Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☐ DRILL ☐ REENTER

1b. Type of Well: ☐ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☐ Single Zone ☐ Multiple Zone

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

8. Lease Name and Well No.

[331867]
30-025-49667

2. Name of Operator

[229137]

9. API Well No.

3a. Address

3b. Phone No. *(include area code)*

10. Field and Pool, or Exploratory **[96689]**

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface

At proposed prod. zone

11. Sec., T. R. M. or Blk. and Survey or Area

14. Distance in miles and direction from nearest town or post office*

12. County or Parish

13. State

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
Title		
Approved by *(Signature)*	Name *(Printed/Typed)*	Date
Title	Office	

Application approval 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.
Conditions of approval, if any, are attached.

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.

NGMP Rec 12/21/2021

KZ
12/21/2021

SL

APPROVED WITH CONDITIONS

Approval Date: 12/02/2021

(Continued on page 2)

*(Instructions on page 2)

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 RD., 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, New Mexico 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-025- 49667	96689	Brinninstool; Wolfcamp,West

Property Code	Property Name	Well Number
331867	MARGHERITA FEDERAL COM	602H

OGRID No.	Operator Name	Elevation
229137	COG OPERATING, LLC	3716.1'

Surface Location

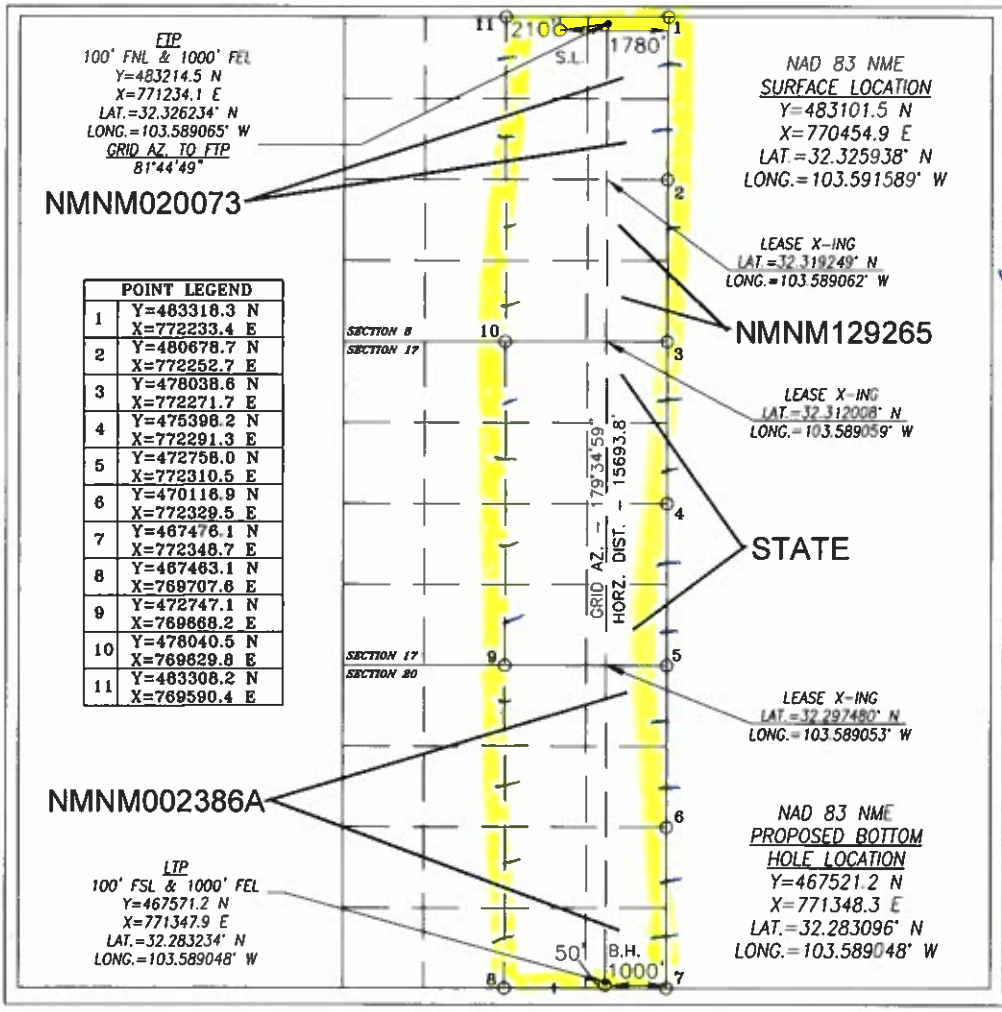
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	8	23-S	33-E		210	NORTH	1780	EAST	LEA

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	20	23-S	33-E		50	SOUTH	1000	EAST	LEA

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
960			

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



POINT LEGEND	
1	Y=483318.3 N X=772233.4 E
2	Y=480678.7 N X=772252.7 E
3	Y=478038.6 N X=772271.7 E
4	Y=475398.2 N X=772291.3 E
5	Y=472758.0 N X=772310.5 E
6	Y=470116.9 N X=772329.5 E
7	Y=467476.1 N X=772348.7 E
8	Y=467463.1 N X=769707.6 E
9	Y=472747.1 N X=769668.2 E
10	Y=478040.5 N X=769629.8 E
11	Y=483308.2 N X=769590.4 E

OPERATOR CERTIFICATION

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.

Signature — Date: 6/25/2021

Mayte Reyes
Printed Name

mayte.x.reyes@conocophillips.com
E-mail Address

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.

MAY 6, 2021
Date of Survey

Signature & Seal of Professional Surveyor

CHAD L. HARCROW
NEW MEXICO
17777
LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 6/3/21

Certificate No. CHAD HARCROW 17777

W.O. # 21-565 DRAWN BY: DS

State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description

Effective May 25, 2021

I. Operator: COG Operating LLC **OGRID:** 229137 **Date:** 06 / 25 / 21

II. Type: ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Margherita Federal Com 602H	30-025-49667	B-8-23S-33E	210 FNL & 1780 FEL	± 1400	± 2240	± 4900

IV. Central Delivery Point Name: _____ [See 19.15.27.9(D)(1) NMAC]

V. Anticipated Schedule: Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
Margherita Federal Com 602H	Pending		± 25 days from spud	TBD	TBD	TBD
	30-025-49667					

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

VII. Operational Practices: ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

VIII. Best Management Practices: ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 2 – Enhanced Plan

EFFECTIVE APRIL 1, 2022

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☐ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

X. Natural Gas Gathering System (NGGS):

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

XI. Map. ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

XII. Line Capacity. The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

XIII. Line Pressure. Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

XIV. Confidentiality: ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system. ***If Operator checks this box, Operator will select one of the following:***

Well Shut-In. ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- **(a)** power generation on lease;
- **(b)** power generation for grid;
- **(c)** compression on lease;
- **(d)** liquids removal on lease;
- **(e)** reinjection for underground storage;
- **(f)** reinjection for temporary storage;
- **(g)** reinjection for enhanced oil recovery;
- **(h)** fuel cell production; and
- **(i)** other alternative beneficial uses approved by the division.

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

VI. Separation Equipment

How Operator will size separation equipment to optimize gas capture:

Initial separation equipment will be sized with adequate retention time to effectively separate all phases of production and capture gas prior to liquid phases entering storage tanks.

VII. Operational Practices

Actions Operator will take to comply with the requirements below:

- Install VCU on all vent lines from tanks to combust gas emitted due to normal tank breathing
- All flare stacks are equipped with auto ignition devices and are located at a minimum of 150' from storage tanks and wellheads
- Install meters on all flare lines to quantify volume of gas being flared during an upset condition
- A properly sized mud gas separator and flare stack located a minimum of 100 feet from the nearest surface hole location will be used to combust natural gas from normal drilling operations. Will report natural gas vented or flared due to an emergency or malfunction.

VIII. Best Management Practices

Operator's best management practices to minimize venting during active and planned maintenance:

Operations plan will be to shut in production for planned maintenance activities that may result in venting of natural gas.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature:	
Printed Name:	Mayte Reyes
Title:	Sr. Regulatory Coodinator
E-mail Address:	mayte.x.reyes@conocophillips.com
Date:	6/25/2021
Phone:	575-748-6945

OIL CONSERVATION DIVISION
(Only applicable when submitted as a standalone form)

Approved By:	
Title:	
Approval Date:	
Conditions of Approval:	

AFMSS
U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

APD Print Report
12/02/2021

APD ID: 10400076700
Submission Date: 06/29/2021
Operator Name: COG OPERATING LLC
Federal/Indian APD: FED
Well Name: MARGHERITA FEDERAL COM
Well Number: 602H
Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Application

Section 1 - General

APD ID: 10400076700
Tie to previous NOS?
Submission Date: 06/29/2021
BLM Office: Hobbs
User: MAYTE REYES
Title: Regulatory Analyst
Federal/Indian APD: FED
Is the first lease penetrated for production Federal or Indian? FED
Lease number: NMNM020073
Lease Acres:
Surface access agreement in place?
Allotted?
Reservation:
Agreement in place? NO
Federal or Indian agreement:
Agreement number:
Agreement name:
Keep application confidential? Y
Permitting Agent? NO
APD Operator: COG OPERATING LLC
Operator letter of designation:

Operator Info

Operator Organization Name: COG OPERATING LLC
Operator Address: 600 West Illinois Ave
Zip: 79701
Operator PO Box:
Operator City: Midland
State: TX
Operator Phone: (432)683-7443
Operator Internet Address: RODOM@CONCHO.COM

Section 2 - Well Information

Well in Master Development Plan? EXISTING
Master Development Plan name: No
Well in Master SUPO?
Master SUPO name:

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Well in Master Drilling Plan? **Master Drilling Plan name:**

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** BRINNINSTOOL **Pool Name:** WOLFCAMP, WEST

Is the proposed well in an area containing other mineral resources? NATURAL GAS,OIL

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** N **New surface disturbance?**

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** Margherita FEDERAL COM **Number:** 601H, 602H, 603H, 604H

Well Class: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 21 Miles **Distance to nearest well:** 30 FT **Distance to lease line:** 50 FT

Reservoir well spacing assigned acres Measurement: 960 Acres

Well plat: COG_Margherita_602H_C102_20210629135859.pdf

Well work start Date: 12/01/2021 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: **Reference Datum:** GROUND LEVEL

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
SHL Leg #1	210	FNL	1780	FEL	23S	33E	8	Aliquot NWNE	32.325938	-103.591589	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 0020073	3716	0	0	Y
KOP Leg #1	210	FNL	1780	FEL	23S	33E	8	Aliquot NWNE	32.325938	-103.591589	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 0020073	3716	0	0	Y

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
PPP Leg #1-1	100	FNL	1000	FEL	23S	33E	8	Aliquot NENE	32.326234	-103.589065	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 0020073	-8533	12325	12249	Y
PPP Leg #1-2	2639	FSL	1000	FEL	23S	33E	17	Aliquot NESE	32.31249	-103.589062	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 129265	-8706	14970	12422	Y
PPP Leg #1-3	1	FNL	1000	FEL	23S	33E	17	Aliquot NENE	32.312008	-103.589059	LEA	NEW MEXICO	NEW MEXICO	S	STATE	-8715	17500	12431	Y
EXIT Leg #1	100	FSL	1000	FEL	23S	33E	20	Aliquot SESE	32.283234	-103.589048	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 002386A	-8751	27861	12467	Y
BHL Leg #1	50	FSL	1000	FEL	23S	33E	20	Aliquot SESE	32.283096	-103.589048	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 002386A	-8699	27911	12415	Y

Drilling Plan

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
6582386	RED BEDS	3716	0	0	ALLUVIUM	NONE	N
6582387	RUSTLER	2418	1298	1298	GYPSUM	NONE	N
6582388	TOP SALT	1900	1816	1816	SALT	NONE	N
6582389	BASE OF SALT	-1116	4832	4832	ANHYDRITE, SALT	NONE	N
6582390	LAMAR	-1409	5125	5125	LIMESTONE	NATURAL GAS, OIL	N
6582391	BELL CANYON	-1468	5184	5184	SANDSTONE	NATURAL GAS, OIL	N
6582392	CHERRY CANYON	-2252	5968	5968	SANDSTONE	NATURAL GAS, OIL	N
6582393	BRUSHY CANYON	-3784	7500	7500	SANDSTONE	NATURAL GAS, OIL	N

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
6582394	BONE SPRING LIME	-5208	8924	8924	LIMESTONE, SANDSTONE	NATURAL GAS, OIL	N
6582397	BONE SPRING 1ST	-6389	10105	10105	HALITE, SANDSTONE	NATURAL GAS, OIL	N
6582398	BONE SPRING 2ND	-7009	10725	10725	HALITE, SANDSTONE	NATURAL GAS, OIL	N
6582399	BONE SPRING 3RD	-8236	11952	11952	HALITE, SANDSTONE	NATURAL GAS, OIL	N
6582400	WOLFCAMP	-8586	12302	12302	SHALE, SILTSTONE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M **Rating Depth:** 12415

Equipment: Accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.
Requesting Variance? YES

Variance request: Request a 5M annular variance on a 10M system. (5M variance attached in section 8). A variance is requested for the use of a flexible choke line from the BOP to the choke manifold. See attached for specs and hydrostatic test chart.
Testing Procedure: 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.
Choke Diagram Attachment:

COG_Margherita_10M_Choke_20210628160532.pdf

BOP Diagram Attachment:

COG_Margherita_10M_BOP_20210628160540.pdf

COG_Margherita_601H_602H_603H_604H_Flex_Hose_20210628160557.pdf

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Pressure Rating (PSI): 5M **Rating Depth:** 11800

Equipment: Annular, Blind Ram, Pipe Ram. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold
Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to the choke manifold. See attached for specs and hydrostatic test chart.
Testing Procedure: 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.

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Choke Diagram Attachment:

COG_Margherita_5M_Choke_20210628160441.pdf

BOP Diagram Attachment:

COG_Margherita_5M_BOP_20210628160451.pdf

COG_Margherita_601H_602H_603H_604H_Flex_Hose_20210628160502.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	14.75	10.75	NEW	API	N	0	1350	0	1350	3692	2342	1350	N-80	45.5	OTHER - BTC	4	1.67	DRY	17.86	DRY	163
2	INTERMEDIATE	8.75	7.625	NEW	API	Y	0	11800	0	11800	3697	-8108	11800	HCP-110	29.7	OTHER - FJM	1.21	1.39	DRY	1.59	DRY	2.
3	PRODUCTION	6.75	5.5	NEW	API	Y	0	27911	0	12415	3697	-8723	27911	P-110	23	OTHER - Talon	1.8	2.13	DRY	2.48	DRY	2.

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Margherita_602H_Casing_Program_20210629080134.pdf

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Casing Attachments

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Margherita_602H_Casing_Program_20210629080152.pdf

Casing Design Assumptions and Worksheet(s):

COG_Margherita_602H_Casing_Program_20210629080208.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Margherita_602H_Casing_Program_20210629080045.pdf

Casing Design Assumptions and Worksheet(s):

COG_Margherita_602H_Casing_Program_20210629080103.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1350	644	1.75	13.5	1127	50	Class C + 4% Gel	1% CaCl2
SURFACE	Tail		0	1350	250	1.34	14.8	335	50	Class C	2% CaCl2
INTERMEDIATE	Lead		0	11800	840	3.3	10.3	2772	50	Halliburton tunded light	As needed
INTERMEDIATE	Tail		0	11800	250	1.35	14.8	337	50	Class H	As needed

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		12415	27911	524	2	12.7	1048	35	50:50:10 H Blend	As needed
PRODUCTION	Tail		12415	27911	1566	1.24	14.4	1941	35	50:50:2 Class H Blend	As needed

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
1350	11800	OTHER : Brine Diesel Emulsion	8.4	9							Brine Diesel Emulsion
11800	27911	OTHER : OBM	9.6	12.5							OBM
0	1350	OTHER : FW Gel	8.6	8.8							FW Gel

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

None planned

List of open and cased hole logs run in the well:

CEMENT BOND LOG,COMPENSATED NEUTRON LOG,GAMMA RAY LOG,

Coring operation description for the well:

None planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 8070 **Anticipated Surface Pressure:** 5327

Anticipated Bottom Hole Temperature(F): 180

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

COG_Margherita_601H_602H_603H_604H_H2S_Schem_20210628161106.pdf
COG_Margherita_H2S_SUP_20210628161123.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

COG_Margherita_602H_AC_RPT_20210629080701.pdf
COG_Margherita_602H_Directional_Plan_20210629080708.pdf

Other proposed operations facets description:

Drilling program attached.
GCP attached.
Cement program attached.

Other proposed operations facets attachment:

7.625_29.7_P110_HC_Liberty_FJM_20210628161326.pdf
COG_Margherita_602H_Cement_Program_20210629080726.pdf
COG_Margherita_602H_Drilling_Program_20210629080736.pdf
COG_Margherita_602H_GCP_20210629080743.pdf
5.5_Inch_23Talon_Spec._Sheet_20211027103558.pdf

Other Variance attachment:

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

5M_Variance_Well_Plan_20200925152216.pdf

SUPO

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

COG_Margherita_601H_602H_603H_604H_Existing_Road_20210628153634.pdf

Existing Road Purpose: ACCESS **Row(s) Exist?** NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

COG_Margherita_601H_602H_603H_604H_Road_Plats_20210628154135.pdf

New road type: RESOURCE

Length: 44.9 Feet **Width (ft.):** 30

Max slope (%): 33 **Max grade (%):** 1

Army Corp of Engineers (ACOE) permit required? N

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

New road access plan or profile prepared? N

New road access plan attachment:

Access road engineering design? N

Access road engineering design attachment:

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Turnout? N

Access surfacing type: OTHER

Access topsoil source: ONSITE

Access surfacing type description: Caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description:

Onsite topsoil removal process: Blading

Access other construction information: No turnouts are planned

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: None necessary

Road Drainage Control Structures (DCS) description: None needed

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

COG_Margherita_602H_1_Mile_Data_20210628161654.pdf

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: 1) Margherita Federal 8B CTB. This CTB will be built to accommodate the Margherita Federal Com #601H, #602, #603H and #604. We plan to install (1) buried 4 FP 601HT production flowline from each wellhead to the inlet manifold of the proposed CTB (4 lines total); the route for these flowlines is indicated on the drawing below in purple. We will install (1) buried 4 gas line for gas lift supply from the CTB to well pad (1 lines total); the route for the gas lift lines will follow the gas lift route as shown in the drawing below.

Production Facilities map:

COG_Margherita_601H_602H_603H_604H_Flowline_Gas_Line_20210628154349.pdf

COG_Margherita_601H_602H_603H_604H_Powerline_20210628154359.pdf

COG_Margherita_Fed_8_B_CTB_20210628154314.pdf

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: OTHER

Describe type: Brine Water

Water source use type: INTERMEDIATE/PRODUCTION CASING

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: COMMERCIAL

Source transportation land ownership: COMMERCIAL

Water source volume (barrels): 30000 **Source volume (acre-feet):** 3.86679289

Source volume (gal): 1260000

Water source type: OTHER

Describe type: Fresh Water

Water source use type: ICE PAD CONSTRUCTION & MAINTENANCE
SURFACE CASING

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: PIPELINE

Source land ownership: PRIVATE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 450000 **Source volume (acre-feet):** 58.00189335

Source volume (gal): 18900000

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Water source and transportation map:

COG_Margherita_601H_602H_603H_604H_Brine_H2O_20210628154449.pdf

COG_Margherita_601H_602H_603H_604H_Fresh_H2O_20210628154457.pdf

Water source comments: Fresh water will be obtained from the Sopapilla Frac Pond located in Section 2. T23S, R33E. Brine water will be obtained from the Malaga II Brine station in Section 12. T23S. R28E.
New water well? N

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be hauled from Limestone caliche pit located in Section 8. T23S. R33E.
Construction Materials source location attachment:

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drilling fluids and produced oil and water during drilling and completion operations

Amount of waste: 6000 barrels

Waste disposal frequency : One Time Only

Safe containment description: All drilling waste will be stored safely and disposed of properly

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Waste type: SEWAGE

Waste content description: Human waste and gray water

Amount of waste: 250 gallons

Waste disposal frequency : Weekly

Safe containment description: Waste will be properly contained and disposed of properly at a state approved disposal facility

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Waste type: GARBAGE

Waste content description: Garbage and trash produced during drilling and completion operations

Amount of waste: 125 pounds

Waste disposal frequency : Weekly

Safe containment description: Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit? NO

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? Y

Description of cuttings location Roll off cuttings containers on tracks

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: N

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

COG_Margherita_601H_602H_603H_604H_Layout_20210628154533.pdf

Comments:

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: Margherita FEDERAL COM

Multiple Well Pad Number: 601H, 602H, 603H, 604H

Recontouring attachment:

COG_Margherita_601H_602H_603H_604H_Reclamation_20210628154714.pdf

COG_Margherita_601H_602H_603H_604H_Closed_Loop_20210628154947.pdf

COG_Margherita_601H_602H_603H_604H_Closed_Loop_20210628155023.pdf

Drainage/Erosion control construction: Immediately following construction, straw waddles will be placed as necessary at the well site to reduce sediment impacts to fragile/sensitive soils.

Drainage/Erosion control reclamation: Immediately following construction, straw waddles will be placed as necessary at the well site to reduce sediment impacts to fragile/sensitive soils.

Well pad proposed disturbance (acres): 3.67
Road proposed disturbance (acres): 0.01
Powerline proposed disturbance (acres): 5.42
Pipeline proposed disturbance (acres): 0.3
Other proposed disturbance (acres): 3.67
Total proposed disturbance: 13.07

Well pad interim reclamation (acres): 0.06
Road interim reclamation (acres): 0.01
Powerline interim reclamation (acres): 5.42
Pipeline interim reclamation (acres): 0.3
Other interim reclamation (acres): 3.67
Total interim reclamation: 9.46

Well pad long term disturbance (acres): 3.21
Road long term disturbance (acres): 0.01
Powerline long term disturbance (acres): 5.42
Pipeline long term disturbance (acres): 0.3
Other long term disturbance (acres): 3.67
Total long term disturbance: 12.610000000000001

Disturbance Comments:

Reconstruction method: If needed, portions of the pad not needed for production operations will be re-contoured to its original state as much as possible. The caliche that is removed will be reused. The stockpiled topsoil will be spread out over reclaimed area and reseeded with BLM approved seed mixture.
Topsoil redistribution: East

Soil treatment: None

Existing Vegetation at the well pad: Shinnery Oak/Mesquite grassland

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Shinnery Oak/Mesquite grassland

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: Shinnery Oak/Mesquite grassland

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: N/A

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Existing Vegetation Community at other disturbances attachment:

Non native seed used? N

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? N

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? N

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: **Last Name:**

Phone: **Email:**

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? N

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: N/A

Weed treatment plan attachment:

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Monitoring plan description: N/A

Monitoring plan attachment:

Success standards: N/A

Pit closure description: N/A

Pit closure attachment:

COG_Margherita_601H_602H_603H_604H_Closed_Loop_20210628154733.pdf

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: STATE GOVERNMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office: NEW MEXICO

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Section 12 - Other Information

Right of Way needed? N **Use APD as ROW?**

ROW Type(s):

ROW Applications

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

SUPO Additional Information: SUP attached. Onsite was done by Gerald Herrera (COP); Zane Kirsch (BLM); on December 10th, 2020 State Surface
Use a previously conducted onsite? Y

Previous Onsite information: Onsite was done by Gerald Herrera (COP); Zane Kirsch (BLM); on December 10th, 2020 State Surface

Other SUPO Attachment

COG_Margherita_601H_602H_603H_604H_Existing_Road_20210628155507.pdf
COG_Margherita_601H_602H_603H_604H_Flowline_Gas_Line_20210628155534.pdf
COG_Margherita_601H_602H_603H_604H_Powerline_20210628155545.pdf
COG_Margherita_601H_602H_603H_604H_Road_Plats_20210628155557.pdf
COG_Margherita_Fed_8_B_CTB_20210628155608.pdf
COG_Margherita_602H_SUP_20210628161744.pdf
COG_Margherita_602H_C102_20210629135934.pdf

PWD

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? N

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD disturbance (acres): **PWD surface owner:**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: **Injection well name:**

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

Bond Info

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000215

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

Operator Certification

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: MAYTE REYES **Signed on:** 06/28/2021

Title: Regulatory Analyst

Street Address: 925 N ELDRIDGE PARKWAY

City: HOUSTON **State:** TX **Zip:** 77252

Phone: (281)293-1000

Email address: MAYTE.X.REYES@CONOCOPHILLIPS.COM

Field Representative

Representative Name: Gerald Herrera

Street Address: 2208 West Main Street

City: Artesia **State:** NM **Zip:** 88210

Phone: (575)748-6940

Email address: Gerald.A.Herrera@conocophillips.com

Payment Info

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Payment

APD Fee Payment Method: PAY.GOV

pay.gov Tracking ID: 26SHGQ9M

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report

12/02/2021

APD ID: 10400076700 **Submission Date:** 06/29/2021

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
6582386	RED BEDS	3716	0	0	ALLUVIUM	NONE	N
6582387	RUSTLER	2418	1298	1298	GYPSUM	NONE	N
6582388	TOP SALT	1900	1816	1816	SALT	NONE	N
6582389	BASE OF SALT	-1116	4832	4832	ANHYDRITE, SALT	NONE	N
6582390	LAMAR	-1409	5125	5125	LIMESTONE	NATURAL GAS, OIL	N
6582391	BELL CANYON	-1468	5184	5184	SANDSTONE	NATURAL GAS, OIL	N
6582392	CHERRY CANYON	-2252	5968	5968	SANDSTONE	NATURAL GAS, OIL	N
6582393	BRUSHY CANYON	-3784	7500	7500	SANDSTONE	NATURAL GAS, OIL	N
6582394	BONE SPRING LIME	-5208	8924	8924	LIMESTONE, SANDSTONE	NATURAL GAS, OIL	N
6582397	BONE SPRING 1ST	-6389	10105	10105	HALITE, SANDSTONE	NATURAL GAS, OIL	N
6582398	BONE SPRING 2ND	-7009	10725	10725	HALITE, SANDSTONE	NATURAL GAS, OIL	N
6582399	BONE SPRING 3RD	-8236	11952	11952	HALITE, SANDSTONE	NATURAL GAS, OIL	N
6582400	WOLFCAMP	-8586	12302	12302	SHALE, SILTSTONE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Pressure Rating (PSI): 10M **Rating Depth:** 12415

Equipment: Accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.
Requesting Variance? YES

Variance request: Request a 5M annular variance on a 10M system. (5M variance attached in section 8). A variance is requested for the use of a flexible choke line from the BOP to the choke manifold. See attached for specs and hydrostatic test chart.
Testing Procedure: 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.
Choke Diagram Attachment:

COG_Margherita_10M_Choke_20210628160532.pdf

BOP Diagram Attachment:

COG_Margherita_10M_BOP_20210628160540.pdf

COG_Margherita_601H_602H_603H_604H_Flex_Hose_20210628160557.pdf

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Pressure Rating (PSI): 5M **Rating Depth:** 11800

Equipment: Annular, Blind Ram, Pipe Ram. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold
Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to the choke manifold. See attached for specs and hydrostatic test chart.
Testing Procedure: 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.
Choke Diagram Attachment:

COG_Margherita_5M_Choke_20210628160441.pdf

BOP Diagram Attachment:

COG_Margherita_5M_BOP_20210628160451.pdf

COG_Margherita_601H_602H_603H_604H_Flex_Hose_20210628160502.pdf

---

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	14.75	10.75	NEW	API	N	0	1350	0	1350	3692	2342	1350	N-80	45.5	OTHER - BTC	4	1.67	DRY	17.86	DRY	16.93
2	INTERMEDIATE	8.75	7.625	NEW	API	Y	0	11800	0	11800	3697	-8108	11800	HCP-110	29.7	OTHER - FJM	1.21	1.39	DRY	1.59	DRY	2.68
3	PRODUCTION	6.75	5.5	NEW	API	Y	0	27911	0	12415	3697	-8723	27911	P-110	23	OTHER - Talon	1.8	2.13	DRY	2.48	DRY	2.55

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Margherita_602H_Casing_Program_20210629080134.pdf

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Casing Attachments

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Margherita_602H_Casing_Program_20210629080152.pdf

Casing Design Assumptions and Worksheet(s):

COG_Margherita_602H_Casing_Program_20210629080208.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Margherita_602H_Casing_Program_20210629080045.pdf

Casing Design Assumptions and Worksheet(s):

COG_Margherita_602H_Casing_Program_20210629080103.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1350	644	1.75	13.5	1127	50	Class C + 4% Gel	1% CaCl2
SURFACE	Tail		0	1350	250	1.34	14.8	335	50	Class C	2% CaCl2
INTERMEDIATE	Lead		0	11800	840	3.3	10.3	2772	50	Halliburton tunded light	As needed
INTERMEDIATE	Tail		0	11800	250	1.35	14.8	337	50	Class H	As needed
PRODUCTION	Lead		12415	27911	524	2	12.7	1048	35	50:50:10 H Blend	As needed

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Tail		12415	27911	1566	1.24	14.4	1941	35	50:50:2 Class H Blend	As needed

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
1350	11800	OTHER : Brine Diesel Emulsion	8.4	9							Brine Diesel Emulsion
11800	27911	OTHER : OBM	9.6	12.5							OBM
0	1350	OTHER : FW Gel	8.6	8.8							FW Gel

Operator Name: COG OPERATING LLC

Well Name: MARGHERITA FEDERAL COM **Well Number:** 602H

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

None planned

List of open and cased hole logs run in the well:

CEMENT BOND LOG,COMPENSATED NEUTRON LOG,GAMMA RAY LOG,

Coring operation description for the well:

None planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 8070 **Anticipated Surface Pressure:** 5327

Anticipated Bottom Hole Temperature(F): 180

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

COG_Margherita_601H_602H_603H_604H_H2S_Schem_20210628161106.pdf
COG_Margherita_H2S_SUP_20210628161123.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

COG_Margherita_602H_AC_RPT_20210629080701.pdf
COG_Margherita_602H_Directional_Plan_20210629080708.pdf

Other proposed operations facets description:

Drilling program attached.
GCP attached.
Cement program attached.

Other proposed operations facets attachment:

7.625_29.7_P110_HC_Liberty_FJM_20210628161326.pdf
COG_Margherita_602H_Cement_Program_20210629080726.pdf
COG_Margherita_602H_Drilling_Program_20210629080736.pdf
COG_Margherita_602H_GCP_20210629080743.pdf
5.5_Inch_23Talon_Spec._Sheet_20211027103558.pdf

Other Variance attachment:

5M_Variance_Well_Plan_20200925152216.pdf

DELAWARE BASIN EAST

BULLDOG PROSPECT (NM-E)
MARHERITA FED COM PROJECT
MARGHERITA FED COM #602H

OWB

Plan: PWP1

Standard Survey Report

09 June, 2021

ConocoPhillips

Survey Report

Company:	DELAWARE BASIN EAST	**Local Co-ordinate Reference:**	Well MARGHERITA FED COM #602H
Project:	BULLDOG PROSPECT (NM-E)	**TVD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Site:	MARHERITA FED COM PROJECT	**MD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Well:	MARGHERITA FED COM #602H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDT 15 Central Prod

Project	BULLDOG PROSPECT (NM-E)

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		

Well	MARGHERITA FED COM #602H

Well Position	**+N/-S**	0.0 usft	**Northing:**	483,041.70 usft	**Latitude:**	32° 19' 32.933 N
	+E/-W	0.0 usft	**Easting:**	729,271.80 usft	**Longitude:**	103° 35' 27.984 W
Position Uncertainty		3.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,716.1 usft

Wellbore	OWB

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	6/9/2021	6.56	59.99	47,551.63332498

Design	PWP1

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	176.72

Survey Tool Program **Date** 6/9/2021

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	11,875.0	PWP1 (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
11,875.0	27,911.4	PWP1 (OWB)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction

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

ConocoPhillips

Survey Report

Company:	DELAWARE BASIN EAST	**Local Co-ordinate Reference:**	Well MARGHERITA FED COM #602H
Project:	BULLDOG PROSPECT (NM-E)	**TVD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Site:	MARHERITA FED COM PROJECT	**MD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Well:	MARGHERITA FED COM #602H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDT 15 Central Prod

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)
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
Start Build 2.00									
2,600.0	2.00	79.92	2,600.0	0.3	1.7	-0.2	2.00	2.00	0.00
2,700.0	4.00	79.92	2,699.8	1.2	6.9	-0.8	2.00	2.00	0.00
2,730.2	4.60	79.92	2,729.9	1.6	9.1	-1.1	2.00	2.00	0.00
Start 9135.6 hold at 2730.2 MD									
2,800.0	4.60	79.92	2,799.5	2.6	14.6	-1.8	0.00	0.00	0.00
2,900.0	4.60	79.92	2,899.2	4.0	22.5	-2.7	0.00	0.00	0.00
3,000.0	4.60	79.92	2,998.9	5.4	30.4	-3.7	0.00	0.00	0.00
3,100.0	4.60	79.92	3,098.6	6.8	38.3	-4.6	0.00	0.00	0.00
3,200.0	4.60	79.92	3,198.2	8.2	46.2	-5.6	0.00	0.00	0.00
3,300.0	4.60	79.92	3,297.9	9.6	54.1	-6.5	0.00	0.00	0.00
3,400.0	4.60	79.92	3,397.6	11.0	62.0	-7.5	0.00	0.00	0.00
3,500.0	4.60	79.92	3,497.3	12.4	69.9	-8.4	0.00	0.00	0.00
3,600.0	4.60	79.92	3,596.9	13.8	77.8	-9.4	0.00	0.00	0.00
3,700.0	4.60	79.92	3,696.6	15.2	85.7	-10.3	0.00	0.00	0.00
3,800.0	4.60	79.92	3,796.3	16.7	93.6	-11.3	0.00	0.00	0.00
3,900.0	4.60	79.92	3,896.0	18.1	101.5	-12.2	0.00	0.00	0.00
4,000.0	4.60	79.92	3,995.7	19.5	109.4	-13.2	0.00	0.00	0.00
4,100.0	4.60	79.92	4,095.3	20.9	117.3	-14.1	0.00	0.00	0.00
4,200.0	4.60	79.92	4,195.0	22.3	125.2	-15.1	0.00	0.00	0.00
4,300.0	4.60	79.92	4,294.7	23.7	133.1	-16.0	0.00	0.00	0.00
4,400.0	4.60	79.92	4,394.4	25.1	141.0	-17.0	0.00	0.00	0.00
4,500.0	4.60	79.92	4,494.0	26.5	149.0	-17.9	0.00	0.00	0.00
4,600.0	4.60	79.92	4,593.7	27.9	156.9	-18.9	0.00	0.00	0.00
4,700.0	4.60	79.92	4,693.4	29.3	164.8	-19.8	0.00	0.00	0.00
4,800.0	4.60	79.92	4,793.1	30.7	172.7	-20.8	0.00	0.00	0.00
4,900.0	4.60	79.92	4,892.8	32.1	180.6	-21.7	0.00	0.00	0.00
5,000.0	4.60	79.92	4,992.4	33.5	188.5	-22.7	0.00	0.00	0.00
5,100.0	4.60	79.92	5,092.1	34.9	196.4	-23.6	0.00	0.00	0.00
5,200.0	4.60	79.92	5,191.8	36.3	204.3	-24.6	0.00	0.00	0.00
5,300.0	4.60	79.92	5,291.5	37.7	212.2	-25.5	0.00	0.00	0.00
5,400.0	4.60	79.92	5,391.1	39.1	220.1	-26.5	0.00	0.00	0.00

ConocoPhillips

Survey Report

Company:	DELAWARE BASIN EAST	**Local Co-ordinate Reference:**	Well MARGHERITA FED COM #602H
Project:	BULLDOG PROSPECT (NM-E)	**TVD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Site:	MARHERITA FED COM PROJECT	**MD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Well:	MARGHERITA FED COM #602H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDT 15 Central Prod

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)
5,500.0	4.60	79.92	5,490.8	40.5	228.0	-27.4	0.00	0.00	0.00
5,600.0	4.60	79.92	5,590.5	41.9	235.9	-28.4	0.00	0.00	0.00
5,700.0	4.60	79.92	5,690.2	43.4	243.8	-29.3	0.00	0.00	0.00
5,800.0	4.60	79.92	5,789.8	44.8	251.7	-30.3	0.00	0.00	0.00
5,900.0	4.60	79.92	5,889.5	46.2	259.6	-31.2	0.00	0.00	0.00
6,000.0	4.60	79.92	5,989.2	47.6	267.5	-32.2	0.00	0.00	0.00
6,100.0	4.60	79.92	6,088.9	49.0	275.4	-33.1	0.00	0.00	0.00
6,200.0	4.60	79.92	6,188.6	50.4	283.3	-34.1	0.00	0.00	0.00
6,300.0	4.60	79.92	6,288.2	51.8	291.2	-35.0	0.00	0.00	0.00
6,400.0	4.60	79.92	6,387.9	53.2	299.1	-36.0	0.00	0.00	0.00
6,500.0	4.60	79.92	6,487.6	54.6	307.0	-36.9	0.00	0.00	0.00
6,600.0	4.60	79.92	6,587.3	56.0	314.9	-37.9	0.00	0.00	0.00
6,700.0	4.60	79.92	6,686.9	57.4	322.8	-38.8	0.00	0.00	0.00
6,800.0	4.60	79.92	6,786.6	58.8	330.7	-39.8	0.00	0.00	0.00
6,900.0	4.60	79.92	6,886.3	60.2	338.6	-40.7	0.00	0.00	0.00
7,000.0	4.60	79.92	6,986.0	61.6	346.5	-41.7	0.00	0.00	0.00
7,100.0	4.60	79.92	7,085.7	63.0	354.4	-42.6	0.00	0.00	0.00
7,200.0	4.60	79.92	7,185.3	64.4	362.3	-43.6	0.00	0.00	0.00
7,300.0	4.60	79.92	7,285.0	65.8	370.2	-44.5	0.00	0.00	0.00
7,400.0	4.60	79.92	7,384.7	67.2	378.1	-45.5	0.00	0.00	0.00
7,500.0	4.60	79.92	7,484.4	68.6	386.0	-46.4	0.00	0.00	0.00
7,600.0	4.60	79.92	7,584.0	70.1	393.9	-47.4	0.00	0.00	0.00
7,700.0	4.60	79.92	7,683.7	71.5	401.8	-48.3	0.00	0.00	0.00
7,800.0	4.60	79.92	7,783.4	72.9	409.7	-49.3	0.00	0.00	0.00
7,900.0	4.60	79.92	7,883.1	74.3	417.6	-50.2	0.00	0.00	0.00
8,000.0	4.60	79.92	7,982.8	75.7	425.5	-51.2	0.00	0.00	0.00
8,100.0	4.60	79.92	8,082.4	77.1	433.4	-52.2	0.00	0.00	0.00
8,200.0	4.60	79.92	8,182.1	78.5	441.3	-53.1	0.00	0.00	0.00
8,300.0	4.60	79.92	8,281.8	79.9	449.2	-54.1	0.00	0.00	0.00
8,400.0	4.60	79.92	8,381.5	81.3	457.1	-55.0	0.00	0.00	0.00
8,500.0	4.60	79.92	8,481.1	82.7	465.0	-56.0	0.00	0.00	0.00
8,600.0	4.60	79.92	8,580.8	84.1	472.9	-56.9	0.00	0.00	0.00
8,700.0	4.60	79.92	8,680.5	85.5	480.8	-57.9	0.00	0.00	0.00
8,800.0	4.60	79.92	8,780.2	86.9	488.7	-58.8	0.00	0.00	0.00
8,900.0	4.60	79.92	8,879.8	88.3	496.6	-59.8	0.00	0.00	0.00
9,000.0	4.60	79.92	8,979.5	89.7	504.5	-60.7	0.00	0.00	0.00
9,100.0	4.60	79.92	9,079.2	91.1	512.4	-61.7	0.00	0.00	0.00
9,200.0	4.60	79.92	9,178.9	92.5	520.3	-62.6	0.00	0.00	0.00
9,300.0	4.60	79.92	9,278.6	93.9	528.2	-63.6	0.00	0.00	0.00
9,400.0	4.60	79.92	9,378.2	95.3	536.2	-64.5	0.00	0.00	0.00
9,500.0	4.60	79.92	9,477.9	96.8	544.1	-65.5	0.00	0.00	0.00
9,600.0	4.60	79.92	9,577.6	98.2	552.0	-66.4	0.00	0.00	0.00
9,700.0	4.60	79.92	9,677.3	99.6	559.9	-67.4	0.00	0.00	0.00
9,800.0	4.60	79.92	9,776.9	101.0	567.8	-68.3	0.00	0.00	0.00

ConocoPhillips

Survey Report

Company:	DELAWARE BASIN EAST	**Local Co-ordinate Reference:**	Well MARGHERITA FED COM #602H
Project:	BULLDOG PROSPECT (NM-E)	**TVD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Site:	MARHERITA FED COM PROJECT	**MD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Well:	MARGHERITA FED COM #602H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDT 15 Central Prod

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)
9,900.0	4.60	79.92	9,876.6	102.4	575.7	-69.3	0.00	0.00	0.00
10,000.0	4.60	79.92	9,976.3	103.8	583.6	-70.2	0.00	0.00	0.00
10,100.0	4.60	79.92	10,076.0	105.2	591.5	-71.2	0.00	0.00	0.00
10,200.0	4.60	79.92	10,175.7	106.6	599.4	-72.1	0.00	0.00	0.00
10,300.0	4.60	79.92	10,275.3	108.0	607.3	-73.1	0.00	0.00	0.00
10,400.0	4.60	79.92	10,375.0	109.4	615.2	-74.0	0.00	0.00	0.00
10,500.0	4.60	79.92	10,474.7	110.8	623.1	-75.0	0.00	0.00	0.00
10,600.0	4.60	79.92	10,574.4	112.2	631.0	-75.9	0.00	0.00	0.00
10,700.0	4.60	79.92	10,674.0	113.6	638.9	-76.9	0.00	0.00	0.00
10,800.0	4.60	79.92	10,773.7	115.0	646.8	-77.8	0.00	0.00	0.00
10,900.0	4.60	79.92	10,873.4	116.4	654.7	-78.8	0.00	0.00	0.00
11,000.0	4.60	79.92	10,973.1	117.8	662.6	-79.7	0.00	0.00	0.00
11,100.0	4.60	79.92	11,072.8	119.2	670.5	-80.7	0.00	0.00	0.00
11,200.0	4.60	79.92	11,172.4	120.6	678.4	-81.6	0.00	0.00	0.00
11,300.0	4.60	79.92	11,272.1	122.0	686.3	-82.6	0.00	0.00	0.00
11,400.0	4.60	79.92	11,371.8	123.5	694.2	-83.5	0.00	0.00	0.00
11,500.0	4.60	79.92	11,471.5	124.9	702.1	-84.5	0.00	0.00	0.00
11,600.0	4.60	79.92	11,571.1	126.3	710.0	-85.4	0.00	0.00	0.00
11,700.0	4.60	79.92	11,670.8	127.7	717.9	-86.4	0.00	0.00	0.00
11,800.0	4.60	79.92	11,770.5	129.1	725.8	-87.3	0.00	0.00	0.00
11,865.8	4.60	79.92	11,836.1	130.0	731.0	-88.0	0.00	0.00	0.00
Start DLS 10.00 TFO 99.65									
11,900.0	5.25	119.87	11,870.2	129.5	733.7	-87.3	10.00	1.90	116.89
12,000.0	13.42	160.16	11,968.8	116.2	741.6	-73.6	10.00	8.17	40.29
12,100.0	23.07	168.85	12,063.7	86.0	749.4	-43.0	10.00	9.65	8.69
12,200.0	32.92	172.55	12,151.9	39.7	756.7	3.6	10.00	9.85	3.70
12,300.0	42.84	174.68	12,230.7	-21.2	763.4	64.9	10.00	9.92	2.13
12,400.0	52.78	176.14	12,297.8	-95.0	769.3	138.9	10.00	9.94	1.45
12,500.0	62.74	177.25	12,351.1	-179.3	774.1	223.3	10.00	9.96	1.11
12,600.0	72.70	178.18	12,389.0	-271.7	777.7	315.7	10.00	9.96	0.93
12,700.0	82.67	179.01	12,410.3	-369.2	780.1	413.3	10.00	9.97	0.83
12,771.6	89.80	179.58	12,415.0	-440.6	781.0	484.6	10.00	9.97	0.80
Start 15139.8 hold at 12771.6 MD									
12,800.0	89.80	179.58	12,415.1	-469.0	781.2	512.9	0.00	0.00	0.00
12,900.0	89.80	179.58	12,415.4	-569.0	782.0	612.8	0.00	0.00	0.00
13,000.0	89.80	179.58	12,415.7	-669.0	782.7	712.7	0.00	0.00	0.00
13,100.0	89.80	179.58	12,416.1	-769.0	783.4	812.6	0.00	0.00	0.00
13,200.0	89.80	179.58	12,416.4	-869.0	784.2	912.5	0.00	0.00	0.00
13,300.0	89.80	179.58	12,416.8	-969.0	784.9	1,012.3	0.00	0.00	0.00
13,400.0	89.80	179.58	12,417.1	-1,069.0	785.7	1,112.2	0.00	0.00	0.00
13,500.0	89.80	179.58	12,417.5	-1,169.0	786.4	1,212.1	0.00	0.00	0.00
13,600.0	89.80	179.58	12,417.8	-1,269.0	787.1	1,312.0	0.00	0.00	0.00
13,700.0	89.80	179.58	12,418.2	-1,369.0	787.9	1,411.8	0.00	0.00	0.00

ConocoPhillips

Survey Report

Company:	DELAWARE BASIN EAST	**Local Co-ordinate Reference:**	Well MARGHERITA FED COM #602H
Project:	BULLDOG PROSPECT (NM-E)	**TVD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Site:	MARHERITA FED COM PROJECT	**MD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Well:	MARGHERITA FED COM #602H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDT 15 Central Prod

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)
13,800.0	89.80	179.58	12,418.5	-1,469.0	788.6	1,511.7	0.00	0.00	0.00
13,900.0	89.80	179.58	12,418.8	-1,569.0	789.4	1,611.6	0.00	0.00	0.00
14,000.0	89.80	179.58	12,419.2	-1,669.0	790.1	1,711.5	0.00	0.00	0.00
14,100.0	89.80	179.58	12,419.5	-1,769.0	790.8	1,811.3	0.00	0.00	0.00
14,200.0	89.80	179.58	12,419.9	-1,869.0	791.6	1,911.2	0.00	0.00	0.00
14,300.0	89.80	179.58	12,420.2	-1,969.0	792.3	2,011.1	0.00	0.00	0.00
14,400.0	89.80	179.58	12,420.6	-2,069.0	793.1	2,111.0	0.00	0.00	0.00
14,500.0	89.80	179.58	12,420.9	-2,169.0	793.8	2,210.8	0.00	0.00	0.00
14,600.0	89.80	179.58	12,421.2	-2,269.0	794.5	2,310.7	0.00	0.00	0.00
14,700.0	89.80	179.58	12,421.6	-2,369.0	795.3	2,410.6	0.00	0.00	0.00
14,800.0	89.80	179.58	12,421.9	-2,468.9	796.0	2,510.5	0.00	0.00	0.00
14,900.0	89.80	179.58	12,422.3	-2,568.9	796.8	2,610.3	0.00	0.00	0.00
15,000.0	89.80	179.58	12,422.6	-2,668.9	797.5	2,710.2	0.00	0.00	0.00
15,100.0	89.80	179.58	12,423.0	-2,768.9	798.2	2,810.1	0.00	0.00	0.00
15,200.0	89.80	179.58	12,423.3	-2,868.9	799.0	2,910.0	0.00	0.00	0.00
15,300.0	89.80	179.58	12,423.7	-2,968.9	799.7	3,009.8	0.00	0.00	0.00
15,400.0	89.80	179.58	12,424.0	-3,068.9	800.5	3,109.7	0.00	0.00	0.00
15,500.0	89.80	179.58	12,424.3	-3,168.9	801.2	3,209.6	0.00	0.00	0.00
15,600.0	89.80	179.58	12,424.7	-3,268.9	801.9	3,309.5	0.00	0.00	0.00
15,700.0	89.80	179.58	12,425.0	-3,368.9	802.7	3,409.3	0.00	0.00	0.00
15,800.0	89.80	179.58	12,425.4	-3,468.9	803.4	3,509.2	0.00	0.00	0.00
15,900.0	89.80	179.58	12,425.7	-3,568.9	804.2	3,609.1	0.00	0.00	0.00
16,000.0	89.80	179.58	12,426.1	-3,668.9	804.9	3,709.0	0.00	0.00	0.00
16,100.0	89.80	179.58	12,426.4	-3,768.9	805.6	3,808.8	0.00	0.00	0.00
16,200.0	89.80	179.58	12,426.7	-3,868.9	806.4	3,908.7	0.00	0.00	0.00
16,300.0	89.80	179.58	12,427.1	-3,968.9	807.1	4,008.6	0.00	0.00	0.00
16,400.0	89.80	179.58	12,427.4	-4,068.9	807.9	4,108.5	0.00	0.00	0.00
16,500.0	89.80	179.58	12,427.8	-4,168.9	808.6	4,208.3	0.00	0.00	0.00
16,600.0	89.80	179.58	12,428.1	-4,268.9	809.3	4,308.2	0.00	0.00	0.00
16,700.0	89.80	179.58	12,428.5	-4,368.9	810.1	4,408.1	0.00	0.00	0.00
16,800.0	89.80	179.58	12,428.8	-4,468.9	810.8	4,508.0	0.00	0.00	0.00
16,900.0	89.80	179.58	12,429.2	-4,568.9	811.6	4,607.8	0.00	0.00	0.00
17,000.0	89.80	179.58	12,429.5	-4,668.9	812.3	4,707.7	0.00	0.00	0.00
17,100.0	89.80	179.58	12,429.8	-4,768.9	813.0	4,807.6	0.00	0.00	0.00
17,200.0	89.80	179.58	12,430.2	-4,868.9	813.8	4,907.5	0.00	0.00	0.00
17,300.0	89.80	179.58	12,430.5	-4,968.9	814.5	5,007.3	0.00	0.00	0.00
17,400.0	89.80	179.58	12,430.9	-5,068.9	815.2	5,107.2	0.00	0.00	0.00
17,500.0	89.80	179.58	12,431.2	-5,168.9	816.0	5,207.1	0.00	0.00	0.00
17,600.0	89.80	179.58	12,431.6	-5,268.9	816.7	5,307.0	0.00	0.00	0.00
17,700.0	89.80	179.58	12,431.9	-5,368.9	817.5	5,406.8	0.00	0.00	0.00
17,800.0	89.80	179.58	12,432.2	-5,468.8	818.2	5,506.7	0.00	0.00	0.00
17,900.0	89.80	179.58	12,432.6	-5,568.8	818.9	5,606.6	0.00	0.00	0.00
18,000.0	89.80	179.58	12,432.9	-5,668.8	819.7	5,706.5	0.00	0.00	0.00
18,100.0	89.80	179.58	12,433.3	-5,768.8	820.4	5,806.3	0.00	0.00	0.00

ConocoPhillips

Survey Report

Company:	DELAWARE BASIN EAST	**Local Co-ordinate Reference:**	Well MARGHERITA FED COM #602H
Project:	BULLDOG PROSPECT (NM-E)	**TVD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Site:	MARHERITA FED COM PROJECT	**MD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Well:	MARGHERITA FED COM #602H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDT 15 Central Prod

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)
18,200.0	89.80	179.58	12,433.6	-5,868.8	821.2	5,906.2	0.00	0.00	0.00
18,300.0	89.80	179.58	12,434.0	-5,968.8	821.9	6,006.1	0.00	0.00	0.00
18,400.0	89.80	179.58	12,434.3	-6,068.8	822.6	6,106.0	0.00	0.00	0.00
18,500.0	89.80	179.58	12,434.7	-6,168.8	823.4	6,205.8	0.00	0.00	0.00
18,600.0	89.80	179.58	12,435.0	-6,268.8	824.1	6,305.7	0.00	0.00	0.00
18,700.0	89.80	179.58	12,435.3	-6,368.8	824.9	6,405.6	0.00	0.00	0.00
18,800.0	89.80	179.58	12,435.7	-6,468.8	825.6	6,505.5	0.00	0.00	0.00
18,900.0	89.80	179.58	12,436.0	-6,568.8	826.3	6,605.3	0.00	0.00	0.00
19,000.0	89.80	179.58	12,436.4	-6,668.8	827.1	6,705.2	0.00	0.00	0.00
19,100.0	89.80	179.58	12,436.7	-6,768.8	827.8	6,805.1	0.00	0.00	0.00
19,200.0	89.80	179.58	12,437.1	-6,868.8	828.6	6,905.0	0.00	0.00	0.00
19,300.0	89.80	179.58	12,437.4	-6,968.8	829.3	7,004.8	0.00	0.00	0.00
19,400.0	89.80	179.58	12,437.7	-7,068.8	830.0	7,104.7	0.00	0.00	0.00
19,500.0	89.80	179.58	12,438.1	-7,168.8	830.8	7,204.6	0.00	0.00	0.00
19,600.0	89.80	179.58	12,438.4	-7,268.8	831.5	7,304.5	0.00	0.00	0.00
19,700.0	89.80	179.58	12,438.8	-7,368.8	832.3	7,404.3	0.00	0.00	0.00
19,800.0	89.80	179.58	12,439.1	-7,468.8	833.0	7,504.2	0.00	0.00	0.00
19,900.0	89.80	179.58	12,439.5	-7,568.8	833.7	7,604.1	0.00	0.00	0.00
20,000.0	89.80	179.58	12,439.8	-7,668.8	834.5	7,704.0	0.00	0.00	0.00
20,100.0	89.80	179.58	12,440.2	-7,768.8	835.2	7,803.8	0.00	0.00	0.00
20,200.0	89.80	179.58	12,440.5	-7,868.8	836.0	7,903.7	0.00	0.00	0.00
20,300.0	89.80	179.58	12,440.8	-7,968.8	836.7	8,003.6	0.00	0.00	0.00
20,400.0	89.80	179.58	12,441.2	-8,068.8	837.4	8,103.5	0.00	0.00	0.00
20,500.0	89.80	179.58	12,441.5	-8,168.8	838.2	8,203.3	0.00	0.00	0.00
20,600.0	89.80	179.58	12,441.9	-8,268.8	838.9	8,303.2	0.00	0.00	0.00
20,700.0	89.80	179.58	12,442.2	-8,368.8	839.7	8,403.1	0.00	0.00	0.00
20,800.0	89.80	179.58	12,442.6	-8,468.7	840.4	8,503.0	0.00	0.00	0.00
20,900.0	89.80	179.58	12,442.9	-8,568.7	841.1	8,602.8	0.00	0.00	0.00
21,000.0	89.80	179.58	12,443.2	-8,668.7	841.9	8,702.7	0.00	0.00	0.00
21,100.0	89.80	179.58	12,443.6	-8,768.7	842.6	8,802.6	0.00	0.00	0.00
21,200.0	89.80	179.58	12,443.9	-8,868.7	843.4	8,902.5	0.00	0.00	0.00
21,300.0	89.80	179.58	12,444.3	-8,968.7	844.1	9,002.3	0.00	0.00	0.00
21,400.0	89.80	179.58	12,444.6	-9,068.7	844.8	9,102.2	0.00	0.00	0.00
21,500.0	89.80	179.58	12,445.0	-9,168.7	845.6	9,202.1	0.00	0.00	0.00
21,600.0	89.80	179.58	12,445.3	-9,268.7	846.3	9,302.0	0.00	0.00	0.00
21,700.0	89.80	179.58	12,445.7	-9,368.7	847.1	9,401.8	0.00	0.00	0.00
21,800.0	89.80	179.58	12,446.0	-9,468.7	847.8	9,501.7	0.00	0.00	0.00
21,900.0	89.80	179.58	12,446.3	-9,568.7	848.5	9,601.6	0.00	0.00	0.00
22,000.0	89.80	179.58	12,446.7	-9,668.7	849.3	9,701.5	0.00	0.00	0.00
22,100.0	89.80	179.58	12,447.0	-9,768.7	850.0	9,801.3	0.00	0.00	0.00
22,200.0	89.80	179.58	12,447.4	-9,868.7	850.8	9,901.2	0.00	0.00	0.00
22,300.0	89.80	179.58	12,447.7	-9,968.7	851.5	10,001.1	0.00	0.00	0.00
22,400.0	89.80	179.58	12,448.1	-10,068.7	852.2	10,101.0	0.00	0.00	0.00

ConocoPhillips

Survey Report

Company:	DELAWARE BASIN EAST	**Local Co-ordinate Reference:**	Well MARGHERITA FED COM #602H
Project:	BULLDOG PROSPECT (NM-E)	**TVD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Site:	MARHERITA FED COM PROJECT	**MD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Well:	MARGHERITA FED COM #602H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDT 15 Central Prod

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)
22,500.0	89.80	179.58	12,448.4	-10,168.7	853.0	10,200.8	0.00	0.00	0.00
22,600.0	89.80	179.58	12,448.7	-10,268.7	853.7	10,300.7	0.00	0.00	0.00
22,700.0	89.80	179.58	12,449.1	-10,368.7	854.5	10,400.6	0.00	0.00	0.00
22,800.0	89.80	179.58	12,449.4	-10,468.7	855.2	10,500.5	0.00	0.00	0.00
22,900.0	89.80	179.58	12,449.8	-10,568.7	855.9	10,600.3	0.00	0.00	0.00
23,000.0	89.80	179.58	12,450.1	-10,668.7	856.7	10,700.2	0.00	0.00	0.00
23,100.0	89.80	179.58	12,450.5	-10,768.7	857.4	10,800.1	0.00	0.00	0.00
23,200.0	89.80	179.58	12,450.8	-10,868.7	858.2	10,900.0	0.00	0.00	0.00
23,300.0	89.80	179.58	12,451.1	-10,968.7	858.9	10,999.8	0.00	0.00	0.00
23,400.0	89.80	179.58	12,451.5	-11,068.7	859.6	11,099.7	0.00	0.00	0.00
23,500.0	89.80	179.58	12,451.8	-11,168.7	860.4	11,199.6	0.00	0.00	0.00
23,600.0	89.80	179.58	12,452.2	-11,268.7	861.1	11,299.5	0.00	0.00	0.00
23,700.0	89.80	179.58	12,452.5	-11,368.7	861.8	11,399.3	0.00	0.00	0.00
23,800.0	89.80	179.58	12,452.9	-11,468.6	862.6	11,499.2	0.00	0.00	0.00
23,900.0	89.80	179.58	12,453.2	-11,568.6	863.3	11,599.1	0.00	0.00	0.00
24,000.0	89.80	179.58	12,453.6	-11,668.6	864.1	11,699.0	0.00	0.00	0.00
24,100.0	89.80	179.58	12,453.9	-11,768.6	864.8	11,798.8	0.00	0.00	0.00
24,200.0	89.80	179.58	12,454.2	-11,868.6	865.5	11,898.7	0.00	0.00	0.00
24,300.0	89.80	179.58	12,454.6	-11,968.6	866.3	11,998.6	0.00	0.00	0.00
24,400.0	89.80	179.58	12,454.9	-12,068.6	867.0	12,098.5	0.00	0.00	0.00
24,500.0	89.80	179.58	12,455.3	-12,168.6	867.8	12,198.3	0.00	0.00	0.00
24,600.0	89.80	179.58	12,455.6	-12,268.6	868.5	12,298.2	0.00	0.00	0.00
24,700.0	89.80	179.58	12,456.0	-12,368.6	869.2	12,398.1	0.00	0.00	0.00
24,800.0	89.80	179.58	12,456.3	-12,468.6	870.0	12,498.0	0.00	0.00	0.00
24,900.0	89.80	179.58	12,456.6	-12,568.6	870.7	12,597.8	0.00	0.00	0.00
25,000.0	89.80	179.58	12,457.0	-12,668.6	871.5	12,697.7	0.00	0.00	0.00
25,100.0	89.80	179.58	12,457.3	-12,768.6	872.2	12,797.6	0.00	0.00	0.00
25,200.0	89.80	179.58	12,457.7	-12,868.6	872.9	12,897.5	0.00	0.00	0.00
25,300.0	89.80	179.58	12,458.0	-12,968.6	873.7	12,997.3	0.00	0.00	0.00
25,400.0	89.80	179.58	12,458.4	-13,068.6	874.4	13,097.2	0.00	0.00	0.00
25,500.0	89.80	179.58	12,458.7	-13,168.6	875.2	13,197.1	0.00	0.00	0.00
25,600.0	89.80	179.58	12,459.1	-13,268.6	875.9	13,297.0	0.00	0.00	0.00
25,700.0	89.80	179.58	12,459.4	-13,368.6	876.6	13,396.8	0.00	0.00	0.00
25,800.0	89.80	179.58	12,459.7	-13,468.6	877.4	13,496.7	0.00	0.00	0.00
25,900.0	89.80	179.58	12,460.1	-13,568.6	878.1	13,596.6	0.00	0.00	0.00
26,000.0	89.80	179.58	12,460.4	-13,668.6	878.9	13,696.5	0.00	0.00	0.00
26,100.0	89.80	179.58	12,460.8	-13,768.6	879.6	13,796.3	0.00	0.00	0.00
26,200.0	89.80	179.58	12,461.1	-13,868.6	880.3	13,896.2	0.00	0.00	0.00
26,300.0	89.80	179.58	12,461.5	-13,968.6	881.1	13,996.1	0.00	0.00	0.00
26,400.0	89.80	179.58	12,461.8	-14,068.6	881.8	14,096.0	0.00	0.00	0.00
26,500.0	89.80	179.58	12,462.1	-14,168.6	882.6	14,195.8	0.00	0.00	0.00
26,600.0	89.80	179.58	12,462.5	-14,268.6	883.3	14,295.7	0.00	0.00	0.00
26,700.0	89.80	179.58	12,462.8	-14,368.6	884.0	14,395.6	0.00	0.00	0.00

ConocoPhillips

Survey Report

Company:	DELAWARE BASIN EAST	**Local Co-ordinate Reference:**	Well MARGHERITA FED COM #602H
Project:	BULLDOG PROSPECT (NM-E)	**TVD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Site:	MARHERITA FED COM PROJECT	**MD Reference:**	KB=26' @ 3742.1usft (MCVAY 8)
Well:	MARGHERITA FED COM #602H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	EDT 15 Central Prod

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)
26,800.0	89.80	179.58	12,463.2	-14,468.5	884.8	14,495.5	0.00	0.00	0.00
26,900.0	89.80	179.58	12,463.5	-14,568.5	885.5	14,595.3	0.00	0.00	0.00
27,000.0	89.80	179.58	12,463.9	-14,668.5	886.3	14,695.2	0.00	0.00	0.00
27,100.0	89.80	179.58	12,464.2	-14,768.5	887.0	14,795.1	0.00	0.00	0.00
27,200.0	89.80	179.58	12,464.6	-14,868.5	887.7	14,895.0	0.00	0.00	0.00
27,300.0	89.80	179.58	12,464.9	-14,968.5	888.5	14,994.8	0.00	0.00	0.00
27,400.0	89.80	179.58	12,465.2	-15,068.5	889.2	15,094.7	0.00	0.00	0.00
27,500.0	89.80	179.58	12,465.6	-15,168.5	890.0	15,194.6	0.00	0.00	0.00
27,600.0	89.80	179.58	12,465.9	-15,268.5	890.7	15,294.5	0.00	0.00	0.00
27,700.0	89.80	179.58	12,466.3	-15,368.5	891.4	15,394.3	0.00	0.00	0.00
27,800.0	89.80	179.58	12,466.6	-15,468.5	892.2	15,494.2	0.00	0.00	0.00
27,900.0	89.80	179.58	12,467.0	-15,568.5	892.9	15,594.1	0.00	0.00	0.00
27,911.4	89.80	179.58	12,467.0	-15,579.9	893.0	15,605.5	0.00	0.00	0.00
TD at 27911.4									

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
FTP (MARGHERITA F	0.00	0.01	12,415.0	113.0	779.2	483,154.70	730,051.00	32° 19' 33.998 N	103° 35' 18.894 W
- plan misses target center by 225.4usft at 12325.6usft MD (12249.1 TVD, -39.0 N, 765.0 E)									
- Circle (radius 50.0)									
LTP (MARGHERITA F	0.00	0.00	12,467.0	-15,529.9	892.6	467,511.80	730,164.40	32° 16' 59.197 N	103° 35' 18.839 W
- plan misses target center by 0.2usft at 27861.4usft MD (12466.8 TVD, -15529.9 N, 892.6 E)									
- Point									
PBHL (MARGHERITA	-0.20	359.58	12,467.0	-15,579.9	893.0	467,461.80	730,164.80	32° 16' 58.702 N	103° 35' 18.838 W
- plan hits target center									
- Rectangle (sides W100.0 H15,742.0 D20.0)									

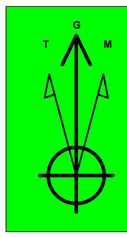
Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2500	2500	0	0	Start Build 2.00
2730	2730	2	9	Start 9135.6 hold at 2730.2 MD
11,866	11,836	130	731	Start DLS 10.00 TFO 99.65
12,772	12,415	-441	781	Start 15139.8 hold at 12771.6 MD
27,911	12,467	-15,580	893	TD at 27911.4

Checked By: _____ Approved By: _____ Date: _____

ConocoPhillips

Project:	BULLDOG PROSPECT (NM-E)
Site:	MARHERITA FED COM PROJECT
Well:	MARGHERITA FED COM #602H
Wellbore:	OWB
Design:	PWP1
GL:	3716.1
KB=26' @ 3742.1usft (MCVAY 8)	



Azimuths to Grid North
True North: -0.40°
Magnetic North: 6.17°

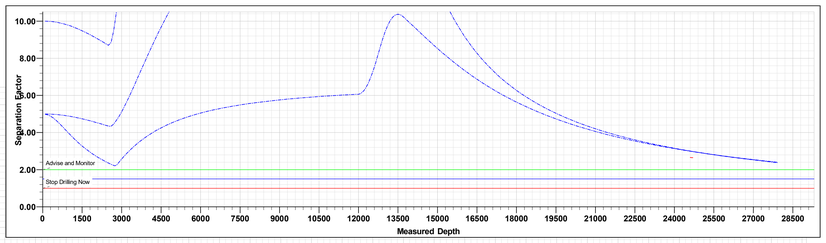
Magnetic Field
Strength: 47551.6nT
Dip Angle: 59.99°
Date: 6/9/2021
Model: IGRF2020

WELL DETAILS: MARGHERITA FED COM #602H

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	483041.70	729271.80	32° 19' 32.933 N	103° 35' 27.984 W

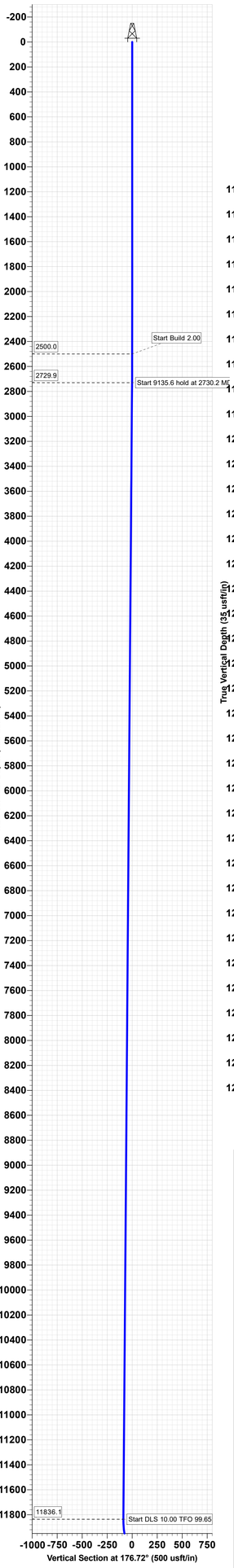
DESIGN TARGET DETAILS

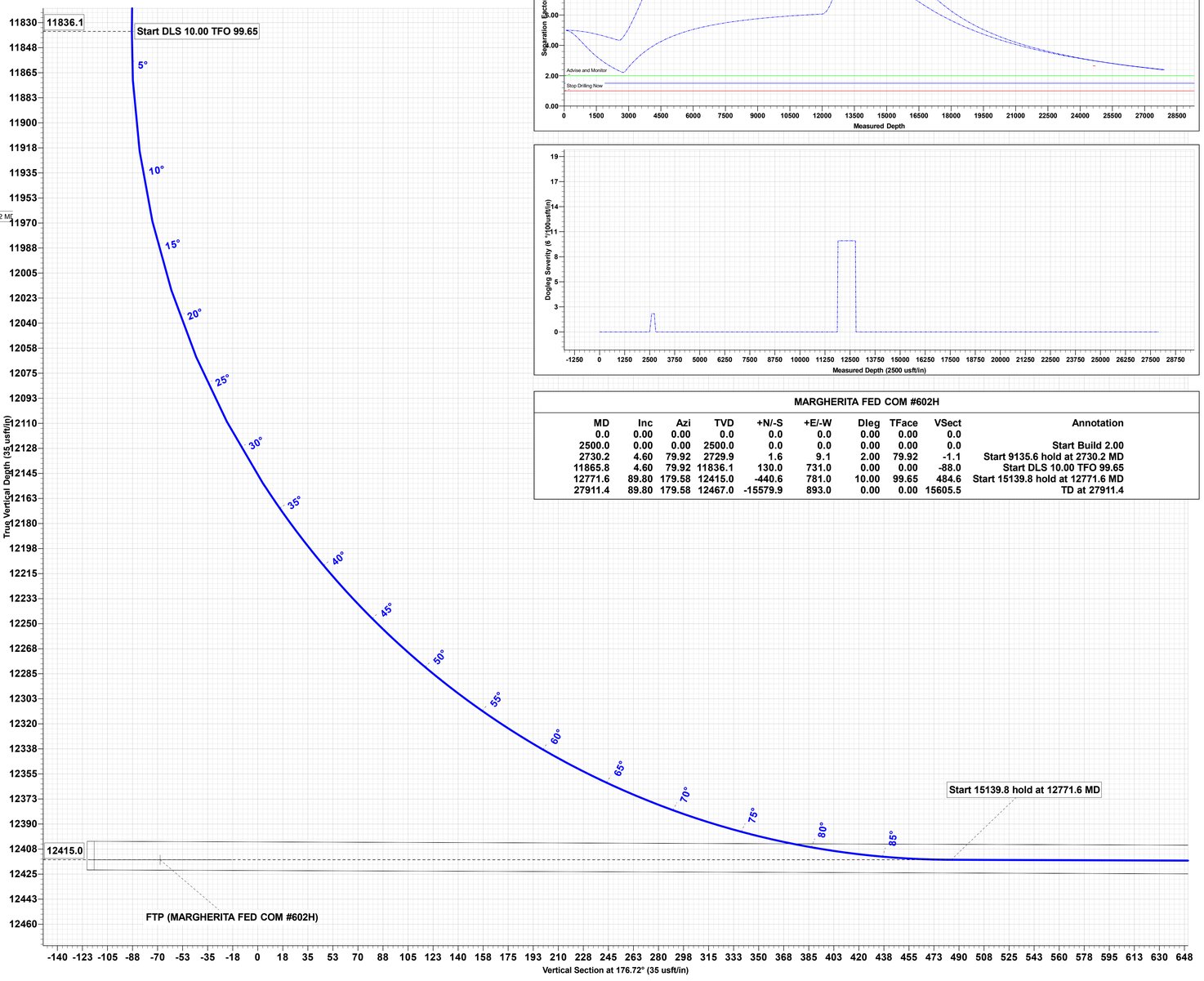
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP (MARGHERITA FED COM #602H)	12415.0	113.0	779.2	483154.70	730051.00	32° 19' 33.998 N	103° 35' 18.894 W
LTP (MARGHERITA FED COM #602H)	12467.0	-15529.9	892.6	467511.80	730164.40	32° 16' 59.197 N	103° 35' 18.839 W
PBHL (MARGHERITA FED COM #602H)	12467.0	-15579.9	893.0	467461.80	730164.80	32° 16' 58.702 N	103° 35' 18.838 W

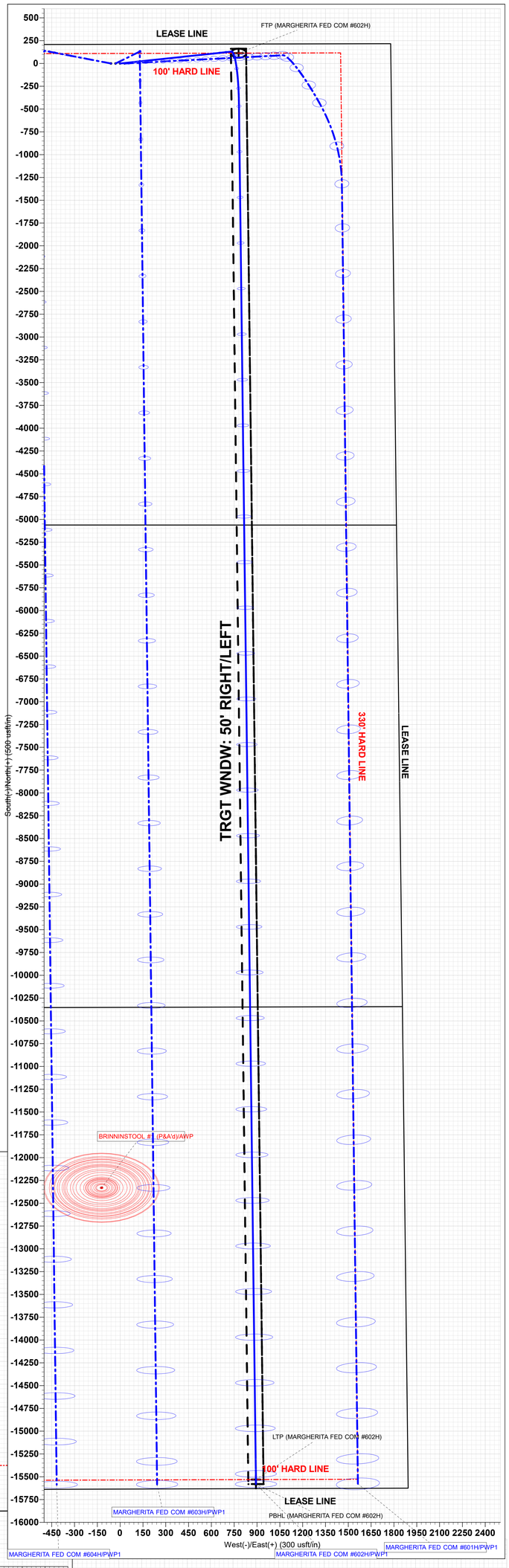


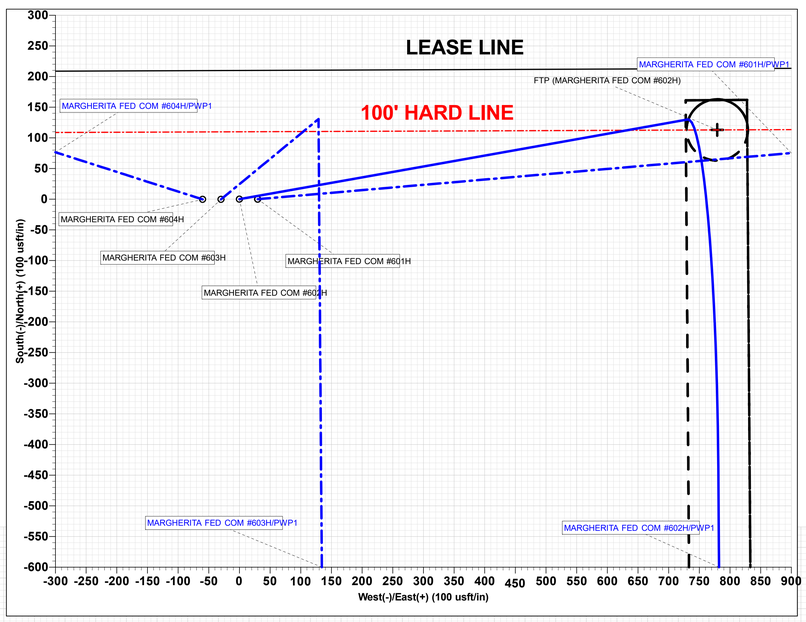
MARGHERITA FED COM #602H

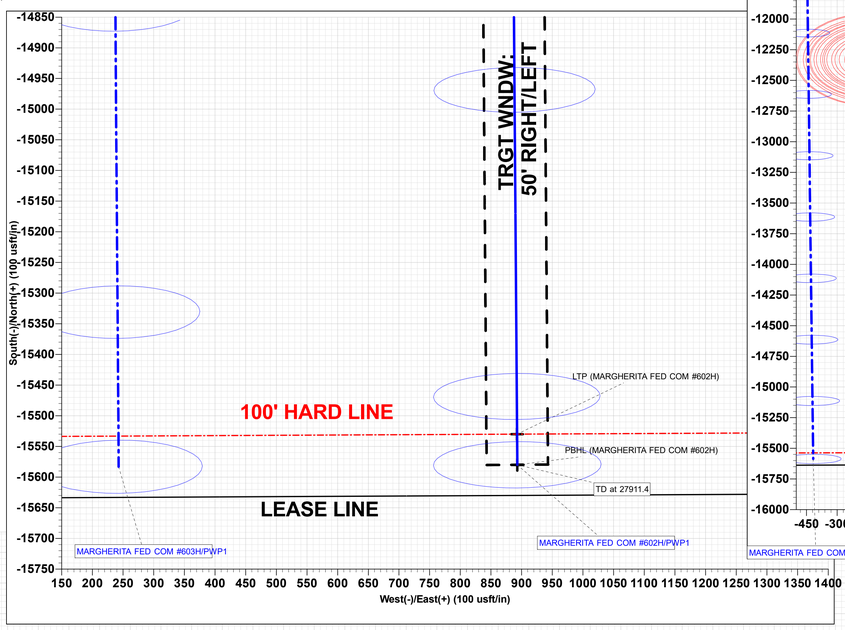
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2500.0	0.00	0.00	2500.0	0.0	0.0	0.00	0.00	0.0	Start Build 2.00
2730.2	4.60	79.92	2729.9	1.6	9.1	2.00	79.92	-1.1	Start 9135.6 hold at 2730.2 MD
11865.8	4.60	79.92	11836.1	130.0	731.0	0.00	0.00	-88.0	Start DLS 10.00 TFO 99.65
12771.6	89.80	179.58	12415.0	-440.6	781.0	10.00	99.65	484.6	Start 15139.8 hold at 12771.6 MD
27911.4	89.80	179.58	12467.0	-15579.9	893.0	0.00	0.00	15605.5	TD at 27911.4



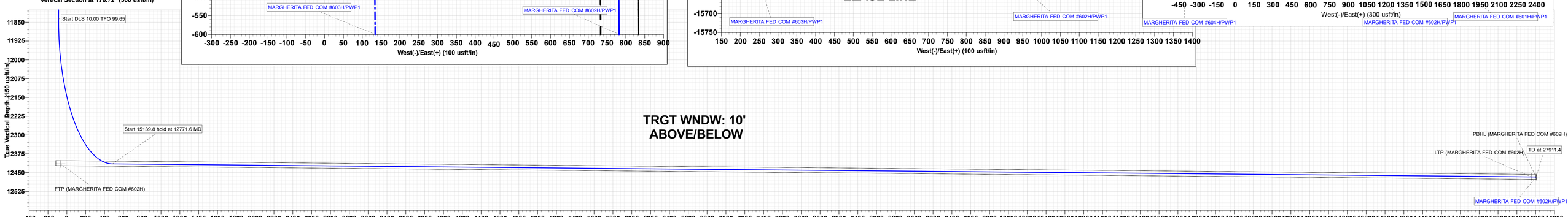








TRGT WNDW: 10' ABOVE/BELOW



PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**COG**
LEASE NO.:	**NMNM020073**
LOCATION:	Section 8, T.23 S., R.33 E., NMPM
COUNTY:	Lea County, New Mexico

WELL NAME & NO.:	Margherita Fed Com 602H
SURFACE HOLE FOOTAGE:	210'/N & 1780'/E
BOTTOM HOLE FOOTAGE	50'/S & 1000'/E

COA

H2S	◉ Yes	○ No	
Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	◉ Low	○ Medium	○ High
Cave/Karst Potential	○ Critical		
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	○ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☑ COM	☐ Unit

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Delaware Group** formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING

1. The **10-3/4** inch surface casing shall be set at approximately **1366** feet (a minimum of 25 feet (Lea County) into the Rustler Anhydrite and above the salt) and cemented to the surface.

    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 will be a minimum of **8**

 Approval Date: 12/02/2021

hours or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

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 **7-5/8** inch intermediate casing is:
   - Cement to surface. If cement does not circulate see B.1.a, c-d above. **Excess calculates to 22%. Additional cement maybe required.**

Wait on cement (WOC) time for a primary cement job is to include the tail cement slurry due to cave/karst or potash.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:
   - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).

2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **10,000 (10M)** psi. **Variance is approved to use a 5000 (5M) Annular which shall be tested to 5000 (5M) psi.**

   a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
   b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
   c. Manufacturer representative shall install the test plug for the initial BOP test.
   d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
   e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

GENERAL 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

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

1. 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.

a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
b. When the operator proposes to set surface casing with Spudder Rig
   - Notify the BLM when moving in and removing the Spudder Rig.

- Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
- BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

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.

A. CASING

1. 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.

2. Wait on cement (WOC) for Potash Areas: 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 for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. 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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

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

6. 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. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. 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.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. 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. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.

 Approval Date: 12/02/2021

c. Manufacturer representative shall install the test plug for the initial BOP test.
d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

5. 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. In potash areas, 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. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

d. 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. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

e. The results of the test shall be reported to the appropriate BLM office.

f. 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.

g. 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.

h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. 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.
ZS112221

COG OPERATING LLC
HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

1. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

a. The hazards and characteristics of hydrogen sulfide (H_2S).
b. The proper use and maintenance of personal protective equipment and life support systems.
c. The proper use of H_2S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
d. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

a. The effects of H2S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
b. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
c. The contents and requirements of the H_2S Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H2S zone (within 3 days or 500 feet) and weekly H2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H2S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

2. H_2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H_2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H2S. If H2S greater than 100 ppm is encountered in the gas stream we will shut in and install H2S equipment.

a. Well Control Equipment:
Flare line.
Choke manifold with remotely operated choke.
Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head.

b. Protective equipment for essential personnel:
Mark II Surviveair 30-minute units located in the dog house and at briefing areas.

c. H2S detection and monitoring equipment:
2 - portable H2S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 ppm are reached.

d. Visual warning systems:
Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

e. Mud Program:
The mud program has been designed to minimize the volume of H2S circulated to the surface.

f. Metallurgy:
All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

g. Communication:
Company vehicles equipped with cellular telephone.

COG OPERATING LLC has conducted a review to determine if an H2S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal. H2S concentrations of wells in this area from surface to TD are low enough; therefore, we do not believe that an H2S contingency plan is necessary.

W A R N I N G

YOU ARE ENTERING AN H_2S AREA
AUTHORIZED PERSONNEL ONLY

1. ***BEARDS OR CONTACT LENSES NOT ALLOWED***
2. ***HARD HATS REQUIRED***
3. ***SMOKING IN DESIGNATED AREAS ONLY***
4. ***BE WIND CONSCIOUS AT ALL TIMES***
5. ***CK WITH COG OPERATING LLC FOREMAN AT MAIN OFFICE***

COG OPERATING LLC

1-575-748-6940

EMERGENCY CALL LIST

	OFFICE	MOBILE
COG OPERATING LLC OFFICE	575-748-6940	
SETH WILD	432-683-7443	432-528-3633
WALTER ROYE	575-748-6940	432-934-1886

EMERGENCY RESPONSE NUMBERS

	OFFICE
STATE POLICE	575-748-9718
EDDY COUNTY SHERIFF	575-746-2701
EMERGENCY MEDICAL SERVICES (AMBULANCE)	911 or 575-746-2701
EDDY COUNTY EMERGENCY MANAGEMENT (HARRY BURGESS)	575-887-9511
STATE EMERGENCY RESPONSE CENTER (SERC)	575-476-9620
CARLSBAD POLICE DEPARTMENT	575-885-2111
CARLSBAD FIRE DEPARTMENT	575-885-3125
NEW MEXICO OIL CONSERVATION DIVISION	575-748-1283
INDIAN FIRE & SAFETY	800-530-8693
HALLIBURTON SERVICES	800-844-8451

COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

Well pad will be 400' X 400' with cellar in center of pad

Flare Lines will be from both Choke Manifold & Separator to edge of location.

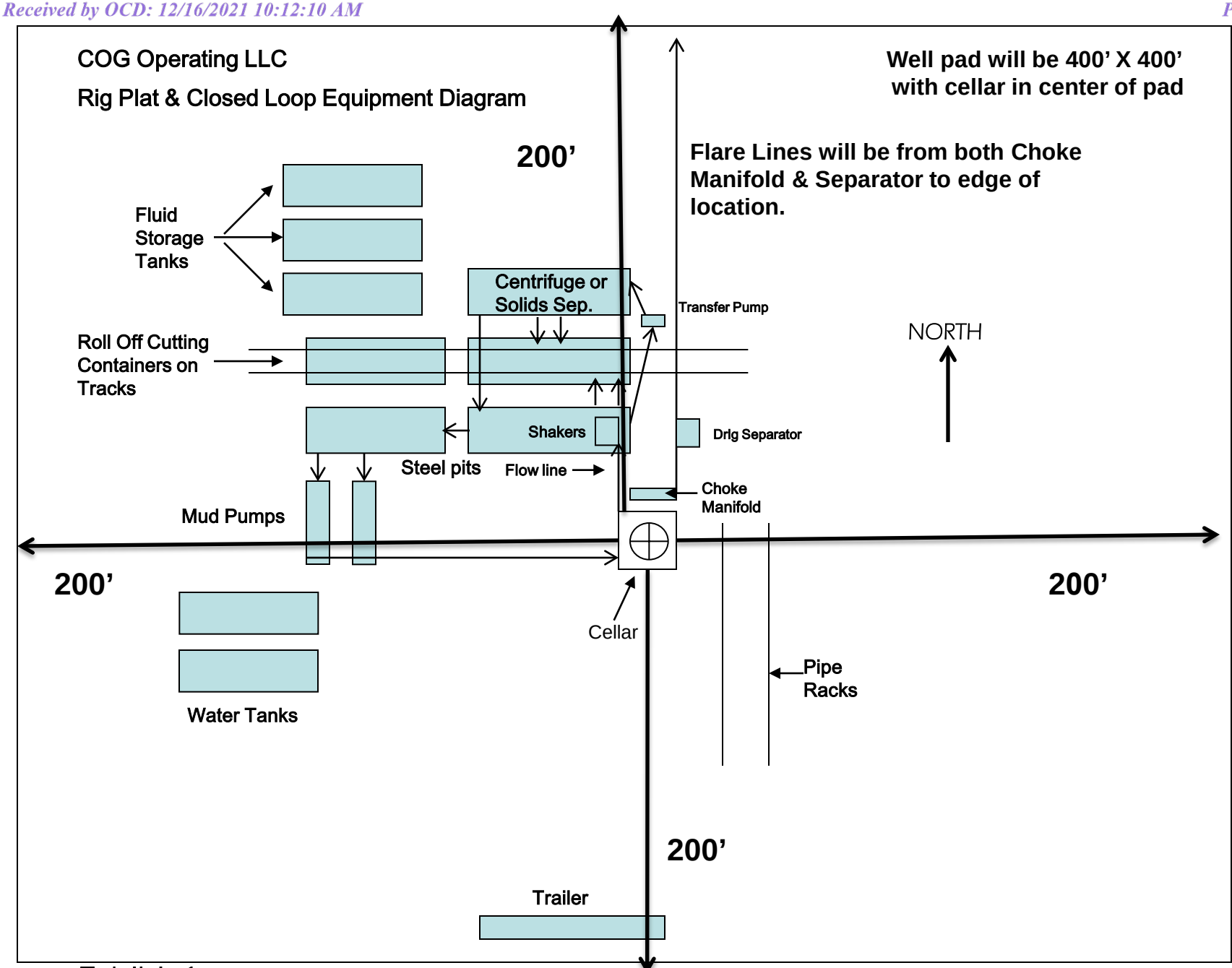


Exhibit 1

"I further certify that COG will comply with Rule 19.15.17 NMAC by using a Closed Loop System."

Intent ☐ As Drilled ☐

API #

Operator Name:	Property Name:	Well Number

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County

Latitude	Longitude	NAD

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County

Latitude	Longitude	NAD

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County

Latitude	Longitude	NAD

Is this well the defining well for the Horizontal Spacing Unit? ☐

Is this well an infill well? ☐

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #

Operator Name:	Property Name:	Well Number

KZ 06/29/2018

COG Operating, LLC - Margherita Federal Com #602H

1. Geologic Formations

TVD of target	12,415' EOL	Pilot hole depth	NA
MD at TD:	27,911'	Deepest expected fresh water:	345'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	1298	Water	
Top of Salt	1816	Salt	
Base of Salt	4832	Salt	
Lamar	5125	Salt Water	
Bell Canyon	5184	Salt Water	
Cherry Canyon	5968	Oil/Gas	
Brushy Canyon	7500	Oil/Gas	
Bone Spring Lime	8924	Oil/Gas	
1st Bone Spring Sand	10105	Oil/Gas	
2nd Bone Spring Sand	10725	Oil/Gas	
3rd Bone Spring Sand	11952	Oil/Gas	
Wolfcamp A	12302	Target	
Wolfcamp B	0	Not Penetrated	
Wolfcamp D	0	Not Penetrated	

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight	Grade	Conn.	SF	SF Burst	SF	SF
	From	To		(lbs)			Collapse		Body	Joint
14.75"	0	1350	10.75"	45.5	N80	BTC	4.00	1.67	16.93	17.86
9.875"	0	8500	7.625"	29.7	HCL80	BTC	1.56	1.07	2.88	2.90
8.750"	8500	11800	7.625"	29.7	HCP110	FJM	1.21	1.39	2.68	1.59
6.75"	0	11300	5.5"	23	P110	BTC	1.98	2.34	2.80	2.79
6.75"	11300	27,911	5.5"	23	P110	Talon	1.80	2.13	2.55	2.48
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet	1.6 Dry 1.8 Wet

Intermediate casing will be kept at least 1/3 full while running casing.to mitigate collapse. Surface burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface and
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

The 5 1/2" talon casing will be run back 200' into the intermediate casing to ensure the coupling OD clearance is greater than .422" for the cement bond tie in.

COG Operating, LLC - Margherita Federal Com #602H

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	Y
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate 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 3rd 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 2nd 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?	

COG Operating, LLC - Margherita Federal Com #602H

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H_20 gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	644	13.5	1.75	9	12	Lead: Class C + 4% Gel + 1% CaCl2
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl2
Inter. Stage 1	840	10.3	3.3	22	24	Halliburton tunded light
	250	14.8	1.35	6.6	8	Tail: Class H
Prod	524	12.7	2	10.7	72	Lead: 50:50:10 H Blend
	1566	14.4	1.24	5.7	19	Tail: 50:50:2 Class H Blend

If losses are encountered in the intermediate section a DV/ECP tool will be run ~50' above the Lamar Lime top, cement will be adjusted accordingly if this contingency is necessary.

Volumes Subject to Observed Hole Conditions and/or Fluid Caliper Results
Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
Surface	0’	50%
1st Intermediate	0’	50%
Production	11,300'	35% OH in Lateral (KOP to EOL)

COG Operating, LLC - Margherita Federal Com #602H

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?	Min. Required WP	Type	x	Tested to:
9-7/8”	13-5/8”	5M	Annular	x	2500psi
			Blind Ram	x	5000psi
			Pipe Ram	x	
			Double Ram	x	
			Other*		
6-3/4”	13-5/8”	10M	5M Annular	x	5000psi
			Blind Ram	x	10000psi
			Pipe Ram	x	
			Double Ram	x	
			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.

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.
	N Are anchors required by manufacturer?
Y	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.

COG Operating, LLC - Margherita Federal Com #602H

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	7-5/8" Int shoe	Brine Diesel Emulsion	8.4 - 9	28-34	N/C
7-5/8" Int shoe	Lateral TD	OBM	9.6 - 12.5	35-45	<20

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

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing.	
Y	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.
Y	No Logs are planned based on well control or offset log information.
N	Drill stem test? If yes, explain.
N	Coring? If yes, explain.

Additional logs planned		Interval
N	Resistivity	Pilot Hole TD to ICP
N	Density	Pilot Hole TD to ICP
Y	CBL	Production casing (If cement not circulated to surface)
Y	Mud log	Intermediate shoe to TD
N	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	8070 psi at 12415' TVD
Abnormal Temperature	NO 180 Deg. F.

No abnormal pressure or temperature conditions are anticipated. Sufficient mud materials to maintain mud properties and weight increase requirements will be kept on location at all times.

Sufficient supplies of Paper/LCM for periodic sweeps to control seepage and losses will be maintained on location.

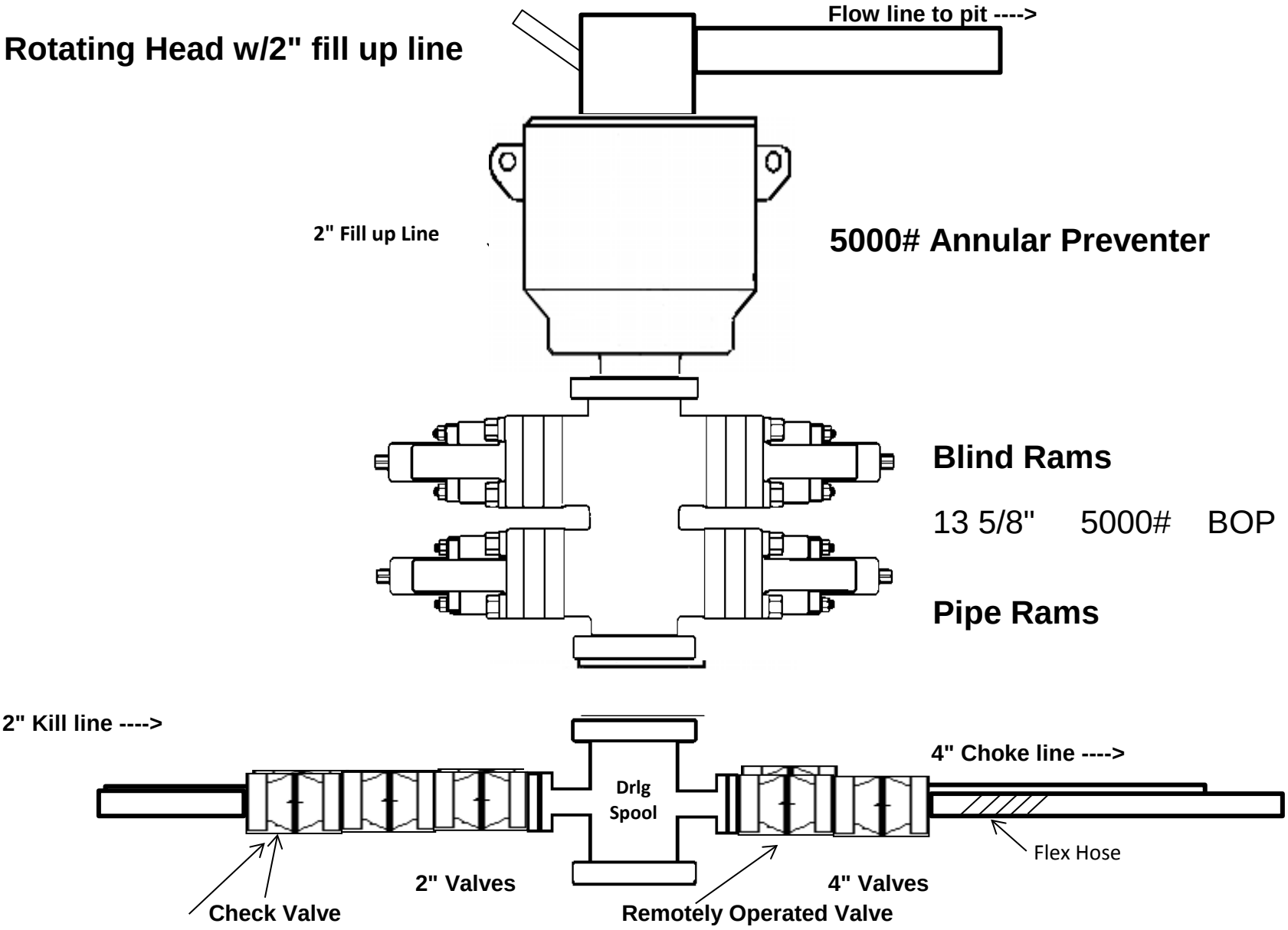
Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be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

8. Other Facets of Operation

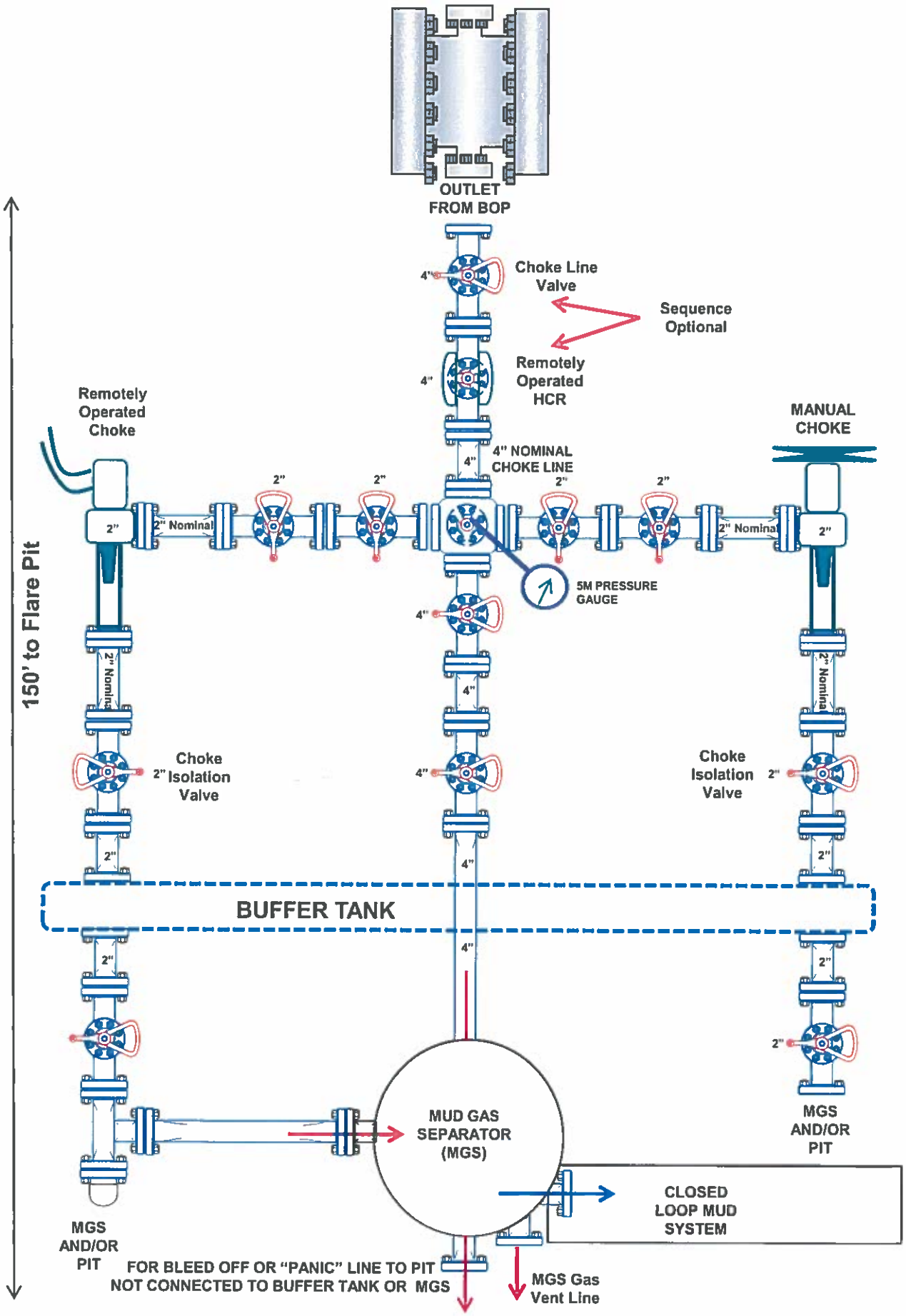
Y	Is it a walking operation?
Y	Is casing pre-set?

x	H2S Plan.
x	BOP & Choke Schematics.
x	Directional Plan

5,000 psi BOP Schematic

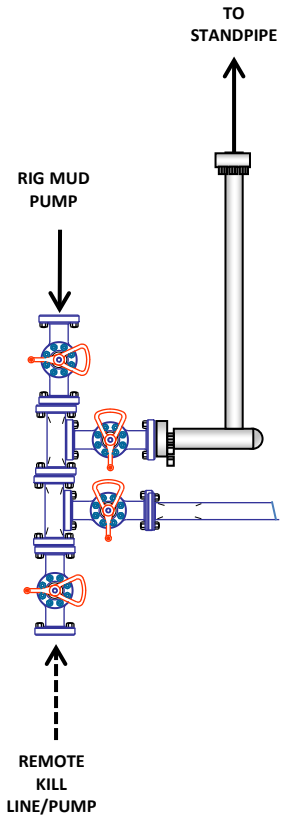


5M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)

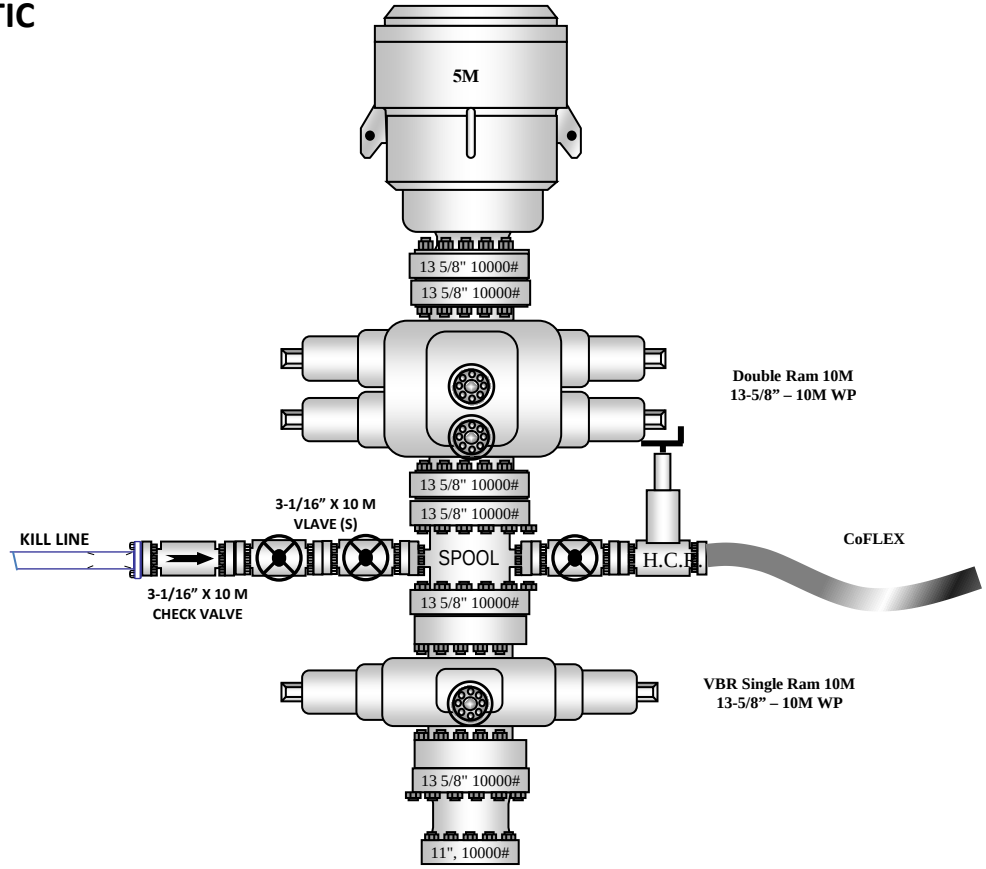


10M BOP Stack

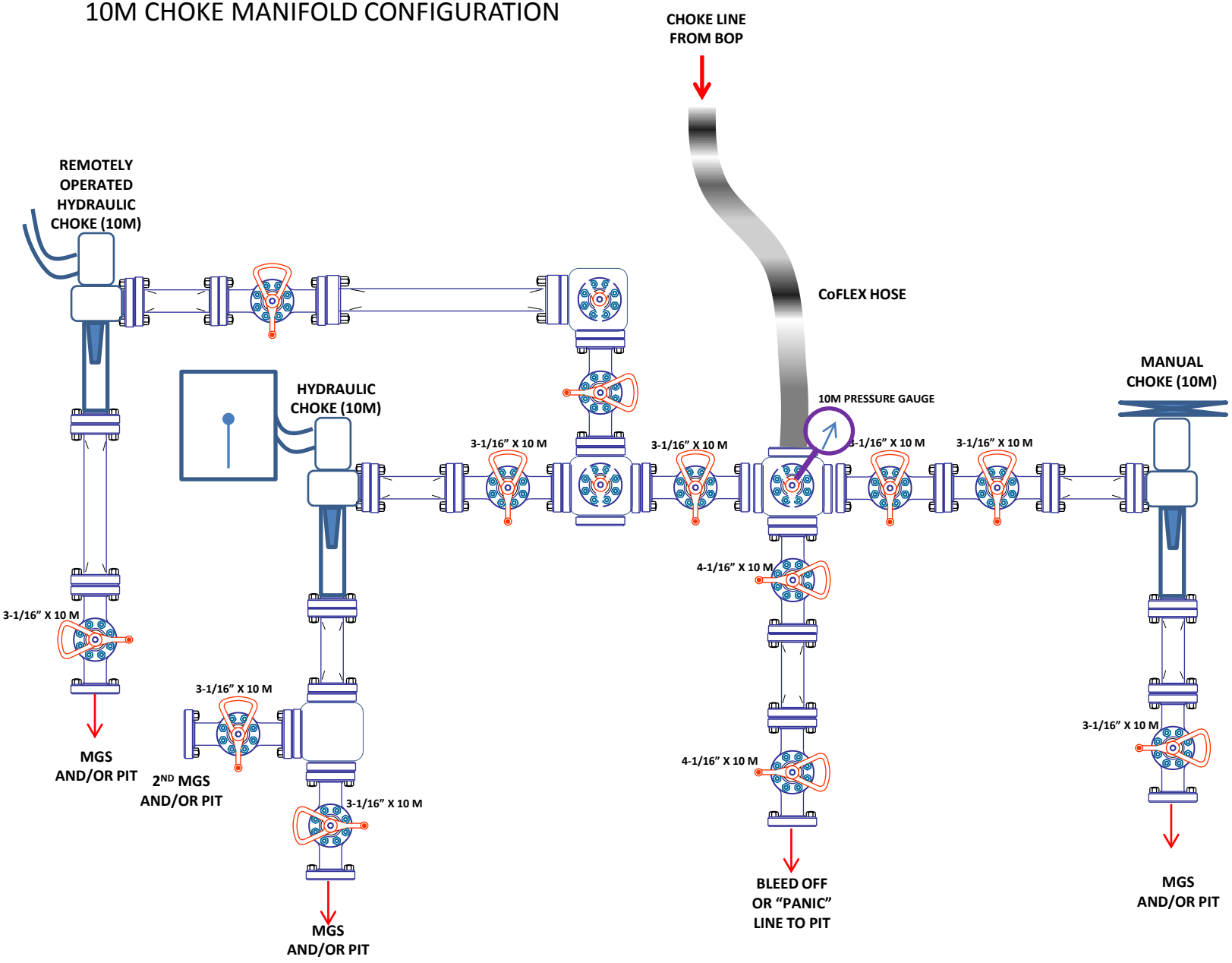
10M REMOTE KILL SCHEMATIC



10M BOP Stack
(5M Annular)



10M CHOKE MANIFOLD CONFIGURATION



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 Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 66668

CONDITIONS

Operator: COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701	OGRID: 229137
	Action Number: 66668
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
pkautz	Will require a File As Drilled C-102 and a Directional Survey with the C-104	12/21/2021
pkautz	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string	12/21/2021
pkautz	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system	12/21/2021
pkautz	Cement is required to circulate on both surface and intermediate1 strings of casing	12/21/2021