

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM 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.***SUBMIT IN TRIPLICATE - Other instructions on reverse side.**

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		5. Lease Serial No. NMLC064222
2. Name of Operator COG OPERATING LLC Contact: KELLY J HOLLY E-Mail: kholly@concho.com		6. If Indian, Allottee or Tribe Name
3a. Address ONE CONCHO CENTER 600 W ILLINOIS AVENUE MIDLAND, TX 79701	3b. Phone No. (include area code) Ph: 432.685.4384	7. If Unit or CA/Agreement, Name and/or No.
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 1 T17S R29E Lot 1 310FNL 190FEL 32.869813 N Lat, 104.019734 W Lon		8. Well Name and No. MUNDS 1 FEDERAL COM LBB 1H
		9. API Well No. 30-015-41564-00-X1
		10. Field and Pool, or Exploratory EMPIRE
		11. County or Parish, and State EDDY COUNTY, 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 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 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 Operating LLC respectfully requests permission to change the Well #, SHL and TVD of this well is follows:

FROM: Munds 1 Federal Com LBB #1H

TO: Munds 1 Federal Com #21H (313983)

FROM:
SHL-310 FNL & 190 FEL
BHL-330 FNL & 330 FWL

TO:
SHL-350 FNL & 190 FEL

NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 3 2015

RECEIVED

8/13/15
Accepted for record
NM OGD

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

Electronic Submission #310103 verified by the BLM Well Information System

For COG OPERATING LLC, sent to the Carlsbad

Committed to AFMSS for processing by JENNIFER SANCHEZ on 07/24/2015 (15JAS0442SE)

Name (Printed/Typed) KELLY J HOLLY

Title PERMITTING TECH

Signature (Electronic Submission)

Date 07/23/2015

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By <u>Kelly J. Holly</u>	Title <u>MS</u>	Date <u>7/31/15</u>
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 <u>CPO</u>

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.

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Additional data for EC transaction #310103 that would not fit on the form

32. Additional remarks, continued

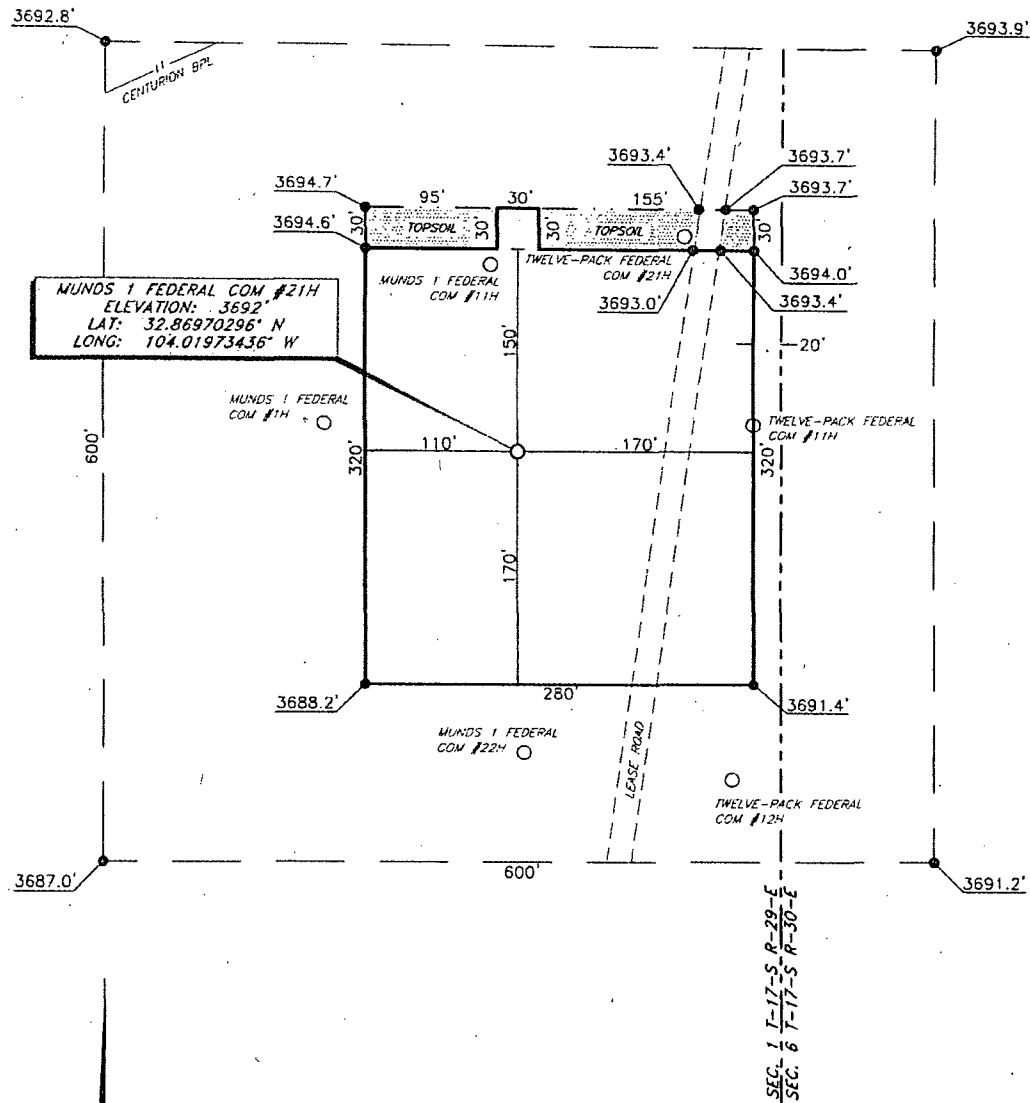
BHL-330 FNL & 330 FWL

FROM: 5326' TVD; 9943' MD; EOC 5400' TVD
TO: 4926' TVD; 9536' MD; EOC 5000' TVD

A revised C-102 and directional plan are attached.

COG OPERATING, LLC

Munds 1 Federal Com #21H
(350' FNL & 190' FEL)
Section 1, T-17-S, R-29-E,
N. M. P. M., Eddy Co., New Mexico



3	MOVE WELL	6/12/15
2	WELL NAME	2/4/15
1	WELL NAME	5/2/13
NO.	REVISION	DATE
JOB NO.:	LS1506310	
DWG. NO.:	1506310PAD	

PROSPERITY CONSULTANTS, LLC



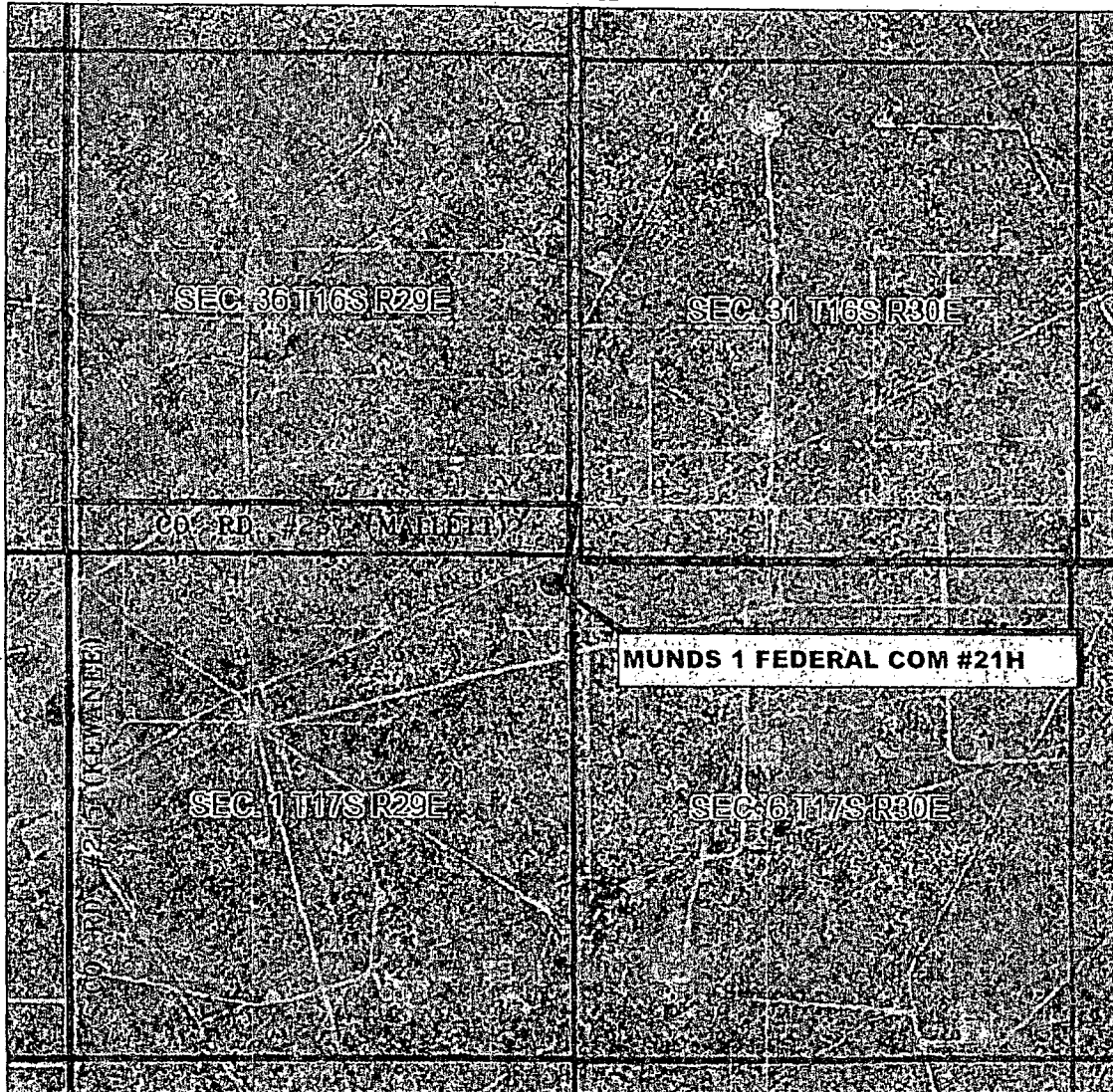
2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664

(512) 992-2097 / (512) 251-2518

SCALE: 1" = 100'
DATE: 6/12/15
SURVEYED BY: GB/SM
DRAWN BY: RMH
APPROVED BY: RMH
SHEET : 1 OF 1

VICINITY MAP

NOT TO SCALE



SECTION 1, TWP. 17 SOUTH, RGE. 29 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Munds 1 Federal Com
WELL NO.: 21H

LOCATION: 350' FNL & 190' FEL
ELEVATION: 3692'

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3	MOVE WELL	6/12/15
2	WELL NAME	2/4/15
1	WELL NAME	5/2/13
NO.	REVISION	DATE
JOB NO.: LS1506310		
DWG. NO.: 1506310VM		

PROSPERITY CONSULTANTS, LLC

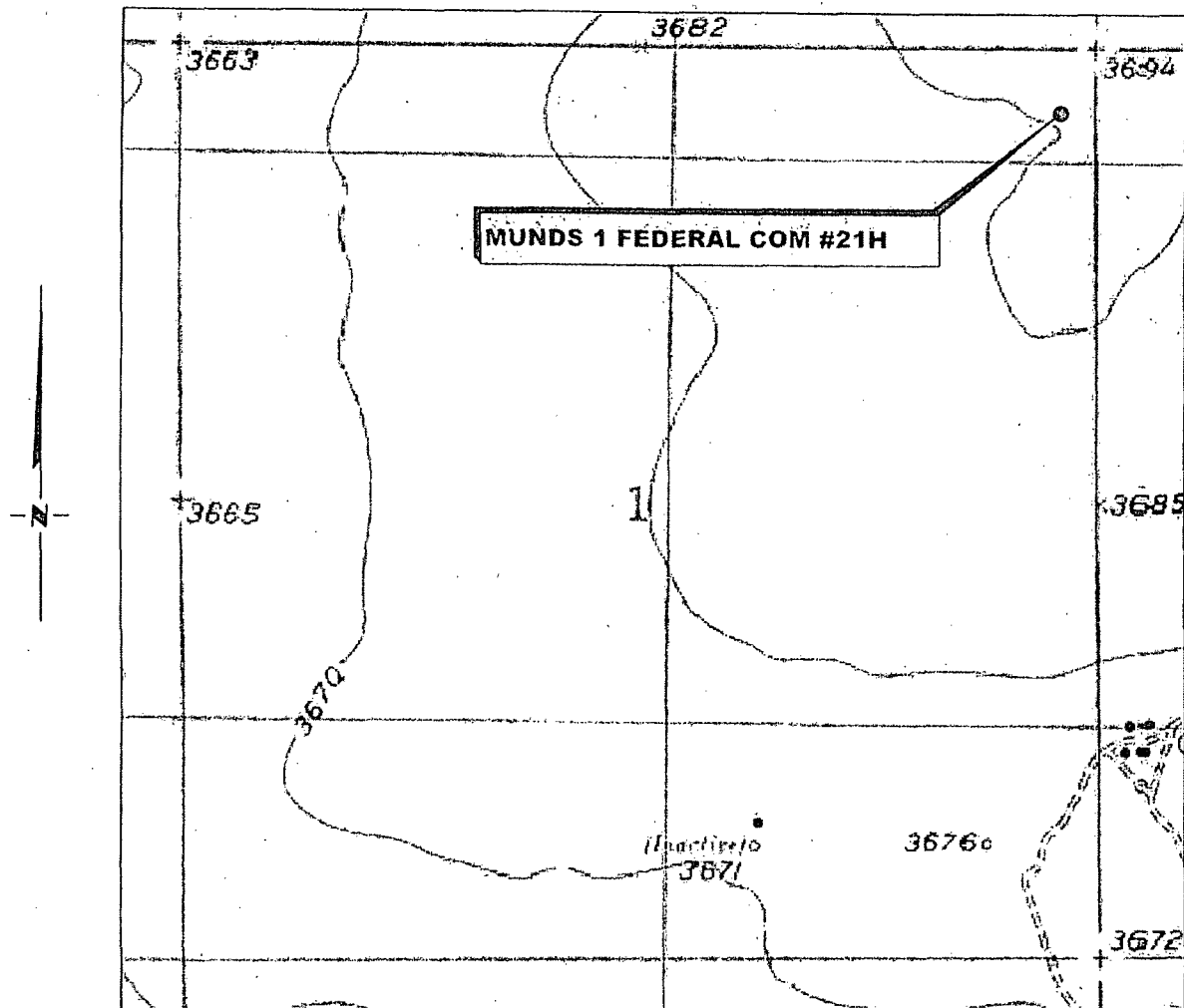


2251 Double Creek Drive, Suite 602, Round Rock, Texas 78664

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

SCALE: N. T. S.
DATE: 6/12/15
SURVEYED BY: GB/CG
DRAWN BY: RMH
APPROVED BY: RMH
SHEET : 1 OF 1

LOCATION VERIFICATION MAP



SECTION 1, TWP. 17 SOUTH, RGE. 29 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Munds 1 Federal Com
WELL NO.: 21H
ELEVATION: 3692'

LOCATION: 350' FNL & 190' FEL
CONTOUR INTERVAL: 10'
USGS TOPO. SOURCE MAP:
Red Lake SE, NM (1955)

Copyright 2012 - All Rights Reserved

3	MOVE WELL	6/12/15
2	WELL NAME	2/4/15
1	WELL NAME	5/2/13
NO.	REVISION	DATE
JOB NO.: LS1506310		
DWG. NO.: 1506310LVM		

PROSPERITY CONSULTANTS, LLC



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

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

SCALE: 1" = 1000'
DATE: 6/12/15
SURVEYED BY: GB/CG
DRAWN BY: RMH
APPROVED BY: RMH
SHEET : 1 OF 1



NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 3 2015

RECEIVED

COG Operating LLC

Eddy County, NM

Munds 1 Federal Com #21H

SHL: 350' FNL, 190' FEL, Sec 1, T17S, R29E, Lot 1

PP: 349.4' FNL, 330' FEL, Sec 1, T17S, R29E, Lot 1

EOC: 347.7' FNL, 720' FWL, Sec 1, T17S, R29E, Lot 1

BHL: 330' FNL, 330' FWL, Sec 1, T17S, R29E, Lot 4

Plan: Plan #1

Standard Planning Report

07 July, 2015





TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Munds 1 Federal Com #21H
Company:	COG Operating LLC	TVD Reference:	KB @ 3704.0usft (United 43)
Project:	Eddy County, NM	MD Reference:	KB @ 3704.0usft (United 43)
Site:	Munds 1 Federal Com #21H	North Reference:	Grid
Well:	SHL 350' FNL 190' FEL Sec 1, T17S, R29E Lot 1	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL 330' FNL 330' FWL Sec 1, T17S, R29E Lot 4		
Design:	Plan #1		

Project:	Eddy 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:	Munds 1 Federal Com #21H				
Site Position:		Northing:	680,252.30 usft	Latitude:	32° 52' 10.931 N
From:	Map	Easting:	596,285.50 usft	Longitude:	104° 1' 11.043 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.17 °

Well	SHL 350' FNL 190' FEL Sec 1, T17S, R29E, Lot 1					
Well Position	+N/-S	0.0 usft	Northing:	680,252.30 usft	Latitude:	32° 52' 10.931 N
	+E/-W	0.0 usft	Easting:	596,285.50 usft	Longitude:	104° 1' 11.043 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,692.0 usft

Wellbore:	BHL 330' FNL 330' FWL Sec 1, T17S, R29E Lot 4
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Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2015	7/7/2015	7.42	60.61	48,473

Design:	Plan #1
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Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.0

Vertical Section:	Depth From (TVD)	N/S	E/W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	270.22

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	N/S	E/W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(usft)	(°)	(°)	(usft)	(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	
4,479.2	0.00	0.00	4,479.2	0.0	0.0	0.00	0.00	0.00	0.00	
5,306.5	91.00	270.22	5,000.0	2.0	-530.0	11.00	11.00	-10.85	270.22	
9,536.0	91.00	270.22	4,926.2	18.0	-4,758.8	0.00	0.00	0.00	0.00	PBHL (M1FC #21H/O



TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Munds 1 Federal Com #21H
Company:	COG Operating LLC	TVD Reference:	KB @ 3704.0usft (United 43)
Project:	Eddy County, NM	MD Reference:	KB @ 3704.0usft (United 43)
Site:	Munds 1 Federal Com #21H	North Reference:	Grid
Well:	SHL: 350' FNL, 190' FEL, Sec 1, T17S, R29E, Lot 1	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL: 330' FNL, 330' FWL, Sec 1, T17S, R29E, Lot 4		
Design:	Plan #1		

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	
4,479.2	0.00	0.00	4,479.2	0.0	0.0	0.0	0.00	0.00	0.00	
KOP - Start DLS 11.00 TFO 270.22										
4,500.0	2.29	270.22	4,500.0	0.0	-0.4	0.4	11.00	11.00	0.00	
4,550.0	7.79	270.22	4,549.8	0.0	-4.8	4.8	11.00	11.00	0.00	
4,600.0	13.29	270.22	4,598.9	0.1	-13.9	13.9	11.00	11.00	0.00	
4,650.0	18.79	270.22	4,647.0	0.1	-27.8	27.8	11.00	11.00	0.00	
4,700.0	24.29	270.22	4,693.4	0.2	-46.1	46.1	11.00	11.00	0.00	



TDS
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Munds 1 Federal Com #21H
Company:	COG Operating LLC	TVD Reference:	KB @ 3704.0usft (United 43)
Project:	Eddy County, NM	MD Reference:	KB @ 3704.0usft (United 43)
Site:	Munds 1 Federal Com #21H	North Reference:	Grid
Well:	SHL 350' FNL, 190' FEL, Sec 1, T17S, R29E	Survey Calculation Method:	Minimum Curvature
	Lot 1		
Wellbore:	BHL 330' FNL, 330' FWL, Sec 1, T17S, R29E		
	Lot 4		
Design:	Plan #1		

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)
4,750.0	29.79	270.22	4,738.0	0.3	-68.8	68.8	11.00	11.00	0.00
4,800.0	35.29	270.22	4,780.1	0.4	-95.7	95.7	11.00	11.00	0.00
4,850.0	40.79	270.22	4,819.5	0.5	-126.5	126.5	11.00	11.00	0.00
4,900.0	46.29	270.22	4,855.7	0.6	-160.9	160.9	11.00	11.00	0.00
4,950.0	51.79	270.22	4,888.5	0.8	-198.7	198.7	11.00	11.00	0.00
5,000.0	57.29	270.22	4,917.5	0.9	-239.4	239.4	11.00	11.00	0.00
5,050.0	62.79	270.22	4,942.4	1.1	-282.7	282.7	11.00	11.00	0.00
5,100.0	68.29	270.22	4,963.1	1.2	-328.2	328.2	11.00	11.00	0.00
5,150.0	73.79	270.22	4,979.4	1.4	-375.4	375.4	11.00	11.00	0.00
5,200.0	79.29	270.22	4,991.0	1.6	-424.1	424.1	11.00	11.00	0.00
5,250.0	84.79	270.22	4,997.9	1.8	-473.6	473.6	11.00	11.00	0.00
5,300.0	90.29	270.22	5,000.1	2.0	-523.5	523.5	11.00	11.00	0.00
5,306.5	91.00	270.22	5,000.0	2.0	-530.0	530.0	11.00	11.00	0.00
EOC - Start 4229.5 hold at 5306.5 MD									
5,400.0	91.00	270.22	4,998.4	2.4	-623.5	623.5	0.00	0.00	0.00
5,500.0	91.00	270.22	4,996.6	2.7	-723.5	723.5	0.00	0.00	0.00
5,600.0	91.00	270.22	4,994.9	3.1	-823.4	823.4	0.00	0.00	0.00
5,700.0	91.00	270.22	4,993.1	3.5	-923.4	923.4	0.00	0.00	0.00
5,800.0	91.00	270.22	4,991.4	3.9	-1,023.4	1,023.4	0.00	0.00	0.00
5,900.0	91.00	270.22	4,989.6	4.2	-1,123.4	1,123.4	0.00	0.00	0.00
6,000.0	91.00	270.22	4,987.9	4.6	-1,223.4	1,223.4	0.00	0.00	0.00
6,100.0	91.00	270.22	4,986.1	5.0	-1,323.4	1,323.4	0.00	0.00	0.00
6,200.0	91.00	270.22	4,984.4	5.4	-1,423.3	1,423.4	0.00	0.00	0.00
6,300.0	91.00	270.22	4,982.7	5.8	-1,523.3	1,523.3	0.00	0.00	0.00
6,400.0	91.00	270.22	4,980.9	6.1	-1,623.3	1,623.3	0.00	0.00	0.00
6,500.0	91.00	270.22	4,979.2	6.5	-1,723.3	1,723.3	0.00	0.00	0.00
6,600.0	91.00	270.22	4,977.4	6.9	-1,823.3	1,823.3	0.00	0.00	0.00
6,700.0	91.00	270.22	4,975.7	7.3	-1,923.3	1,923.3	0.00	0.00	0.00
6,800.0	91.00	270.22	4,973.9	7.7	-2,023.2	2,023.3	0.00	0.00	0.00
6,900.0	91.00	270.22	4,972.2	8.0	-2,123.2	2,123.2	0.00	0.00	0.00
7,000.0	91.00	270.22	4,970.4	8.4	-2,223.2	2,223.2	0.00	0.00	0.00
7,100.0	91.00	270.22	4,968.7	8.8	-2,323.2	2,323.2	0.00	0.00	0.00
7,200.0	91.00	270.22	4,966.9	9.2	-2,423.2	2,423.2	0.00	0.00	0.00
7,300.0	91.00	270.22	4,965.2	9.5	-2,523.2	2,523.2	0.00	0.00	0.00
7,400.0	91.00	270.22	4,963.5	9.9	-2,623.2	2,623.2	0.00	0.00	0.00
7,500.0	91.00	270.22	4,961.7	10.3	-2,723.1	2,723.2	0.00	0.00	0.00
7,600.0	91.00	270.22	4,960.0	10.7	-2,823.1	2,823.1	0.00	0.00	0.00
7,700.0	91.00	270.22	4,958.2	11.1	-2,923.1	2,923.1	0.00	0.00	0.00
7,800.0	91.00	270.22	4,956.5	11.4	-3,023.1	3,023.1	0.00	0.00	0.00
7,900.0	91.00	270.22	4,954.7	11.8	-3,123.1	3,123.1	0.00	0.00	0.00
8,000.0	91.00	270.22	4,953.0	12.2	-3,223.1	3,223.1	0.00	0.00	0.00
8,100.0	91.00	270.22	4,951.2	12.6	-3,323.0	3,323.1	0.00	0.00	0.00
8,200.0	91.00	270.22	4,949.5	12.9	-3,423.0	3,423.0	0.00	0.00	0.00
8,300.0	91.00	270.22	4,947.8	13.3	-3,523.0	3,523.0	0.00	0.00	0.00
8,400.0	91.00	270.22	4,946.0	13.7	-3,623.0	3,623.0	0.00	0.00	0.00
8,500.0	91.00	270.22	4,944.3	14.1	-3,723.0	3,723.0	0.00	0.00	0.00
8,600.0	91.00	270.22	4,942.5	14.5	-3,823.0	3,823.0	0.00	0.00	0.00
8,700.0	91.00	270.22	4,940.8	14.8	-3,922.9	3,923.0	0.00	0.00	0.00
8,800.0	91.00	270.22	4,939.0	15.2	-4,022.9	4,023.0	0.00	0.00	0.00
8,900.0	91.00	270.22	4,937.3	15.6	-4,122.9	4,122.9	0.00	0.00	0.00
9,000.0	91.00	270.22	4,935.5	16.0	-4,222.9	4,222.9	0.00	0.00	0.00
9,100.0	91.00	270.22	4,933.8	16.4	-4,322.9	4,322.9	0.00	0.00	0.00



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Munds 1 Federal Com #21H
Company:	COG Operating LLC	TVD Reference:	KB @ 3704.0usft (United 43)
Project:	Eddy County, NM	MD Reference:	KB @ 3704.0usft (United 43)
Site:	Munds 1 Federal Com #21H	North Reference:	Grid
Well:	SHL 350' FNL, 190' FEL, Sec 1, T17S, R29E, Lot 1	Survey Calculation Method:	Minimum Curvature
Wellbore:	BHL 330' FNL, 330' FWL, Sec 1, T17S, R29E, Lot 4		
Design:	Plan #1		

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)	
9,200.0	91.00	270.22	4,932.0	16.7	-4,422.9	4,422.9	0.00	0.00	0.00	
9,300.0	91.00	270.22	4,930.3	17.1	-4,522.8	4,522.9	0.00	0.00	0.00	
9,400.0	91.00	270.22	4,928.6	17.5	-4,622.8	4,622.9	0.00	0.00	0.00	
9,500.0	91.00	270.22	4,926.8	17.9	-4,722.8	4,722.8	0.00	0.00	0.00	
9,536.0	91.00	270.22	4,926.2	18.0	-4,758.8	4,758.8	0.00	0.00	0.00	
TD at 9536.0										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
PP (M1FC #21H/OH Pla - plan hits target center - Point	0.00	0.01	4,834.5	0.5	-140.0	680,252.82	596,145.50	32° 52' 10.940 N	104° 1' 12.685 W	
PBHL (M1FC #21H/OH) - plan hits target center - Point	0.00	0.00	4,926.2	18.0	-4,758.8	680,270.30	591,526.70	32° 52' 11.245 N	104° 2' 6.839 W	
EOC (M1FC #21H/OH P - plan hits target center - Point	0.00	0.00	5,000.0	2.0	-530.0	680,254.30	595,755.52	32° 52' 10.966 N	104° 1' 17.257 W	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment	
4,479.2	4,479.2	0.0	0.0	KOP - Start DLS 11.00 TFO 270.22	
5,306.5	5,000.0	2.0	-530.0	EOC - Start 4229.5 hold at 5306.5 MD	
9,536.0	4,926.2	18.0	-4,758.8	TD at 9536.0	



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	4479.2	0.00	0.00	4479.2	0.0	0.0	0.00	0.00	0.0	
3	5306.5	91.00	270.22	5000.0	2.0	-530.0	11.00	270.22	530.0	
4	9536.0	91.00	270.22	4926.2	18.0	-4758.8	0.00	0.00	4758.8	PBHL (M1FC #21H/OH)

Ground Elevation:: 3692.0

RKB Elevation: KB @ 3704.0usft (United 43)

Northing	Easting	Latitude	Longitude
680252.30	596285.50	32° 52' 10.931 N	104° 1' 11.043 W

COG Operating LLC

Project: Eddy County, NM

Site: Munds 1 Federal Com #21H

Well: SHL: 350' FNL, 190' FEL, Sec 1, T17S, R29E, Lot 1.

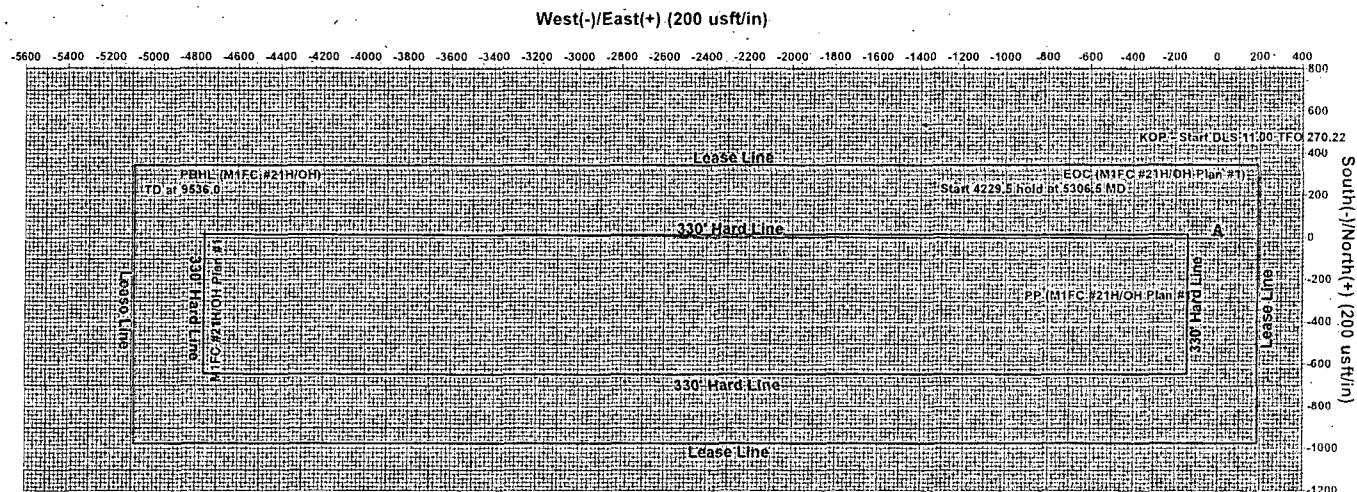
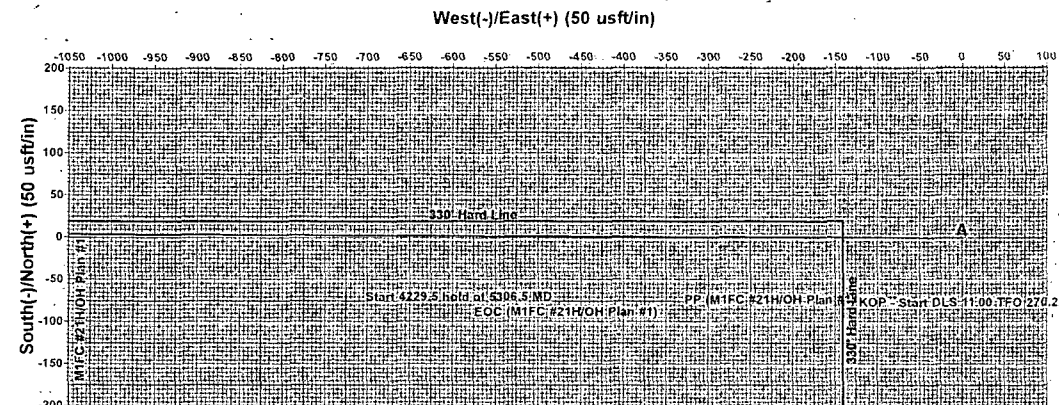
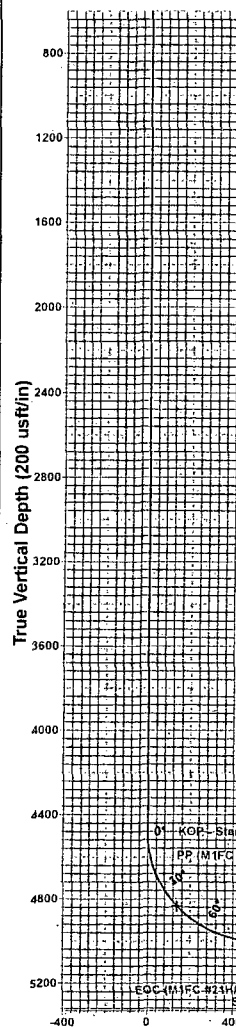
Wellbore: BHL: 330' FNL, 330' FWL, Sec 1, T17S, R29E, Lot 4

Plan: Plan #1 (SHL: 350' FNL, 190' FEL, Sec 1, T17S, R29E, Lot 1/BHL: 330' FNL, 330' FWL, Sec 1, T17S, R29E, Lot 4)



Azimuths to Grid North
True North: -0.17°
Magnetic North: 7.25°

Magnetic Field
Strength: 48472.5nT
Dip Angle: 60.61°
Date: 7/7/2015
Model: IGRF2015



Vertical Section at 270.22° (200 usft/in)

Terra Directional Services LLC

3705 South County Road 1210, Midland, TX 79706

Office: (432) 618-1210

PROJECT DETAILS: Eddy 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