

NM OIL CONSERVATION

DISTRICT I
1825 N. FREDERICK DR., EDBERG, NM 88340
Phone: (505) 333-6101 Fax: (505) 333-6720

DISTRICT II
1801 W. GRAND AVENUE, ARTESIA, NM 88210
Phone: (505) 740-1203 Fax: (505) 740-0720

DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1185 S. ST. FRANCIS DR., SANTA FE, NM 87505
Phone: (505) 478-3450 Fax: (505) 478-3450

State of New Mexico ARTESIA DISTRICT
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
11885 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

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

RECEIVED

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-42451	Pool Code 98138	Pool Name WC-015 G-07 S252923A; Wolfcamp
Property Code 37491	Property Name PATRON 23 FEDERAL	Well Number 4H
OCRID No. 217955	Operator Name COG PRODUCTION, LLC	Elevation 3141.0

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	23	25-S	29-E		190	NORTH	660	EAST	EDDY

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	County
P	23	25-S	29-E		660	SOUTH	660	EAST	EDDY

Dedicated Acres 320	Joint or Infill	Consolidation Code	Order No.
------------------------	-----------------	--------------------	-----------

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

<p>NAD 27 <u>SURFACE LOCATION</u> Y=408355.9 N X=619229.7 E LAT.=32.122101° N LONG.=103.948205° W</p> <p>NAD 27 <u>PROPOSED BOTTOM HOLE LOCATION</u> Y=403898.0 N X=619241.2 E LAT.=32.109846° N LONG.=103.948219° W</p>	<p>Y=408545.0 N X=618560.0 E</p> <p>Y=408547.0 N X=619889.2 E</p> <p>Y=405239.4 N X=619902.8 E</p> <p>Y=403236.5 N X=618578.6 E</p>	<p>190' S.L.O. 660'</p> <p>GRID AZ. - 179°51'10" PRODUCING AREA PROJECT</p> <p>HORIZ. DIST. - 4436.0</p> <p>B.H. 660'</p>	<p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p>Signature: <u>Mayte Reyes</u> Date: <u>6-4-15</u></p> <p>Printed Name: <u>Mayte Reyes</u></p> <p>E-mail Address: <u>mreyes1@concho.com</u></p> <p>SURVEYOR CERTIFICATION</p> <p>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.</p> <p>APRIL 24, 2013</p> <p>Date of Survey</p> <p>Signature & Seal of Professional Surveyor</p> <p></p> <p>5/18/15</p> <p>Certificate No. CHAD HARCROW 17777</p> <p>W.O. # 15-635 DRAWN BY: AM</p>
--	---	---	--

Accepted for record
N.M.O.C.D.

JUL 16 2015

COG Operating LLC, Patron 23 Federal 4H

RECEIVED

1. Geologic Formations

TVD of target	10,711'	Pilot hole depth	12,200'
MD at TD:	14,959'	Deepest expected fresh water:	60'

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	718	Water	
Top of Salt	1222	Salt	
Lamar	3291		
Delaware Group	3310	Oil/Gas	
Bone Spring	7116	Oil/Gas	
Wolfcamp	10,306	Oil/Gas	
Penn Shale	12,046		
Strawn	12,786	Will Not Penetrate	
Middle Wolfcamp	10,711	Target Zone	
Pilot Hole TD	12,200		

*H2S, water flows, loss of circulation, abnormal pressures, etc.

2. Casing Program

Hole Size	Casing From	Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	750	13.375"	54.5	J55	STC	3.184	1.748	16.856
12.25"	0	3300	9.625"	36	J55	LTC	1.294	0.719	3.813
8.75"	0	10,350	7"	29	HCP110	LTC	1.878	1.940	3.095
6.125"	9850	14,959	4.5"	13.5	HCP110	BTC	2.105	2.448	2.918
BLM Minimum Safety Factor							1.125	1.0	1.6 Dry 1.8 Wet

- All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h
- BLM standard formulas where used on all SF calculations.
- Explanation for SF's below BLM's minimum standards:
 - 9-5/8" Burst SF @ 0.719 – used BLM's frac gradient scenario to qualify.
3520 psi/3300' = 1.06 > 0.7

COG Operating LLC, Patron 23 Federal 4H

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification. See assumptions above table.	N
Will the pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Csg	#/sx	Density ppg	Yield ft ³ /sx	H ₂ O gal/sx	500# Comp. Strength (hours)	Slurry Description
Sfc	350	13.5	1.75	9.2	13	Lead: Class C + 4% Gel + 2% CaCl ₂
	250	14.8	1.34	6.4	6	Tail: Class C + 2% CaCl ₂
Intrmd 1	950	13.5	1.75	9.2	15	Lead: Class C + 4% Gel
	250	14.8	1.34	6.4	6	Tail: Class C + 2% CaCl ₂
Intrmd 2	500	10.2	3.50	22.0	72	Lead: Tuned Light H Blend (FR, Retarder, FL adds as needed)
	200	16.4	1.10	4.3	12	Tail: Class H (FR, Retarder, FL adds as needed)
Prod	300	14.4	1.25	5.7	17	Lead: 50:50:2 H Blend (FR, Retarder, FL adds as needed)
	300	14.4	1.25	5.7	17	Tail: 50:50:2 H Blend (FR, FL adds as needed)

Casing String	TOC	% Excess
Surface	0'	50% on OH volumes
Intermediate 1	0'	35% on OH volumes
Intermediate 2	0'	35% on OH volumes
Production	9850' (@ Top of Liner)	35% on OH volumes

COG Operating LLC, Patron 23 Federal 4H

PHTD = 12,200'

KOP = 10,350'

will need more cement. This is not adequate

Plug top	Plug Bottom	% Excess	No. Sacks	Wt. lb/gal	Yld. ft ³ /sack	Water gal/sk	Slurry Description and Cement Type
10,350	11,300	10	225	17.2	0.99	5	Class H
11,300	12,200	10	225	17.2	0.99	5	Class H

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
---	--

BOP installed and tested before drilling which hole?	Size?	System Rated WP	Type	✓	Tested to:
12-1/4"	13-5/8"	2M	Annular	X	50% of working pressure
			Blind Ram		WP
			Pipe Ram		
			Double Ram		
			Other*		
8-3/4"	11"	5M	Annular	X	50% testing pressure
			Blind Ram	X	WP
			Pipe Ram	X	
			Double Ram		
			Other*		
6-1/8"	11"	5M	Annular	X	50% testing pressure
			Blind Ram	X	WP
			Pipe Ram	X	
			Double Ram		
			Other*		

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

COG Operating LLC, Patron 23 Federal 4H

Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
	Are anchors required by manufacturer?
N	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. See attached schematic & Description.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. shoe	FW Gel	8.6-8.8	28-34	N/C
Surf csg	Int 1 shoe	Saturated Brine	10.0-10.2	28-34	N/C
Int 1 shoe	Int 2 shoe	Cut Brine	8.7-9.3	28-34	N/C
Int 2 shoe	PHTD	Cut Brine	8.7-9.3	28-34	N/C
Int 2 shoe/KOP	TMD	OBM	11.0 - 14.0	40-60	10-50

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

Weighted OBM system will be used in the curve and lateral for shale stability, not for formation over pressure.

What will be used to monitor the loss or gain of fluid?	Pason PVT
---	-----------

6. Logging and Testing Procedures

Logging, Coring and Testing	
X	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned	Interval
Resistivity	
Density	
CBL	
Mud log	
PEX	

COG Operating LLC, Patron 23 Federal 4H

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	5773 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe:

No abnormal drilling conditions are expected to occur.

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.

	H2S is present
X	H2S Contingency Plan Attached

8. Other Facets of Operation

Is this a walking operation? No

Will be pre-setting casing? No

Attachments:

- BOP & Choke Schematics
- Flex hose spec sheet & test chart
- Directional Plan



COG Production LLC
Project: Eddy County, NM
Site: Patron 23 Federal
Well: #4H
Wellbore: OH
Plan: Plan #1 (#4H/OH)

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	10228.5	0.00	0.00	10228.5	0.0	0.0	0.00	0.00	0.0
3	10977.9	89.93	179.85	10706.0	-476.9	1.2	12.00	179.85	476.9
4	14959.0	89.93	179.86	10711.0	-4457.9	11.5	0.00	0.00	4457.9

PBHL (P23F #4H/OH)

WELL DETAILS: #4H

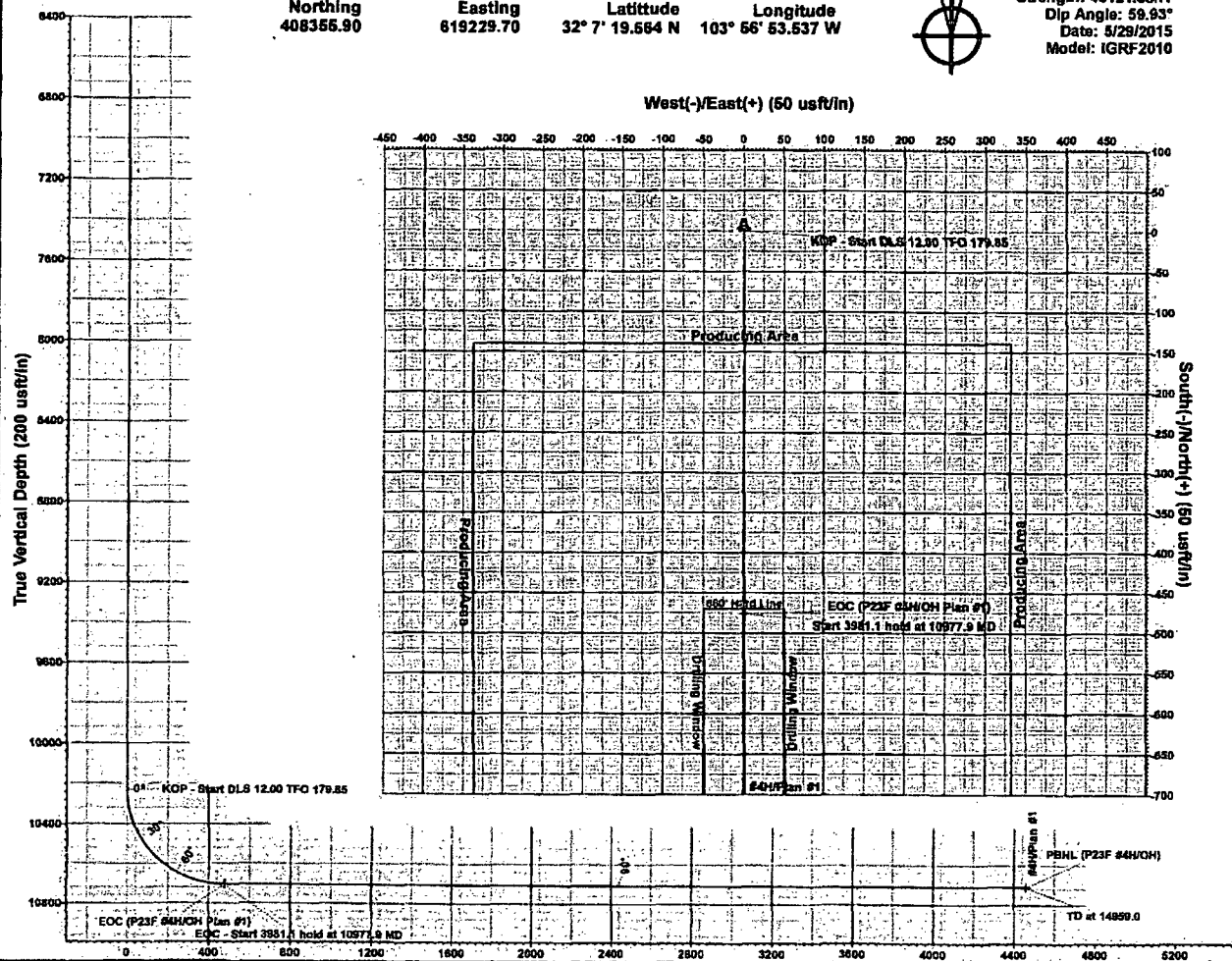
Ground Elevation: 3141.0
RKB Elevation: KB @ 3166.0usft (Latahaw 44)
Rig Name: Latahaw 44

Northing 408355.90 Easting 619229.70 Latitude 32° 7' 19.564 N Longitude 103° 56' 53.537 W

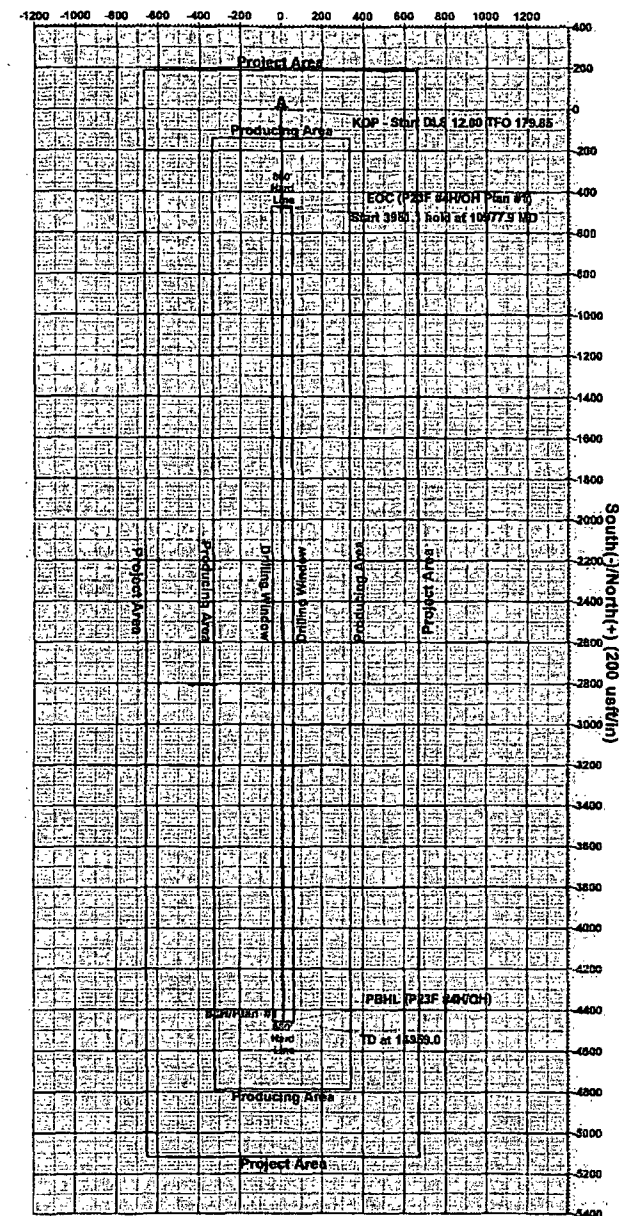


Azimuths to Grid North
True North: -0.20°
Magnetic North: 7.06°
Magnetic Field
Strength: 48121.5snT
Dip Angle: 59.93°
Date: 5/29/2015
Model: IGRF2010

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



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



Plan: Plan #1 (#4H/OH)
Created By: Well Planner Date: 13:38, May 29 2015

Terra Directional Services
322 Spring Hill Drive, Suite A100, Spring, Texas 77386
432.426.7532

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 3081
System Datum: Mean Sea Level
Local North: Grid