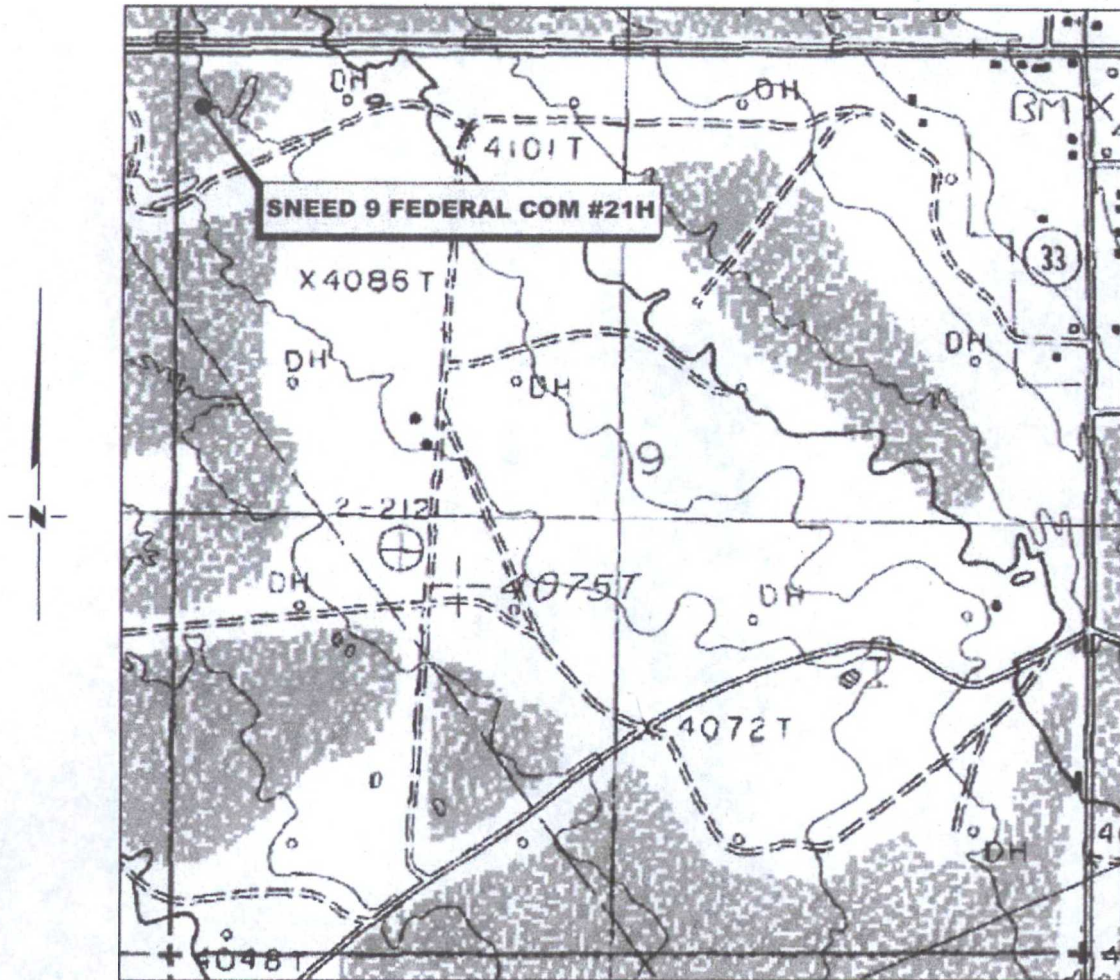
2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664

o (512) 992-2087 f (512) 251-2518

SCALE: N.T.S.
DATE: 5/31/13
SURVEYED BY: GB/SM
DRAWN BY: AF
APPROVED BY: LWB
SHEET : 1 OF 1

LOCATION VERIFICATION MAP

NOT TO SCALE



SECTION 9, TWP. 17 SOUTH, RGE. 32 EAST,
N. M. P. M., LEA COUNTY, NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Sneed 9 Federal Com
WELL NO.: 21H
ELEVATION: 4089'

LOCATION: 330' FNL & 150' FWL
CONTOUR INTERVAL: 10'
USGS TOPO. SOURCE MAP:
Maljamar, NM (Prov. Ed. 1985)

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NO.	REVISION	DATE
JOB NO.:	LS130060	
DWG. NO.:	130060LVM	

PROSPERITY CONSULTANTS, LLC

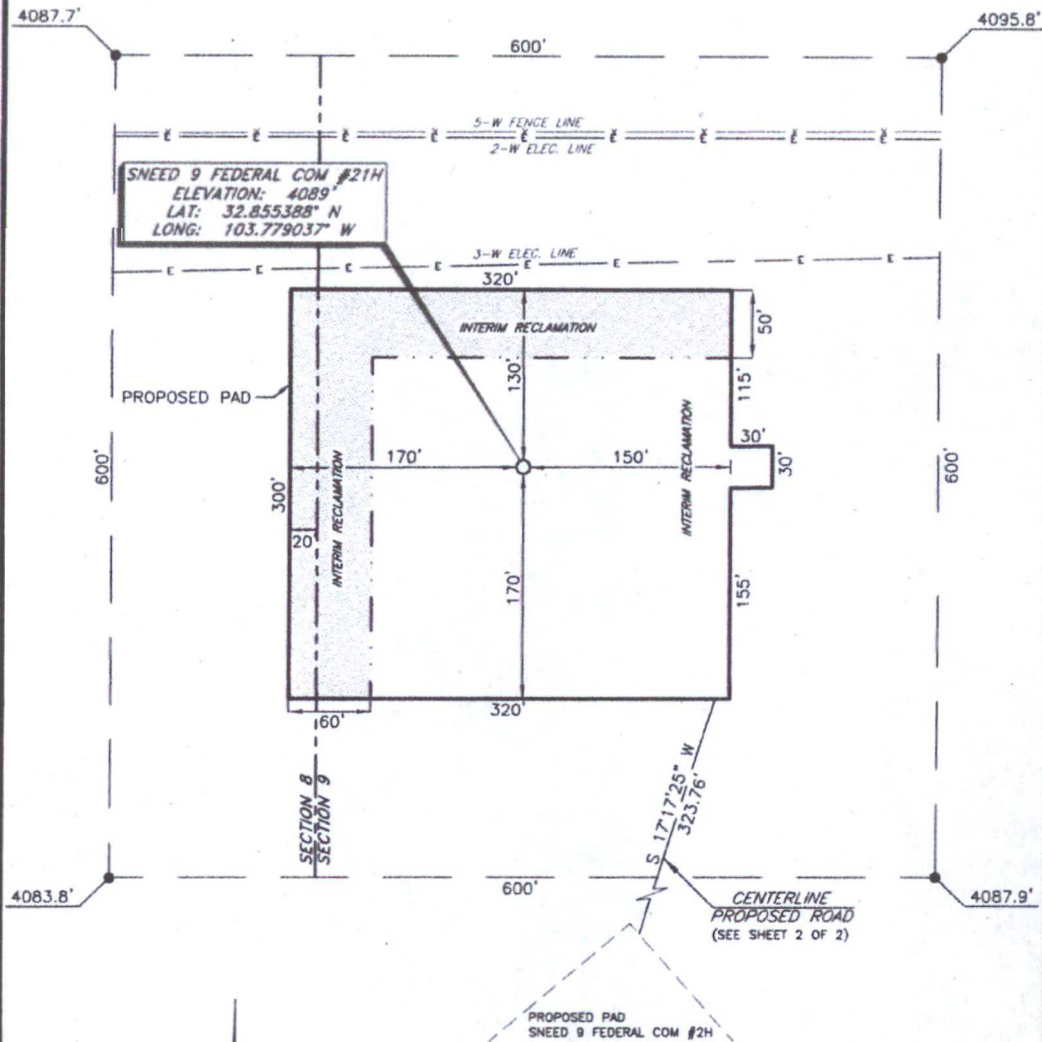


2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664

o (512) 992-2087 f (512) 251-2518

SCALE: N.T.S.
DATE: 5/31/13
SURVEYED BY: GB/SM
DRAWN BY: AF
APPROVED BY: LWB
SHEET : 1 OF 1

COG OPERATING, LLC
Interim Reclamation
Sneed 9 Federal Com #21H
(330' FNL & 150' FWL)
Section 9, T-17-S, R-32-E,
N. M. P. M., Lea Co., New Mexico



DIRECTIONS TO LOCATION

From U.S. Hwy. #82 and L-126 (Maljamar Rd.):

Go South on L-126 (Maljamar Rd.) approx. 0.6 mile.

Turn right on a lease road and go Southwest approx. 0.8 mile.

Turn right and go North approx. 0.6 mile to the proposed road.

Follow proposed road 0.15 mile West then continue following survey North for approx. 0.4 mile to this location.

SCALE: 1" = 100'
0 50 100
BEARINGS ARE
MAD 27° - NM EAST
DISTANCES ARE
GROUND.

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NO.	REVISION	DATE
JOB NO.:	LS130060	
DWG. NO.:	130060REC	

PROSPERITY CONSULTANTS, LLC



2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664

© (512) 992-2087 f (512) 251-2518

SCALE: 1" = 100'
DATE: 5/31/13
SURVEYED BY: GB/SM
DRAWN BY: AF
APPROVED BY: LWB
SHEET : 1 OF 1

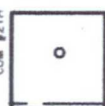
COG OPERATING, LLC

ROAD DRAWING FOR SNEED WELLS
Section 9, T-17-S, R-32-E,
N. M. P. M., Lea Co., New Mexico

PRO. PK. MILE
IN ROAD

5 4
8 9

SNEED 9 FEDERAL
COM #21H



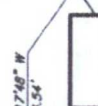
SNEED 9 FEDERAL
COM #2H



SNEED 9 FEDERAL
COM #23H



SNEED 9 FEDERAL
COM #5



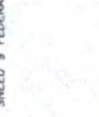
SNEED 9 FEDERAL
COM #6



SNEED 9 FEDERAL
COM #7



SNEED 9 FEDERAL
COM #8



SECTION 9



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PROSPERITY CONSULTANTS, LLC



SCALE: N.T.S.
DATE: 5/31/13
SURVEYED BY: GB/SM
DRAWN BY: AF
APPROVED BY: LWB
SHEET : 2 OF 2

NO.	REVISION	DATE
JOB NO.:	LS130060	
DWG. NO.:	130060RD	

2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664

o (512) 992-2087 f (512) 251-2518

COG respectfully request approval to change production casing and cement programs as follows:

Original production casing proposal:

OLD Casing design

Hole Size	Interval MD	OD Casing	Weight	Grade	Condition	Jt.	brst/clps/ten
8 3/4"	2290'-6223'	7"	26#	L-80	New	LT&C	1.17/1.83/3.70
8 3/4"	6223'-6981'	5 1/2"	17#	L-80	New	LT&C	1.55/1.96/3.45
7 7/8"	6981'-11108'	5 1/2"	17#	L-80	New	LT&C	1.55/1.96/3.45

New production casing proposal:

Hole Size	Interval MD	OD Casing	Weight	Grade	Condition	Coupling	Burst	Collapse	Tension
8 3/4"	2290'-5879	7"	26#	L-80	New	LT&C	1.33	3.24	2.76
8 3/4"	5879'-6697	5 1/2"	17#	L-80	New	LT&C	1.33	2.61	3.1
7 7/8"	12288	5 1/2"	17#	L-80	New	LT&C	1.33	2.61	6.18

New production cement:

Single Stage:

500 psi							
Interval	Hole Size	Sacks	Yield (cf/sx)	Cement wt (ppg)	Wtr Required (gal/sx)	Excess (%)	Time (hrs)
0-5897	8.75	475	2.01	12.5	11.4	34	30
5879-6697	8.75	200	1.37	14	6.5	37	12
6697-12288	7.875	1300	1.37	14	6.5	37	12

Multi-stage:

500 psi							
Interval	Hole Size	Sacks	Yield (cf/sx)	Cement wt (ppg)	Wtr Required (gal/sx)	Excess (%)	Time (hrs)
0-3676	8.75	225	2.01	12.5	11.4	30	30
3676-4082	8.75	150	1.02	16.8	4	143	6
4082-5879	8.75	175	2.01	12.5	11.4	30	30
5879-6697	8.75	200	1.37	14	6.5	37	12
6697-12288	7.875	1300	1.37	14	6.5	37	12

This sundry was necessary because another $\frac{1}{4}$ " mile was added to EOL.

The casing changes will help us install larger pumping equipment and L-80 has better corrosion resistance than P110.

COG OPERATING, LLC

Lea County, NM

Sneed 9 Federal Com 21H

21H

Lateral

Plan: Plan #1a

Standard Planning Report

03 February, 2015

Section Distances

Sec9,T17S,R32E

SHL - Unit D

330'FNL, 150'FWL

PP - Unit D

330'FNL, 330'FWL

Sec10,T17S,R32E

PBHL - Unit D

330'FNL, 988'FWL

COG OPERATING, LLC

Field: Lea County, NM
Site: Sneed 9 Federal Com 21H
Well: 21H
Wellbore: Lateral
Plan: Plan #1a

Section Distances

Sec9, T17S, R32E
SHL - Unit D
330FNL, 150FWL
PP - Unit D
330FNL, 330FWL
Sec10, T17S, R32E
PBHL - Unit D
330FNL, 988FWL

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Sneed 9 Federal Com #21H SHL	0.00	0.00	0.00	675348.20	670215.80	32° 51' 19.40 N	103° 46' 44.53 W
Sneed 9 Federal Com #21H PP	6273.00	0.62	180.03	675348.82	670386.83	32° 51' 19.39 N	103° 46' 42.42 W
Sneed 9 Federal Com #21H PBHL	6400.00	21.00	6111.60	675369.20	676327.40	32° 51' 19.28 N	103° 45' 32.89 W

TARGET DETAILS

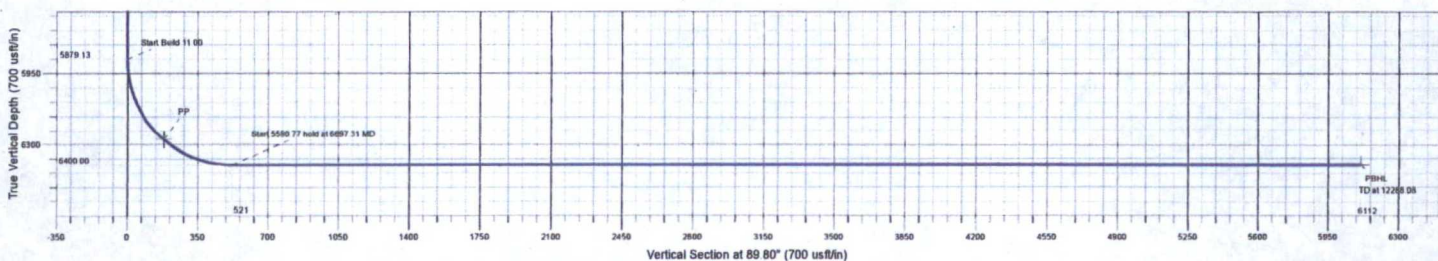
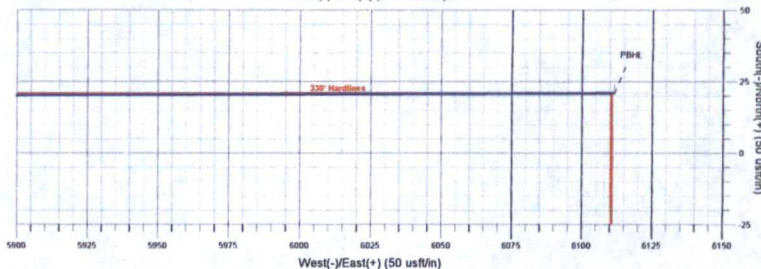
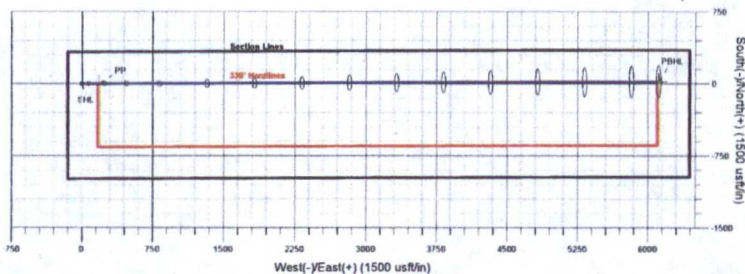
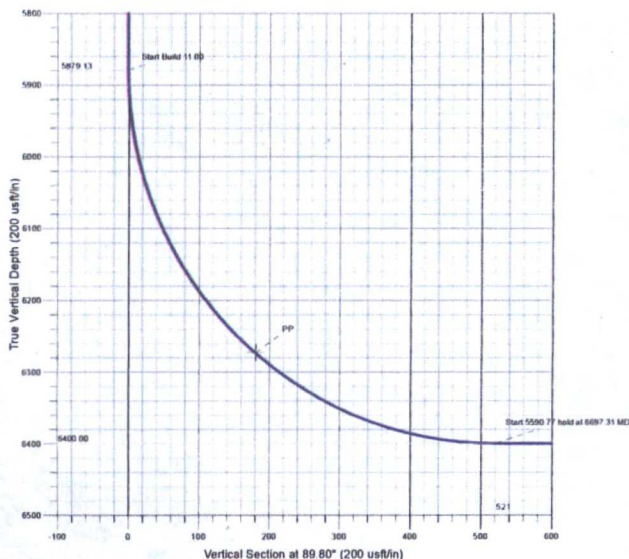
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	5879.13	0.00	0.00	5879.13	0.00	0.00	0.00	0.00	0.00	
3	6697.31	90.00	89.80	6400.00	1.79	520.87	11.00	89.80	520.87	Sneed 9 Federal Com #21H PBHL
4	12288.08	90.00	89.80	6400.00	21.00	6111.60	0.00	0.00	6111.64	



Azimuths to Grid North
True North -0.30°
Magnetic North: 7.13°

Magnetic Field
Strength: 48658.5nT
Dip Angle: 60.90°
Date: 1/23/2015
Model: HDGM



Archer

ARCHER DIRECTIONAL DRILLING SERVICES
12101 Cutten Rd. Houston, Texas 77066
Phone: 281-301-2600 Fax: 281-301-2795

Design: Plan #1a (21H/Lateral)
Created By: Keith Noack
Date: 7.32, February 03 2015

Archer Planning Report

Database:	EDM R5000.1 MULTI	Local Co-ordinate Reference:	Well 21H
Company:	COG OPERATING, LLC	TVD Reference:	4089' GL + 19 RKB @ 4108.00usft (McVay 6)
Project:	Lea County, NM	MD Reference:	4089' GL + 19 RKB @ 4108.00usft (McVay 6)
Site:	Sneed 9 Federal Com 21H	North Reference:	Grid
Well:	21H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1a		

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	Sneed 9 Federal Com 21H		
Site Position:		Northing:	675,348.20 usft
From:	Map	Easting:	670,215.80 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in
		Latitude:	32° 51' 19.40 N
		Longitude:	103° 46' 44.53 W
		Grid Convergence:	0.30 °

Well	21H		
Well Position	+N/-S	0.00 usft	Northing: 675,348.20 usft
	+E/-W	0.00 usft	Easting: 670,215.80 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 51' 19.40 N
		Longitude:	103° 46' 44.53 W
		Ground Level:	4,089.00 usft

Wellbore	Lateral		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	1/23/2015	7.43
			Dip Angle (°)
			60.90
			Field Strength (nT)
			48,659

Design	Plan #1a		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction (°)
			89.80

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,879.13	0.00	0.00	5,879.13	0.00	0.00	0.00	0.00	0.00	0.00	
6,697.31	90.00	89.80	6,400.00	1.79	520.87	11.00	11.00	0.00	89.80	
12,288.08	90.00	89.80	6,400.00	21.00	6,111.60	0.00	0.00	0.00	0.00	Sneed 9 Federal Corr

Archer Planning Report

Database: EDM R5000.1 MULTI
Company: COG OPERATING, LLC
Project: Lea County, NM
Site: Sneed 9 Federal Com 21H
Well: 21H
Wellbore: Lateral
Design: Plan #1a

Local Co-ordinate Reference: Well 21H
TVD Reference: 4089' GL + 19 RKB @ 4108.00usft (McVay 6)
MD Reference: 4089' GL + 19 RKB @ 4108.00usft (McVay 6)
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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00

Archer Planning Report

Database:	EDM R5000.1 MULTI	Local Co-ordinate Reference:	Well 21H
Company:	COG OPERATING, LLC	TVD Reference:	4089' GL + 19 RKB @ 4108.00usft (McVay 6)
Project:	Lea County, NM	MD Reference:	4089' GL + 19 RKB @ 4108.00usft (McVay 6)
Site:	Sneed 9 Federal Com 21H	North Reference:	Grid
Well:	21H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1a		

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)
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,879.13	0.00	0.00	5,879.13	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 11.00									
5,900.00	2.30	89.80	5,899.99	0.00	0.42	0.42	11.00	11.00	0.00
5,950.00	7.80	89.80	5,949.78	0.02	4.81	4.81	11.00	11.00	0.00
6,000.00	13.30	89.80	5,998.92	0.05	13.96	13.96	11.00	11.00	0.00
6,050.00	18.80	89.80	6,046.95	0.10	27.78	27.78	11.00	11.00	0.00
6,100.00	24.30	89.80	6,093.44	0.16	46.13	46.13	11.00	11.00	0.00
6,150.00	29.80	89.80	6,137.96	0.24	68.86	68.86	11.00	11.00	0.00
6,200.00	35.30	89.80	6,180.09	0.33	95.75	95.75	11.00	11.00	0.00
6,250.00	40.80	89.80	6,219.45	0.43	126.55	126.55	11.00	11.00	0.00
6,300.00	46.30	89.80	6,255.68	0.55	160.98	160.98	11.00	11.00	0.00
6,350.00	51.80	89.80	6,288.44	0.68	198.73	198.73	11.00	11.00	0.00
6,400.00	57.30	89.80	6,317.43	0.82	239.44	239.44	11.00	11.00	0.00
6,450.00	62.80	89.80	6,342.38	0.97	282.75	282.75	11.00	11.00	0.00
6,500.00	68.30	89.80	6,363.07	1.13	328.24	328.24	11.00	11.00	0.00
6,550.00	73.80	89.80	6,379.31	1.29	375.51	375.52	11.00	11.00	0.00
6,600.00	79.30	89.80	6,390.94	1.46	424.12	424.12	11.00	11.00	0.00
6,650.00	84.80	89.80	6,397.85	1.63	473.62	473.62	11.00	11.00	0.00
6,697.31	90.00	89.80	6,400.00	1.79	520.87	520.87	11.00	11.00	0.00
Start 5590.77 hold at 6697.31 MD									
6,700.00	90.00	89.80	6,400.00	1.80	523.56	523.56	0.00	0.00	0.00
6,800.00	90.00	89.80	6,400.00	2.14	623.56	623.56	0.00	0.00	0.00
6,900.00	90.00	89.80	6,400.00	2.49	723.56	723.56	0.00	0.00	0.00
7,000.00	90.00	89.80	6,400.00	2.83	823.55	823.56	0.00	0.00	0.00
7,100.00	90.00	89.80	6,400.00	3.17	923.55	923.56	0.00	0.00	0.00
7,200.00	90.00	89.80	6,400.00	3.52	1,023.55	1,023.56	0.00	0.00	0.00
7,300.00	90.00	89.80	6,400.00	3.86	1,123.55	1,123.56	0.00	0.00	0.00
7,400.00	90.00	89.80	6,400.00	4.20	1,223.55	1,223.56	0.00	0.00	0.00
7,500.00	90.00	89.80	6,400.00	4.55	1,323.55	1,323.56	0.00	0.00	0.00
7,600.00	90.00	89.80	6,400.00	4.89	1,423.55	1,423.56	0.00	0.00	0.00
7,700.00	90.00	89.80	6,400.00	5.24	1,523.55	1,523.56	0.00	0.00	0.00
7,800.00	90.00	89.80	6,400.00	5.58	1,623.55	1,623.56	0.00	0.00	0.00
7,900.00	90.00	89.80	6,400.00	5.92	1,723.55	1,723.56	0.00	0.00	0.00
8,000.00	90.00	89.80	6,400.00	6.27	1,823.55	1,823.56	0.00	0.00	0.00
8,100.00	90.00	89.80	6,400.00	6.61	1,923.55	1,923.56	0.00	0.00	0.00
8,200.00	90.00	89.80	6,400.00	6.95	2,023.55	2,023.56	0.00	0.00	0.00
8,300.00	90.00	89.80	6,400.00	7.30	2,123.55	2,123.56	0.00	0.00	0.00
8,400.00	90.00	89.80	6,400.00	7.64	2,223.55	2,223.56	0.00	0.00	0.00
8,500.00	90.00	89.80	6,400.00	7.98	2,323.55	2,323.56	0.00	0.00	0.00
8,600.00	90.00	89.80	6,400.00	8.33	2,423.55	2,423.56	0.00	0.00	0.00
8,700.00	90.00	89.80	6,400.00	8.67	2,523.54	2,523.56	0.00	0.00	0.00
8,800.00	90.00	89.80	6,400.00	9.01	2,623.54	2,623.56	0.00	0.00	0.00
8,900.00	90.00	89.80	6,400.00	9.36	2,723.54	2,723.56	0.00	0.00	0.00
9,000.00	90.00	89.80	6,400.00	9.70	2,823.54	2,823.56	0.00	0.00	0.00
9,100.00	90.00	89.80	6,400.00	10.05	2,923.54	2,923.56	0.00	0.00	0.00
9,200.00	90.00	89.80	6,400.00	10.39	3,023.54	3,023.56	0.00	0.00	0.00
9,300.00	90.00	89.80	6,400.00	10.73	3,123.54	3,123.56	0.00	0.00	0.00
9,400.00	90.00	89.80	6,400.00	11.08	3,223.54	3,223.56	0.00	0.00	0.00

Archer Planning Report

Database:	EDM R5000.1 MULTI	Local Co-ordinate Reference:	Well 21H
Company:	COG OPERATING, LLC	TVD Reference:	4089' GL + 19 RKB @ 4108.00usft (McVay 6)
Project:	Lea County, NM	MD Reference:	4089' GL + 19 RKB @ 4108.00usft (McVay 6)
Site:	Sneed 9 Federal Com 21H	North Reference:	Grid
Well:	21H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1a		

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)
9,500.00	90.00	89.80	6,400.00	11.42	3,323.54	3,323.56	0.00	0.00	0.00
9,600.00	90.00	89.80	6,400.00	11.76	3,423.54	3,423.56	0.00	0.00	0.00
9,700.00	90.00	89.80	6,400.00	12.11	3,523.54	3,523.56	0.00	0.00	0.00
9,800.00	90.00	89.80	6,400.00	12.45	3,623.54	3,623.56	0.00	0.00	0.00
9,900.00	90.00	89.80	6,400.00	12.79	3,723.54	3,723.56	0.00	0.00	0.00
10,000.00	90.00	89.80	6,400.00	13.14	3,823.54	3,823.56	0.00	0.00	0.00
10,100.00	90.00	89.80	6,400.00	13.48	3,923.54	3,923.56	0.00	0.00	0.00
10,200.00	90.00	89.80	6,400.00	13.83	4,023.54	4,023.56	0.00	0.00	0.00
10,300.00	90.00	89.80	6,400.00	14.17	4,123.54	4,123.56	0.00	0.00	0.00
10,400.00	90.00	89.80	6,400.00	14.51	4,223.53	4,223.56	0.00	0.00	0.00
10,500.00	90.00	89.80	6,400.00	14.86	4,323.53	4,323.56	0.00	0.00	0.00
10,600.00	90.00	89.80	6,400.00	15.20	4,423.53	4,423.56	0.00	0.00	0.00
10,700.00	90.00	89.80	6,400.00	15.54	4,523.53	4,523.56	0.00	0.00	0.00
10,800.00	90.00	89.80	6,400.00	15.89	4,623.53	4,623.56	0.00	0.00	0.00
10,900.00	90.00	89.80	6,400.00	16.23	4,723.53	4,723.56	0.00	0.00	0.00
11,000.00	90.00	89.80	6,400.00	16.57	4,823.53	4,823.56	0.00	0.00	0.00
11,100.00	90.00	89.80	6,400.00	16.92	4,923.53	4,923.56	0.00	0.00	0.00
11,200.00	90.00	89.80	6,400.00	17.26	5,023.53	5,023.56	0.00	0.00	0.00
11,300.00	90.00	89.80	6,400.00	17.60	5,123.53	5,123.56	0.00	0.00	0.00
11,400.00	90.00	89.80	6,400.00	17.95	5,223.53	5,223.56	0.00	0.00	0.00
11,500.00	90.00	89.80	6,400.00	18.29	5,323.53	5,323.56	0.00	0.00	0.00
11,600.00	90.00	89.80	6,400.00	18.64	5,423.53	5,423.56	0.00	0.00	0.00
11,700.00	90.00	89.80	6,400.00	18.98	5,523.53	5,523.56	0.00	0.00	0.00
11,800.00	90.00	89.80	6,400.00	19.32	5,623.53	5,623.56	0.00	0.00	0.00
11,900.00	90.00	89.80	6,400.00	19.67	5,723.53	5,723.56	0.00	0.00	0.00
12,000.00	90.00	89.80	6,400.00	20.01	5,823.53	5,823.56	0.00	0.00	0.00
12,100.00	90.00	89.80	6,400.00	20.35	5,923.52	5,923.56	0.00	0.00	0.00
12,200.00	90.00	89.80	6,400.00	20.70	6,023.52	6,023.56	0.00	0.00	0.00
12,288.08	90.00	89.80	6,400.00	21.00	6,111.60	6,111.64	0.00	0.00	0.00
TD at 12288.08									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Sneed 9 Federal Com #: - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	675,348.20	670,215.80	32° 51' 19.40 N	103° 46' 44.53 W
Sneed 9 Federal Com #: - plan hits target center - Point	0.00	0.00	6,273.00	0.62	180.03	675,348.81	670,395.83	32° 51' 19.39 N	103° 46' 42.42 W
Sneed 9 Federal Com #: - plan hits target center - Point	0.00	0.00	6,400.00	21.00	6,111.60	675,369.20	676,327.40	32° 51' 19.28 N	103° 45' 32.89 W

Archer Planning Report

Database:	EDM R5000.1 MULTI	Local Co-ordinate Reference:	Well 21H
Company:	COG OPERATING, LLC	TVD Reference:	4089' GL + 19 RKB @ 4108.00usft (McVay 6)
Project:	Lea County, NM	MD Reference:	4089' GL + 19 RKB @ 4108.00usft (McVay 6)
Site:	Sneed 9 Federal Com 21H	North Reference:	Grid
Well:	21H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lateral		
Design:	Plan #1a		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,879.13	5,879.13	0.00	0.00	Start Build 11.00
6,697.31	6,400.00	1.79	520.87	Start 5590.77 hold at 6697.31 MD
12,288.08	6,400.00	21.00	6,111.60	TD at 12288.08