

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL CONSERVATION

OCD Artesia DISTRICT

FORM 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.

FEB 23 2015

RECEIVED

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> 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 890FNL 295FEL 32.868220 N Lat, 104.020082 W Lon		8. Well Name and No. MUNDS 1 FEDERAL COM 12H
		9. API Well No. 30-015-41565-00-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			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	Change to Original A
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> 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 recomplete 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 recompletion 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 TVD of this well as follows:

FROM: 4578' TVD; 9081' MD
TO: 4428' TVD; 8931' MD

A revised directional plan is attached.

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL***RED 3/2/15*
Accepted for record
NMLC

14. I hereby certify that the foregoing is true and correct. Electronic Submission #290915 verified by the BLM Well Information System For COG OPERATING LLC, sent to the Carlsbad Committed to AFMSS for processing by JENNIFER MASON on 02/17/2015 (15JAM0220SE)	
Name (Printed/Typed) KELLY J HOLLY	Title PERMITTING TECH
Signature (Electronic Submission)	Date 02/09/2015
APPROVED	
THIS SPACE FOR FEDERAL OR STATE OFFICE USE	
Approved By _____	Title _____
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.	



NM OIL CONSERVATION

ARTESTA DISTRICT

FEB 23 2015

RECEIVED

NEW MEXICO SHELF

EDDY COUNTY, NM

EMPIRE

MUNDS 1 FEDERAL COM #12H

OWB

Plan: PWP0

Standard Planning Report

05 February, 2015

SHL: 890' FNL, 295' FEL

Sec.1, T17S, R29E

PP: 891' FNL, 330' FEL,

Sec.1, T17S, R29E

BHL: 989' FNL, 330' FWL

Sec.1, T17S, R29E



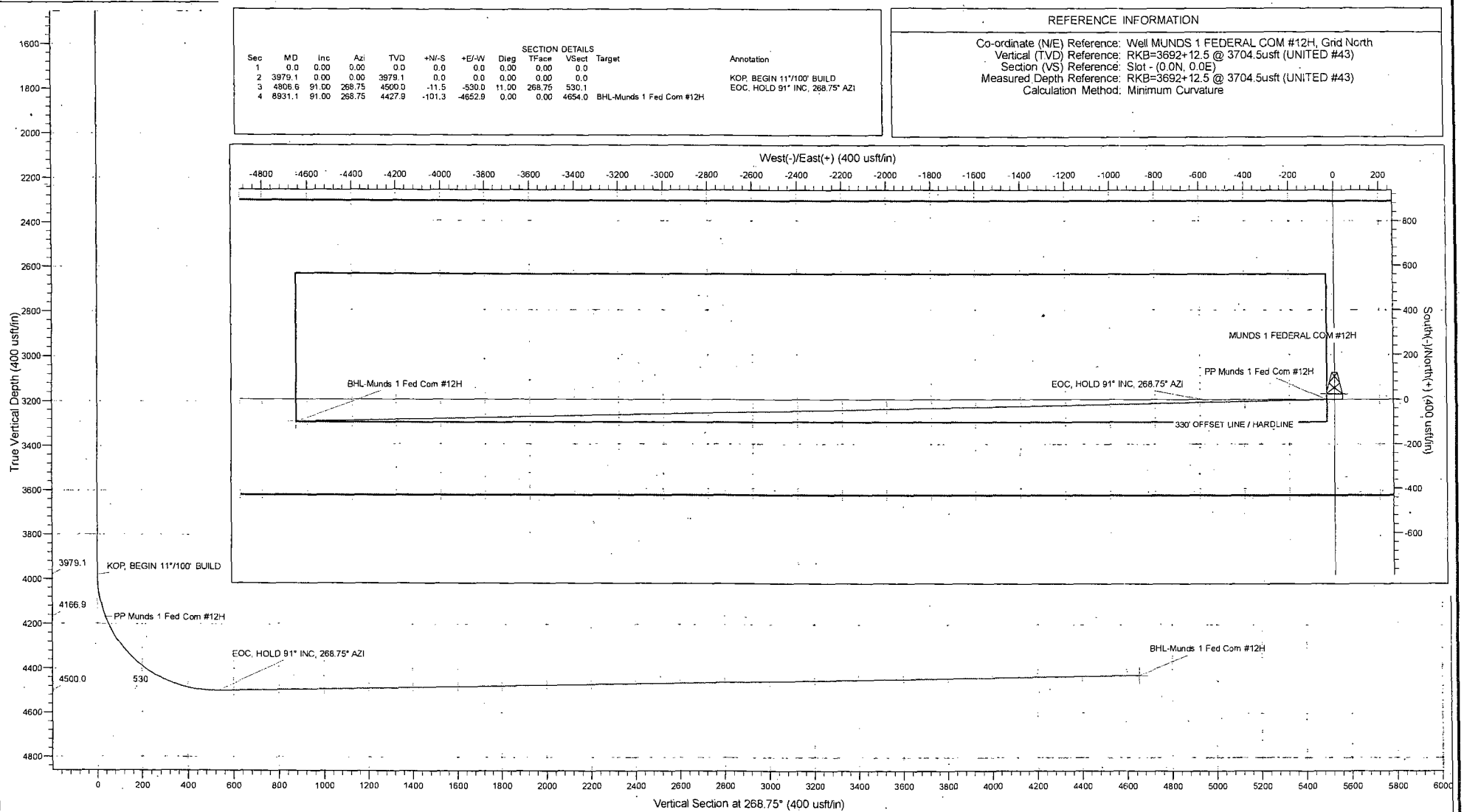
Project: EDDY COUNTY, NM
 Site: EMPIRE
 Well: MUNDS 1 FEDERAL COM #12H
 Wellbore: OWB
 Design: PWPO

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well MUNDS 1 FEDERAL COM #12H, Grid North
 Vertical (TVD) Reference: RKB=3692+12.5 @ 3704.5usft (UNITED #43)
 Section (VS) Reference: Slot - (0.0N, 0.0E)
 Measured Depth Reference: RKB=3692+12.5 @ 3704.5usft (UNITED #43)
 Calculation Method: Minimum Curvature

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dieg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	3979.1	0.00	0.00	3979.1	0.0	0.0	0.00	0.00	0.0	
3	4806.6	91.00	268.75	4500.0	-11.5	-530.0	11.00	268.75	530.1	
4	8931.1	91.00	268.75	4427.9	-101.3	-4652.9	0.00	0.00	4654.0	BHL-Munds 1 Fed Com #12H

Annotation
 KOP, BEGIN 11"/100' BUILD
 EOC, HOLD 91" INC, 268.75° AZI





COG Operating LLC

Planning Report

Database:	EDM Users	Local Co-ordinate Reference:	Well: MUNDs 1 FEDERAL COM #12H
Company:	NEW MEXICO SHELF	TVD Reference:	RKB=3692+12.5 @ 3704' usft (UNITED #43)
Project:	EDDY COUNTY, NM	MD Reference:	RKB=3692+12.5 @ 3704' usft (UNITED #43)
Site:	EMPIRE	North Reference:	Grid
Well:	MUNDs 1 FEDERAL COM #12H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWP0		

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:	EMPIRE		
Site Position:		Northing:	667,066.90 usft
From:	Map	Easting:	582,960.90 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 50' 0.822 N
		Longitude:	104° 3' 47.669 W
		Grid Convergence:	0.15 °

Well:	MUNDs 1 FEDERAL COM #12H		
Well Position	+N/-S	12,645.6 usft	Northing:
	+E/-W	13,219.3 usft	Easting:
Position Uncertainty	3.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	32° 52' 5.592 N
		Longitude:	104° 1' 12.297 W
		Ground Level:	• 3,692.0 usft

Wellbore:	OWB		
Magnetics	Model Name	Sample Date	Declination
	WMM_2005	12/31/2009	8.01
			Dip Angle
			60.75
			Field Strength
			49,123

Design:	PWP0		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			268.75

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	
3,979.1	0.00	0.00	3,979.1	0.0	0.0	0.00	0.00	0.00	0.00	
4,806.6	91.00	268.75	4,500.0	-11.5	-530.0	11.00	11.00	0.00	268.75	
8,931.1	91.00	268.75	4,427.8	-101.3	-4,652.9	0.00	0.00	0.00	0.00	BHL-Munds 1 Fed Co



COG Operating LLC
Planning Report

Database:	EDM Users	Local Co-ordinate Reference:	Well: MUNDs 1 FEDERAL COM #12H
Company:	NEW MEXICO SHEL	TVD Reference:	RKB=3692+12.5 @ 3704.5usft (UNITED #43)
Project:	EDDY COUNTY NM	MD Reference:	RKB=3692+12.5 @ 3704.5usft (UNITED #43)
Site:	EMPIRE	North Reference:	Grid
Well:	MUNDs 1 FEDERAL COM #12H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWPO		

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	
3,979.1	0.00	0.00	3,979.1	0.0	0.0	0.0	0.00	0.00	0.00	
KOP: BEGIN 11°/100' BUILD										
4,000.0	2.30	268.75	4,000.0	0.0	-0.4	0.4	11.00	11.00	0.00	
4,100.0	13.30	268.75	4,098.9	-0.3	-14.0	14.0	11.00	11.00	0.00	
4,171.2	21.13	268.75	4,166.9	-0.8	-35.0	35.0	11.00	11.00	0.00	
PP Munds 1 Fed.Com #12H										
4,200.0	24.29	268.75	4,193.4	-1.0	-46.1	46.1	11.00	11.00	0.00	
4,300.0	35.29	268.75	4,280.1	-2.1	-95.7	95.7	11.00	11.00	0.00	
4,400.0	46.29	268.75	4,355.7	-3.5	-160.9	161.0	11.00	11.00	0.00	
4,500.0	57.29	268.75	4,417.4	-5.2	-239.4	239.4	11.00	11.00	0.00	
4,600.0	68.29	268.75	4,463.1	-7.1	-328.1	328.2	11.00	11.00	0.00	
4,700.0	79.28	268.75	4,491.0	-9.2	-424.0	424.1	11.00	11.00	0.00	
4,800.0	90.28	268.75	4,500.1	-11.4	-523.4	523.5	11.00	11.00	0.00	
4,806.6	91.00	268.75	4,500.0	-11.5	-530.0	530.1	10.93	10.93	0.00	



COG Operating LLC
Planning Report

Database:	EDM Users	Local Co-ordinate Reference:	Well: MUNDs 1 FEDERAL COM #12H
Company:	NEW MEXICO SHELF	TVD Reference:	RKB=3692+12'5 @ 3704'5usft (UNITED #43)
Project:	EDDY COUNTY, NM	MD Reference:	RKB=3692+12'5 @ 3704'5usft (UNITED #43)
Site:	EMPIRE	North Reference:	Grid
Well:	MUNDs 1 FEDERAL COM #12H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWPD		

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)	
EOC HOLD 91° INC 268.75° AZI										
4,900.0	91.00	268.75	4,498.4	-13.6	-623.4	623.5	0.00	0.00	0.00	
5,000.0	91.00	268.75	4,496.6	-15.7	-723.3	723.5	0.00	0.00	0.00	
5,100.0	91.00	268.75	4,494.9	-17.9	-823.3	823.5	0.00	0.00	0.00	
5,200.0	91.00	268.75	4,493.1	-20.1	-923.3	923.5	0.00	0.00	0.00	
5,300.0	91.00	268.75	4,491.4	-22.3	-1,023.2	1,023.5	0.00	0.00	0.00	
5,400.0	91.00	268.75	4,489.6	-24.5	-1,123.2	1,123.4	0.00	0.00	0.00	
5,500.0	91.00	268.75	4,487.9	-26.6	-1,223.1	1,223.4	0.00	0.00	0.00	
5,600.0	91.00	268.75	4,486.1	-28.8	-1,323.1	1,323.4	0.00	0.00	0.00	
5,700.0	91.00	268.75	4,484.4	-31.0	-1,423.1	1,423.4	0.00	0.00	0.00	
5,800.0	91.00	268.75	4,482.6	-33.2	-1,523.0	1,523.4	0.00	0.00	0.00	
5,900.0	91.00	268.75	4,480.9	-35.3	-1,623.0	1,623.4	0.00	0.00	0.00	
6,000.0	91.00	268.75	4,479.1	-37.5	-1,722.9	1,723.3	0.00	0.00	0.00	
6,100.0	91.00	268.75	4,477.4	-39.7	-1,822.9	1,823.3	0.00	0.00	0.00	
6,200.0	91.00	268.75	4,475.6	-41.9	-1,922.9	1,923.3	0.00	0.00	0.00	
6,300.0	91.00	268.75	4,473.9	-44.0	-2,022.8	2,023.3	0.00	0.00	0.00	
6,400.0	91.00	268.75	4,472.1	-46.2	-2,122.8	2,123.3	0.00	0.00	0.00	
6,500.0	91.00	268.75	4,470.4	-48.4	-2,222.7	2,223.3	0.00	0.00	0.00	
6,600.0	91.00	268.75	4,468.6	-50.6	-2,322.7	2,323.3	0.00	0.00	0.00	
6,700.0	91.00	268.75	4,466.9	-52.7	-2,422.7	2,423.2	0.00	0.00	0.00	
6,800.0	91.00	268.75	4,465.1	-54.9	-2,522.6	2,523.2	0.00	0.00	0.00	
6,900.0	91.00	268.75	4,463.4	-57.1	-2,622.6	2,623.2	0.00	0.00	0.00	
7,000.0	91.00	268.75	4,461.6	-59.3	-2,722.5	2,723.2	0.00	0.00	0.00	
7,100.0	91.00	268.75	4,459.9	-61.4	-2,822.5	2,823.2	0.00	0.00	0.00	
7,200.0	91.00	268.75	4,458.1	-63.6	-2,922.5	2,923.2	0.00	0.00	0.00	
7,300.0	91.00	268.75	4,456.4	-65.8	-3,022.4	3,023.1	0.00	0.00	0.00	
7,400.0	91.00	268.75	4,454.6	-68.0	-3,122.4	3,123.1	0.00	0.00	0.00	
7,500.0	91.00	268.75	4,452.9	-70.2	-3,222.4	3,223.1	0.00	0.00	0.00	
7,600.0	91.00	268.75	4,451.1	-72.3	-3,322.3	3,323.1	0.00	0.00	0.00	
7,700.0	91.00	268.75	4,449.4	-74.5	-3,422.3	3,423.1	0.00	0.00	0.00	
7,800.0	91.00	268.75	4,447.6	-76.7	-3,522.2	3,523.1	0.00	0.00	0.00	
7,900.0	91.00	268.75	4,445.9	-78.9	-3,622.2	3,623.1	0.00	0.00	0.00	
8,000.0	91.00	268.75	4,444.1	-81.0	-3,722.2	3,723.0	0.00	0.00	0.00	
8,100.0	91.00	268.75	4,442.4	-83.2	-3,822.1	3,823.0	0.00	0.00	0.00	
8,200.0	91.00	268.75	4,440.6	-85.4	-3,922.1	3,923.0	0.00	0.00	0.00	
8,300.0	91.00	268.75	4,438.9	-87.6	-4,022.0	4,023.0	0.00	0.00	0.00	
8,400.0	91.00	268.75	4,437.1	-89.7	-4,122.0	4,123.0	0.00	0.00	0.00	
8,500.0	91.00	268.75	4,435.4	-91.9	-4,222.0	4,223.0	0.00	0.00	0.00	
8,600.0	91.00	268.75	4,433.6	-94.1	-4,321.9	4,322.9	0.00	0.00	0.00	
8,700.0	91.00	268.75	4,431.9	-96.3	-4,421.9	4,422.9	0.00	0.00	0.00	
8,800.0	91.00	268.75	4,430.1	-98.4	-4,521.8	4,522.9	0.00	0.00	0.00	
8,900.0	91.00	268.75	4,428.4	-100.6	-4,621.8	4,622.9	0.00	0.00	0.00	
8,931.1	91.00	268.75	4,427.8	-101.3	-4,652.9	4,654.0	0.00	0.00	0.00	

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
BHL-Munds 1 Fed Com		0.00	0.00	4,427.8	-101.3	-4,652.9	679,611.20	591,527.30	32° 52' 4.723 N	104° 2' 6.854 W
- plan hits target center										
- Point										



COG Operating LLC

Planning Report

Database:	EDM Users	Local Co-ordinate Reference:	Well: MUNDs 1 FEDERAL COM #12H
Company:	NEW MEXICO SHELF	TVD Reference:	RKB=3692+12.5 @ 3704.5usft (UNITED #43)
Project:	EDDY COUNTY NM	MD Reference:	RKB=3692+12.5 @ 3704.5usft (UNITED #43)
Site:	EMPIRE	North Reference:	Grid
Well:	MUNDs 1 FEDERAL COM #12H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWP0		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		N/S (usft)	E/W (usft)	
3,979.1	3,979.1	0.0	0.0	KOP, BEGIN 11°/100' BUILD
4,171.2	4,166.9	-0.8	-35.0	PP Munds 1 Fed Com #12H
4,806.6	4,500.0	-11.5	-530.0	EOC, HOLD 91° INC, 268.75° AZI

**PECOS DISTRICT
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	COG Operating, LLC
LEASE NO.:	NMLC-064222
WELL NAME & NO.:	Munds 1 Federal Com 12H
SURFACE HOLE FOOTAGE:	0890' FNL & 0295' FEL
BOTTOM HOLE FOOTAGE	0989' FNL & 0330' FWL
LOCATION:	Section 01, T. 17 S., R 29 E., NMPM
COUNTY:	Eddy County, New Mexico
API:	30-015-41565

The original COAs still stand with the following drilling modifications:

I. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
(575) 361-2822

1. **Hydrogen Sulfide (H₂S) monitors shall be installed prior to drilling out the surface shoe. If H₂S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**
2. **Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) for Water Basin:

After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Medium Cave/Karst

Possibility of water flows in the Salado and Artesia group.

Possibility of lost circulation in the Rustler, San Andres, and Grayburg.

1. The **13-3/8** inch surface casing shall be set at approximately **330** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

- d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

Option #1 (Single Stage):

- ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

Option #2:

Operator has proposed DV tool at depth of 312', but with the change in casing depth this is no longer acceptable. Operator will adjust cement proportionately according to the depth change. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

a. First stage to DV tool:

- ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:

- ☒ Cement to surface. Operator shall provide method of verification. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

3. The minimum required fill of cement behind the **7 X 5-1/2** inch production casing is:

Option #1 (Single Stage):

- ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

Option #2:

Operator has proposed DV tools at depth of 4879' and 1200', but will adjust cement proportionately if moved. DV tools shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depths cannot be set in this range.

a. First stage to DV tool:

- ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:

- ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with third stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

c. Third stage above DV tool:

- ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. **In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M) psi.**

4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
 - c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock.
 - d. The results of the test shall be reported to the appropriate BLM office.
 - e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
 - f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

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