

Form 3160-3
(June 2015)FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM92757
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: ☐ Hydraulic Fracturing ☒ Single Zone ☐ Multiple Zone		7. If Unit or CA Agreement, Name and No. NMNM140216X/TOMAHAWK WC UNIT
2. Name of Operator COG OPERATING LLC		8. Lease Name and Well No. TOMAHAWK WC UNIT 722H
3a. Address 600 West Illinois Ave, Midland, TX 79701	3b. Phone No. (include area code) (432) 683-7443	9. API Well No.
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface SWSE / 500 FSL / 1430 FEL / LAT 32.1973 / LONG -104.122842 At proposed prod. zone SWSE / 200 FSL / 2134 FEL / LAT 32.167087 / LONG -104.125112		10. Field and Pool, or Exploratory PURPLE SAGE/WOLFCAMP GAS
11. Sec., T. R. M. or Blk. and Survey or Area SEC 19/T24S/R28E/NMP		
14. Distance in miles and direction from nearest town or post office* 3 miles		12. County or Parish EDDY
13. State NM		
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 200 feet	16. No of acres in lease	17. Spacing Unit dedicated to this well 1283.96
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 30 feet	19. Proposed Depth 9366 feet / 20115 feet	20. BLM/BIA Bond No. in file FED: NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3074 feet	22. Approximate date work will start* 01/01/2025	23. Estimated duration 30 days
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. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 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). | 6. Such other site specific information and/or plans as may be requested by the BLM. |

25. Signature (Electronic Submission)	Name (Printed/Typed) MAYTE REYES / Ph: (432) 683-7443	Date 07/17/2023
Title Regulatory Analyst		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) CODY LAYTON / Ph: (575) 234-5959	Date 04/29/2024
Title Assistant Field Manager Lands & Minerals		
Office Carlsbad Field 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.

(Continued on page 2)

*(Instructions on page 2)



INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM connects this information to an evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

Additional Operator Remarks

Location of Well

0. SHL: SWSE / 500 FSL / 1430 FEL / TWSP: 24S / RANGE: 28E / SECTION: 19 / LAT: 32.1973 / LONG: -104.122842 (TVD: 0 feet, MD: 0 feet)

PPP: NWNE / 10 FNL / 2134 FEL / TWSP: 24S / RANGE: 28E / SECTION: 30 / LAT: 32.19587 / LONG: -104.12511 (TVD: 9330 feet, MD: 9645 feet)

BHL: SWSE / 200 FSL / 2134 FEL / TWSP: 24S / RANGE: 28E / SECTION: 31 / LAT: 32.167087 / LONG: -104.125112 (TVD: 9366 feet, MD: 20115 feet)

BLM Point of Contact

Name: JANET D ESTES

Title: ADJUDICATOR

Phone: (575) 234-6233

Email: JESTES@BLM.GOV

CONFIDENTIAL

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

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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) 746-1283 Fax: (575) 746-9720

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 30-015-	Pool Code 98220	Pool Name Purple Sage; Wolfcamp (Gas)
Property Code	Property Name TOMAHAWK WC UNIT	Well Number 722H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3074.2'

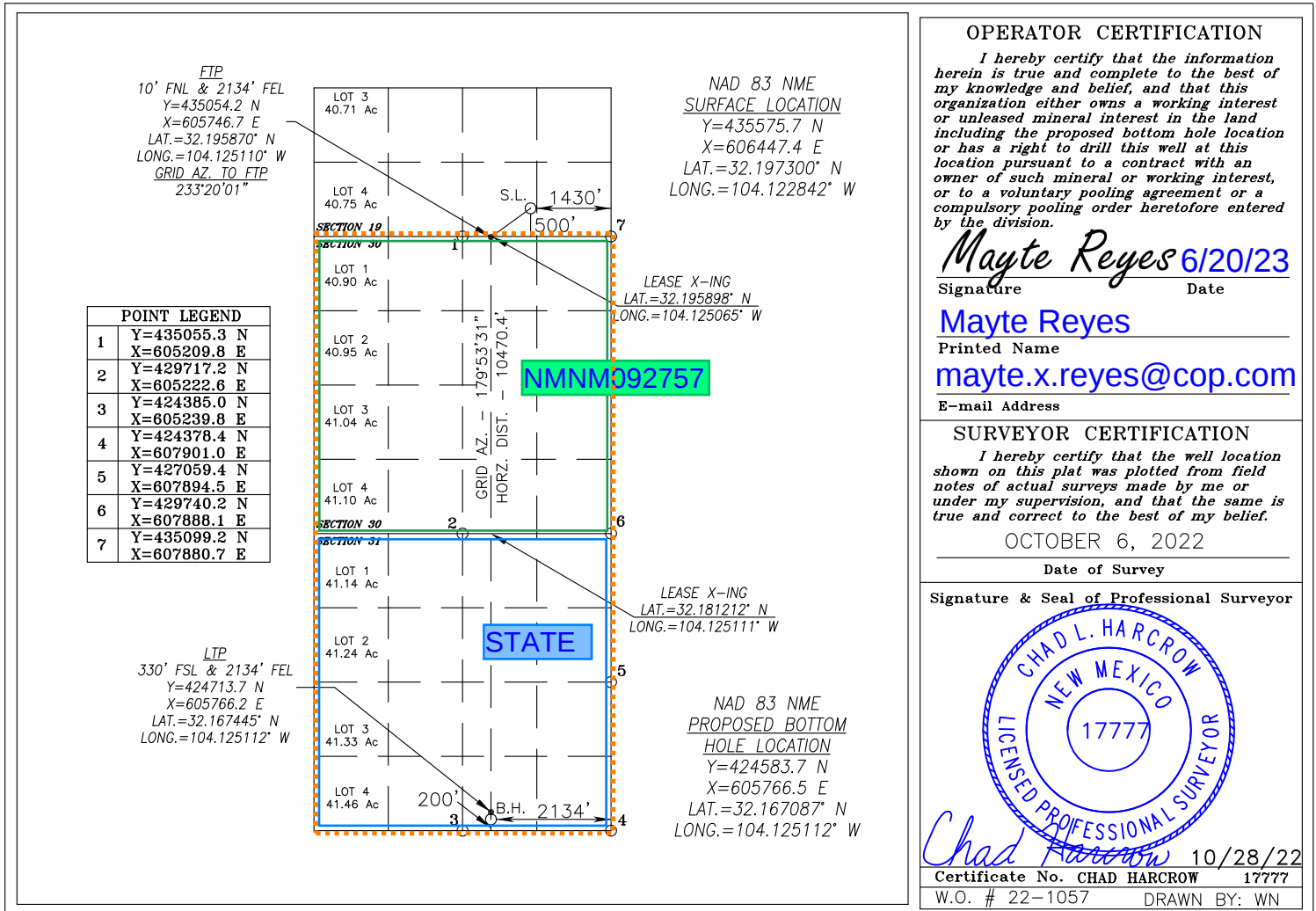
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
0	19	24-S	28-E		500	SOUTH	1430	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
0	31	24-S	28-E		200	SOUTH	2134	EAST	EDDY
Dedicated Acres 1283.96	Joint or Infill	Consolidation Code	Order No.						

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



As per LR2000 Section 30: Lot 1 40.22, Lot 2 40.27, Lot 3 40.32 and Lot 4 40.37.

Section 31: Lot 1 40.47, Lot 2 40.62, Lot 3 40.77 and Lot 4 40.92

State of New Mexico
Energy, Minerals and Natural Resources DepartmentSubmit Electronically
Via E-permittingOil 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:** 6 / 20/ 23**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
Tomahawk WC Unit 722H	30-015-	O-19-24S-28E	500 FSL & 1430 FEL	± 1720	± 5733	± 6732

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
Tomahawk WC Unit 722H	Pending	3/19/2025	± 25 days from spud	7/17/2025	7/27/2025	8/1/2025

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:

All ConocoPhillips production facility equipment will be sized per industry standards (API 12J) with adequate retention time to effectively separate all phases of production. Each project will take into consideration the number of wells and type curves for each formation pool to ensure adequate facility capacity. Design considerations will also include review of all piping, tanks, VRU's and associated equipment to ensure optimized gas capture minimized risk of release.

VII. Operational Practices

Actions Operator will take to comply with the requirements below:

B. Drilling Operations

- During drilling, flare stacks will be located a minimum of 100 feet from the nearest surface hole location. All gas is captured or combusted. If an emergency or malfunction occurs, gas will be flared or vented for public health, safety, and the environment and be properly reported to the NMOCD pursuant to 19.15.27.8.G.
- Measure or estimate the volume of natural gas that is vented, flared or beneficially used during drilling, completion and production operations, regardless of the reason or authorization for such venting or flaring.

C. Completion Operations

- During completion operations, operator does not produce oil or gas but maintains adequate well control through completion operations.
- Individual well test separators will be set to properly separate gas and liquids. A temporary test separator will be utilized initially to process volumes. In addition, separators will be tied into flowback tanks which will be tied into the gas processing equipment for sales down a pipeline.

D. Venting and flaring during production operations

- During each phase of well life (drilling, completion and production) of a ConocoPhillips well, COP personnel will follow all necessary procedures to ensure both the operation and the equipment are within the NMAC 19.15.27.8 Subsection D guidelines.
- During well operations that require unloading of the well to atmospheric pressure, all reasonable actions will be taken to minimize vented gas
- Through the life of the well all flaring shall be measured, and venting events quantified using the data available and industry best practice.

E. Performance standards for separation, storage tank and flare equipment

- All storage tanks and separation equipment are designed minimize risk of liquid or vapor release and optimize gas capture. This includes automation for automatic gauging and pressure monitoring.

- All flare stacks are equipped with auto ignition devices and/or continuous pilots and are designed to operate at maximum combustion efficiency pursuant NMAC 19.15.27.8 Subsection E. Flares will follow COP spacing guidelines to ensure they are a safe distance from combustibles and operations equipment.
- COP personnel will conduct routine AVO inspections on a regular basis per NMAC 19.15.27.8 Subsection E guidelines.

F. Measurement of vented and flared natural gas.

- Measurement equipment will be installed to quantify gas flared during drilling, completion and production of the well.
- All measurement devices installed will meet accuracy ratings per AGA and API standards.
- Measurement devices will be installed without manifolds that allow diversion of gas around the metering element, except for the sole purpose of inspection of servicing the measurement device.

VIII. Best Management Practices

- Operator will curtail or shut in production, within reasonable limits, during upset conditions to minimize venting and flaring.
- When feasible, Operator will use equipment to capture gas that would otherwise be vented or flared.
- During completions and production operations Operator will minimize blowdowns to atmosphere
- When feasible, Operator will use electric or air actuated equipment to reduce bleed emissions

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: <i>Mayte Reyes</i>
Printed Name: Mayte Reyes
Title: Sr. Regulatory Coordinator
E-mail Address: mayte.x.reyes@conocophillips.com
Date: 6/20/2023
Phone: 575-748-6945
OIL CONSERVATION DIVISION (Only applicable when submitted as a standalone form)
Approved By:
Title:
Approval Date:
Conditions of Approval:



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

Drilling Plan Data Report

09/04/2024

APD ID: 10400093483

Submission Date: 07/17/2023

Highlighted data
reflects the most
recent changes

Operator Name: COG OPERATING LLC

Well Name: TOMAHAWK WC UNIT

Well Number: 722H

Well Type: OIL WELL

Well Work Type: Drill

[Show Final Text](#)

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
13332652	QUATERNARY	3074	0	0	ALLUVIUM	NONE	N
13332647	RUSTLER	2571	503	503	ANHYDRITE	USEABLE WATER	N
13332648	TOP SALT	2207	867	867	SALT	NONE	N
13332657	BASE OF SALT	803	2271	2271	SALT	NONE	N
13332650	LAMAR	586	2488	2488	LIMESTONE	NONE	N
13332651	BELL CANYON	549	2525	2525	SANDSTONE	NONE	N
13332658	CHERRY CANYON	-245	3319	3319	SANDSTONE	NATURAL GAS, OIL	N
13332659	BRUSHY CANYON	-1292	4366	4366	SANDSTONE	NATURAL GAS, OIL	N
13332660	BONE SPRING	-2889	5963	5963	SANDSTONE	NATURAL GAS, OIL	N
13332661	BONE SPRING 1ST	-3901	6975	6975	SANDSTONE	NATURAL GAS, OIL	N
13332662	BONE SPRING 2ND	-4509	7583	7583	SANDSTONE	NATURAL GAS, OIL	N
13332654	BONE SPRING 3RD	-5791	8865	8865	SANDSTONE	NATURAL GAS, OIL	N
13332649	WOLFCAMP	-6153	9227	9227	SHALE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Operator Name: COG OPERATING LLC**Well Name:** TOMAHAWK WC UNIT**Well Number:** 722H**Pressure Rating (PSI):** 10M**Rating Depth:** 9366

Equipment: BOP and BOPE will be installed per Onshore Order #2 requirements prior to drilling below the surface casing and will be rated to the above pressure rating or greater, see attached diagrams. Required safety valves, with appropriate wrenches and subs for the drill string being utilized, will be in the open position and accessible on the rig floor.

Requesting Variance? YES

Variance request: 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. 5M Annular variance requested. A variance is requested to use a multibowl wellhead.

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.

Choke Diagram Attachment:

COG_Tomahawk_10M_Choke_20230621073357.pdf

BOP Diagram Attachment:

COG_Tomahawk_10M_BOP_20230621073410.pdf

COG_Tomahawk_Flex_Hose_Variance_20230621073442.pdf

Pressure Rating (PSI): 5M**Rating Depth:** 8800

Equipment: BOP and BOPE will be installed per Onshore Order #2 requirements prior to drilling below the surface casing and will be rated to the above pressure rating or greater, see attached diagrams. Required safety valves, with appropriate wrenches and subs for the drill string being utilized, will be in the open position and accessible on the rig floor.

Requesting Variance? YES

Variance request: 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. 5M Variance is requested. A variance is requested to use a multibowl wellhead.

Testing Procedure: The BOP and BOPE will be fully tested per Onshore Order #2 when initially installed, whenever any seal subject to test pressure is broken, and/or following related repairs.

Choke Diagram Attachment:

COG_Tomahawk_5M_Choke_20230621073230.pdf

BOP Diagram Attachment:

COG_Tomahawk_5M_BOP_20230621073254.pdf

COG_Tomahawk_Flex_Hose_Variance_20230621073255.pdf

Operator Name: COG OPERATING LLC

Well Name: TOMAHAWK WC UNIT

Well Number: 722H

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	817	0	817	3074	2257	817	J-55	45.5	OTHER - BTC	5.59	1.48	DRY	21.41	DRY	19.23
2	INTERMEDIATE	8.75	7.625	NEW	API	Y	0	8800	0	8800	3585	-5726	8800	OTHER	29.7	OTHER - W513	1.66	2.15	DRY	2.45	DRY	4.09
3	PRODUCTION	6.75	5.5	NEW	API	Y	0	20115	0	9366	3585	-6292	20115	OTHER	23	OTHER - W441	2.39	2.82	DRY	3.07	DRY	3.38

Casing Attachments

Casing ID: 1

String

SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Tomahawk_722H_Casing_Program_20230717161658.pdf

Operator Name: COG OPERATING LLC

Well Name: TOMAHAWK WC UNIT

Well Number: 722H

Casing Attachments

Casing ID: 2StringINTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Tomahawk_722H_Casing_Program_20230717161737.pdf

Casing Design Assumptions and Worksheet(s):

COG_Tomahawk_722H_Casing_Program_20230717161801.pdf

Casing ID: 3StringPRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Tomahawk_722H_Casing_Program_20230717161558.pdf

Casing Design Assumptions and Worksheet(s):

COG_Tomahawk_722H_Casing_Program_20230717161628.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	817	390	1.73	13.5	674	50	Class C + 4% Gel + 1% CaCl2	As needed
SURFACE	Tail		817	817	250	1.35	14.8	337	50	Class C + 2% CaCl2	As needed
INTERMEDIATE	Lead		8800	8800	590	3.6	10.5	2124	50	NeoCem-C	As needed
INTERMEDIATE	Tail		8800	8800	220	1.35	14.8	297	50	HalCem-C	As needed
PRODUCTION	Lead		9366	20115	450	1.71	12.5	769	25	VersaCem	As needed

Operator Name: COG OPERATING LLC

Well Name: TOMAHAWK WC UNIT

Well Number: 722H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Tail		9366	20115	830	1.48	13.2	1228	25	NeoCem-C	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
817	8800	OTHER : Diesel Brine Emulsion	8.4	9.7							Diesel Brine Emulsion
8800	20115	OIL-BASED MUD	11	12.5							OBM
0	817	OTHER : Fresh water gel	8.6	8.8							Fresh water gel

Operator Name: COG OPERATING LLC**Well Name:** TOMAHAWK WC UNIT**Well Number:** 722H

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: 6090**Anticipated Surface Pressure:** 4029**Anticipated Bottom Hole Temperature(F):** 150**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** NO**Describe:****Contingency Plans geohazards description:****Contingency Plans geohazards****Hydrogen Sulfide drilling operations plan required?** YES**Hydrogen sulfide drilling operations**

COG_Tomahawk_H2S_SUP_20230717144406.pdf

COG_Tomahawk_H2S_Schem_20230717144406.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

COG_Tomahawk_722H_Directional_Plan_20230717162417.pdf

COG_Tomahawk_722H_AC_RPT_20230717162417.pdf

Other proposed operations facets description:

Drilling Plan attached.

GCP attached.

Cement Plan attached.

Other proposed operations facets attachment:

COG_Tomahawk_722H_Casing_Program_20230717162502.pdf

COG_Tomahawk_722H_Drilling_Program_20230717162502.pdf

COG_Tomahawk_722H_Cement_Program_20230717162503.pdf

COG_Tomahawk_722H_GCP_20230717162503.pdf

API_BTC_10.750_0.400_J55_Casing_11092022_20230621084615.pdf

API_BTC_7.625_0.375_L80_ICY_11092022_20230621084613.pdf

TXP_BTC_5.500_0.415_P110_CY_11092022_20230621084615.pdf

Wedge_441_5.500_0.415_P110_CY_11092022_20230621084615.pdf

Operator Name: COG OPERATING LLC

Well Name: TOMAHAWK WC UNIT

Well Number: 722H

Wedge_513_7.625_0.375_P110_ICY_11092022_20230621084616.pdf

Other Variance attachment:

COG_6.75_5M_Variance_WCP_20230621084732.pdf

CONFIDENTIAL

DELAWARE BASIN WEST

TOMAHAWK PROSPECT (NM-E)

TOMAHAWK WC UNIT S19-30-31 R24S T28E

TOMAHAWK WC UNIT #722H

OWB

Plan: PWP1

Standard Planning Report

18 May, 2023

ConocoPhillips
Planning Report

Database:	EDT 17 Central Planning Prod	Local Co-ordinate Reference:	Well TOMAHAWK WC UNIT #722H
Company:	DELAWARE BASIN WEST	TVD Reference:	RKB=32ft @ 3106.2usft
Project:	TOMAHAWK PROSPECT (NM-E)	MD Reference:	RKB=32ft @ 3106.2usft
Site:	TOMAHAWK WC UNIT S19-30-31 R24S T28E	North Reference:	Grid
Well:	TOMAHAWK WC UNIT #722H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWP1		

Project	TOMAHAWK 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		

Site	TOMAHAWK WC UNIT S19-30-31 R24S T28E		
Site Position:		Northing:	429,658.13 usft
From:	Map	Easting:	564,040.01 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 10' 51.880 N
		Longitude:	104° 7' 34.829 W

Well	TOMAHAWK WC UNIT #722H					
Well Position	+N/-S	0.0 usft	Northing:	435,517.50 usft	Latitude:	32° 11' 49.843 N
	+E/-W	0.0 usft	Easting:	565,264.00 usft	Longitude:	104° 7' 20.453 W
Position Uncertainty		3.0 usft	Wellhead Elevation:	usft	Ground Level:	3,074.2 usft
Grid Convergence:		0.11 °				

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2023	9/1/2024	6.70	59.79	47,258.21844794

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	183.55

Plan Survey Tool Program		Date	5/18/2023		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.0	1,500.0 PWP1 (OWB)	r.5 SDI_KPR_WL_NS-CT SDI Keeper Wireline Gyrocomp		
2	1,500.0	8,911.9 PWP1 (OWB)	r.5 MWD+IFR1 OWSG MWD + IFR1 rev.5		
3	8,911.9	20,114.9 PWP1 (OWB)	r.5 MWD+IFR1+MS OWSG MWD + IFR1 + Multi-St		

ConocoPhillips

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Well:	TOMAHAWK WC UNIT #722H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWP1		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,050.0	11.00	265.00	2,046.6	-4.6	-52.4	2.00	2.00	0.00	265.00	
4,360.8	11.00	265.00	4,315.0	-43.0	-491.7	0.00	0.00	0.00	0.00	
6,560.8	0.00	0.00	6,501.5	-61.4	-701.4	0.50	-0.50	0.00	180.00	
8,911.9	0.00	0.00	8,852.5	-61.4	-701.4	0.00	0.00	0.00	0.00	
9,660.2	89.80	179.89	9,330.0	-537.2	-700.5	12.00	12.00	24.04	179.89	
19,984.9	89.80	179.89	9,365.6	-10,861.8	-681.3	0.00	0.00	0.00	0.00	
20,114.9	89.80	179.89	9,366.0	-10,991.8	-681.1	0.00	0.00	0.00	0.00	

ConocoPhillips

Planning Report

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Project:	TOMAHAWK PROSPECT (NM-E)	MD Reference:	RKB=32ft @ 3106.2usft
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Well:	TOMAHAWK WC UNIT #722H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWP1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 2.00									
1,600.0	2.00	265.00	1,600.0	-0.2	-1.7	0.3	2.00	2.00	0.00
1,700.0	4.00	265.00	1,699.8	-0.6	-7.0	1.0	2.00	2.00	0.00
1,800.0	6.00	265.00	1,799.5	-1.4	-15.6	2.3	2.00	2.00	0.00
1,900.0	8.00	265.00	1,898.7	-2.4	-27.8	4.1	2.00	2.00	0.00
2,000.0	10.00	265.00	1,997.5	-3.8	-43.4	6.5	2.00	2.00	0.00
2,050.0	11.00	265.00	2,046.6	-4.6	-52.4	7.8	2.00	2.00	0.00
Start 2310.8 hold at 2050.0 MD									
2,100.0	11.00	265.00	2,095.7	-5.4	-61.9	9.2	0.00	0.00	0.00
2,200.0	11.00	265.00	2,193.9	-7.1	-80.9	12.1	0.00	0.00	0.00
2,300.0	11.00	265.00	2,292.0	-8.7	-100.0	14.9	0.00	0.00	0.00
2,400.0	11.00	265.00	2,390.2	-10.4	-119.0	17.7	0.00	0.00	0.00
2,500.0	11.00	265.00	2,488.4	-12.1	-138.0	20.6	0.00	0.00	0.00
2,600.0	11.00	265.00	2,586.5	-13.7	-157.0	23.4	0.00	0.00	0.00
2,700.0	11.00	265.00	2,684.7	-15.4	-176.0	26.3	0.00	0.00	0.00
2,800.0	11.00	265.00	2,782.8	-17.1	-195.0	29.1	0.00	0.00	0.00
2,900.0	11.00	265.00	2,881.0	-18.7	-214.0	31.9	0.00	0.00	0.00
3,000.0	11.00	265.00	2,979.2	-20.4	-233.0	34.8	0.00	0.00	0.00
3,100.0	11.00	265.00	3,077.3	-22.0	-252.0	37.6	0.00	0.00	0.00
3,200.0	11.00	265.00	3,175.5	-23.7	-271.0	40.4	0.00	0.00	0.00
3,300.0	11.00	265.00	3,273.7	-25.4	-290.0	43.3	0.00	0.00	0.00
3,400.0	11.00	265.00	3,371.8	-27.0	-309.0	46.1	0.00	0.00	0.00
3,500.0	11.00	265.00	3,470.0	-28.7	-328.1	48.9	0.00	0.00	0.00
3,600.0	11.00	265.00	3,568.1	-30.4	-347.1	51.8	0.00	0.00	0.00
3,700.0	11.00	265.00	3,666.3	-32.0	-366.1	54.6	0.00	0.00	0.00
3,800.0	11.00	265.00	3,764.5	-33.7	-385.1	57.4	0.00	0.00	0.00
3,900.0	11.00	265.00	3,862.6	-35.4	-404.1	60.3	0.00	0.00	0.00
4,000.0	11.00	265.00	3,960.8	-37.0	-423.1	63.1	0.00	0.00	0.00
4,100.0	11.00	265.00	4,059.0	-38.7	-442.1	65.9	0.00	0.00	0.00
4,200.0	11.00	265.00	4,157.1	-40.3	-461.1	68.8	0.00	0.00	0.00
4,300.0	11.00	265.00	4,255.3	-42.0	-480.1	71.6	0.00	0.00	0.00
4,360.8	11.00	265.00	4,315.0	-43.0	-491.7	73.3	0.00	0.00	0.00
Start Drop -0.50									
4,400.0	10.80	265.00	4,353.5	-43.7	-499.1	74.4	0.50	-0.50	0.00
4,500.0	10.30	265.00	4,451.8	-45.3	-517.3	77.2	0.50	-0.50	0.00
4,600.0	9.80	265.00	4,550.2	-46.8	-534.7	79.8	0.50	-0.50	0.00
4,700.0	9.30	265.00	4,648.8	-48.2	-551.2	82.2	0.50	-0.50	0.00

ConocoPhillips

Planning Report

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Company:	DELAWARE BASIN WEST	TVD Reference:	RKB=32ft @ 3106.2usft
Project:	TOMAHAWK PROSPECT (NM-E)	MD Reference:	RKB=32ft @ 3106.2usft
Site:	TOMAHAWK WC UNIT S19-30-31 R24S T28E	North Reference:	Grid
Well:	TOMAHAWK WC UNIT #722H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWP1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,800.0	8.80	265.00	4,747.6	-49.6	-566.9	84.6	0.50	-0.50	0.00
4,900.0	8.30	265.00	4,846.5	-50.9	-581.7	86.8	0.50	-0.50	0.00
5,000.0	7.80	265.00	4,945.5	-52.1	-595.7	88.9	0.50	-0.50	0.00
5,100.0	7.30	265.00	5,044.6	-53.3	-608.8	90.8	0.50	-0.50	0.00
5,200.0	6.80	265.00	5,143.9	-54.3	-621.0	92.6	0.50	-0.50	0.00
5,300.0	6.30	265.00	5,243.2	-55.3	-632.4	94.3	0.50	-0.50	0.00
5,400.0	5.80	265.00	5,342.7	-56.2	-642.9	95.9	0.50	-0.50	0.00
5,500.0	5.30	265.00	5,442.2	-57.1	-652.5	97.3	0.50	-0.50	0.00
5,600.0	4.80	265.00	5,541.8	-57.9	-661.3	98.6	0.50	-0.50	0.00
5,700.0	4.30	265.00	5,641.5	-58.5	-669.2	99.8	0.50	-0.50	0.00
5,800.0	3.80	265.00	5,741.2	-59.2	-676.3	100.9	0.50	-0.50	0.00
5,900.0	3.30	265.00	5,841.0	-59.7	-682.4	101.8	0.50	-0.50	0.00
6,000.0	2.80	265.00	5,940.9	-60.2	-687.7	102.6	0.50	-0.50	0.00
6,100.0	2.30	265.00	6,040.8	-60.6	-692.2	103.3	0.50	-0.50	0.00
6,200.0	1.80	265.00	6,140.7	-60.9	-695.8	103.8	0.50	-0.50	0.00
6,300.0	1.30	265.00	6,240.7	-61.1	-698.5	104.2	0.50	-0.50	0.00
6,400.0	0.80	265.00	6,340.7	-61.3	-700.3	104.5	0.50	-0.50	0.00
6,500.0	0.30	265.00	6,440.7	-61.4	-701.3	104.6	0.50	-0.50	0.00
6,560.8	0.00	0.00	6,501.5	-61.4	-701.4	104.6	0.50	-0.50	0.00
Start 2351.0 hold at 6560.8 MD									
6,600.0	0.00	0.00	6,540.7	-61.4	-701.4	104.6	0.00	0.00	0.00
6,700.0	0.00	0.00	6,640.7	-61.4	-701.4	104.6	0.00	0.00	0.00
6,800.0	0.00	0.00	6,740.7	-61.4	-701.4	104.6	0.00	0.00	0.00
6,900.0	0.00	0.00	6,840.7	-61.4	-701.4	104.6	0.00	0.00	0.00
7,000.0	0.00	0.00	6,940.7	-61.4	-701.4	104.6	0.00	0.00	0.00
7,100.0	0.00	0.00	7,040.7	-61.4	-701.4	104.6	0.00	0.00	0.00
7,200.0	0.00	0.00	7,140.7	-61.4	-701.4	104.6	0.00	0.00	0.00
7,300.0	0.00	0.00	7,240.7	-61.4	-701.4	104.6	0.00	0.00	0.00
7,400.0	0.00	0.00	7,340.7	-61.4	-701.4	104.6	0.00	0.00	0.00
7,500.0	0.00	0.00	7,440.7	-61.4	-701.4	104.6	0.00	0.00	0.00
7,600.0	0.00	0.00	7,540.7	-61.4	-701.4	104.6	0.00	0.00	0.00
7,700.0	0.00	0.00	7,640.7	-61.4	-701.4	104.6	0.00	0.00	0.00
7,800.0	0.00	0.00	7,740.7	-61.4	-701.4	104.6	0.00	0.00	0.00
7,900.0	0.00	0.00	7,840.7	-61.4	-701.4	104.6	0.00	0.00	0.00
8,000.0	0.00	0.00	7,940.7	-61.4	-701.4	104.6	0.00	0.00	0.00
8,100.0	0.00	0.00	8,040.7	-61.4	-701.4	104.6	0.00	0.00	0.00
8,200.0	0.00	0.00	8,140.7	-61.4	-701.4	104.6	0.00	0.00	0.00
8,300.0	0.00	0.00	8,240.7	-61.4	-701.4	104.6	0.00	0.00	0.00
8,400.0	0.00	0.00	8,340.7	-61.4	-701.4	104.6	0.00	0.00	0.00
8,500.0	0.00	0.00	8,440.7	-61.4	-701.4	104.6	0.00	0.00	0.00
8,600.0	0.00	0.00	8,540.7	-61.4	-701.4	104.6	0.00	0.00	0.00
8,700.0	0.00	0.00	8,640.7	-61.4	-701.4	104.6	0.00	0.00	0.00
8,800.0	0.00	0.00	8,740.7	-61.4	-701.4	104.6	0.00	0.00	0.00
8,900.0	0.00	0.00	8,840.7	-61.4	-701.4	104.6	0.00	0.00	0.00
8,911.9	0.00	0.00	8,852.5	-61.4	-701.4	104.6	0.00	0.00	0.00
Start DLS 12.00 TFO 179.89									
8,925.0	1.58	179.89	8,865.7	-61.5	-701.4	104.8	12.00	12.00	0.00
8,950.0	4.58	179.89	8,890.6	-62.9	-701.4	106.1	12.00	12.00	0.00
8,975.0	7.58	179.89	8,915.5	-65.5	-701.4	108.8	12.00	12.00	0.00
9,000.0	10.58	179.89	8,940.2	-69.5	-701.4	112.7	12.00	12.00	0.00
9,025.0	13.58	179.89	8,964.6	-74.7	-701.4	117.9	12.00	12.00	0.00
9,050.0	16.58	179.89	8,988.8	-81.2	-701.4	124.4	12.00	12.00	0.00
9,075.0	19.58	179.89	9,012.5	-89.0	-701.4	132.2	12.00	12.00	0.00

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Wellbore:	OWB		
Design:	PWP1		

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)
9,100.0	22.58	179.89	9,035.8	-98.0	-701.4	141.1	12.00	12.00	0.00
9,125.0	25.58	179.89	9,058.7	-108.2	-701.3	151.3	12.00	12.00	0.00
9,150.0	28.58	179.89	9,080.9	-119.5	-701.3	162.7	12.00	12.00	0.00
9,175.0	31.58	179.89	9,102.6	-132.1	-701.3	175.2	12.00	12.00	0.00
9,200.0	34.58	179.89	9,123.5	-145.7	-701.3	188.8	12.00	12.00	0.00
9,225.0	37.58	179.89	9,143.7	-160.4	-701.2	203.5	12.00	12.00	0.00
9,250.0	40.58	179.89	9,163.1	-176.2	-701.2	219.2	12.00	12.00	0.00
9,275.0	43.58	179.89	9,181.7	-192.9	-701.2	235.9	12.00	12.00	0.00
9,300.0	46.58	179.89	9,199.3	-210.6	-701.1	253.6	12.00	12.00	0.00
9,325.0	49.58	179.89	9,216.0	-229.2	-701.1	272.2	12.00	12.00	0.00
9,350.0	52.58	179.89	9,231.7	-248.7	-701.1	291.6	12.00	12.00	0.00
9,375.0	55.58	179.89	9,246.4	-268.9	-701.0	311.8	12.00	12.00	0.00
9,400.0	58.58	179.89	9,260.0	-289.9	-701.0	332.7	12.00	12.00	0.00
9,425.0	61.58	179.89	9,272.4	-311.6	-701.0	354.3	12.00	12.00	0.00
9,450.0	64.58	179.89	9,283.8	-333.9	-700.9	376.6	12.00	12.00	0.00
9,475.0	67.58	179.89	9,293.9	-356.7	-700.9	399.4	12.00	12.00	0.00
9,500.0	70.58	179.89	9,302.8	-380.1	-700.8	422.7	12.00	12.00	0.00
9,525.0	73.58	179.89	9,310.5	-403.8	-700.8	446.4	12.00	12.00	0.00
9,550.0	76.58	179.89	9,317.0	-428.0	-700.7	470.5	12.00	12.00	0.00
9,575.0	79.58	179.89	9,322.1	-452.5	-700.7	494.9	12.00	12.00	0.00
9,600.0	82.58	179.89	9,326.0	-477.1	-700.6	519.6	12.00	12.00	0.00
9,625.0	85.58	179.89	9,328.6	-502.0	-700.6	544.4	12.00	12.00	0.00
9,650.0	88.58	179.89	9,329.9	-527.0	-700.6	569.3	12.00	12.00	0.00
9,660.2	89.80	179.89	9,330.0	-537.2	-700.5	579.5	12.00	12.00	0.00
Start 10324.7 hold at 9660.2 MD									
9,700.0	89.80	179.89	9,330.1	-577.0	-700.5	619.2	0.00	0.00	0.00
9,800.0	89.80	179.89	9,330.5	-677.0	-700.3	719.0	0.00	0.00	0.00
9,900.0	89.80	179.89	9,330.8	-777.0	-700.1	818.8	0.00	0.00	0.00
10,000.0	89.80	179.89	9,331.2	-877.0	-699.9	918.6	0.00	0.00	0.00
10,100.0	89.80	179.89	9,331.5	-977.0	-699.7	1,018.4	0.00	0.00	0.00
10,200.0	89.80	179.89	9,331.9	-1,077.0	-699.5	1,118.2	0.00	0.00	0.00
10,300.0	89.80	179.89	9,332.2	-1,177.0	-699.3	1,218.0	0.00	0.00	0.00
10,400.0	89.80	179.89	9,332.5	-1,277.0	-699.2	1,317.8	0.00	0.00	0.00
10,500.0	89.80	179.89	9,332.9	-1,377.0	-699.0	1,417.6	0.00	0.00	0.00
10,600.0	89.80	179.89	9,333.2	-1,477.0	-698.8	1,517.4	0.00	0.00	0.00
10,700.0	89.80	179.89	9,333.6	-1,577.0	-698.6	1,617.2	0.00	0.00	0.00
10,800.0	89.80	179.89	9,333.9	-1,677.0	-698.4	1,716.9	0.00	0.00	0.00
10,900.0	89.80	179.89	9,334.3	-1,777.0	-698.2	1,816.7	0.00	0.00	0.00
11,000.0	89.80	179.89	9,334.6	-1,877.0	-698.0	1,916.5	0.00	0.00	0.00
11,100.0	89.80	179.89	9,335.0	-1,977.0	-697.9	2,016.3	0.00	0.00	0.00
11,200.0	89.80	179.89	9,335.3	-2,077.0	-697.7	2,116.1	0.00	0.00	0.00
11,300.0	89.80	179.89	9,335.6	-2,177.0	-697.5	2,215.9	0.00	0.00	0.00
11,400.0	89.80	179.89	9,336.0	-2,277.0	-697.3	2,315.7	0.00	0.00	0.00
11,500.0	89.80	179.89	9,336.3	-2,377.0	-697.1	2,415.5	0.00	0.00	0.00
11,600.0	89.80	179.89	9,336.7	-2,477.0	-696.9	2,515.3	0.00	0.00	0.00
11,700.0	89.80	179.89	9,337.0	-2,577.0	-696.7	2,615.1	0.00	0.00	0.00
11,800.0	89.80	179.89	9,337.4	-2,677.0	-696.5	2,714.9	0.00	0.00	0.00
11,900.0	89.80	179.89	9,337.7	-2,777.0	-696.4	2,814.7	0.00	0.00	0.00
12,000.0	89.80	179.89	9,338.1	-2,877.0	-696.2	2,914.5	0.00	0.00	0.00
12,100.0	89.80	179.89	9,338.4	-2,977.0	-696.0	3,014.3	0.00	0.00	0.00
12,200.0	89.80	179.89	9,338.7	-3,077.0	-695.8	3,114.1	0.00	0.00	0.00
12,300.0	89.80	179.89	9,339.1	-3,177.0	-695.6	3,213.9	0.00	0.00	0.00
12,400.0	89.80	179.89	9,339.4	-3,277.0	-695.4	3,313.7	0.00	0.00	0.00

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Planning Report

Database:	EDT 17 Central Planning Prod	Local Co-ordinate Reference:	Well TOMAHAWK WC UNIT #722H
Company:	DELAWARE BASIN WEST	TVD Reference:	RKB=32ft @ 3106.2usft
Project:	TOMAHAWK PROSPECT (NM-E)	MD Reference:	RKB=32ft @ 3106.2usft
Site:	TOMAHAWK WC UNIT S19-30-31 R24S T28E	North Reference:	Grid
Well:	TOMAHAWK WC UNIT #722H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWP1		

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)
12,500.0	89.80	179.89	9,339.8	-3,377.0	-695.2	3,413.5	0.00	0.00	0.00
12,600.0	89.80	179.89	9,340.1	-3,477.0	-695.1	3,513.3	0.00	0.00	0.00
12,700.0	89.80	179.89	9,340.5	-3,576.9	-694.9	3,613.1	0.00	0.00	0.00
12,800.0	89.80	179.89	9,340.8	-3,676.9	-694.7	3,712.9	0.00	0.00	0.00
12,900.0	89.80	179.89	9,341.2	-3,776.9	-694.5	3,812.7	0.00	0.00	0.00
13,000.0	89.80	179.89	9,341.5	-3,876.9	-694.3	3,912.5	0.00	0.00	0.00
13,100.0	89.80	179.89	9,341.8	-3,976.9	-694.1	4,012.3	0.00	0.00	0.00
13,200.0	89.80	179.89	9,342.2	-4,076.9	-693.9	4,112.1	0.00	0.00	0.00
13,300.0	89.80	179.89	9,342.5	-4,176.9	-693.8	4,211.9	0.00	0.00	0.00
13,400.0	89.80	179.89	9,342.9	-4,276.9	-693.6	4,311.7	0.00	0.00	0.00
13,500.0	89.80	179.89	9,343.2	-4,376.9	-693.4	4,411.4	0.00	0.00	0.00
13,600.0	89.80	179.89	9,343.6	-4,476.9	-693.2	4,511.2	0.00	0.00	0.00
13,700.0	89.80	179.89	9,343.9	-4,576.9	-693.0	4,611.0	0.00	0.00	0.00
13,800.0	89.80	179.89	9,344.3	-4,676.9	-692.8	4,710.8	0.00	0.00	0.00
13,900.0	89.80	179.89	9,344.6	-4,776.9	-692.6	4,810.6	0.00	0.00	0.00
14,000.0	89.80	179.89	9,344.9	-4,876.9	-692.4	4,910.4	0.00	0.00	0.00
14,100.0	89.80	179.89	9,345.3	-4,976.9	-692.3	5,010.2	0.00	0.00	0.00
14,200.0	89.80	179.89	9,345.6	-5,076.9	-692.1	5,110.0	0.00	0.00	0.00
14,300.0	89.80	179.89	9,346.0	-5,176.9	-691.9	5,209.8	0.00	0.00	0.00
14,400.0	89.80	179.89	9,346.3	-5,276.9	-691.7	5,309.6	0.00	0.00	0.00
14,500.0	89.80	179.89	9,346.7	-5,376.9	-691.5	5,409.4	0.00	0.00	0.00
14,600.0	89.80	179.89	9,347.0	-5,476.9	-691.3	5,509.2	0.00	0.00	0.00
14,700.0	89.80	179.89	9,347.4	-5,576.9	-691.1	5,609.0	0.00	0.00	0.00
14,800.0	89.80	179.89	9,347.7	-5,676.9	-691.0	5,708.8	0.00	0.00	0.00
14,900.0	89.80	179.89	9,348.0	-5,776.9	-690.8	5,808.6	0.00	0.00	0.00
15,000.0	89.80	179.89	9,348.4	-5,876.9	-690.6	5,908.4	0.00	0.00	0.00
15,100.0	89.80	179.89	9,348.7	-5,976.9	-690.4	6,008.2	0.00	0.00	0.00
15,200.0	89.80	179.89	9,349.1	-6,076.9	-690.2	6,108.0	0.00	0.00	0.00
15,300.0	89.80	179.89	9,349.4	-6,176.9	-690.0	6,207.8	0.00	0.00	0.00
15,400.0	89.80	179.89	9,349.8	-6,276.9	-689.8	6,307.6	0.00	0.00	0.00
15,500.0	89.80	179.89	9,350.1	-6,376.9	-689.7	6,407.4	0.00	0.00	0.00
15,600.0	89.80	179.89	9,350.5	-6,476.9	-689.5	6,507.2	0.00	0.00	0.00
15,700.0	89.80	179.89	9,350.8	-6,576.9	-689.3	6,607.0	0.00	0.00	0.00
15,800.0	89.80	179.89	9,351.1	-6,676.9	-689.1	6,706.8	0.00	0.00	0.00
15,900.0	89.80	179.89	9,351.5	-6,776.9	-688.9	6,806.6	0.00	0.00	0.00
16,000.0	89.80	179.89	9,351.8	-6,876.9	-688.7	6,906.4	0.00	0.00	0.00
16,100.0	89.80	179.89	9,352.2	-6,976.9	-688.5	7,006.2	0.00	0.00	0.00
16,200.0	89.80	179.89	9,352.5	-7,076.9	-688.4	7,105.9	0.00	0.00	0.00
16,300.0	89.80	179.89	9,352.9	-7,176.9	-688.2	7,205.7	0.00	0.00	0.00
16,400.0	89.80	179.89	9,353.2	-7,276.9	-688.0	7,305.5	0.00	0.00	0.00
16,500.0	89.80	179.89	9,353.6	-7,376.9	-687.8	7,405.3	0.00	0.00	0.00
16,600.0	89.80	179.89	9,353.9	-7,476.9	-687.6	7,505.1	0.00	0.00	0.00
16,700.0	89.80	179.89	9,354.2	-7,576.9	-687.4	7,604.9	0.00	0.00	0.00
16,800.0	89.80	179.89	9,354.6	-7,676.9	-687.2	7,704.7	0.00	0.00	0.00
16,900.0	89.80	179.89	9,354.9	-7,776.9	-687.0	7,804.5	0.00	0.00	0.00
17,000.0	89.80	179.89	9,355.3	-7,876.9	-686.9	7,904.3	0.00	0.00	0.00
17,100.0	89.80	179.89	9,355.6	-7,976.9	-686.7	8,004.1	0.00	0.00	0.00
17,200.0	89.80	179.89	9,356.0	-8,076.9	-686.5	8,103.9	0.00	0.00	0.00
17,300.0	89.80	179.89	9,356.3	-8,176.9	-686.3	8,203.7	0.00	0.00	0.00
17,400.0	89.80	179.89	9,356.7	-8,276.9	-686.1	8,303.5	0.00	0.00	0.00
17,500.0	89.80	179.89	9,357.0	-8,376.9	-685.9	8,403.3	0.00	0.00	0.00
17,600.0	89.80	179.89	9,357.3	-8,476.9	-685.7	8,503.1	0.00	0.00	0.00
17,700.0	89.80	179.89	9,357.7	-8,576.9	-685.6	8,602.9	0.00	0.00	0.00

ConocoPhillips
Planning Report

Database:	EDT 17 Central Planning Prod	Local Co-ordinate Reference:	Well TOMAHAWK WC UNIT #722H
Company:	DELAWARE BASIN WEST	TVD Reference:	RKB=32ft @ 3106.2usft
Project:	TOMAHAWK PROSPECT (NM-E)	MD Reference:	RKB=32ft @ 3106.2usft
Site:	TOMAHAWK WC UNIT S19-30-31 R24S T28E	North Reference:	Grid
Well:	TOMAHAWK WC UNIT #722H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWP1		

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)
17,800.0	89.80	179.89	9,358.0	-8,676.9	-685.4	8,702.7	0.00	0.00	0.00
17,900.0	89.80	179.89	9,358.4	-8,776.9	-685.2	8,802.5	0.00	0.00	0.00
18,000.0	89.80	179.89	9,358.7	-8,876.9	-685.0	8,902.3	0.00	0.00	0.00
18,100.0	89.80	179.89	9,359.1	-8,976.9	-684.8	9,002.1	0.00	0.00	0.00
18,200.0	89.80	179.89	9,359.4	-9,076.9	-684.6	9,101.9	0.00	0.00	0.00
18,300.0	89.80	179.89	9,359.8	-9,176.9	-684.4	9,201.7	0.00	0.00	0.00
18,400.0	89.80	179.89	9,360.1	-9,276.9	-684.3	9,301.5	0.00	0.00	0.00
18,500.0	89.80	179.89	9,360.4	-9,376.9	-684.1	9,401.3	0.00	0.00	0.00
18,600.0	89.80	179.89	9,360.8	-9,476.9	-683.9	9,501.1	0.00	0.00	0.00
18,700.0	89.80	179.89	9,361.1	-9,576.9	-683.7	9,600.9	0.00	0.00	0.00
18,800.0	89.80	179.89	9,361.5	-9,676.9	-683.5	9,700.7	0.00	0.00	0.00
18,900.0	89.80	179.89	9,361.8	-9,776.9	-683.3	9,800.4	0.00	0.00	0.00
19,000.0	89.80	179.89	9,362.2	-9,876.9	-683.1	9,900.2	0.00	0.00	0.00
19,100.0	89.80	179.89	9,362.5	-9,976.9	-682.9	10,000.0	0.00	0.00	0.00
19,200.0	89.80	179.89	9,362.8	-10,076.9	-682.8	10,099.8	0.00	0.00	0.00
19,300.0	89.80	179.89	9,363.2	-10,176.9	-682.6	10,199.6	0.00	0.00	0.00
19,400.0	89.80	179.89	9,363.5	-10,276.9	-682.4	10,299.4	0.00	0.00	0.00
19,500.0	89.80	179.89	9,363.9	-10,376.9	-682.2	10,399.2	0.00	0.00	0.00
19,600.0	89.80	179.89	9,364.2	-10,476.9	-682.0	10,499.0	0.00	0.00	0.00
19,700.0	89.80	179.89	9,364.6	-10,576.9	-681.8	10,598.8	0.00	0.00	0.00
19,800.0	89.80	179.89	9,364.9	-10,676.9	-681.6	10,698.6	0.00	0.00	0.00
19,900.0	89.80	179.89	9,365.3	-10,776.9	-681.5	10,798.4	0.00	0.00	0.00
19,984.9	89.80	179.89	9,365.6	-10,861.8	-681.3	10,883.1	0.00	0.00	0.00
Start 130.0 hold at 19984.9 MD									
20,000.0	89.80	179.89	9,365.6	-10,876.9	-681.3	10,898.2	0.00	0.00	0.00
20,100.0	89.80	179.89	9,365.9	-10,976.9	-681.1	10,998.0	0.00	0.00	0.00
20,114.9	89.80	179.89	9,366.0	-10,991.8	-681.1	11,012.9	0.00	0.00	0.00
TD at 20114.9									

Design Targets									
Target Name									
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP (TOMAHAWK WC I - plan misses target center by 0.3usft at 9644.6usft MD (9329.7 TVD, -521.6 N, -700.6 E) - Circle (radius 50.0)	0.00	0.00	9,330.0	-521.6	-700.6	434,995.90	564,563.40	32° 11' 44.695 N	104° 7' 28.619 W
LTP (TOMAHAWK WC I - plan hits target center - Point	0.00	0.00	9,365.6	-10,861.8	-681.3	424,655.70	564,582.70	32° 10' 2.364 N	104° 7' 28.628 W
PBHL (TOMAHAWK WC - plan hits target center - Rectangle (sides W100.0 H10,470.2 D20.0)	0.20	179.89	9,366.0	-10,991.8	-681.1	424,525.70	564,582.90	32° 10' 1.077 N	104° 7' 28.628 W

ConocoPhillips
Planning Report

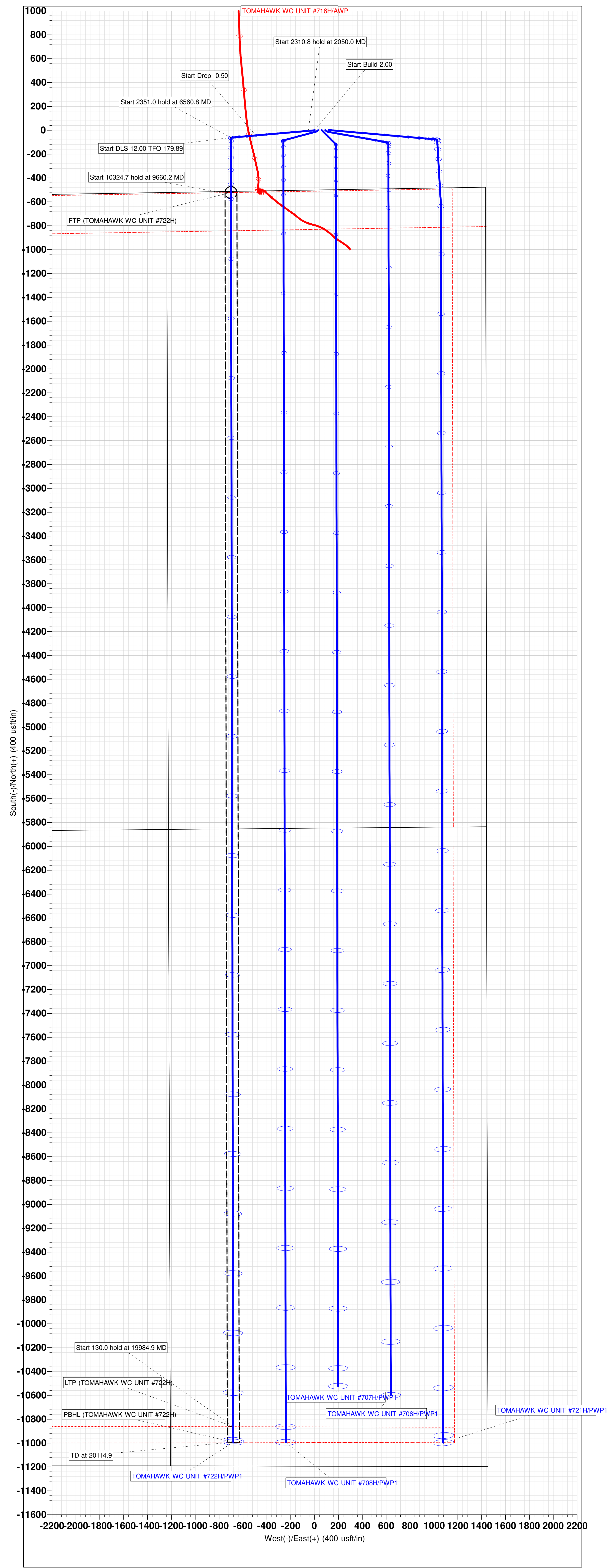
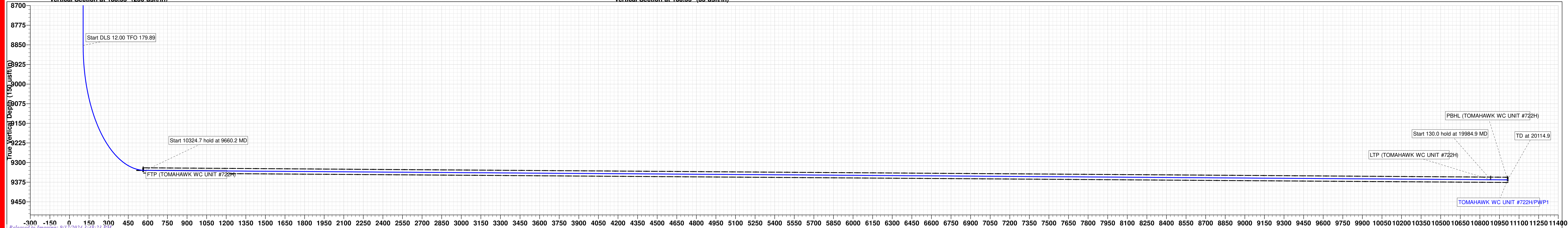
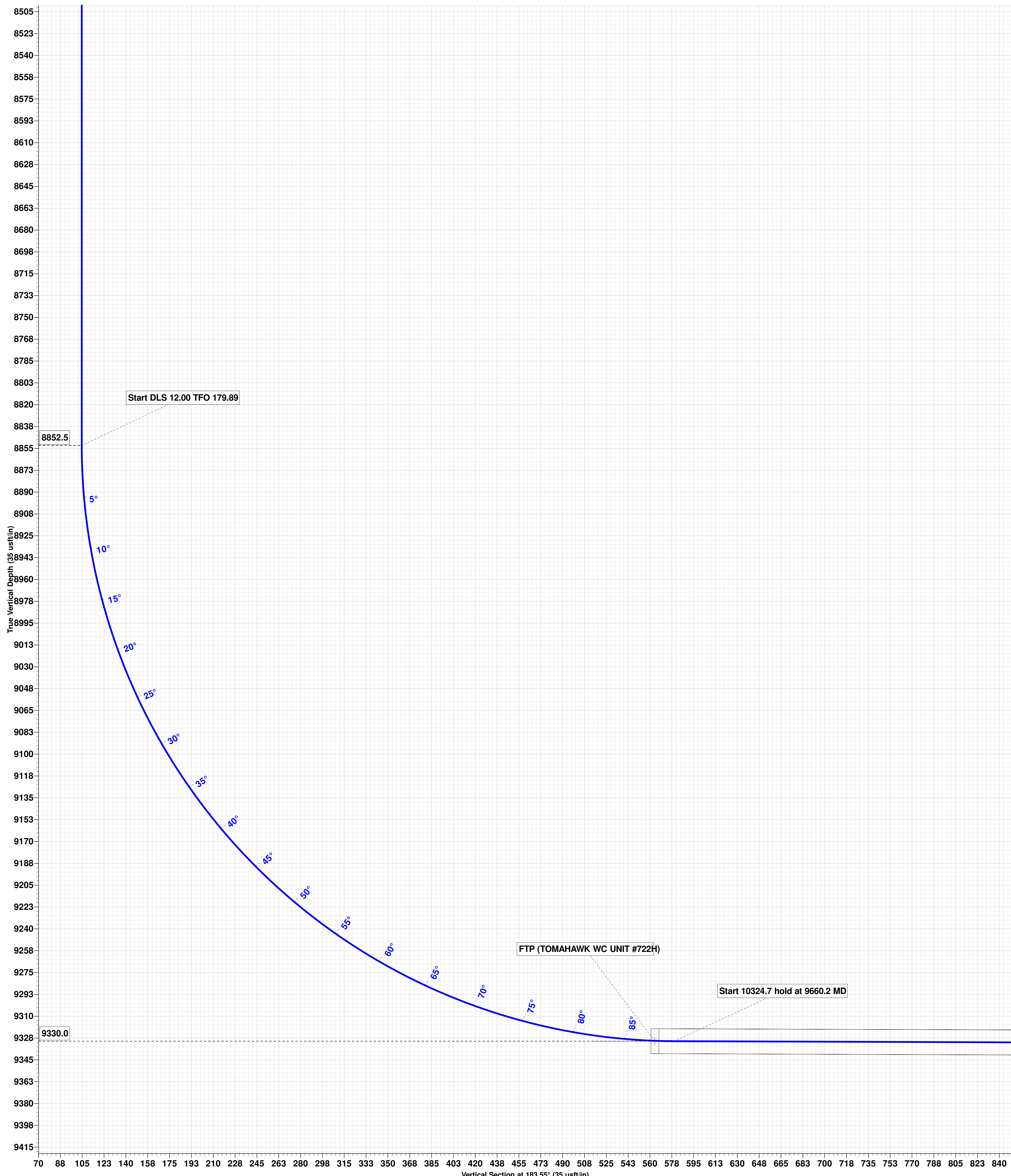
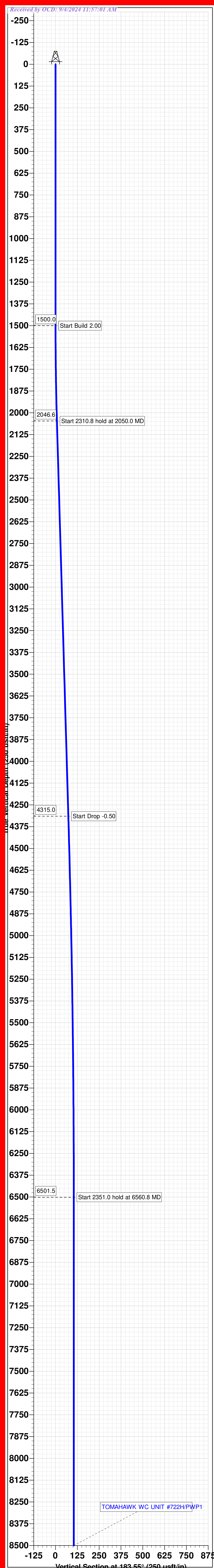
Database:	EDT 17 Central Planning Prod	Local Co-ordinate Reference:	Well TOMAHAWK WC UNIT #722H
Company:	DELAWARE BASIN WEST	TVD Reference:	RKB=32ft @ 3106.2usft
Project:	TOMAHAWK PROSPECT (NM-E)	MD Reference:	RKB=32ft @ 3106.2usft
Site:	TOMAHAWK WC UNIT S19-30-31 R24S T28E	North Reference:	Grid
Well:	TOMAHAWK WC UNIT #722H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PWP1		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,500.0	1,500.0	0.0	0.0	Start Build 2.00	
2,050.0	2,046.6	-4.6	-52.4	Start 2310.8 hold at 2050.0 MD	
4,360.8	4,315.0	-43.0	-491.7	Start Drop -0.50	
6,560.8	6,501.5	-61.4	-701.4	Start 2351.0 hold at 6560.8 MD	
8,911.9	8,852.5	-61.4	-701.4	Start DLS 12.00 TFO 179.89	
9,660.2	9,330.0	-537.2	-700.5	Start 10324.7 hold at 9660.2 MD	
19,984.9	9,365.6	-10,861.8	-681.3	Start 130.0 hold at 19984.9 MD	
20,114.9	9,366.0	-10,991.8	-681.1	TD at 20114.9	

Project: TOMAHAWK PROSPECT (NM-E)
Site: TOMAHAWK WC UNIT S19-30-31 R24S T28E
Well: TOMAHAWK WC UNIT #722H
Wellbore: OWB
Design: PWP1
GL: 3074.2
RKB=32ft @ 3106.2usft



WELL DETAILS: TOMAHAWK WC UNIT #722H						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.0	0.0	435517.50	565264.00	32° 11' 49.843 N	104° 7' 20.453 W	
DESIGN TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	
FTP (TOMAHAWK WC UNIT #722H)	9330.0	-521.6	-700.6	434995.90	564563.40	
LTP (TOMAHAWK WC UNIT #722H)	9365.6	-10861.8	-681.3	424655.70	564582.70	
PBHL (TOMAHAWK WC UNIT #722H)	9366.0	-10991.8	-681.1	424525.70	564582.90	
SECTION DETAILS						
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect
0.0	0.00	0.00	0.0	0.0	0.00	0.00
1500.0	0.00	0.00	1500.0	0.0	0.00	0.00
2050.0	11.00	265.00	2046.6	-4.6	-52.4	2.00
4360.8	11.00	265.00	4315.0	-43.0	-491.7	0.00
6560.8	0.00	0.00	6501.5	-61.4	-701.4	0.50
8911.9	0.00	0.00	8852.5	-61.4	-701.4	0.00
9660.2	89.80	179.89	9330.0	-537.2	-700.5	12.00
19984.9	89.80	179.89	9365.6	-10861.8	-681.3	0.00
20114.9	89.80	179.89	9366.0	-10991.8	-681.1	0.00





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

Application Data

09/04/2024

APD ID: 10400093483

Submission Date: 07/17/2023

Operator Name: COG OPERATING LLC

Well Name: TOMAHAWK WC UNIT

Well Number: 722H

Well Type: OIL WELL

Well Work Type: Drill

Highlighted data
reflects the most
recent changes
[Show Final Text](#)

Section 1 - General

APD ID: 10400093483

Tie to previous NOS? N

Submission Date: 07/17/2023

BLM Office: Carlsbad

User: MAYTE REYES

Title: Regulatory Analyst

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM92757

Lease Acres:

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? YES

Federal or Indian agreement: FEDERAL

Agreement number: NMNM140216X

Agreement name: TOMAHAWK WC UNIT

Keep application confidential? YES

Permitting Agent? NO

APD Operator: COG OPERATING LLC

Operator letter of

Operator Info

Operator Organization Name: COG OPERATING LLC

Operator Address: ONE CONCHO CENTER 600 W ILLINOIS AVENUE

Zip: 79701-4287

Operator PO Box:

Operator City: MIDLAND

State: TX

Operator Phone: (432)685-4342

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: TOMAHAWK WC UNIT

Well Number: 722H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: PURPLE SAGE

Pool Name: WOLFCAMP GAS

Operator Name: COG OPERATING LLC

Well Name: TOMAHAWK WC UNIT

Well Number: 722H

Is the proposed well in an area containing other mineral resources? USEABLE WATER

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:
TOMAHAWK WC UNITNumber: 706H, 707H, 708H,
721H, 722H

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: 3 Miles

Distance to nearest well: 30 FT

Distance to lease line: 200 FT

Reservoir well spacing assigned acres Measurement: 1283.96 Acres

Well plat: COG_Tomahawk_722H_C102_20230717162556.pdf

Well work start Date: 01/01/2025

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
SHL Leg #1	500	FSL	1430	FEL	24S	28E	19	Aliquot SWSE	32.1973	- 104.122842	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	3074	0	0	N
KOP Leg #1	500	FSL	1430	FEL	24S	28E	19	Aliquot SWSE	32.1973	- 104.122842	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	3074	0	0	N
PPP Leg #1-1	10	FNL	2134	FEL	24S	28E	30	Aliquot NWNE	32.19587	- 104.12511	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 92757	- 6256	9645	9330	Y

Operator Name: COG OPERATING LLC**Well Name:** TOMAHAWK WC UNIT**Well Number:** 722H

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
EXIT Leg #1	330	FSL	2134	FEL	24S	28E	31	Aliquot SWSE	32.167445	-104.125112	EDD Y	NEW MEXICO	NEW MEXICO	S	STATE	-6292	20100	9366	Y
BHL Leg #1	200	FSL	2134	FEL	24S	28E	31	Aliquot SWSE	32.167087	-104.125112	EDD Y	NEW MEXICO	NEW MEXICO	S	STATE	-6292	20115	9366	Y

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG OPERATING LLC
WELL NAME & NO.:	TOMAHAWK WC UNIT 722H
SURFACE HOLE FOOTAGE:	500'/S & 1430'/E
BOTTOM HOLE FOOTAGE:	200'/S & 2134'/E
LOCATION:	Section 19, T.24 S., R.28 E.
COUNTY:	Eddy County, New Mexico

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
Wellhead Variance	☐ Diverter		
Other	☐ 4 String	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Pilot Hole	☐ Open Annulus
Cementing	☐ Contingency Cement Squeeze	☐ EchoMeter	☐ Primary Cement Squeeze
Special Requirements	☐ Water Disposal	☐ COM	☒ Unit
Special Requirements	☐ Batch Sundry		
Special Requirements Variance	☐ Break Testing	☐ Offline Cementing	☒ Casing Clearance

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated AT SPUD. 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

Primary Casing Design:

1. The 10-3/4 inch surface casing shall be set at approximately **816** feet (a minimum of 70 feet (Eddy County) into the Rustler Anhydrite, above the salt, and below usable fresh water) 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 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 7-5/8 inch intermediate casing shall be set at approximately **8,800** feet. The minimum required fill of cement behind the 7-5/8 inch intermediate casing is:

Option 1 (Single Stage):

- Cement to surface. If cement does not circulate see B.1.a, c-d above.

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as it is below the salt interval and the cement volume is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
 - b. Second stage above DV tool:
 - Cement to surface. If cement does not circulate, contact the appropriate BLM office.
- ❖ In Medium Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
3. The 5-1/2 inch production casing shall be set at approximately **20,115** feet. . **The W441 connection should tie back 500' + into the W513 intermediate casing for clearance overlap.** 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 **10-3/4 inch** 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 3500 (70% Working Pressure) 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)

Unit Wells

The well sign for a unit well shall include the unit number in addition to the surface and bottom hole lease numbers. This also applies to participating area numbers. If a participating area has not been established, the operator can use the general unit designation, but will replace the unit number with the participating area number when the sign is replaced.

Commercial Well Determination

A commercial well determination shall be submitted after production has been established for at least six months. (This is not necessary for secondary recovery unit wells)

Casing Clearance:

- Overlap clearance OK for production interval

Operator shall clean up cycles until wellbore is clear of cuttings and any large debris, ensure cutting sizes are adequate "coffee ground or less" before cementing.

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)
 - If well located in Eddy County
EMAIL or call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
BLM_NM_CFO_DrillingNotifications@BLM.GOV
(575) 361-2822
 - If well located in Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 689-5981
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 **43 CFR part 3170 Subpart 3172** 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 integrity 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 integrity 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 **43 CFR part 3170 Subpart 3172** and **API STD 53 Sec. 5.3**.
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.
 - 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 **43 CFR part 3170 Subpart 3172** 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 cement), 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 cement plug. The BOPE test can be initiated after bumping the cement plug with the casing valve open. (only applies to single stage cement jobs, prior to the cement setting up.)
- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer and can be initiated immediately with the casing valve open. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to **43 CFR part 3170 Subpart 3172** 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 **43 CFR part 3170 Subpart 3172**.

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.

KPI 4/7/2024



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

APD Print Report

09/04/2024

APD ID: 10400093020

Submission Date: 06/22/2023

Highlighted data
reflects the most
recent changes
[Show Final Text](#)

Operator Name: COG OPERATING LLC

Federal/Indian APD: FED

Well Name: TOMAHAWK WC UNIT

Well Number: 724H

Well Type: OIL WELL

Well Work Type: Drill

Application

Section 1 - General

APD ID: 10400093020

Tie to previous NOS? N

Submission Date: 06/22/2023

BLM Office: Carlsbad

User: MAYTE REYES

Title: Regulatory Analyst

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM92757

Lease Acres:

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? YES

Federal or Indian agreement: FEDERAL

Agreement number: NMNM140216X

Agreement name: TOMAHAWK WC UNIT

Keep application confidential? YES

Permitting Agent? NO

APD Operator: COG OPERATING LLC

Operator letter of

Operator Info

Operator Organization Name: COG OPERATING LLC

Operator Address: ONE CONCHO CENTER 600 W ILLINOIS AVENUE

Zip: 79701-4287

Operator PO Box:

Operator City: MIDLAND

State: TX

Operator Phone: (432)685-4342

Operator Internet Address:

Approval Date: 04/29/2024

Page 1 of 23

Operator Name: COG OPERATING LLC

Well Name: TOMAHAWK WC UNIT

Well Number: 724H

Section 2 - Well Information

Well in Master Development Plan? NO

Well in Master SUPO? NO

Well in Master Drilling Plan? NO

Well Name: TOMAHAWK WC UNIT

Field/Pool or Exploratory? Field and Pool

Is the proposed well in an area containing other mineral resources? USEABLE WATER

Master Development Plan name:

Master SUPO name:

Master Drilling Plan name:

Well Number: 724H

Field Name: PURPLE SAGE

Well API Number:

Pool Name: WOLFCAMP GAS

Is the proposed well in a Helium production area? N

Type of Well Pad: MULTIPLE WELL

Well Class: HORIZONTAL

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 3 Miles

Distance to nearest well: 30 FT

Distance to lease line: 200 FT

Reservoir well spacing assigned acres Measurement: 1283.96 Acres

Well plat: COG_Tomahawk_724H_C102_20230621152857.pdf

Well work start Date: 01/01/2025

Duration: 30 DAYS

Use Existing Well Pad? N

Multiple Well Pad Name: TOMAHAWK WC UNIT

Number of Legs: 1

New surface disturbance? Number: 719H, 718H, 719H, 723H, 724H

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Survey number:

Vertical Datum: NAVD88

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

Operator Name: COG OPERATING LLC

Well Name: TOMAHAWK WC UNIT

Well Number: 724H

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
SHL Leg #1	225	FNL	1316	FWL	24S	28E	30	Aliquot NWN W	32.195201	- 104.131245	EDD Y	NEW MEXICO	NEW MEXICO	F	NMNM 92757	3094	0	0	Y
KOP Leg #1	225	FNL	1316	FWL	24S	28E	30	Aliquot NWN W	32.195201	- 104.131245	EDD Y	NEW MEXICO	NEW MEXICO	F	NMNM 92757	3094	0	0	Y
PPP Leg #1-1	330	FNL	575	FWL	24S	28E	30	Aliquot NWN W	32.194882	- 104.133641	EDD Y	NEW MEXICO	NEW MEXICO	F	NMNM 92757	- 6229	9515	9323	Y
EXIT Leg #1	330	FSL	575	FWL	24S	28E	31	Aliquot SWS W	32.167464	- 104.133658	EDD Y	NEW MEXICO	NEW MEXICO	S	STATE	- 6268	19481	9362	Y
BHL Leg #1	200	FSL	575	FWL	24S	28E	31	Aliquot SWS W	32.167106	- 104.133659	EDD Y	NEW MEXICO	NEW MEXICO	S	STATE	- 6361	19611	9455	Y

Drilling Plan

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
13332681	QUATERNARY	3094	0	0	ALLUVIUM	NONE	N
13332697	RUSTLER	2593	501	501	ANHYDRITE	USEABLE WATER	N
13332698	TOP SALT	2229	865	865	SALT	NONE	N
13332686	BASE OF SALT	826	2268	2268	SALT	NONE	N
13332679	LAMAR	608	2486	2486	LIMESTONE	NONE	N
13332680	BELL CANYON	572	2522	2522	SANDSTONE	NONE	N
13332687	CHERRY CANYON	-223	3317	3317	SANDSTONE	NATURAL GAS, OIL	N
13332688	BRUSHY CANYON	-1229	4323	4323	SANDSTONE	NATURAL GAS, OIL	N

Operator Name: COG OPERATING LLC

Well Name: TOMAHAWK WC UNIT

Well Number: 724H

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
13332689	BONE SPRING	-2850	5944	5944	SANDSTONE	NATURAL GAS, OIL	N
13332690	BONE SPRING 1ST	-3874	6968	6968	SANDSTONE	NATURAL GAS, OIL	N
13332691	BONE SPRING 2ND	-4435	7529	7529	SANDSTONE	NATURAL GAS, OIL	N
13332683	BONE SPRING 3RD	-5757	8851	8851	SANDSTONE	NATURAL GAS, OIL	N
13332699	WOLFCAMP	-6120	9214	9214	SHALE	NATURAL GAS, OIL	N
13332678	WOLFCAMP	-6256	9350	9350	SHALE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M

Rating Depth: 9455

Equipment: BOP and BOPE will be installed per Onshore Order #2 requirements prior to drilling below the surface casing and will be rated to the above pressure rating or greater, see attached diagrams. Required safety valves, with appropriate wrenches and subs for the drill string being utilized, will be in the open position and accessible on the rig floor.

Requesting Variance? YES

Variance request: 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. 5M Annular variance requested. A variance is requested to use a multibowl wellhead.

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.

Choke Diagram Attachment:

COG_Tomahawk_10M_Choke_20230621073357.pdf

BOP Diagram Attachment:

COG_Tomahawk_10M_BOP_20230621073410.pdf

COG_Tomahawk_Flex_Hose_Variance_20230621073442.pdf

Pressure Rating (PSI): 5M

Rating Depth: 8900

Equipment: BOP and BOPE will be installed per Onshore Order #2 requirements prior to drilling below the surface casing and will be rated to the above pressure rating or greater, see attached diagrams. Required safety valves, with appropriate wrenches and subs for the drill string being utilized, will be in the open position and accessible on the rig floor.

Requesting Variance? YES

Variance request: 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. 5M Variance is requested. A variance is requested to use a multibowl wellhead.

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Well Name: TOMAHAWK WC UNITWell Number: 724H

Testing Procedure: The BOP and BOPE will be fully tested per Onshore Order #2 when initially installed, whenever any seal subject to test pressure is broken, and/or following related repairs.

Choke Diagram Attachment:

COG_Tomahawk_5M_Choke_20230621073230.pdf

BOP Diagram Attachment:

COG_Tomahawk_5M_BOP_20230621073254.pdf
COG_Tomahawk_Flex_Hose_Variance_20230621073255.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	815	0	815	3094	2279	815	J-55	45.5	OTHER - BTC	5.6	1.49	DRY	21.47	DRY	19.8
2	INTERMEDIATE	8.75	7.625	NEW	API	Y	0	8900	0	8900	3585	-5806	8900	OTHER	29.7	OTHER - W513	1.64	2.13	DRY	2.42	DRY	4.1
3	PRODUCTION	6.75	5.5	NEW	API	Y	0	19611	0	9455	3585	-6361	19611	OTHER	23	OTHER - W441	2.37	2.79	DRY	3.04	DRY	3.1

Casing Attachments

Casing ID: 1StringSURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Tomahawk_724H_Casing_Prog_20230621155638.pdf

Operator Name: COG OPERATING LLC

Well Name: TOMAHAWK WC UNITWell Number: 724H

Casing Attachments

Casing ID: 2StringINTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Tomahawk_724H_Casing_Prog_20230621155709.pdf

Casing Design Assumptions and Worksheet(s):

COG_Tomahawk_724H_Casing_Prog_20230621155740.pdf

Casing ID: 3StringPRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Tomahawk_724H_Casing_Prog_20230621155453.pdf

Casing Design Assumptions and Worksheet(s):

COG_Tomahawk_724H_Casing_Prog_20230621155519.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	815	390	1.73	13.5	674	50	Class C + 4% Gel + 1% CaCl2	As needed
SURFACE	Tail		815	815	250	1.35	14.8	337	50	Class C + 2% CaCl2	As needed
INTERMEDIATE	Lead		8900	8900	590	3.6	10.5	2124	50	NeoCem-C	As needed
INTERMEDIATE	Tail		8900	8900	220	1.35	14.8	297	50	HalCem-C	As needed

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Well Name: TOMAHAWK WC UNIT

Well Number: 724H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		9455	1961 1	460	1.71	12.5	786	25	VersaCem	As needed
PRODUCTION	Tail		9455	1961 1	790	1.48	13.2	1169	25	NeoCem	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
815	8900	OTHER : Diesel Brine Emulsion	8.4	9.7							Diesel Brine Emulsion
8900	1961 1	OIL-BASED MUD	11	12.5							OBM
0	815	OTHER : Fresh water gel	8.6	8.8							Fresh water gel

Operator Name: COG OPERATING LLC**Well Name:** TOMAHAWK WC UNIT**Well Number:** 724H

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: 6150**Anticipated Surface Pressure:** 4069**Anticipated Bottom Hole Temperature(F):** 155**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** NO**Describe:****Contingency Plans geohazards description:****Contingency Plans geohazards****Hydrogen Sulfide drilling operations plan required?** YES**Hydrogen sulfide drilling operations**

COG_Tomahawk_H2S_SUP_20230621084435.pdf

COG_Tomahawk_H2S_Schem_20230621084435.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

COG_Tomahawk_724H_AC_RPT_20230621160207.pdf

COG_Tomahawk_724H_Directional_Plan_20230621160207.pdf

Other proposed operations facets description:

Drilling Plan attached.

GCP attached.

Cement Plan attached.

Other proposed operations facets attachment:

API_BTC_10.750_0.400_J55_Casing_11092022_20230621084615.pdf

API_BTC_7.625_0.375_L80_ICY_11092022_20230621084613.pdf

TXP_BTC_5.500_0.415_P110_CY_11092022_20230621084615.pdf

Wedge_441_5.500_0.415_P110_CY_11092022_20230621084615.pdf

Wedge_513_7.625_0.375_P110_ICY_11092022_20230621084616.pdf

COG_Tomahawk_724H_Cement_Prog_20230621160240.pdf

COG_Tomahawk_724H_Drilling_Prog_20230621160240.pdf

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Well Name: TOMAHAWK WC UNIT

Well Number: 724H

COG_Tomahawk_724H_GCP_20230621160242.pdf

Other Variance attachment:

COG_6.75_5M_Variance_WCP_20230621084732.pdf

SUPO

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

COG_Tomahawk_Existing_Road__20230620152245.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? YES

Existing Road Improvement Description: Existing roads will be maintained in the same condition or better.

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

COG_Tomahawk_Access_Road_20230620153247.pdf

New road type: RESOURCE

Length: 10289.9

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

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Well Number: 724H

Access road engineering design? N

Access road engineering design

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: Roads previously approved with Tomahawk WC Unit 701H, 702H, 703H, 704H, 705H, 706H, 707H, 708H, 709H, 710H, 711H, 712H, 713H, 714H, 715H, 716H, 717H and 718H APDs.

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_Tomahawk_724H_1_Mile_Map_20230621122137.pdf

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

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: Tomahawk Federal 30-B CTB. This CTB will be built to accommodate the Tomahawk Fed Com #706H, #707, #708, #717, #718, #719, #721, #, #722, #723, #724. We plan to install (1) buried 6 FP 601HT production flowline with MAWP of 1350 psi from each wellhead to the inlet manifold of the proposed CTB (10 lines total); the route for these flowlines will follow the flowlines route as shown in the diagram below. We will install (1) buried 6 FP 601 gas line for gas lift supply with MAWP of 1350 psi from the CTB to the well pads; the route for the gas lift lines will follow the gas lift route as shown in layout below. We

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Well Number: 724H

will install (1) buried 6 FP 601 liquid return line with MAWP of 1350 psi for compressor liquids from the well pads to the CTB; the route for the liquid return lines will follow the liquid return route as shown in layout on the following page. CTB, powerlines and flowlines, previously approved with Tomahawk WC Unit 701H, 702H, 703H, 704H, 705H, 706H, 707H, 708H, 709H, 710H, 711H, 712H, 713H, 714H, 715H, 716H, 717H and 718H APDs.

Production Facilities map:

- COG_Tomahawk_Federal_30_B_CTB_20240103084925.pdf
- COG_TOMAHAWK_POWERLINE_REV_20240103084933.pdf
- COG_TOMAHAWK_FLOWLINE_GASLINE_REV_20240103084937.pdf

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): 3.866793

Source volume (gal): 1260000

Water source type: OTHER

Describe type: Fresh Water

Water source use type:

SURFACE CASING

STIMULATION

ICE PAD CONSTRUCTION & MAINTENANCE

Source latitude:

Source longitude:

Source datum:

Water source permit type:

PRIVATE CONTRACT

Operator Name: COG OPERATING LLC**Well Name:** TOMAHAWK WC UNIT**Well Number:** 724H**Water source transport method:** PIPELINE**Source land ownership:** PRIVATE**Source transportation land ownership:** PRIVATE**Water source volume (barrels):** 450000**Source volume (acre-feet):** 58.001892**Source volume (gal):** 18900000**Water source and transportation**

COG_Tomahawk_Brine_H2O_20230621105126.pdf

COG_Tomahawk_Fresh_H2O_20230621105127.pdf

Water source comments: See attached maps**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:**

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Well Name: TOMAHAWK WC UNIT	Well Number: 724H

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: Caliche will be obtained from the actual well site. If caliche does not exist or is not plentiful from the well site, the caliche source will be from the Hayhurst Caliche Pit located in Sec 18. T24S. R28E. SENW

Construction Materials source location

Section 7 - Methods for Handling

Waste type: DRILLING

Waste content description: Drilling fluids and produced oil land water while 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: 1000 gallons

Waste disposal frequency : One Time Only

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:** PRIVATE

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: 500 pounds

Waste disposal frequency : One Time Only

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:

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Well Name: TOMAHAWK WC UNIT	Well Number: 724H

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

Disposal type description:

Disposal location description: Trucked to an approved disposal facility.

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 cutting 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

Are you requesting any Ancillary Facilities?: N

Ancillary Facilities

Comments: Gas Capture Plan attached

Operator Name: COG OPERATING LLC

Well Name: TOMAHAWK WC UNIT

Well Number: 724H

Section 9 - Well Site

Well Site Layout Diagram:
COG_TOMAHAWK_WC_PAD_EXP_Layout_20240103085021.pdf
Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance Multiple Well Pad Name: TOMAHAWK WC UNIT
Multiple Well Pad Number: 719H, 718H, 719H, 723H, 724H

Recontouring
COG_TOMAHAWK_WC_PAD_EXP_RECLAMATION_REV_20240103085054.pdf

Drainage/Erosion control construction: Proper erosion control methods will be used at the well site to control erosion, runoff, and siltation of the surrounding area. Straw waddles will be used as necessary at the well site to reduce sediment impacts to fragile/sensitive soils.
Drainage/Erosion control reclamation: The interim reclamation will be monitored periodically to ensure that vegetation has re-established and that erosion is controlled.

Well pad proposed disturbance (acres): 4.78	Well pad interim reclamation (acres): 0.92	Well pad long term disturbance (acres): 3.86
Road proposed disturbance (acres): 7.09	Road interim reclamation (acres): 7.09	Road long term disturbance (acres): 7.09
Powerline proposed disturbance (acres): 8.15	Powerline interim reclamation (acres): 8.15	Powerline long term disturbance (acres): 8.15
Pipeline proposed disturbance (acres): 3.54	Pipeline interim reclamation (acres): 3.54	Pipeline long term disturbance (acres): 3.54
Other proposed disturbance (acres): 5.74	Other interim reclamation (acres): 5.74	Other long term disturbance (acres): 5.74
Total proposed disturbance: 29.300000000000004	Total interim reclamation: 25.439999999999998	Total long term disturbance: 28.380000000000003

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: North

Soil treatment: None

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

Existing Vegetation at the well pad

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

Existing Vegetation Community at the road

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Well Name: TOMAHAWK WC UNIT

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

Existing Vegetation Community at the pipeline

Existing Vegetation Community at other disturbances: N/A

Existing Vegetation Community at other disturbances

Non native seed used? N

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? N

Seedling transplant description

Will seed be harvested for use in site reclamation? N

Seed harvest description:

Seed harvest description attachment:

Seed

Seed Table

Seed Summary	
Seed Type	Pounds/Acre

Total pounds/Acre:

Seed reclamation

Operator Contact/Responsible Official

First Name:

Last Name:

Phone:

Email:

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? N

Existing invasive species treatment description:

Operator Name: COG OPERATING LLC**Well Name:** TOMAHAWK WC UNIT**Well Number:** 724H**Existing invasive species treatment****Weed treatment plan description:** N/A**Weed treatment plan****Monitoring plan description:** N/A**Monitoring plan****Success standards:** N/A**Pit closure description:** N/A**Pit closure attachment:**

COG_Tomahawk_Closed_Loop_20230621105320.pdf

Section 11 - Surface Ownership

Disturbance type: WELL PAD**Describe:****Surface Owner:** BUREAU OF LAND MANAGEMENT**Other surface owner description:****BIA Local Office:****BOR Local Office:****COE Local Office:****DOD Local Office:****NPS Local Office:****State Local Office:****Military Local Office:****USFWS Local Office:****Other Local Office:****USFS Region:****USFS Forest/Grassland:****USFS Ranger District:**

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Operator Name: COG OPERATING LLC**Well Name:** TOMAHAWK WC UNIT**Well Number:** 724H**Section 12 - Other****Right of Way needed?** N**Use APD as ROW?****ROW Type(s):****ROW**

SUPO Additional Information: Surface Use & Operating Plan. Attached On-site was done by Gerald Herrera (COG); Keely Watland (BLM); on October 4th, 2022.

Use a previously conducted onsite? N

Previous Onsite information:

Other SUPO

COG_Tomahawk_724H_C102_20230621123049.pdf

COG_Tomahawk_724H_1_Mile_Map_20230621122649.pdf

COG_Tomahawk_Access_Road_20230621114810.pdf

COG_Tomahawk_Brine_H2O_20230621114757.pdf

COG_Tomahawk_Closed_Loop_20230621114744.pdf

COG_Tomahawk_Existing_Road__20230621114758.pdf

COG_Tomahawk_Fresh_H2O_20230621114757.pdf

COG_TOMAHAWK_WC_PAD_EXP_RECLAMATION_REV_20240103085153.pdf

COG_Tomahawk_Federal_30_B_CTB_20240103085158.pdf

COG_TOMAHAWK_WC_PAD_EXP_Layout_20240103085201.pdf

COG_TOMAHAWK_POWERLINE_REV_20240103085208.pdf

COG_TOMAHAWK_FLOWLINE_GASLINE_REV_20240103085213.pdf

COG_Tomahawk_717H_718H_719H_723H_724H_SUP_20240103085433.pdf

PWD

Operator Name: COG OPERATING LLC**Well Name:** TOMAHAWK WC UNIT**Well Number:** 724H**Section 1 - General****Would you like to address long-term produced water disposal?** NO**Section 2 - Lined****Would you like to utilize Lined Pit PWD options?** N**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****Pit liner description:****Pit liner manufacturers****Precipitated solids disposal:****Describe precipitated solids disposal:****Precipitated solids disposal****Lined pit precipitated solids disposal schedule:****Lined pit precipitated solids disposal schedule****Lined pit reclamation description:****Lined pit reclamation****Leak detection system description:****Leak detection system****Lined pit Monitor description:****Lined pit Monitor****Lined pit: do you have a reclamation bond for the pit?****Is the reclamation bond a rider under the BLM bond?**

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Operator Name: COG OPERATING LLC

Well Name: TOMAHAWK WC UNIT

Well Number: 724H

Lined pit bond number:

Lined pit bond amount:

Additional bond information

Section 3 - Unlined

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

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule

Unlined pit reclamation description:

Unlined pit reclamation

Unlined pit Monitor description:

Unlined pit Monitor

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

Beneficial use user

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

State

Unlined Produced Water Pit Estimated

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:

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Operator Name: COG OPERATING LLC**Well Name:** TOMAHAWK WC UNIT**Well Number:** 724H**Additional bond information****Section 4 -****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****Underground Injection Control (UIC) Permit?****UIC Permit****Section 5 - Surface****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 -****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:**

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Operator Name: COG OPERATING LLC	
Well Name: TOMAHAWK WC UNIT	Well Number: 724H

Other PWD type

Have other regulatory requirements been met?

Other regulatory requirements

Bond Info

Bond

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:

Forest Service reclamation bond

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information

Operator Certification

Payment Info

Payment

APD Fee Payment Method: PAY.GOV

pay.gov Tracking ID: 2765R35H

CONFIDENTIAL

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 (H₂S).
- b. The proper use and maintenance of personal protective equipment and life support systems.
- c. The proper use of H₂S 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 H₂S 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. H₂S SAFETY EQUIPMENT AND SYSTEMS

Note: All H₂S 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 H₂S 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

COG OPERATING LLC OFFICE	575-748-6940
CHAD GREGORY	432-894-5590

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

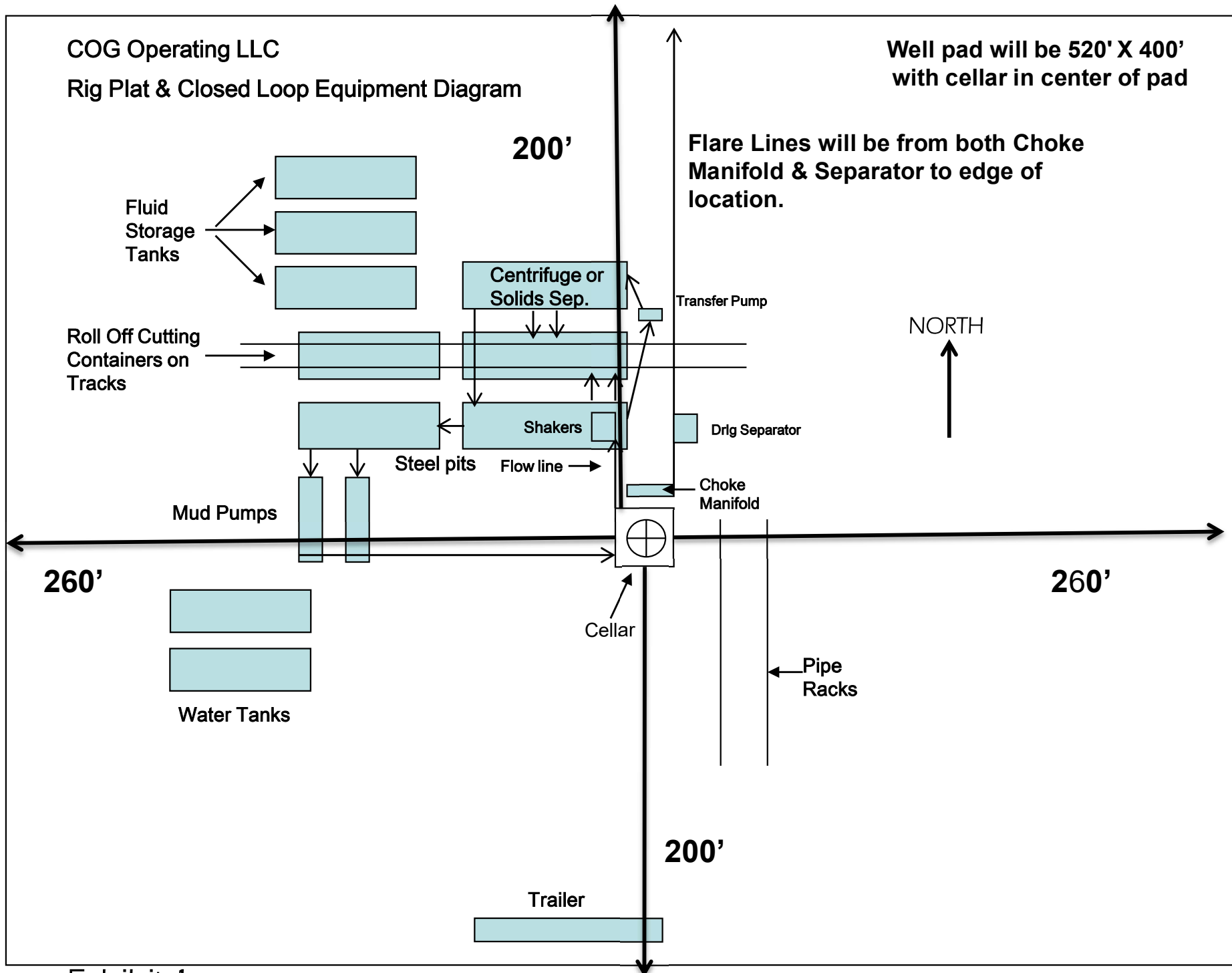


Exhibit 1

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

COG Operating, LLC - Tomahawk WC Unit 722H

1. Geologic Formations

TVD of target	9,366' EOL	Pilot hole depth	NA
MD at TD:	20,115'	Deepest expected fresh water:	90'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	503	Water	
Top of Salt	867	Salt	
Base of Salt	2271	Salt	
Lamar	2488	Salt Water	
Bell Canyon	2525	Salt Water	
Cherry Canyon	3319	Oil/Gas	
Brushy Canyon	4366	Oil/Gas	
Bone Spring	5963	Oil/Gas	
Bone Spring 1st Sand	6975	Oil/Gas	
Bone Spring 2nd Sand	7583	Oil/Gas	
Bone Spring 3rd Carb	7976	Oil/Gas	
Bone Spring 3rd Sand	8865	Oil/Gas	
Wolfcamp	9227	Oil/Gas	

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Body	SF Joint
	From	To								
14.75"	0	817	10.75"	45.5	J55	BTC	5.59	1.48	19.23	21.41
9.875"	0	5963	7.625"	29.7	L80-ICY	TXP BTC	1.96	1.42	4.10	4.10
8.750"	5963	8,800	7.625"	29.7	P110-ICY	W513	1.66	2.15	4.09	2.45
6.75"	0	8300	5.5"	23	P110-CY	TXP BTC	2.70	3.18	3.82	3.82
6.75"	8300	20,115	5.5"	23	P110-CY	W441	2.39	2.82	3.38	3.07
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" W441 casing will be run back at least 200' into the intermediate casing to ensure the coupling OD clearance is greater than .422" for the cement bond tie in.

COG Operating, LLC - Tomahawk WC Unit 722H

	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 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

COG Operating, LLC - Tomahawk WC Unit 722H

3. Cementing Program

Casing	# Sk	Wt. lb/ gal	Yld ft3/ sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	390	13.5	1.73	9.22	12	Lead: Class C + 4% Gel + 1% CaCl ₂
	250	14.8	1.35	6.45	8	Tail: Class C + 2% CaCl ₂
Inter.	590	10.5	3.6	22.81	72	NeoCem-C
Stage 1	220	14.8	1.35	6.6	8	HalCem-C
Prod	450	12.5	1.71	9.32	72	VersaCem
	830	13.2	1.48	7.49	19	NeoCem-C

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%
1 st Intermediate	0'	50%
Production	8,300'	25% OH in Lateral (KOP to EOL)

COG Operating, LLC - Tomahawk WC Unit 722H

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	2500 psi
			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 - Tomahawk WC Unit 722H

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 - 9.7	28-34	N/C
7-5/8" Int shoe	Lateral TD	OBM	11 - 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	

COG Operating, LLC - Tomahawk WC Unit 722H

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	6090 psi at 9366' TVD
Abnormal Temperature	NO 150 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.

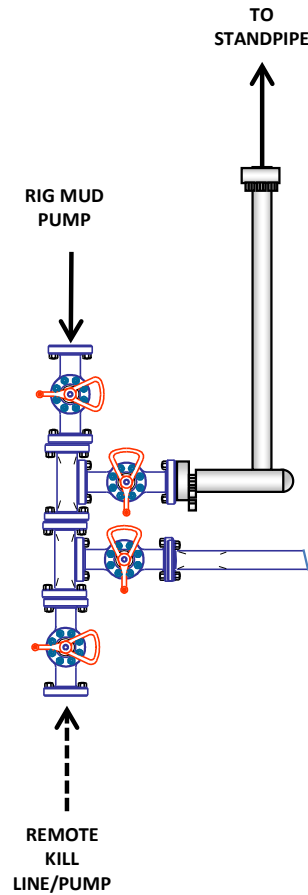
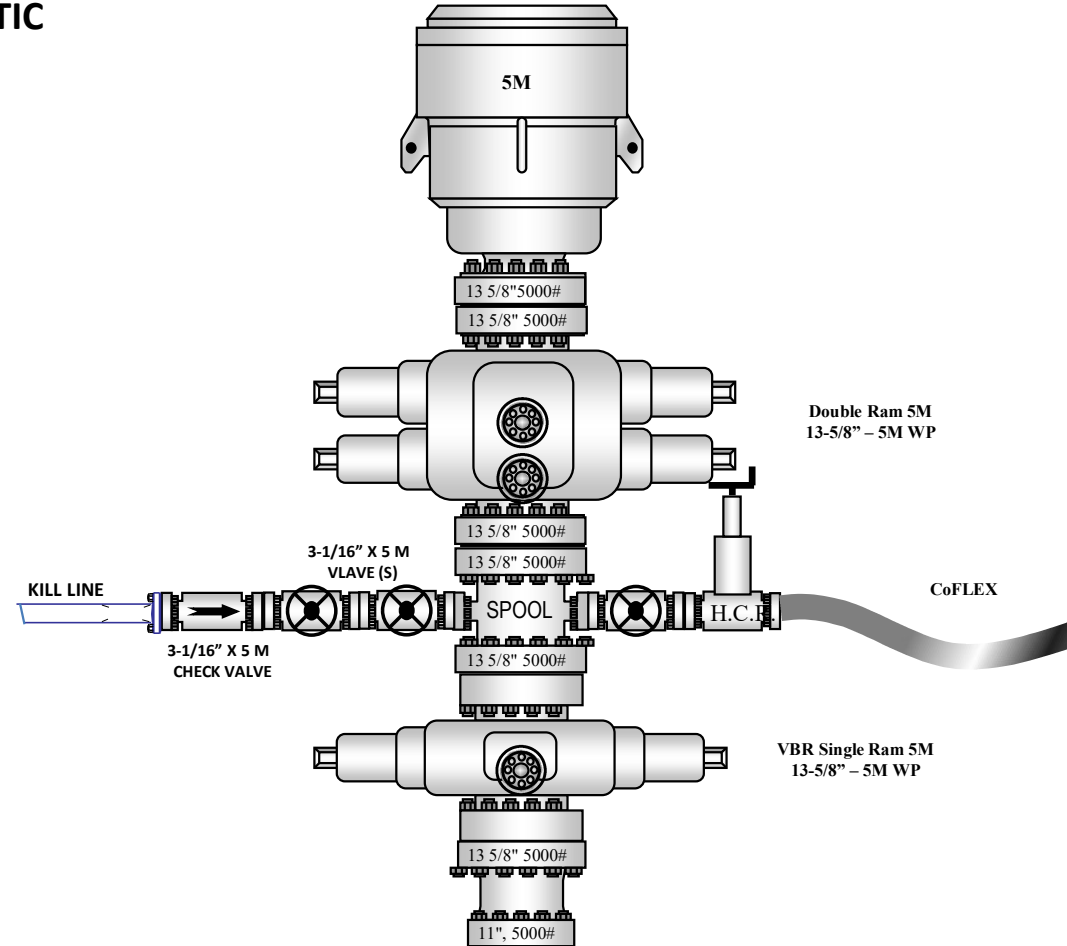
N H₂S is present

Y H₂S Plan attached

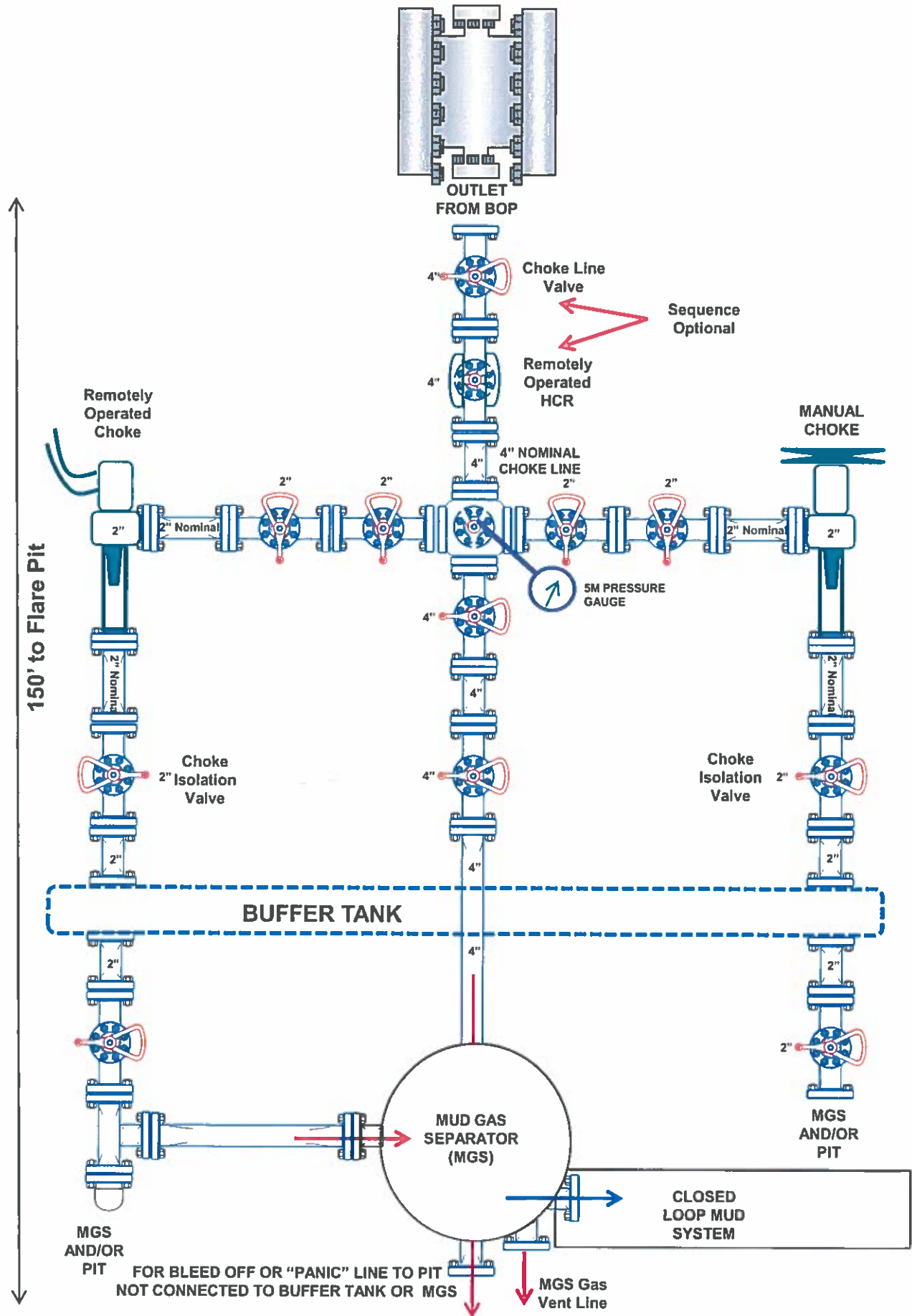
8. Other Facets of Operation

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

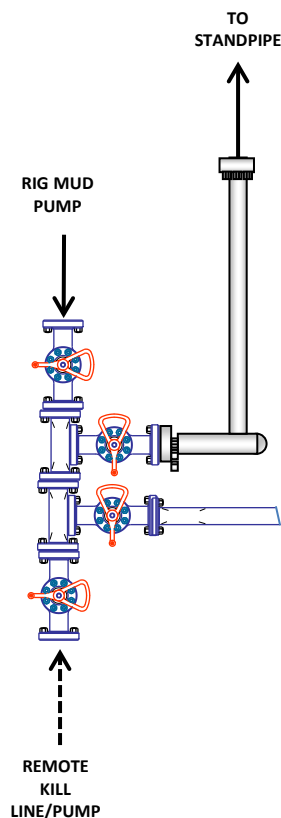
x	H ₂ S Plan.
x	BOP & Choke Schematics.
x	Directional Plan

5M BOP Stack**10M REMOTE KILL SCHEMATIC****5M BOP Stack
(2.5M Annular)**

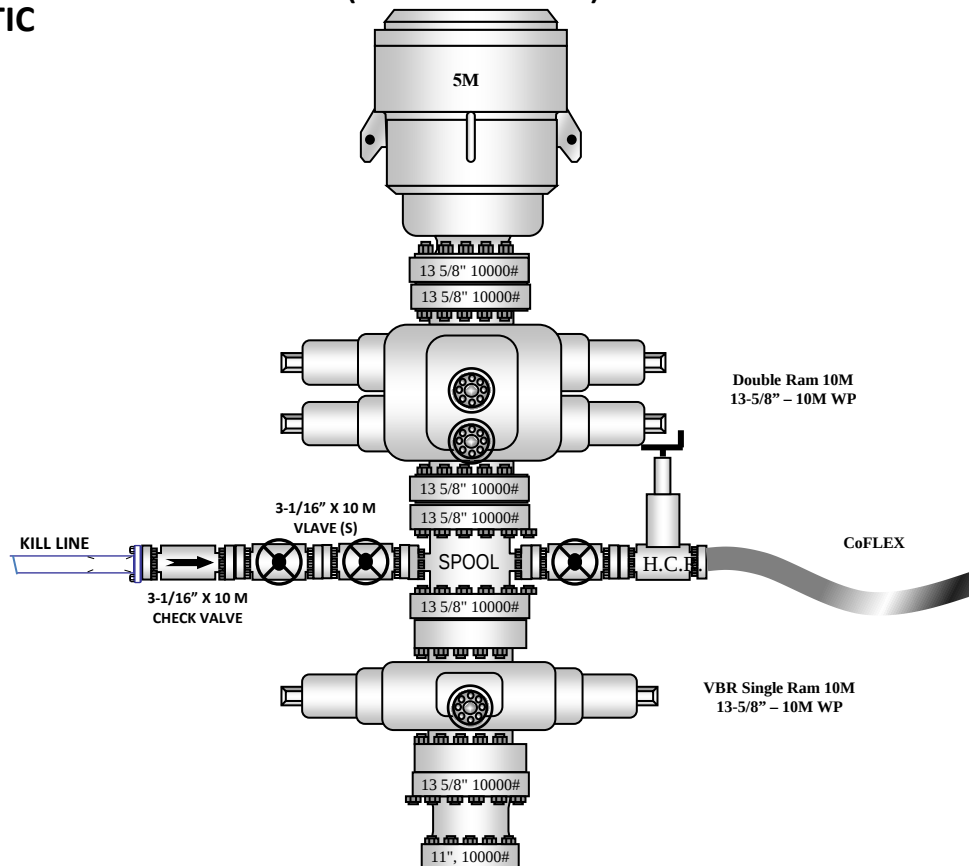
5M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



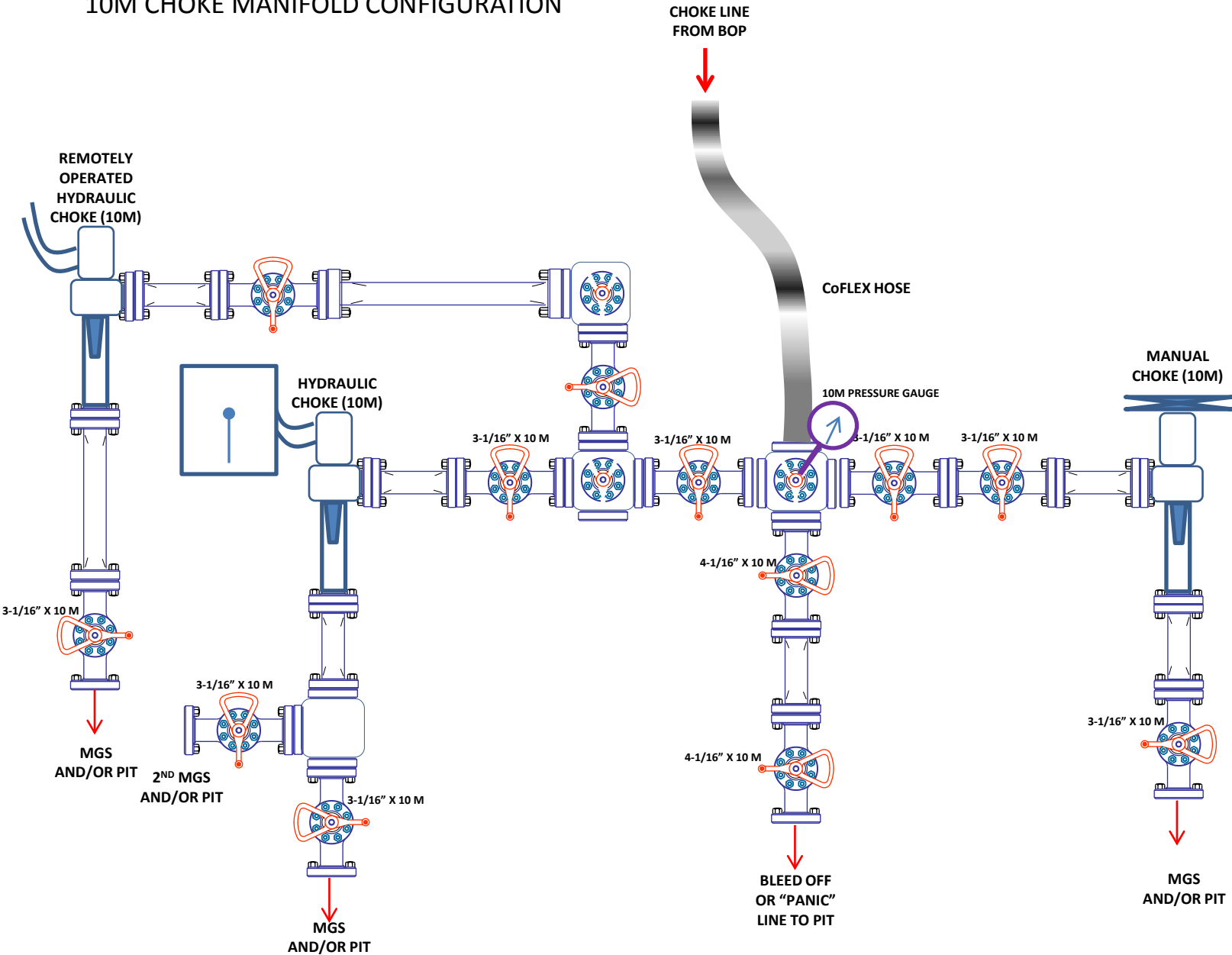
10M REMOTE KILL SCHEMATIC



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 380505

CONDITIONS

Operator: COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701	OGRID:
	229137
	Action Number: 380505
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	Notify OCD 24 hours prior to casing & cement	9/12/2024
ward.rikala	Will require a File As Drilled C-102 and a Directional Survey with the C-104	9/12/2024
ward.rikala	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	9/12/2024
ward.rikala	Cement is required to circulate on both surface and intermediate1 strings of casing	9/12/2024
ward.rikala	If cement does not circulate on any string, a CBL is required for that string of casing	9/12/2024
ward.rikala	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	9/12/2024
ward.rikala	Must submit C-102 on new C-102 form.	9/12/2024