

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

OCD - HOBBS  
05/27/2020  
RECEIVED

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

1a. Type of work: <input type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No.
1b. Type of Well: <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator [229137]		8. Lease Name and Well No. [316267]
3a. Address	3b. Phone No. (include area code)	9. API Well No. 30-025-47205
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface At proposed prod. zone		10. Field and Pool, or Exploratory [98098]
14. Distance in miles and direction from nearest town or post office*		11. Sec., T. R. M. or Blk. and Survey or Area
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)		12. County or Parish
16. No of acres in lease		13. State
17. Spacing Unit dedicated to this well		
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.		
19. Proposed Depth		
20. BLM/BIA Bond No. in file		
21. Elevations (Show whether DF, KDB, RT, GL, etc.)		
22. Approximate date work will start*		
23. Estimated duration		
24. Attachments		

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

- |  |   |
|--|---|
| 1. Well plat certified by a registered surveyor.   | 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	Name (Printed/Typed)	Date
Title		
Approved by (Signature)	Name (Printed/Typed)	Date
Title		
Office		

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.  
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

GCP Rec 05/27/2020

SL

(Continued on page 2)

**APPROVED WITH CONDITIONS**  
Approval Date: 05/18/2020

KZ  
05/28/2020

\*(Instructions on page 2)

## Additional Operator Remarks

### Location of Well

0. SHL: LOT 3 / 375 FNL / 2230 FWL / TWSP: 25S / RANGE: 35E / SECTION: 5 / LAT: 32.165695 / LONG: -103.390835 ( TVD: 0 feet, MD: 0 feet )

PPP: NENW / 1 FNL / 2130 FWL / TWSP: 25S / RANGE: 35E / SECTION: 8 / LAT: 32.152161 / LONG: -103.391175 ( TVD: 12639 feet, MD: 17900 feet )

PPP: SESW / 1319 FSL / 2130 FWL / TWSP: 25S / RANGE: 35E / SECTION: 5 / LAT: 32.155787 / LONG: -103.39117 ( TVD: 12645 feet, MD: 16650 feet )

PPP: NESW / 2639 FSL / 2130 FWL / TWSP: 25S / RANGE: 35E / SECTION: 5 / LAT: 32.159432 / LONG: -103.391164 ( TVD: 12652 feet, MD: 15300 feet )

PPP: LOT 3 / 100 FNL / 2130 FWL / TWSP: 25S / RANGE: 35E / SECTION: 5 / LAT: 32.166451 / LONG: -103.391153 ( TVD: 4096 feet, MD: 4100 feet )

BHL: SESW / 50 FSL / 2130 FWL / TWSP: 25S / RANGE: 35E / SECTION: 8 / LAT: 32.137786 / LONG: -103.391197 ( TVD: 12664 feet, MD: 22909 feet )

### BLM Point of Contact

Name: Deborah Ham

Title: Legal Landlaw Examiner

Phone: (575) 234-5965

Email: dham@blm.gov

CONFIDENTIAL

# **PECOS DISTRICT SURFACE USE CONDITIONS OF APPROVAL**

**COG Operating LLC  
Lease Number NMNM132948  
Deerstalker Federal Com 604H  
Deerstalker Federal Com 703H**

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

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## **I. GENERAL PROVISIONS**

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## **II. PERMIT EXPIRATION**

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## **IV. NOXIOUS WEEDS**

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

## V. SPECIAL REQUIREMENT(S)

### **Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:**

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period.

Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted.

Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

**Ground-level Abandoned Well Marker to avoid raptor perching:** Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

This authorization is subject to your Certificate of Participation and/or Certificate of Inclusion under the New Mexico Candidate Conservation Agreement. Because it involves surface disturbing activities covered under your Certificate, your Habitat Conservation Fund Account with the Center of Excellence for Hazardous Materials Management (CEHMM) will be debited according to Exhibit B Part 2 of the Certificate of Participation.

## **VI. CONSTRUCTION**

### **A. NOTIFICATION**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

### **B. TOPSOIL**

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

### **C. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

### **D. FEDERAL MINERAL MATERIALS PIT**

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

### **E. WELL PAD SURFACING**

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

## **F. EXCLOSURE FENCING (CELLARS & PITS)**

### **Exclosure Fencing**

The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

## **G. ON LEASE ACCESS ROADS**

### **Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

### **Surfacing**

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

### **Crowning**

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

### **Ditching**

Ditching shall be required on both sides of the road.

### **Turnouts**

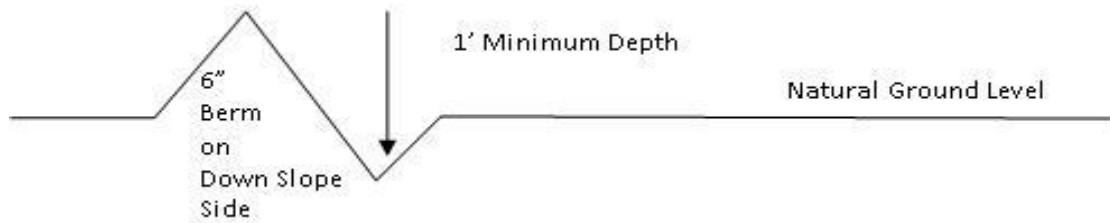
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

## Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

### Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

### Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

## Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

## Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.



**Public Access**

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

### Construction Steps

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes



Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

## **VII. PRODUCTION (POST DRILLING)**

### **A. WELL STRUCTURES & FACILITIES**

#### **Placement of Production Facilities**

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

#### **Exclosure Netting (Open-top Tanks)**

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

#### **Chemical and Fuel Secondary Containment and Exclosure Screening**

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

#### **Open-Vent Exhaust Stack Exclosures**

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

### **Containment Structures**

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

### **Painting Requirement**

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

## **B. PIPELINES**

### **BURIED PIPELINE STIPULATIONS**

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.
6. The pipeline will be buried with a minimum cover of 36 inches between the top of the pipe and ground level.
7. The maximum allowable disturbance for construction in this right-of-way will be 30 feet:
- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed 20 feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)
  - Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed 30 feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)
  - The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)
8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.
9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.
10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.
11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.
12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.
- |                        |                             |
|------------------------|-----------------------------|
| ( ) seed mixture 1     | ( ) seed mixture 3          |
| (X) seed mixture 2     | ( ) seed mixture 4          |
| ( ) seed mixture 2/LPC | ( ) Aplomado Falcon Mixture |
13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.
14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a

permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 17 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

17. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

18. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

19. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

20. Escape Ramps - The operator will construct and maintain pipeline/utility trenches [that are not otherwise fenced, screened, or netted] to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

- a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
- b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

21. Special Stipulations:

**Lesser Prairie-Chicken**

Oil and gas activities will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

**C. ELECTRIC LINES**

**STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES**

**A copy of the grant and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.**

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant.



(See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

6. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 11 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

11. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

12. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

13. Special Stipulations:

For reclamation remove poles, lines, transformer, etc. and dispose of properly.  
Fill in any holes from the poles removed.

**Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken:**

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually.

During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

## **VIII. INTERIM RECLAMATION**

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

## **IX. FINAL ABANDONMENT & RECLAMATION**

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

## Seed Mixture 2, for Sandy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

<u>Species</u>	<u>lb/acre</u>
Sand dropseed ( <i>Sporobolus cryptandrus</i> )	1.0
Sand love grass ( <i>Eragrostis trichodes</i> )	1.0
Plains bristlegrass ( <i>Setaria macrostachya</i> )	2.0

\*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed

# PECOS DISTRICT DRILLING OPERATIONS CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>COG Operating LLC</b>
<b>LEASE NO.:</b>	<b>NMNM132948</b>
<b>WELL NAME &amp; NO.:</b>	<b>Deerstalker Federal Com 703H</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>375' FNL &amp; 2230' FWL (Lot 3)</b>
<b>BOTTOM HOLE FOOTAGE:</b>	<b>50' FSL &amp; 2130' FWL</b>
<b>LOCATION:</b>	<b>Section 5, T 25S, R 35E, NMPM</b>
<b>COUNTY:</b>	<b>Lea County, New Mexico</b>

H2S	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input checked="" type="radio"/> Low	<input type="radio"/> Medium	<input type="radio"/> High
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP
Other	<input checked="" type="checkbox"/> Fluid Filled	<input type="checkbox"/> Cement Squeeze	<input type="checkbox"/> Pilot Hole
Special Requirements	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit

## A. HYDROGEN SULFIDE

1. Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

## B. CASING – see COG's drilling program in this APD package; AFMSS 2's Section 3 - Casing glitched on generation and is not accurate.

1. The **10-3/4"** surface casing shall be set at approximately **900'** (a minimum of 25' into the Rustler Anhydrite and above the salt) and cemented to surface. **Fresh water is anticipated down to 874'.**
  - a. **If cement does not circulate to 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 **6 hours** after pumping cement, ideally between 8-10 hours after.
  - b. WOC time for a primary cement job will be a minimum of **8 hours** or **500 psi** compressive strength, whichever is greater. This is to include the lead cement.
  - c. If cement falls back, remedial cementing will be done prior to drilling out the shoe.
  - d. WOC time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 psi compressive strength, whichever is greater.

2. The **7-5/8"** intermediate casing shall be cemented to surface.
  - a. **If cement does not circulate to surface**, see B.1.a, c & d.
  - b. Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.
    - i. 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 the second stage.
    - ii. Second stage via DV tool: Cement to surface. If cement does not circulate, contact the appropriate BLM office.
  - c. This casing must be kept at least 1/3 full at all times in order to meet BLM collapse requirements.
3. The **5-1/2"** production casing shall be cemented with at least **200' tie-back** into the previous casing. Operator shall provide method of verification.

#### **C. PRESSURE CONTROL**

1. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **10,000 (10M)** psi. **Variance approved to use a 5M annular. This annular must be tested to 70% of its rated pressure (5000 psi).**
3. 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.
4. High formation pressures are anticipated in the Wolfcamp. Heavier mud weights, up to 13.5ppg, are approved.

#### **D. SPECIAL REQUIREMENTS**

1. Submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
  - a. The well sign on location shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

**DR 5/6/2020**

## **GENERAL REQUIREMENTS**

1. The BLM is to be notified in advance for a representative to witness:
  - a. Spudding the well (minimum of 24 hours)
  - b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
  - c. BOP/BOPE tests (minimum of 4 hours)
    - ☒ Eddy County: Call the Carlsbad Field Office, (575) 361-2822
    - ☒ Lea County: Call the Hobbs Field Station, (575) 393-3612
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
  - 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:
    - i. Notify the BLM when moving in and removing the Spudder Rig.
    - ii. Notify the BLM when moving in the 2<sup>nd</sup> Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
    - iii. BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
3. 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.
4. 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 available upon request. 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 the portion of well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

## **B. PRESSURE CONTROL**

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. If the operator has proposed a multi-bowl wellhead assembly in the APD, it must meet or exceed the pressure rating of the BOP system. Additionally, 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. 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 Onshore Order 2 III.A.2.i must be followed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the BOP/BOPE tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
  - b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test which can be initiated immediately after bumping the plug (only applies to single-stage cement jobs).
  - c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be made available upon request.
  - 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 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. This test shall be performed prior

to the test at full stack pressure.

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

**C. DRILLING MUD**

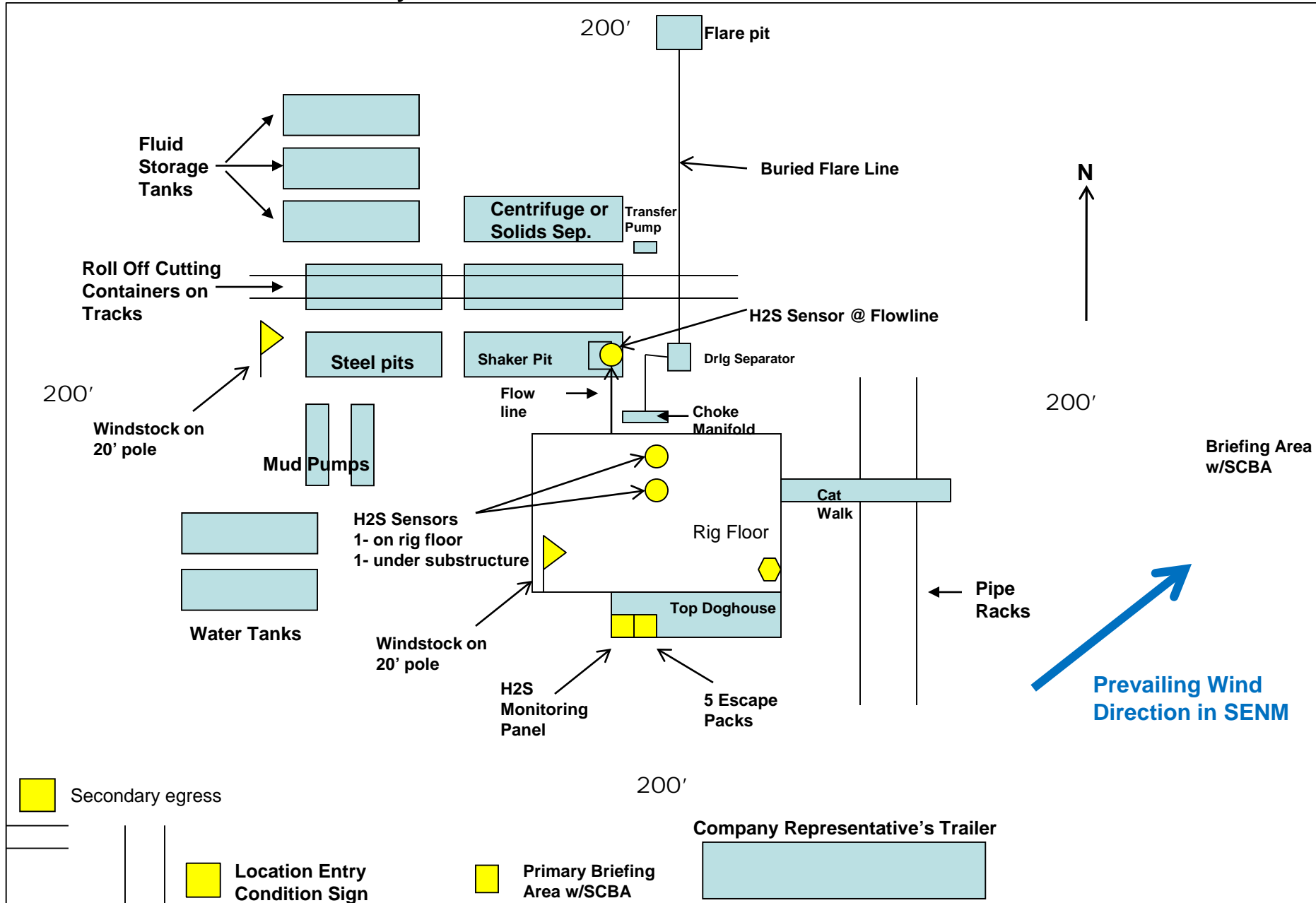
1. Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

**D. WASTE MATERIAL AND FLUIDS**

1. 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.
2. Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

**COG Operating LLC**  
**H<sub>2</sub>S Equipment Schematic**  
**Terrain: Shinnery sand hills.**

**Well pad will be 400' x 400'**  
**with cellar in center of pad**



**COG OPERATING LLC**  
**HYDROGEN SULFIDE DRILLING OPERATIONS PLAN**

**1. HYDROGEN SULFIDE TRAINING**

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

- a. The hazards and characteristics of hydrogen sulfide (H<sub>2</sub>S).
- b. The proper use and maintenance of personal protective equipment and life support systems.
- c. The proper use of H<sub>2</sub>S 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 H<sub>2</sub>S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
- b. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
- c. The contents and requirements of the H<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

**2. H<sub>2</sub>S SAFETY EQUIPMENT AND SYSTEMS**

Note: All H<sub>2</sub>S 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 H<sub>2</sub>S. If H<sub>2</sub>S greater than 100 ppm is encountered in the gas stream we will shut in and install H<sub>2</sub>S equipment.

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

- b. Protective equipment for essential personnel:  
Mark II Surviveair 30-minute units located in the dog house and at briefing areas.
- c. H2S detection and monitoring equipment:  
2 - portable H2S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 ppm are reached.
- d. Visual warning systems:  
Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.
- e. Mud Program:  
The mud program has been designed to minimize the volume of H2S circulated to the surface.
- f. Metallurgy:  
All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.
- g. Communication:  
Company vehicles equipped with cellular telephone.

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

# **W A R N I N G**

**YOU ARE ENTERING AN H<sub>2</sub>S 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**

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

## **EMERGENCY RESPONSE NUMBERS**

	<b><u>OFFICE</u></b>
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



# **NORTHERN DELAWARE BASIN**

**LEA COUNTY, NM**

**BULLDOG**

**DEERSTALKER FED COM #703H**

**OWB**

**Plan: PWP1**

## **Standard Survey Report**

**01 October, 2019**

## Survey Report

<b>Company:</b>	NORTHERN DELAWARE BASIN	<b>Local Co-ordinate Reference:</b>	Well DEERSTALKER FED COM #703H
<b>Project:</b>	LEA COUNTY, NM	<b>TVD Reference:</b>	KB=27' @ 3314.0usft (Nabors 893)
<b>Site:</b>	BULLDOG	<b>MD Reference:</b>	KB=27' @ 3314.0usft (Nabors 893)
<b>Well:</b>	DEERSTALKER FED COM #703H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PWP1	<b>Database:</b>	EDM_Users

<b>Project</b>	LEA COUNTY, NM		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	New Mexico East 3001		

<b>Site</b>	BULLDOG		
<b>Site Position:</b>		<b>Northing:</b>	398,637.10 usft
<b>From:</b>	Map	<b>Easting:</b>	741,887.40 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "
		<b>Latitude:</b>	32° 5' 36.820 N
		<b>Longitude:</b>	103° 33' 8.116 W
		<b>Grid Convergence:</b>	0.42 °

<b>Well</b>	DEERSTALKER FED COM #703H		
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b> 425,233.40 usft
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b> 791,793.90 usft
<b>Position Uncertainty</b>		3.0 usft	<b>Wellhead Elevation:</b> usft
			<b>Latitude:</b> 32° 9' 56.049 N
			<b>Longitude:</b> 103° 23' 25.320 W
			<b>Ground Level:</b> 3,286.8 usft

<b>Wellbore</b>	OWB		
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>
	IGRF2015	10/1/2019	6.62
			<b>Dip Angle (°)</b> 60.01
			<b>Field Strength (nT)</b> 47,687.71873200

<b>Design</b>	PWP1		
<b>Audit Notes:</b>			
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b> 0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>
	0.0	0.0	0.0
			<b>Direction (°)</b> 180.13

<b>Survey Tool Program</b>	<b>Date</b>	10/1/2019		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	22,907.8	PWP1 (OWB)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction

<b>Planned Survey</b>									
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>
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

## Survey Report

<b>Company:</b>	NORTHERN DELAWARE BASIN	<b>Local Co-ordinate Reference:</b>	Well DEERSTALKER FED COM #703H
<b>Project:</b>	LEA COUNTY, NM	<b>TVD Reference:</b>	KB=27' @ 3314.0usft (Nabors 893)
<b>Site:</b>	BULLDOG	<b>MD Reference:</b>	KB=27' @ 3314.0usft (Nabors 893)
<b>Well:</b>	DEERSTALKER FED COM #703H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PWP1	<b>Database:</b>	EDM_Users

### Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>Start Build 2.00</b>									
2,600.0	2.00	342.85	2,600.0	1.7	-0.5	-1.7	2.00	2.00	0.00
2,698.2	3.96	342.85	2,698.1	6.6	-2.0	-6.5	2.00	2.00	0.00
<b>Start 4706.1 hold at 2698.2 MD</b>									
2,700.0	3.96	342.85	2,699.8	6.7	-2.1	-6.7	0.00	0.00	0.00
2,800.0	3.96	342.85	2,799.6	13.3	-4.1	-13.3	0.00	0.00	0.00
2,900.0	3.96	342.85	2,899.4	19.9	-6.1	-19.9	0.00	0.00	0.00
3,000.0	3.96	342.85	2,999.1	26.5	-8.2	-26.5	0.00	0.00	0.00
3,100.0	3.96	342.85	3,098.9	33.1	-10.2	-33.1	0.00	0.00	0.00
3,200.0	3.96	342.85	3,198.6	39.7	-12.3	-39.7	0.00	0.00	0.00
3,300.0	3.96	342.85	3,298.4	46.3	-14.3	-46.3	0.00	0.00	0.00
3,400.0	3.96	342.85	3,398.2	52.9	-16.3	-52.9	0.00	0.00	0.00
3,500.0	3.96	342.85	3,497.9	59.5	-18.4	-59.5	0.00	0.00	0.00
3,600.0	3.96	342.85	3,597.7	66.1	-20.4	-66.1	0.00	0.00	0.00
3,700.0	3.96	342.85	3,697.4	72.7	-22.4	-72.7	0.00	0.00	0.00
3,800.0	3.96	342.85	3,797.2	79.3	-24.5	-79.3	0.00	0.00	0.00
3,900.0	3.96	342.85	3,897.0	85.9	-26.5	-85.9	0.00	0.00	0.00
4,000.0	3.96	342.85	3,996.7	92.5	-28.6	-92.5	0.00	0.00	0.00
4,100.0	3.96	342.85	4,096.5	99.2	-30.6	-99.1	0.00	0.00	0.00
4,200.0	3.96	342.85	4,196.2	105.8	-32.6	-105.7	0.00	0.00	0.00
4,300.0	3.96	342.85	4,296.0	112.4	-34.7	-112.3	0.00	0.00	0.00
4,400.0	3.96	342.85	4,395.8	119.0	-36.7	-118.9	0.00	0.00	0.00
4,500.0	3.96	342.85	4,495.5	125.6	-38.8	-125.5	0.00	0.00	0.00
4,600.0	3.96	342.85	4,595.3	132.2	-40.8	-132.1	0.00	0.00	0.00
4,700.0	3.96	342.85	4,695.1	138.8	-42.8	-138.7	0.00	0.00	0.00
4,800.0	3.96	342.85	4,794.8	145.4	-44.9	-145.3	0.00	0.00	0.00
4,900.0	3.96	342.85	4,894.6	152.0	-46.9	-151.9	0.00	0.00	0.00
5,000.0	3.96	342.85	4,994.3	158.6	-49.0	-158.5	0.00	0.00	0.00

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<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PWP1	<b>Database:</b>	EDM_Users

### Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,100.0	3.96	342.85	5,094.1	165.2	-51.0	-165.1	0.00	0.00	0.00
5,200.0	3.96	342.85	5,193.9	171.8	-53.0	-171.7	0.00	0.00	0.00
5,300.0	3.96	342.85	5,293.6	178.4	-55.1	-178.3	0.00	0.00	0.00
5,400.0	3.96	342.85	5,393.4	185.0	-57.1	-184.9	0.00	0.00	0.00
5,500.0	3.96	342.85	5,493.1	191.6	-59.1	-191.5	0.00	0.00	0.00
5,600.0	3.96	342.85	5,592.9	198.2	-61.2	-198.1	0.00	0.00	0.00
5,700.0	3.96	342.85	5,692.7	204.9	-63.2	-204.7	0.00	0.00	0.00
5,800.0	3.96	342.85	5,792.4	211.5	-65.3	-211.3	0.00	0.00	0.00
5,900.0	3.96	342.85	5,892.2	218.1	-67.3	-217.9	0.00	0.00	0.00
6,000.0	3.96	342.85	5,991.9	224.7	-69.3	-224.5	0.00	0.00	0.00
6,100.0	3.96	342.85	6,091.7	231.3	-71.4	-231.1	0.00	0.00	0.00
6,200.0	3.96	342.85	6,191.5	237.9	-73.4	-237.7	0.00	0.00	0.00
6,300.0	3.96	342.85	6,291.2	244.5	-75.5	-244.3	0.00	0.00	0.00
6,400.0	3.96	342.85	6,391.0	251.1	-77.5	-250.9	0.00	0.00	0.00
6,500.0	3.96	342.85	6,490.7	257.7	-79.5	-257.5	0.00	0.00	0.00
6,600.0	3.96	342.85	6,590.5	264.3	-81.6	-264.1	0.00	0.00	0.00
6,700.0	3.96	342.85	6,690.3	270.9	-83.6	-270.7	0.00	0.00	0.00
6,800.0	3.96	342.85	6,790.0	277.5	-85.7	-277.3	0.00	0.00	0.00
6,900.0	3.96	342.85	6,889.8	284.1	-87.7	-283.9	0.00	0.00	0.00
7,000.0	3.96	342.85	6,989.5	290.7	-89.7	-290.5	0.00	0.00	0.00
7,100.0	3.96	342.85	7,089.3	297.3	-91.8	-297.1	0.00	0.00	0.00
7,200.0	3.96	342.85	7,189.1	303.9	-93.8	-303.7	0.00	0.00	0.00
7,300.0	3.96	342.85	7,288.8	310.6	-95.9	-310.3	0.00	0.00	0.00
7,400.0	3.96	342.85	7,388.6	317.2	-97.9	-316.9	0.00	0.00	0.00
7,404.4	3.96	342.85	7,392.9	317.4	-98.0	-317.2	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
7,500.0	2.05	342.85	7,488.4	322.2	-99.5	-322.0	2.00	-2.00	0.00
7,600.0	0.05	342.85	7,588.4	324.0	-100.0	-323.8	2.00	-2.00	0.00
7,602.6	0.00	0.00	7,591.0	324.0	-100.0	-323.8	2.00	-2.00	0.00
<b>Start 4500.0 hold at 7602.6 MD</b>									
7,700.0	0.00	0.00	7,688.4	324.0	-100.0	-323.8	0.00	0.00	0.00
7,800.0	0.00	0.00	7,788.4	324.0	-100.0	-323.8	0.00	0.00	0.00
7,900.0	0.00	0.00	7,888.4	324.0	-100.0	-323.8	0.00	0.00	0.00
8,000.0	0.00	0.00	7,988.4	324.0	-100.0	-323.8	0.00	0.00	0.00
8,100.0	0.00	0.00	8,088.4	324.0	-100.0	-323.8	0.00	0.00	0.00
8,200.0	0.00	0.00	8,188.4	324.0	-100.0	-323.8	0.00	0.00	0.00
8,300.0	0.00	0.00	8,288.4	324.0	-100.0	-323.8	0.00	0.00	0.00
8,400.0	0.00	0.00	8,388.4	324.0	-100.0	-323.8	0.00	0.00	0.00
8,500.0	0.00	0.00	8,488.4	324.0	-100.0	-323.8	0.00	0.00	0.00
8,600.0	0.00	0.00	8,588.4	324.0	-100.0	-323.8	0.00	0.00	0.00
8,700.0	0.00	0.00	8,688.4	324.0	-100.0	-323.8	0.00	0.00	0.00
8,800.0	0.00	0.00	8,788.4	324.0	-100.0	-323.8	0.00	0.00	0.00
8,900.0	0.00	0.00	8,888.4	324.0	-100.0	-323.8	0.00	0.00	0.00
9,000.0	0.00	0.00	8,988.4	324.0	-100.0	-323.8	0.00	0.00	0.00

## Survey Report

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<b>Design:</b>	PWP1	<b>Database:</b>	EDM_Users

### 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	0.00	0.00	9,088.4	324.0	-100.0	-323.8	0.00	0.00	0.00
9,200.0	0.00	0.00	9,188.4	324.0	-100.0	-323.8	0.00	0.00	0.00
9,300.0	0.00	0.00	9,288.4	324.0	-100.0	-323.8	0.00	0.00	0.00
9,400.0	0.00	0.00	9,388.4	324.0	-100.0	-323.8	0.00	0.00	0.00
9,500.0	0.00	0.00	9,488.4	324.0	-100.0	-323.8	0.00	0.00	0.00
9,600.0	0.00	0.00	9,588.4	324.0	-100.0	-323.8	0.00	0.00	0.00
9,700.0	0.00	0.00	9,688.4	324.0	-100.0	-323.8	0.00	0.00	0.00
9,800.0	0.00	0.00	9,788.4	324.0	-100.0	-323.8	0.00	0.00	0.00
9,900.0	0.00	0.00	9,888.4	324.0	-100.0	-323.8	0.00	0.00	0.00
10,000.0	0.00	0.00	9,988.4	324.0	-100.0	-323.8	0.00	0.00	0.00
10,100.0	0.00	0.00	10,088.4	324.0	-100.0	-323.8	0.00	0.00	0.00
10,200.0	0.00	0.00	10,188.4	324.0	-100.0	-323.8	0.00	0.00	0.00
10,300.0	0.00	0.00	10,288.4	324.0	-100.0	-323.8	0.00	0.00	0.00
10,400.0	0.00	0.00	10,388.4	324.0	-100.0	-323.8	0.00	0.00	0.00
10,500.0	0.00	0.00	10,488.4	324.0	-100.0	-323.8	0.00	0.00	0.00
10,600.0	0.00	0.00	10,588.4	324.0	-100.0	-323.8	0.00	0.00	0.00
10,700.0	0.00	0.00	10,688.4	324.0	-100.0	-323.8	0.00	0.00	0.00
10,800.0	0.00	0.00	10,788.4	324.0	-100.0	-323.8	0.00	0.00	0.00
10,900.0	0.00	0.00	10,888.4	324.0	-100.0	-323.8	0.00	0.00	0.00
11,000.0	0.00	0.00	10,988.4	324.0	-100.0	-323.8	0.00	0.00	0.00
11,100.0	0.00	0.00	11,088.4	324.0	-100.0	-323.8	0.00	0.00	0.00
11,200.0	0.00	0.00	11,188.4	324.0	-100.0	-323.8	0.00	0.00	0.00
11,300.0	0.00	0.00	11,288.4	324.0	-100.0	-323.8	0.00	0.00	0.00
11,400.0	0.00	0.00	11,388.4	324.0	-100.0	-323.8	0.00	0.00	0.00
11,500.0	0.00	0.00	11,488.4	324.0	-100.0	-323.8	0.00	0.00	0.00
11,600.0	0.00	0.00	11,588.4	324.0	-100.0	-323.8	0.00	0.00	0.00
11,700.0	0.00	0.00	11,688.4	324.0	-100.0	-323.8	0.00	0.00	0.00
11,800.0	0.00	0.00	11,788.4	324.0	-100.0	-323.8	0.00	0.00	0.00
11,900.0	0.00	0.00	11,888.4	324.0	-100.0	-323.8	0.00	0.00	0.00
12,000.0	0.00	0.00	11,988.4	324.0	-100.0	-323.8	0.00	0.00	0.00
12,100.0	0.00	0.00	12,088.4	324.0	-100.0	-323.8	0.00	0.00	0.00
12,102.6	0.00	0.00	12,091.0	324.0	-100.0	-323.8	0.00	0.00	0.00
<b>Start DLS 10.00 TFO 179.58</b>									
12,200.0	9.74	179.58	12,188.0	315.7	-99.9	-315.5	10.00	10.00	0.00
12,300.0	19.74	179.58	12,284.5	290.3	-99.8	-290.1	10.00	10.00	0.00
12,400.0	29.74	179.58	12,375.2	248.5	-99.5	-248.3	10.00	10.00	0.00
12,500.0	39.74	179.58	12,457.3	191.6	-99.0	-191.4	10.00	10.00	0.00
12,600.0	49.74	179.58	12,528.2	121.3	-98.5	-121.1	10.00	10.00	0.00
12,700.0	59.74	179.58	12,585.9	39.8	-97.9	-39.5	10.00	10.00	0.00
12,800.0	69.74	179.58	12,628.5	-50.6	-97.3	50.8	10.00	10.00	0.00
12,900.0	79.74	179.58	12,654.8	-146.9	-96.6	147.1	10.00	10.00	0.00
13,000.0	89.74	179.58	12,664.0	-246.4	-95.9	246.6	10.00	10.00	0.00
13,005.5	90.29	179.58	12,664.0	-251.8	-95.8	252.1	10.00	10.00	0.00

## Survey Report

<b>Company:</b>	NORTHERN DELAWARE BASIN	<b>Local Co-ordinate Reference:</b>	Well DEERSTALKER FED COM #703H
<b>Project:</b>	LEA COUNTY, NM	<b>TVD Reference:</b>	KB=27' @ 3314.0usft (Nabors 893)
<b>Site:</b>	BULLDOG	<b>MD Reference:</b>	KB=27' @ 3314.0usft (Nabors 893)
<b>Well:</b>	DEERSTALKER FED COM #703H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PWP1	<b>Database:</b>	EDM_Users

### 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)
<b>Start 9902.4 hold at 13005.5 MD</b>									
13,100.0	90.29	179.58	12,663.5	-346.4	-95.1	346.6	0.00	0.00	0.00
13,200.0	90.29	179.58	12,663.0	-446.4	-94.4	446.6	0.00	0.00	0.00
13,300.0	90.29	179.58	12,662.5	-546.4	-93.7	546.6	0.00	0.00	0.00
13,400.0	90.29	179.58	12,662.0	-646.3	-92.9	646.6	0.00	0.00	0.00
13,500.0	90.29	179.58	12,661.5	-746.3	-92.2	746.6	0.00	0.00	0.00
13,600.0	90.29	179.58	12,661.0	-846.3	-91.5	846.6	0.00	0.00	0.00
13,700.0	90.29	179.58	12,660.4	-946.3	-90.8	946.5	0.00	0.00	0.00
13,800.0	90.29	179.58	12,659.9	-1,046.3	-90.0	1,046.5	0.00	0.00	0.00
13,900.0	90.29	179.58	12,659.4	-1,146.3	-89.3	1,146.5	0.00	0.00	0.00
14,000.0	90.29	179.58	12,658.9	-1,246.3	-88.6	1,246.5	0.00	0.00	0.00
14,100.0	90.29	179.58	12,658.4	-1,346.3	-87.9	1,346.5	0.00	0.00	0.00
14,200.0	90.29	179.58	12,657.9	-1,446.3	-87.1	1,446.5	0.00	0.00	0.00
14,300.0	90.29	179.58	12,657.4	-1,546.3	-86.4	1,546.5	0.00	0.00	0.00
14,400.0	90.29	179.58	12,656.9	-1,646.3	-85.7	1,646.5	0.00	0.00	0.00
14,500.0	90.29	179.58	12,656.4	-1,746.3	-84.9	1,746.5	0.00	0.00	0.00
14,600.0	90.29	179.58	12,655.9	-1,846.3	-84.2	1,846.5	0.00	0.00	0.00
14,700.0	90.29	179.58	12,655.4	-1,946.3	-83.5	1,946.5	0.00	0.00	0.00
14,800.0	90.29	179.58	12,654.9	-2,046.3	-82.8	2,046.5	0.00	0.00	0.00
14,900.0	90.29	179.58	12,654.4	-2,146.3	-82.0	2,146.5	0.00	0.00	0.00
15,000.0	90.29	179.58	12,653.9	-2,246.3	-81.3	2,246.5	0.00	0.00	0.00
15,100.0	90.29	179.58	12,653.4	-2,346.3	-80.6	2,346.5	0.00	0.00	0.00
15,200.0	90.29	179.58	12,652.9	-2,446.3	-79.9	2,446.5	0.00	0.00	0.00
15,300.0	90.29	179.58	12,652.4	-2,546.3	-79.1	2,546.5	0.00	0.00	0.00
15,400.0	90.29	179.58	12,651.9	-2,646.3	-78.4	2,646.4	0.00	0.00	0.00
15,500.0	90.29	179.58	12,651.4	-2,746.3	-77.7	2,746.4	0.00	0.00	0.00
15,600.0	90.29	179.58	12,650.9	-2,846.3	-76.9	2,846.4	0.00	0.00	0.00
15,700.0	90.29	179.58	12,650.4	-2,946.3	-76.2	2,946.4	0.00	0.00	0.00
15,800.0	90.29	179.58	12,649.9	-3,046.3	-75.5	3,046.4	0.00	0.00	0.00
15,900.0	90.29	179.58	12,649.3	-3,146.3	-74.8	3,146.4	0.00	0.00	0.00
16,000.0	90.29	179.58	12,648.8	-3,246.2	-74.0	3,246.4	0.00	0.00	0.00
16,100.0	90.29	179.58	12,648.3	-3,346.2	-73.3	3,346.4	0.00	0.00	0.00
16,200.0	90.29	179.58	12,647.8	-3,446.2	-72.6	3,446.4	0.00	0.00	0.00
16,300.0	90.29	179.58	12,647.3	-3,546.2	-71.9	3,546.4	0.00	0.00	0.00
16,400.0	90.29	179.58	12,646.8	-3,646.2	-71.1	3,646.4	0.00	0.00	0.00
16,500.0	90.29	179.58	12,646.3	-3,746.2	-70.4	3,746.4	0.00	0.00	0.00
16,600.0	90.29	179.58	12,645.8	-3,846.2	-69.7	3,846.4	0.00	0.00	0.00
16,700.0	90.29	179.58	12,645.3	-3,946.2	-68.9	3,946.4	0.00	0.00	0.00
16,800.0	90.29	179.58	12,644.8	-4,046.2	-68.2	4,046.4	0.00	0.00	0.00
16,900.0	90.29	179.58	12,644.3	-4,146.2	-67.5	4,146.4	0.00	0.00	0.00
17,000.0	90.29	179.58	12,643.8	-4,246.2	-66.8	4,246.4	0.00	0.00	0.00
17,100.0	90.29	179.58	12,643.3	-4,346.2	-66.0	4,346.3	0.00	0.00	0.00
17,200.0	90.29	179.58	12,642.8	-4,446.2	-65.3	4,446.3	0.00	0.00	0.00
17,300.0	90.29	179.58	12,642.3	-4,546.2	-64.6	4,546.3	0.00	0.00	0.00

## Survey Report

<b>Company:</b>	NORTHERN DELAWARE BASIN	<b>Local Co-ordinate Reference:</b>	Well DEERSTALKER FED COM #703H
<b>Project:</b>	LEA COUNTY, NM	<b>TVD Reference:</b>	KB=27' @ 3314.0usft (Nabors 893)
<b>Site:</b>	BULLDOG	<b>MD Reference:</b>	KB=27' @ 3314.0usft (Nabors 893)
<b>Well:</b>	DEERSTALKER FED COM #703H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PWP1	<b>Database:</b>	EDM_Users

### 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)
17,400.0	90.29	179.58	12,641.8	-4,646.2	-63.9	4,646.3	0.00	0.00	0.00
17,500.0	90.29	179.58	12,641.3	-4,746.2	-63.1	4,746.3	0.00	0.00	0.00
17,600.0	90.29	179.58	12,640.8	-4,846.2	-62.4	4,846.3	0.00	0.00	0.00
17,700.0	90.29	179.58	12,640.3	-4,946.2	-61.7	4,946.3	0.00	0.00	0.00
17,800.0	90.29	179.58	12,639.8	-5,046.2	-60.9	5,046.3	0.00	0.00	0.00
17,900.0	90.29	179.58	12,639.3	-5,146.2	-60.2	5,146.3	0.00	0.00	0.00
18,000.0	90.29	179.58	12,638.8	-5,246.2	-59.5	5,246.3	0.00	0.00	0.00
18,100.0	90.29	179.58	12,638.3	-5,346.2	-58.8	5,346.3	0.00	0.00	0.00
18,200.0	90.29	179.58	12,637.7	-5,446.2	-58.0	5,446.3	0.00	0.00	0.00
18,300.0	90.29	179.58	12,637.2	-5,546.2	-57.3	5,546.3	0.00	0.00	0.00
18,400.0	90.29	179.58	12,636.7	-5,646.2	-56.6	5,646.3	0.00	0.00	0.00
18,500.0	90.29	179.58	12,636.2	-5,746.1	-55.9	5,746.3	0.00	0.00	0.00
18,600.0	90.29	179.58	12,635.7	-5,846.1	-55.1	5,846.3	0.00	0.00	0.00
18,700.0	90.29	179.58	12,635.2	-5,946.1	-54.4	5,946.3	0.00	0.00	0.00
18,800.0	90.29	179.58	12,634.7	-6,046.1	-53.7	6,046.2	0.00	0.00	0.00
18,900.0	90.29	179.58	12,634.2	-6,146.1	-52.9	6,146.2	0.00	0.00	0.00
19,000.0	90.29	179.58	12,633.7	-6,246.1	-52.2	6,246.2	0.00	0.00	0.00
19,100.0	90.29	179.58	12,633.2	-6,346.1	-51.5	6,346.2	0.00	0.00	0.00
19,200.0	90.29	179.58	12,632.7	-6,446.1	-50.8	6,446.2	0.00	0.00	0.00
19,300.0	90.29	179.58	12,632.2	-6,546.1	-50.0	6,546.2	0.00	0.00	0.00
19,400.0	90.29	179.58	12,631.7	-6,646.1	-49.3	6,646.2	0.00	0.00	0.00
19,500.0	90.29	179.58	12,631.2	-6,746.1	-48.6	6,746.2	0.00	0.00	0.00
19,600.0	90.29	179.58	12,630.7	-6,846.1	-47.9	6,846.2	0.00	0.00	0.00
19,700.0	90.29	179.58	12,630.2	-6,946.1	-47.1	6,946.2	0.00	0.00	0.00
19,800.0	90.29	179.58	12,629.7	-7,046.1	-46.4	7,046.2	0.00	0.00	0.00
19,900.0	90.29	179.58	12,629.2	-7,146.1	-45.7	7,146.2	0.00	0.00	0.00
20,000.0	90.29	179.58	12,628.7	-7,246.1	-44.9	7,246.2	0.00	0.00	0.00
20,100.0	90.29	179.58	12,628.2	-7,346.1	-44.2	7,346.2	0.00	0.00	0.00
20,200.0	90.29	179.58	12,627.7	-7,446.1	-43.5	7,446.2	0.00	0.00	0.00
20,300.0	90.29	179.58	12,627.2	-7,546.1	-42.8	7,546.2	0.00	0.00	0.00
20,400.0	90.29	179.58	12,626.7	-7,646.1	-42.0	7,646.2	0.00	0.00	0.00
20,500.0	90.29	179.58	12,626.1	-7,746.1	-41.3	7,746.1	0.00	0.00	0.00
20,600.0	90.29	179.58	12,625.6	-7,846.1	-40.6	7,846.1	0.00	0.00	0.00
20,700.0	90.29	179.58	12,625.1	-7,946.1	-39.9	7,946.1	0.00	0.00	0.00
20,800.0	90.29	179.58	12,624.6	-8,046.1	-39.1	8,046.1	0.00	0.00	0.00
20,900.0	90.29	179.58	12,624.1	-8,146.1	-38.4	8,146.1	0.00	0.00	0.00
21,000.0	90.29	179.58	12,623.6	-8,246.1	-37.7	8,246.1	0.00	0.00	0.00
21,100.0	90.29	179.58	12,623.1	-8,346.0	-36.9	8,346.1	0.00	0.00	0.00
21,200.0	90.29	179.58	12,622.6	-8,446.0	-36.2	8,446.1	0.00	0.00	0.00
21,300.0	90.29	179.58	12,622.1	-8,546.0	-35.5	8,546.1	0.00	0.00	0.00
21,400.0	90.29	179.58	12,621.6	-8,646.0	-34.8	8,646.1	0.00	0.00	0.00
21,500.0	90.29	179.58	12,621.1	-8,746.0	-34.0	8,746.1	0.00	0.00	0.00
21,600.0	90.29	179.58	12,620.6	-8,846.0	-33.3	8,846.1	0.00	0.00	0.00

## Survey Report

<b>Company:</b>	NORTHERN DELAWARE BASIN	<b>Local Co-ordinate Reference:</b>	Well DEERSTALKER FED COM #703H
<b>Project:</b>	LEA COUNTY, NM	<b>TVD Reference:</b>	KB=27' @ 3314.0usft (Nabors 893)
<b>Site:</b>	BULLDOG	<b>MD Reference:</b>	KB=27' @ 3314.0usft (Nabors 893)
<b>Well:</b>	DEERSTALKER FED COM #703H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PWP1	<b>Database:</b>	EDM_Users

### 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)
21,700.0	90.29	179.58	12,620.1	-8,946.0	-32.6	8,946.1	0.00	0.00	0.00
21,800.0	90.29	179.58	12,619.6	-9,046.0	-31.9	9,046.1	0.00	0.00	0.00
21,900.0	90.29	179.58	12,619.1	-9,146.0	-31.1	9,146.1	0.00	0.00	0.00
22,000.0	90.29	179.58	12,618.6	-9,246.0	-30.4	9,246.1	0.00	0.00	0.00
22,100.0	90.29	179.58	12,618.1	-9,346.0	-29.7	9,346.1	0.00	0.00	0.00
22,200.0	90.29	179.58	12,617.6	-9,446.0	-28.9	9,446.0	0.00	0.00	0.00
22,300.0	90.29	179.58	12,617.1	-9,546.0	-28.2	9,546.0	0.00	0.00	0.00
22,400.0	90.29	179.58	12,616.6	-9,646.0	-27.5	9,646.0	0.00	0.00	0.00
22,500.0	90.29	179.58	12,616.1	-9,746.0	-26.8	9,746.0	0.00	0.00	0.00
22,600.0	90.29	179.58	12,615.6	-9,846.0	-26.0	9,846.0	0.00	0.00	0.00
22,700.0	90.29	179.58	12,615.0	-9,946.0	-25.3	9,946.0	0.00	0.00	0.00
22,800.0	90.29	179.58	12,614.5	-10,046.0	-24.6	10,046.0	0.00	0.00	0.00
22,900.0	90.29	179.58	12,614.0	-10,146.0	-23.9	10,146.0	0.00	0.00	0.00
22,907.8	90.29	179.58	12,614.0	-10,153.8	-23.8	10,153.8	0.00	0.00	0.00
TD at 22907.8									

### Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL (DEERSTALKE - plan hits target center - Rectangle (sides W100.0 H10,477.8 D20.0)	0.29	359.78	12,614.0	-10,153.8	-23.8	415,079.60	791,770.10	32° 8' 15.578 N	103° 23' 26.631 W
LTP (DEERSTALKER - plan misses target center by 0.3usft at 22857.8usft MD (12614.3 TVD, -10103.8 N, -24.2 E) - Point	0.00	0.00	12,614.0	-10,103.8	-24.2	415,129.60	791,769.70	32° 8' 16.073 N	103° 23' 26.631 W
FTP (DEERSTALKER - plan misses target center by 203.2usft at 12588.8usft MD (12521.0 TVD, 129.8 N, -98.6 E) - Point	0.00	0.00	12,664.0	274.1	-101.0	425,507.50	791,692.90	32° 9' 58.770 N	103° 23' 26.467 W

### Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
2500	2500	0	0	Start Build 2.00
2698	2698	7	-2	Start 4706.1 hold at 2698.2 MD
7404	7393	317	-98	Start Drop -2.00
7603	7591	324	-100	Start 4500.0 hold at 7602.6 MD
12,103	12,091	324	-100	Start DLS 10.00 TFO 179.58
13,005	12,664	-252	-96	Start 9902.4 hold at 13005.5 MD
22,908	12,614	-10,154	-24	TD at 22907.8

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

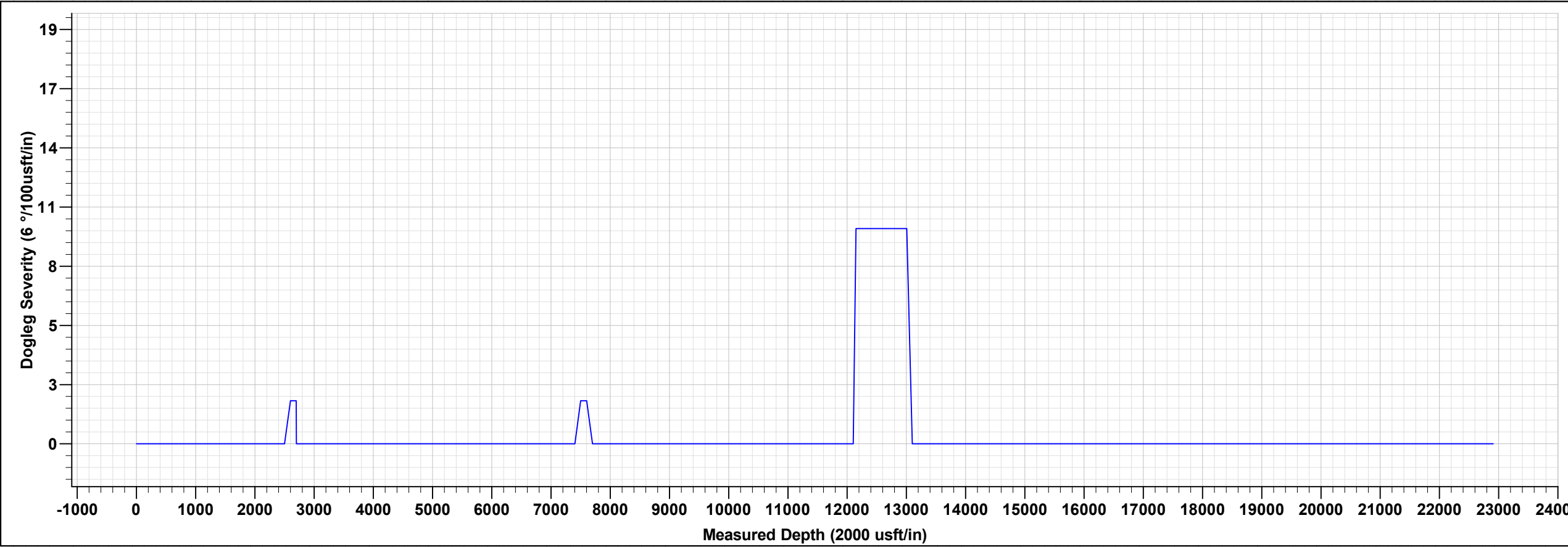
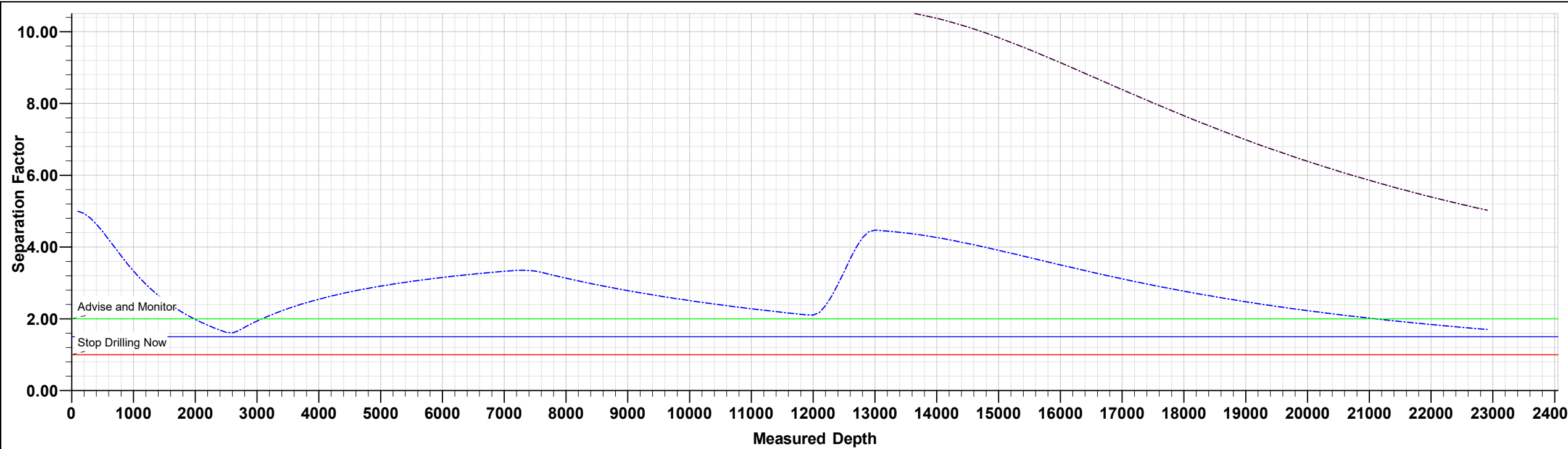




Project: LEA COUNTY, NM  
Site: BULLDOG  
Well: DEERSTALKER FED COM #703H  
Wellbore: OWB  
Design: PWP1  
GL: 3286.8  
KB=27' @ 3314.0usft (Nabors 893)

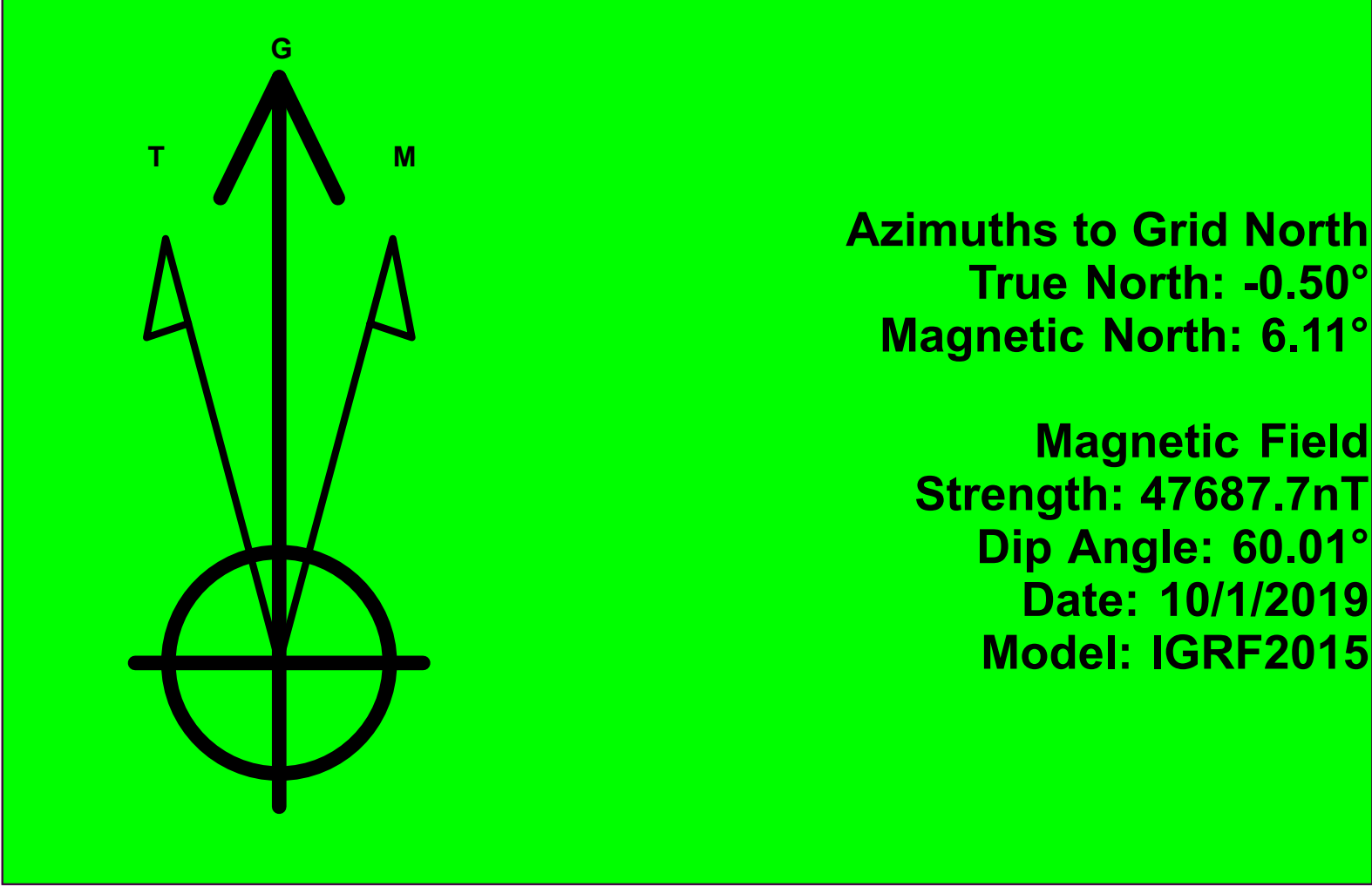
WELL DETAILS: DEERSTALKER FED COM #703H					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	425233.40	791793.90	32° 9' 56.049 N	103° 23' 25.320 W

DESIGN TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	
LTP (DEERSTALKER FED COM #703H)	12614.0	-10103.8	-24.2	415129.60	791769.70	
PBHL (DEERSTALKER FED COM #703H)	12614.0	-10153.8	-23.8	415079.60	791770.10	
FTP (DEERSTALKER FED COM #703H)	12664.0	274.1	-101.0	425507.50	791692.90	

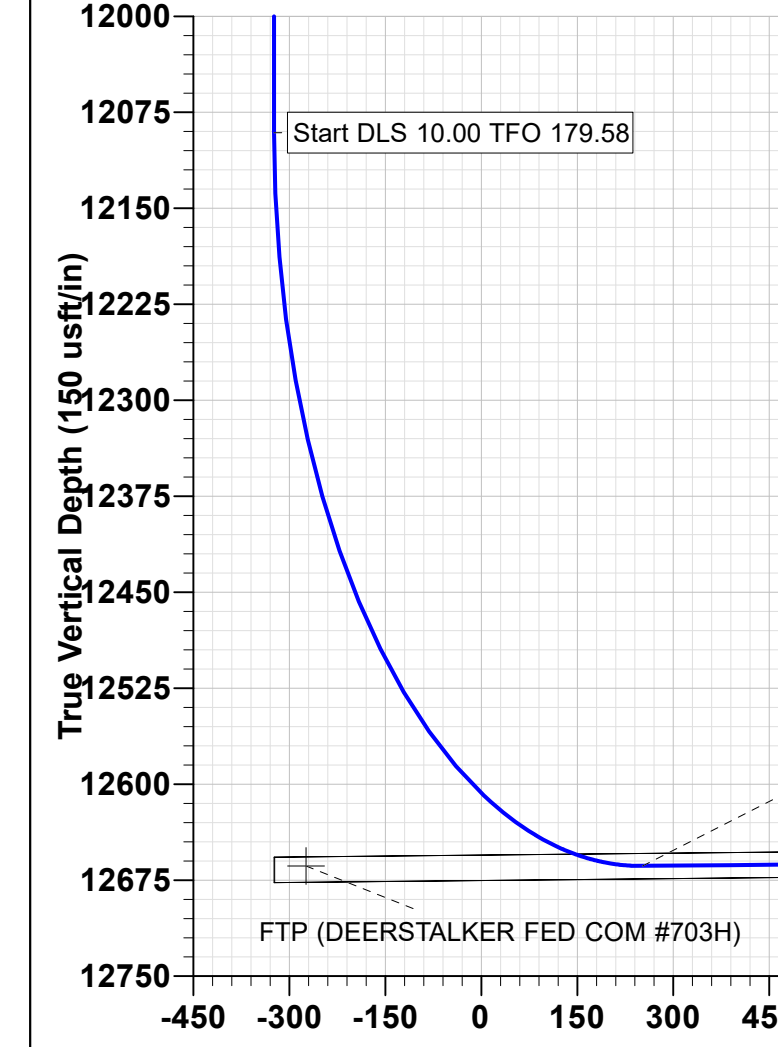
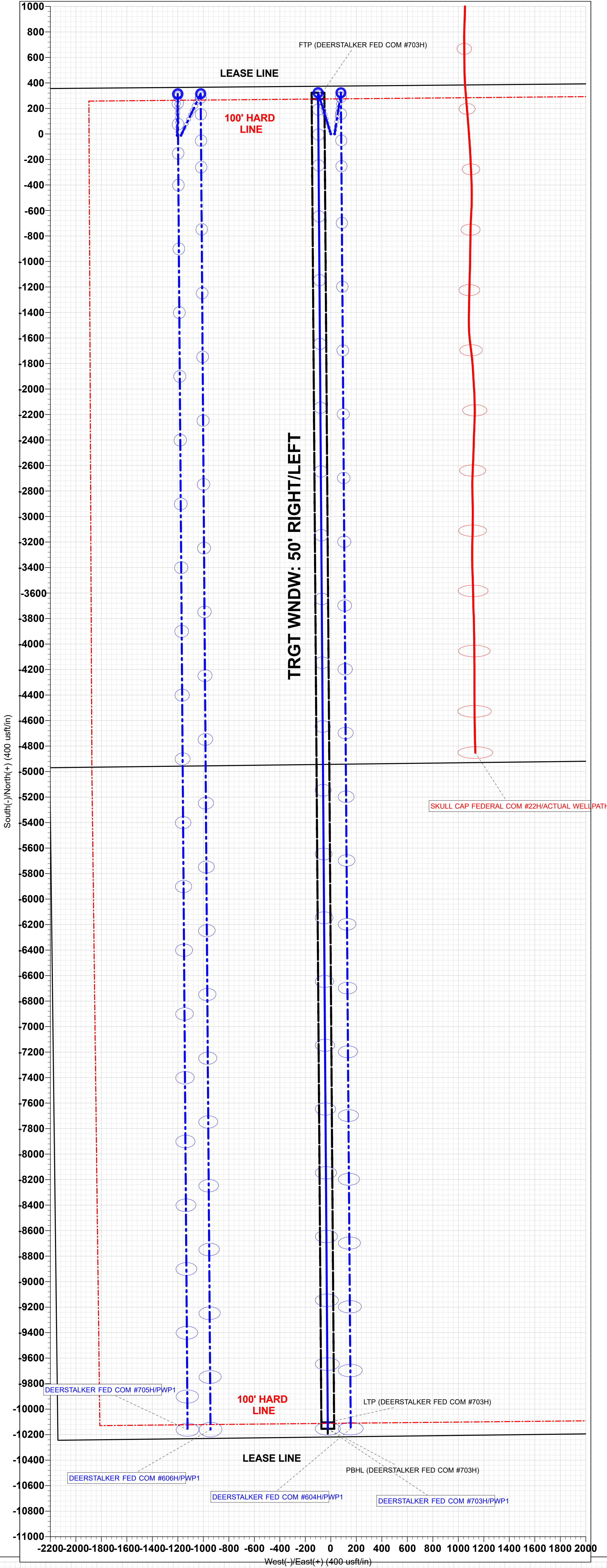
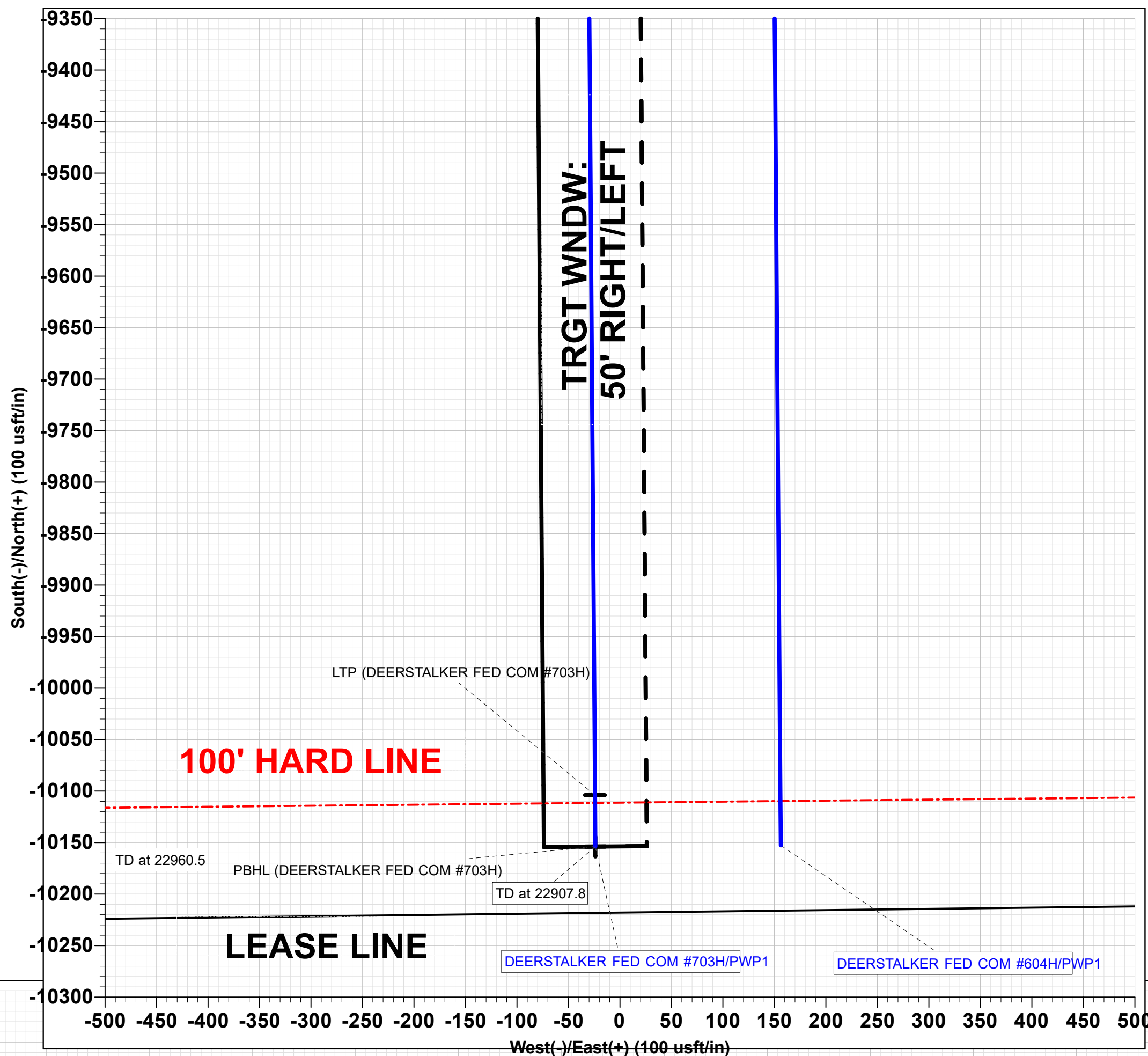
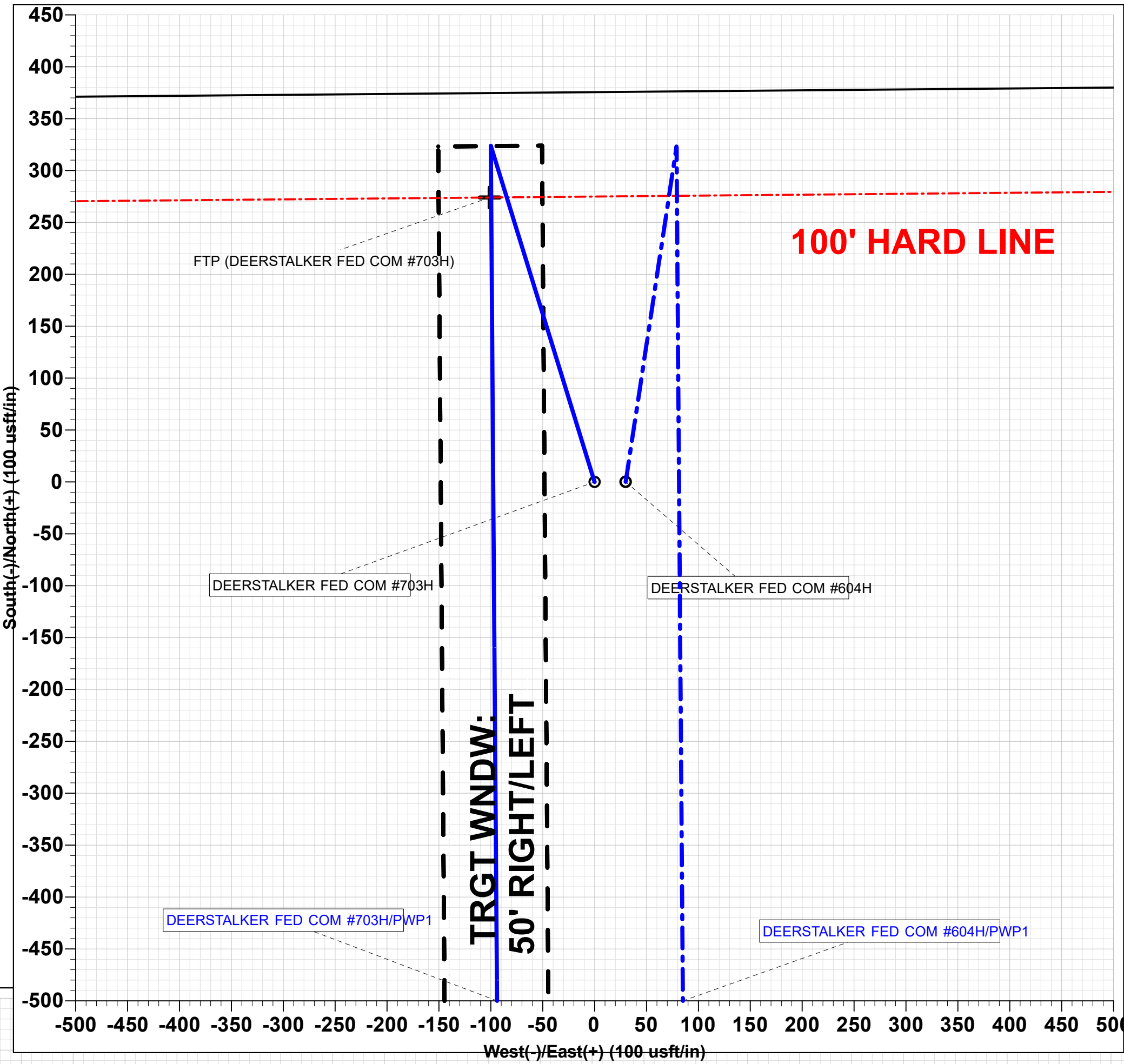
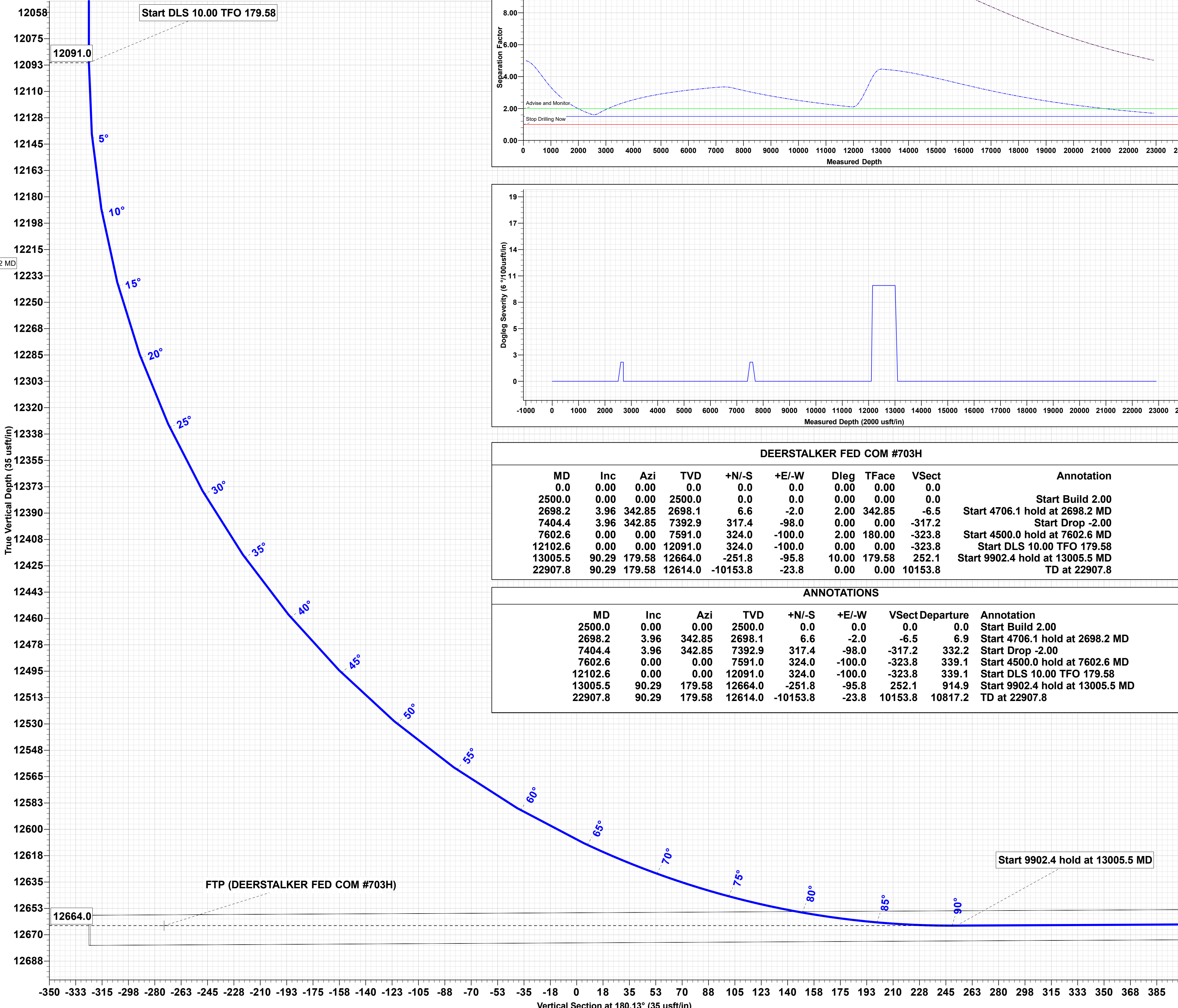
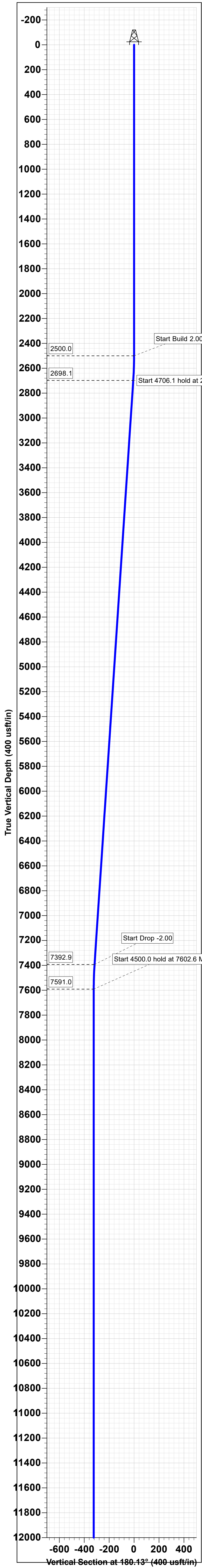


DEERSTALKER FED COM #703H									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2500.0	0.00	0.00	2500.0	0.0	0.0	0.00	0.00	0.0	Start Build 2.00
2698.2	3.96	342.85	2698.1	6.6	-2.0	2.00	342.85	-6.5	Start 4706.1 hold at 2698.2 MD
7404.4	3.96	342.85	7392.9	317.4	-98.0	0.00	0.00	-317.2	Start Drop -2.00
7602.6	0.00	0.00	7591.0	324.0	-100.0	2.00	180.00	-323.8	Start 4500.0 hold at 7602.6 MD
12102.6	0.00	0.00	12091.0	324.0	-100.0	0.00	0.00	-323.8	Start DLS 10.00 TFO 179.58
13005.5	90.29	179.58	12664.0	-251.8	-95.8	10.00	179.58	252.1	Start 9902.4 hold at 13005.5 MD
22907.8	90.29	179.58	12614.0	-10153.8	-23.8	0.00	0.00	10153.8	TD at 22907.8

ANNOTATIONS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation	
2500.0	0.00	0.00	2500.0	0.0	0.0	0.0	0.0	Start Build 2.00	
2698.2	3.96	342.85	2698.1	6.6	-2.0	-6.5	6.9	Start 4706.1 hold at 2698.2 MD	
7404.4	3.96	342.85	7392.9	317.4	-98.0	-317.2	332.2	Start Drop -2.00	
7602.6	0.00	0.00	7591.0	324.0	-100.0	-323.8	339.1	Start 4500.0 hold at 7602.6 MD	
12102.6	0.00	0.00	12091.0	324.0	-100.0	-323.8	339.1	Start DLS 10.00 TFO 179.58	
13005.5	90.29	179.58	12664.0	-251.8	-95.8	252.1	914.9	Start 9902.4 hold at 13005.5 MD	
22907.8	90.29	179.58	12614.0	-10153.8	-23.8	10153.8	10817.2	TD at 22907.8	



Azimuths to Grid North  
True North: -0.50°  
Magnetic North: 6.11°  
  
Magnetic Field  
Strength: 47687.7nT  
Dip Angle: 60.01°  
Date: 10/1/2019  
Model: IGRF2015



TRGT WNDW: 10'  
ABOVE/BELOW



# COG Operating, LLC - Deerstalker Federal Com #703H

## 1. Geologic Formations

TVD of target	12,664' EOL	Pilot hole depth	NA
MD at TD:	22,909'	Deepest expected fresh water:	350'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	764	Water	
Top of Salt	1134	Salt	
Base of Salt	5034	Salt	
Lamar	5364	Salt Water	
Bell Canyon	5395	Salt Water	
Cherry Canyon	6367	Oil/Gas	
Brushy Canyon	7899	Oil/Gas	
Bone Spring Lime	9214	Oil/Gas	
U. Avalon Shale	9259	Oil/Gas	
L. Avalon Shale	9648	Oil/Gas	
1st Bone Spring Sand	10439	Oil/Gas	
2nd Bone Spring Sand	10979	Oil/Gas	
3rd Bone Spring Sand	12088	Oil/Gas	
Wolfcamp	12464	Target Oil/Gas	
Wolfcamp B	12809	Not Penetrated	

## 2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Body
	From	To							
13.5"	0	790	10.75"	45.5	N80	BTC	6.83	1.18	28.93
9.875"	0	12015	7.875"	29.7	P110	BTC	1.26	1.04	3.04
6.75"	0	11515	5.5"	23	P110	BTC	1.84	1.90	2.50
6.75"	11515	22,909	5.5"	23	P110HC	SF	2.02	2.19	2.50
BLM Minimum Safety Factor							1.125	1	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

**COG Operating, LLC - Deerstalker Federal Com #703H**

	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.	N
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 <sup>rd</sup> 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 <sup>nd</sup> 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 - Deerstalker Federal Com #703H

## 3. Cementing Program

Casing	# Sk	Wt. lb/ gal	Yld ft3/ sack	H <sub>2</sub> O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	140	13.5	1.75	9	12	Lead: Class C + 4% Gel + 1% CaCl <sub>2</sub>
	200	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl <sub>2</sub>
Inter. Stage 1	620	11	2.8	19	48	Lead: NeoCem
	200	16.4	1.1	5	8	Tail: Class H
DV Tool @ 5350'						
Inter. Stage 2	440	11	2.8	19	48	Lead: NeoCem
	200	14.8	1.35	6.34	8	Tail: Class C + 1% CaCl <sub>2</sub>
Prod	180	11.9	2.5	19	72	Lead: 50:50:10 H Blend
	980	14.4	1.24	5.7	19	Tail: 50:50:2 Class H Blend

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'	75%
1 <sup>st</sup> Intermediate	0'	50%
Production	11,515'	35% OH in Lateral (KOP to EOL)

## COG Operating, LLC - Deerstalker Federal Com #703H

### 4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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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	3000 psi
			Blind Ram		5M
			Pipe Ram		
			Double Ram		
			Other*		
6-3/4"	13-5/8"	10M	Annular	x	50% testing pressure
			Blind Ram	x	10M
			Pipe Ram	x	
			Double Ram		
			Other*		

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

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

X	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.

## 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	9-5/8" Int shoe	Brine Diesel Emulsion	8.4 - 9	28-34	N/C
7-5/8" Int shoe	Lateral TD	OBM	9.6 - 12	35-45	<20

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

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

## 6. Logging and Testing Procedures

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

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

## 7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	7905 psi at 12664' TVD
Abnormal Temperature	NO 180 Deg. F.

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

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

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

## 8. Other Facets of Operation

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

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

COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

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

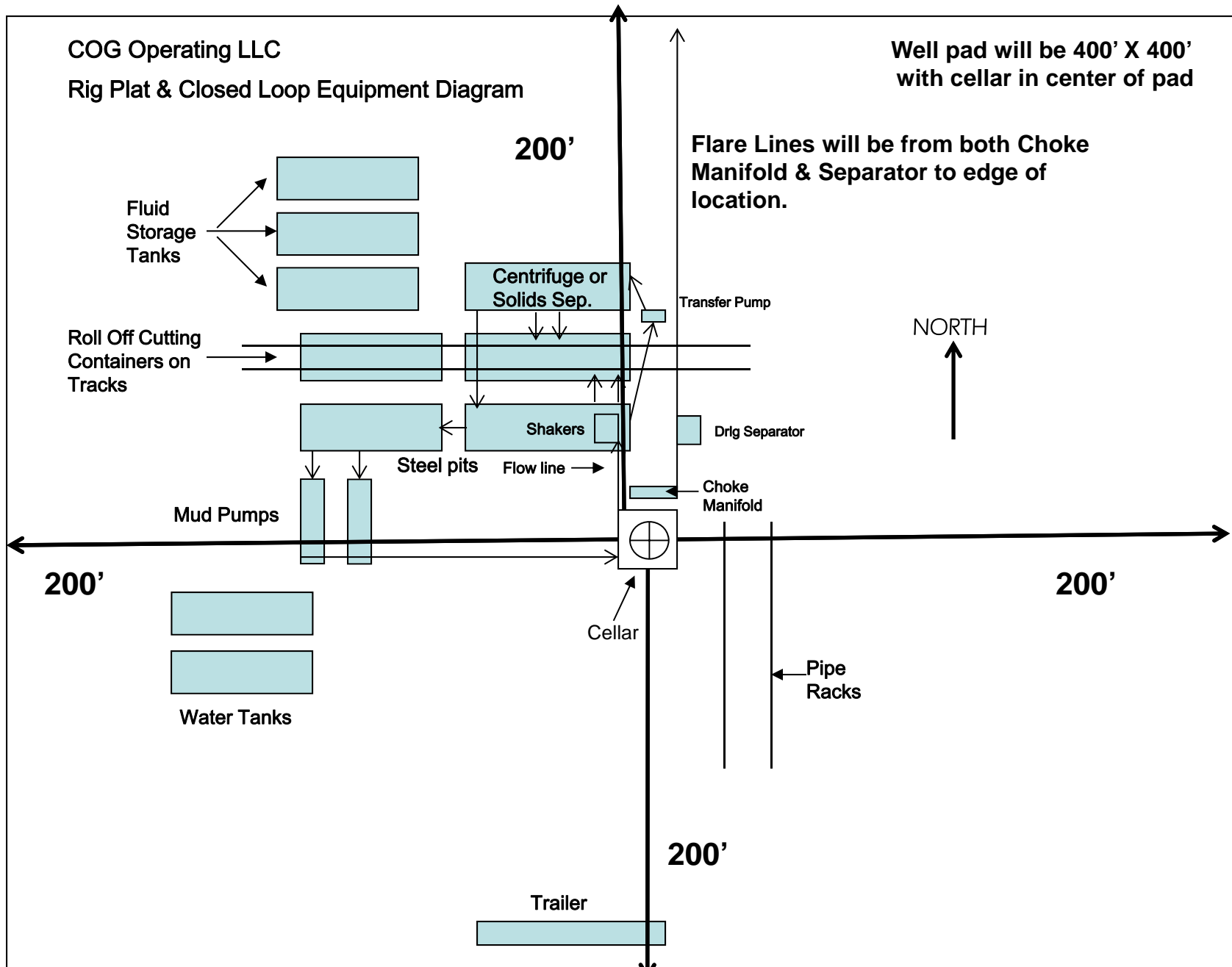


Exhibit 1

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