Form 3160-3
(June 2015)

OCD – HOBBS
08/25/2020
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FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

# APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM026394

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

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

8. Lease Name and Well No.
VACA DRAW 20-17 FEDERAL 32H [319775]

2. Name of Operator
CIMAREX ENERGY COMPANY [215099]

9. API Well No. 30-025-47652

3a. Address
600 N. Marienfeld St., Suite 600 Midland TX 79701

3b. Phone No. *(include area code)*
(432)620-1936

10. Field and Pool, or Exploratory [97994]
WOLFCAMP / WC-025 G-06 S253329D

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

At surface SWSW / 331 FSL / 1311 FWL / LAT 32.109742 / LONG -103.598615

At proposed prod. zone NENW / 100 FNL / 2192 FWL / LAT 32.13758 / LONG -103.595758

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 20 / T25S / R33E / NMP

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

12. County or Parish
LEA

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
331 feet

16. No of acres in lease
2560

17. Spacing Unit dedicated to this well
640

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
20 feet

19. Proposed Depth
9300 feet / 19304 feet

20. BLM/BIA Bond No. in file
FED: NMB001188

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3420 feet

22. Approximate date work will start*
12/01/2019

23. Estimated duration
30 days

## 24. Attachments

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

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

25. Signature
(Electronic Submission)

Name *(Printed/Typed)*
Fatima Vasquez / Ph: (432)620-1933

Date
05/10/2019

Title
Regulatory Analyst

Approved by *(Signature)*
(Electronic Submission)

Name *(Printed/Typed)*
Cody Layton / Ph: (575)234-5959

Date
06/23/2020

Title
Assistant Field Manager Lands & Minerals

Office
CARLSBAD

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 08/25/2020**

**SL**

APPROVED WITH CONDITIONS

KZ
09/08/2020

**Approval Date: 06/23/2020**

(Continued on page 2)

*(Instructions on page 2)

## INSTRUCTIONS

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

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

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

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

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

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

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

## NOTICES

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

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

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

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

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

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

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



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## Additional Operator Remarks

### Location of Well

1. SHL: SWSW / 331 FSL / 1311 FWL / TWSP: 25S / RANGE: 33E / SECTION: 20 / LAT: 32.109742 / LONG: -103.598615 ( TVD: 0 feet, MD: 0 feet )
   PPP: SESW / 379 FSL / 2192 FWL / TWSP: 25S / RANGE: 33E / SECTION: 20 / LAT: 32.1098583 / LONG: -103.5957694 ( TVD: 9032 feet, MD: 9113 feet )
   BHL: NENW / 100 FNL / 2192 FWL / TWSP: 25S / RANGE: 33E / SECTION: 17 / LAT: 32.13758 / LONG: -103.595758 ( TVD: 9300 feet, MD: 19304 feet )

## BLM Point of Contact

Name: Priscilla Perez
Title: Legal Instruments Examiner
Phone: 5752345934
Email: pperez@blm.gov

## Review and Appeal Rights

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

# PECOS DISTRICT
# DRILLING CONDITIONS OF APPROVAL

| | |
|---|---|
| **OPERATOR'S NAME:** | **Cimarex Energy Company** |
| **LEASE NO.:** | **NMNM026394** |
| **WELL NAME & NO.:** | Vaca Draw 20-17 Federal 32H |
| **SURFACE HOLE FOOTAGE:** | 331'/S & 1311'/W |
| **BOTTOM HOLE FOOTAGE** | 100'/N & 2192'/W |
| **LOCATION:** | Section 20, T.25 S., R.33 E., NMPM |
| **COUNTY:** | Lea County, New Mexico |

COA

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

## A. HYDROGEN SULFIDE

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

## B. CASING

1. The **13-3/8 inch** surface casing shall be set at approximately **1,025 feet** (a minimum of **25 feet (Lea County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

**Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.**

2. The minimum required fill of cement behind the **9-5/8 inch** intermediate casing and shall be set at approximately **4,889 feet** is:

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

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

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

## C. PRESSURE CONTROL

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

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M) psi**.

3. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **3000 (3M) psi**.

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

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

# GENERAL REQUIREMENTS

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

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

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

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

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

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

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

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

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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

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

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

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

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

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

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

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

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

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

5. The appropriate BLM office shall be notified a minimum of **4** hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including

lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

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

d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

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

f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

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

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

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

**YJ (05/13/2020)**

# PECOS DISTRICT
# SURFACE USE
# CONDITIONS OF APPROVAL

| | |
|---|---|
| OPERATOR'S NAME: | Cimarex Energy Company |
| LOCATION: | Section 20, T.25 S., R.33 E., NMPM |
| COUNTY: | Lea County, New Mexico |

**Wells:**

**Lea Country, New Mexico**

**Vaca Draw 20-17 Federal 32H:**
SHL: 331 FSL, 1311 FWL. Section 20, T. 25 S., R. 33 E.
BHL: 100 FNL, 2192 FWL. Section 17, T. 25S., R. 33 E.

**Vaca Draw 20-17 Federal 33H:**
SHL: 331 FSL, 1331 FWL. Section 20, T. 25 S., R. 33E.
BHL: 100 FNL, 2356 FWL. Section 17, T. 25 S., R 33 E.

## TABLE OF CONTENTS

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.

## 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)

**Wildlife Mitigation Measures:**

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.

Timing Limitation Exceptions:
The Carlsbad Field Office will publish an annual map of where the LPC timing and noise stipulations and conditions of approval (Limitations) will apply for the identified year (between March 1 and June 15) based on the latest survey information. The LPC Timing Area map will identify areas which are Habitat Areas (HA), Isolated Population Area (IPA), and Primary Population Area (PPA). The LPC Timing Area map will also have an area in red crosshatch. The red crosshatch area is the only area where an operator is required to submit a request for exception to the LPC Limitations. If an operator is operating outside the red crosshatch area, the LPC Limitations do not apply for that year and an exception to LPC Limitations is not required.

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.

**Rangeland Mitigation Measure:**

Livestock Watering Requirement
Any damage to structures that provide water to livestock throughout the life of the well, caused by operations from the well site, must be immediately corrected by the operator. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

**Hydrology/Watershed Mitigation Measures:**

The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. The compacted berm shall be constructed at a minimum of 12 inches with impermeable mineral material (e.g. caliche). Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to

enter the well pad. The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

A leak detection plan will be submitted to the BLM Carlsbad Field Office for approval prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

Electric Lines: Any water erosion that may occur due to the construction of overhead electric line and during the life of the power line will be quickly corrected and proper measures will be taken to prevent future erosion.

Buried Lines:
When crossing ephemeral drainages the pipeline will be buried to a minimum depth of 48 inches from the top of pipe to ground level. Erosion control methods such as gabions and/or rock aprons should be placed on both up and downstream sides of the pipeline crossing. In addition, curled (weed free) wood/straw fiber wattles/logs and/or silt fences should be placed on the downstream side for sediment control during construction and maintained until soils and vegetation have stabilized. Water bars should be placed within the ROW to divert and dissipate surface runoff. A pipeline access road is not permitted to cross these ephemeral drainages. Traffic should be diverted to a preexisting route. Additional seeding may be required in floodplains and drainages to restore energy dissipating vegetation.

Any water erosion that may occur due to construction or during the life of the pipeline system will be quickly corrected and proper measures will be taken to prevent erosion. When crossing ephemeral drainages the soil crown should be level with the surface to allow water to flow without impedance. A leak detection plan will be submitted to the BLM Carlsbad Field Office for approval prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating valves and lines so they can be

visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event. Regular monitoring is required to quickly identify leaks for their immediate and proper treatment.

# 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**

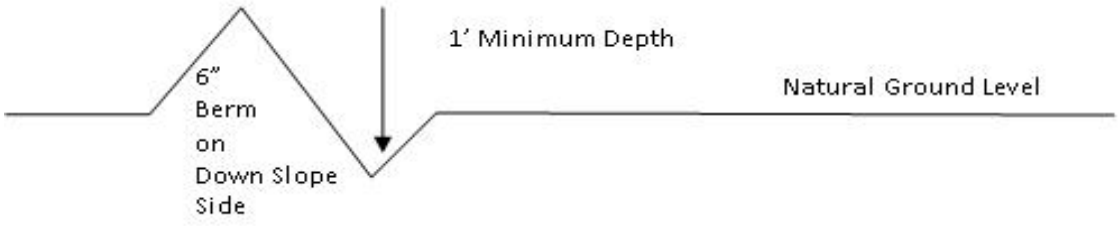
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

**Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping 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:

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

**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

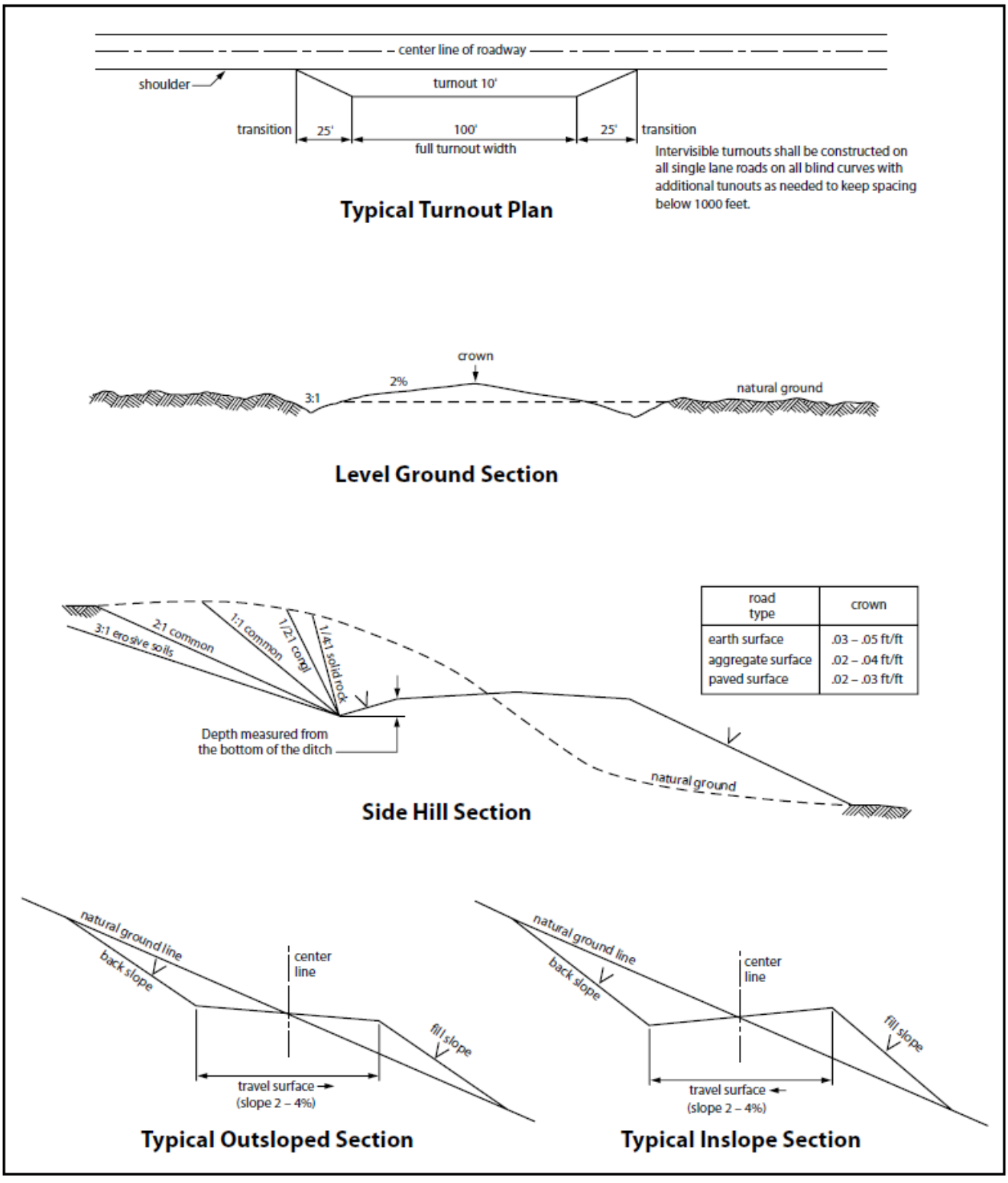



Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

# 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).

## 18. 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).

## 19. 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 for LPC Sand/Shinnery Sites

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 shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall 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). 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. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may 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:

| Species | lb/acre |
|---|---|
| Plains Bristlegrass | 5lbs/A |
| Sand Bluestem | 5lbs/A |
| Little Bluestem | 3lbs/A |
| Big Bluestem | 6lbs/A |
| Plains Coreopsis | 2lbs/A |
| Sand Dropseed | 1lbs/A |

*Pounds of pure live seed:

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

## 1. Geological Formations

TVD of target 9,300
MD at TD 19,304

Pilot Hole TD N/A
Deepest expected fresh water

| Formation | Depth (TVD) from KB | Water/Mineral Bearing/Target Zone | Hazards |
|---|---|---|---|
| Rustler | 935 | N/A | |
| Top of Salt | 1298 | N/A | |
| Base of Salt | 4714 | N/A | |
| Lamar | 4909 | N/A | |
| Bell Canyon | 4937 | N/A | |
| Cherry Canyon | 5990 | N/A | |
| Brushy Canyon | 7536 | Hydrocarbons | |
| Bone Spring | 9032 | Hydrocarbons | |
| Bone Spring Target | 9300 | Hydrocarbons | |
| 1st Bone Spring Sand | 10011 | Hydrocarbons | |
| 2nd Bone Spring Sand | 10583 | Hydrocarbons | |
| 3rd Bone Spring Sand | 11722 | Hydrocarbons | |
| Wolfcamp | 12189 | Hydrocarbons | |

## 2. Casing Program

| Hole Size | Casing Depth From | Casing Depth To | Setting Depth TVD | Casing Size | Weight (lb/ft) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|---|
| 17 1/2 | 0 | 985 | 985 | 13-3/8" | 48.00 | H-40/J-55 Hybrid | ST&C | 1.64 | 3.84 | 6.81 |
| 12 1/4 | 0 | 4889 | 4889 | 9-5/8" | 40.00 | J-55 | LT&C | 1.56 | 1.52 | 2.66 |
| 8 3/4 | 0 | 8897 | 8897 | 5-1/2" | 17.00 | L-80 | LT&C | 1.51 | 1.86 | 2.14 |
| 8 3/4 | 8897 | 19304 | 9300 | 5-1/2" | 17.00 | L-80 | BT&C | 1.45 | 1.78 | 57.95 |
| | | | | | | BLM Minimum Safety Factor | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

TVD was used on all calculations.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

| | 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? | N |
| Is well within the designated 4 string boundary. | N |
| Is well located in SOPA but not in R-111-P? | N |
| If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing? | N |
| Is well located in R-111-P and SOPA? | N |
| If yes, are the first three strings cemented to surface? | N |
| Is 2nd string set 100' to 600' below the base of salt? | N |
| Is well located in high Cave/Karst? | N |
| If yes, are there two strings cemented to surface? | N |
| (For 2 string wells) If yes, is there a contingency casing if lost circulation occurs? | N |
| Is well located in critical Cave/Karst? | N |
| If yes, are there three strings cemented to surface? | N |
| Is AC Report included? | N |

### 3. Cementing Program

| Casing | # Sks | Wt. lb/gal | Yld ft3/sack | H2O gal/sk | 500# Comp. Strength (hours) | Slurry Description |
|---|---|---|---|---|---|---|
| **Surface** | 415 | 13.50 | 1.72 | 9.15 | 15.5 | Lead: Class C + Bentonite |
| | 195 | 14.80 | 1.34 | 6.32 | 9.5 | Tail: Class C + LCM |
| | | | | | | |
| **Intermediate** | 929 | 12.90 | 1.88 | 9.65 | 12 | Lead: 35:65 (Poz:C) + Salt + Bentonite |
| | 286 | 14.80 | 1.34 | 6.32 | 9.5 | Tail: Class C + LCM |
| | | | | | | |
| **Production** | 363 | 10.30 | 3.64 | 22.18 | | Lead: Tuned Light + LCM |
| | 2529 | 14.20 | 1.30 | 5.86 | 14:30 | Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS |
| | | | | | | |

| Casing String | TOC | % Excess |
|---|---|---|
| Surface | 0 | 42 |
| Intermediate | 0 | 49 |
| Production | 4689 | 25 |

Cimarex request the ability to perform casing integrity tests after plug bump of cement job.

## 4. Pressure Control Equipment

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

| BOP installed and tested before drilling which hole? | Size | Min Required WP | Type | | Tested To |
|---|---|---|---|---|---|
| 12 1/4 | 13 5/8 | 2M | Annular | X | 50% of working pressure |
| | | | Blind Ram | | 2M |
| | | | Pipe Ram | | |
| | | | Double Ram | X | |
| | | | Other | | |
| 8 3/4 | 13 5/8 | 3M | Annular | X | 50% of working pressure |
| | | | Blind Ram | | 3M |
| | | | Pipe Ram | | |
| | | | Double Ram | X | |
| | | | Other | | |

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

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

| | | |
|---|---|---|
| | | Formation integrity test will be performed per Onshore Order #2.<br>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. |
| X | | 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? |

## 5. Mud Program

| Depth | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|
| 0' to 985' | FW Spud Mud | 8.30 - 8.80 | 30-32 | N/C |
| 985' to 4889' | Brine Water | 9.70 - 10.20 | 30-32 | N/C |
| 4889' to 19304' | FW/Cut Brine | 8.50 - 9.00 | 30-32 | N/C |

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 |
|---|---|
| X | Will run GR/CNL fromTD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM. |
| | No logs are planned based on well control or offset log information. |
| | Drill stem test? |
| | Coring? |

| Additional Logs Planned | Interval |
|---|---|

## 7. Drilling Conditions

| Condition | |
|---|---|
| BH Pressure at deepest TVD | 4352 psi |
| Abnormal Temperature | No |

| | 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. |
|---|---|
| X | H2S is present |
| X | H2S plan is attached |

## 8. Other Facets of Operation

## 9. Wellhead

A multi-bowl wellhead system will be utilized.

After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 3000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 3000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office.

The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative.

All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 3000 psi.

All casing strings will be tested as per Onshore Order No.2 to atleast 0.22 psi/ft or 1,500 whichever is greater and not to exceed 70% of casing burst.

If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

Hydrogen Sulfide Drilling Operations Plan

**Vaca Draw 20-17 Federal 32H**

Cimarex Energy Co.

UL: M, Sec. 20, 25S, 33E

Lea Co., NM

1 All Company and Contract personnel admitted on location must be trained by a qualified H2S safety instructor to the following:

A. Characteristics of $H_2S$
B. Physical effects and hazards
C. Principal and operation of H2S detectors, warning system and briefing areas.
D. Evacuation procedure, routes and first aid.
E. Proper use of safety equipment & life support systems
F. Essential personnel meeting Medical Evaluation criteria will receive additional training on the proper use of 30 minute pressure demand air packs.

$H_2S$ Detection and Alarm Systems:

A. H2S sensors/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud pits in the shale shaker area. Additional H2S detectors may play placed as deemed necessary.

B. An audio alarm system will be installed on the derrick floor and in the top doghouse.

3 Windsock and/or wind streamers:

A. Windsock at mudpit area should be high enough to be visible.

B. Windsock on the rig floor and / or top doghouse should be high enough to be visible.

4 Condition Flags and Signs

A. Warning sign on access road to location.
B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger ($H_2S$ present in dangerous concentration). Only H2S trained and certified personnel admitted to location.

5 Well control equipment:

A. See exhibit "E-1"

6 Communication:

A. While working under masks chalkboards will be used for communication.
B. Hand signals will be used where chalk board is inappropriate.
C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.

7 Drillstem Testing:

No DSTs r cores are planned at this time.

8 Drilling contractor supervisor will be required to be familiar with the effects $H_2S$ has on tubular goods and other mechanical equipment.

9 If H2S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H2S scavengers if necessary.

$H_2S$ Contingency Plan
**Vaca Draw 20-17 Federal 32H**
Cimarex Energy Co.
UL: M, Sec. 20, 25S, 33E
Lea Co., NM

**Emergency Procedures**

In the event of a release of gas containing $H_2S$, the first responder(s) must:

« Isolate the area and prevent entry by other persons into the 100 ppm ROE.
« Evacuate any public places encompassed by the 100 ppm ROE.
« Be equipped with $H_2S$ monitors and air packs in order to control the release.
« Use the "buddy system" to ensure no injuries occur during the 432-620-1975
« Take precautions to avoid personal injury during this operation.
« Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
« Have received training in the:
  · Detection of $H_2S$, and
  · Measures for protection against the gas,
  · Equipment used for protection and emergency response.

**Ignition of Gas Source**

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide ($SO_2$). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas.

**Characteristics of $H_2S$ and $SO_2$**

Please see attached International Chemical Safety Cards.

**Contacting Authorities**

Cimarex Energy Co. of Colorado's personnel must liaise with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Cimarex Energy Co. of Colorado's response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

$H_2S$ Contingency Plan Emergency Contacts

**Vaca Draw 20-17 Federal 32H**

Cimarex Energy Co.

UL: M, Sec. 20, 25S, 33E

Lea Co., NM

| **Company Office** | | | |
|---|---|---|---|
| Cimarex Energy Co. of Colorado | | 800-969-4789 | |
| Co. Office and After-Hours Menu | | | |

**Key Personnel**

| **Name** | **Title** | **Office** | **Mobile** |
|---|---|---|---|
| Larry Seigrist | Drilling Manager | 432-620-1934 | 580-243-8485 |
| Charlie Pritchard | Drilling Superintendent | 432-620-1975 | 432-238-7084 |
| Roy Shirley | Construction Superintendent | | 432-634-2136 |

| **Artesia** | | |
|---|---|---|
| Ambulance | 911 | |
| State Police | 575-746-2703 | |
| City Police | 575-746-2703 | |
| Sheriff's Office | 575-746-9888 | |
| **Fire Department** | **575-746-2701** | |
| Local Emergency Planning Committee | 575-746-2122 | |
| New Mexico Oil Conservation Division | 575-748-1283 | |

| **Carlsbad** | | |
|---|---|---|
| Ambulance | 911 | |
| State Police | 575-885-3137 | |
| City Police | 575-885-2111 | |
| Sheriff's Office | 575-887-7551 | |
| **Fire Department** | **575-887-3798** | |
| Local Emergency Planning Committee | 575-887-6544 | |
| US Bureau of Land Management | 575-887-6544 | |

| **Santa Fe** | |
|---|---|
| New Mexico Emergency Response Commission (Santa Fe) | 505-476-9600 |
| New Mexico Emergency Response Commission (Santa Fe) 24 Hrs | 505-827-9126 |
| New Mexico State Emergency Operations Center | 505-476-9635 |

| **National** | |
|---|---|
| National Emergency Response Center (Washington, D.C.) | 800-424-8802 |

| **Medical** | | |
|---|---|---|
| Flight for Life - 4000 24th St.; Lubbock, TX | 806-743-9911 | |
| Aerocare - R3, Box 49F; Lubbock, TX | 806-747-8923 | |
| Med Flight Air Amb - 2301 Yale Blvd S.E., #D3; Albuquerque, NM | 505-842-4433 | |
| SB Air Med Service - 2505 Clark Carr Loop S.E.; Albuquerque, NM | 505-842-4949 | |

| **Other** | | | |
|---|---|---|---|
| Boots & Coots IWC | 800-256-9688 | or | 281-931-8884 |
| Cudd Pressure Control | 432-699-0139 | or | 432-563-3356 |
| Halliburton | 575-746-2757 | | |
| B.J. Services | 575-746-3569 | | |

Schlumberger

# Cimarex Vaca Draw 20-17 Federal #32H Rev0 RM 12Mar19 Proposal
# Geodetic Report
**(Non-Def Plan)**

CIMAREX

| | | | |
|---|---|---|---|
| **Report Date:** | March 12, 2019 - 11:06 AM | **Survey / DLS Computation:** | Minimum Curvature / Lubinski |
| **Client:** | Cimarex Energy | **Vertical Section Azimuth:** | 359.628 ° (Grid North) |
| **Field:** | NM Lea County (NAD 83) | **Vertical Section Origin:** | 0.000 ft, 0.000 ft |
| **Structure / Slot:** | Cimarex Vaca Draw 20-17 Federal #32H / New Slot | **TVD Reference Datum:** | RKB |
| **Well:** | Vaca Draw 20-17 Federal #32H | **TVD Reference Elevation:** | 3446.300 ft above MSL |
| **Borehole:** | Vaca Draw 20-17 Federal #32H | **Seabed / Ground Elevation:** | 3420.300 ft above MSL |
| **UWI / API#:** | Unknown / Unknown | **Magnetic Declination:** | 6.670 ° |
| **Survey Name:** | Cimarex Vaca Draw 20-17 Federal #32H Rev0 RM 12Mar19 | **Total Gravity Field Strength:** | 998.4296mgn (9.80665 Based) |
| **Survey Date:** | March 12, 2019 | **Gravity Model:** | GARM |
| **Tort / AHD / DDI / ERD Ratio:** | 110.003 ° / 11014.992 ft / 6.401 / 1.184 | **Total Magnetic Field Strength:** | 47800.604 nT |
| **Coordinate Reference System:** | NAD83 New Mexico State Plane, Eastern Zone, US Feet | **Magnetic Dip Angle:** | 59.730 ° |
| **Location Lat / Long:** | N 32° 6' 35.07051", W 103° 35' 55.01468" | **Declination Date:** | March 12, 2019 |
| **Location Grid N/E Y/X:** | N 404435.750 ftUS, E 768822.400 ftUS | **Magnetic Declination Model:** | HDGM 2019 |
| **CRS Grid Convergence Angle:** | 0.3905 ° | **North Reference:** | Grid North |
| **Grid Scale Factor:** | 0.99996836 | **Grid Convergence Used:** | 0.3905 ° |
| **Version / Patch:** | 2.10.753.0 | **Total Corr Mag North->Grid North:** | 6.2797 ° |
| | | **Local Coord Referenced To:** | Well Head |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SHL [331' FSL, 1311' FWL] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | N/A | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 100.00 | 0.00 | 90.00 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 200.00 | 0.00 | 90.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 300.00 | 0.00 | 90.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 400.00 | 0.00 | 90.00 | 400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 500.00 | 0.00 | 90.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 600.00 | 0.00 | 90.00 | 600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 700.00 | 0.00 | 90.00 | 700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 800.00 | 0.00 | 90.00 | 800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 900.00 | 0.00 | 90.00 | 900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| *Rustler* | *935.00* | *0.00* | *90.00* | *935.00* | *0.00* | *0.00* | *0.00* | *0.00* | *404435.75* | *768822.40* | *N 32 6 35.07* | *W 103 35 55.01* |
| | 1000.00 | 0.00 | 90.00 | 1000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 1100.00 | 0.00 | 90.00 | 1100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 1200.00 | 0.00 | 90.00 | 1200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| *Top of Salt* | *1298.00* | *0.00* | *90.00* | *1298.00* | *0.00* | *0.00* | *0.00* | *0.00* | *404435.75* | *768822.40* | *N 32 6 35.07* | *W 103 35 55.01* |
| | 1300.00 | 0.00 | 90.00 | 1300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 1400.00 | 0.00 | 90.00 | 1400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 1500.00 | 0.00 | 90.00 | 1500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 1600.00 | 0.00 | 90.00 | 1600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 1700.00 | 0.00 | 90.00 | 1700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 1800.00 | 0.00 | 90.00 | 1800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 1900.00 | 0.00 | 90.00 | 1900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| Nudge 2°/100' DLS | 2000.00 | 0.00 | 90.00 | 2000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 404435.75 | 768822.40 | N 32 6 35.07 | W 103 35 55.01 |
| | 2100.00 | 2.00 | 90.00 | 2099.98 | -0.01 | 0.00 | 1.75 | 2.00 | 404435.75 | 768824.15 | N 32 6 35.07 | W 103 35 54.99 |
| | 2200.00 | 4.00 | 90.00 | 2199.84 | -0.05 | 0.00 | 6.98 | 2.00 | 404435.75 | 768829.38 | N 32 6 35.07 | W 103 35 54.93 |
| | 2300.00 | 6.00 | 90.00 | 2299.45 | -0.10 | 0.00 | 15.69 | 2.00 | 404435.75 | 768838.09 | N 32 6 35.07 | W 103 35 54.83 |
| | 2400.00 | 8.00 | 90.00 | 2398.70 | -0.18 | 0.00 | 27.88 | 2.00 | 404435.75 | 768850.28 | N 32 6 35.07 | W 103 35 54.69 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2500.00 | 10.00 | 90.00 | 2497.47 | -0.28 | 0.00 | 43.52 | 2.00 | 404435.75 | 768865.92 | N 32 6 35.07 | W 103 35 54.51 |
| Hold Nudge | 2500.08 | 10.00 | 90.00 | 2497.54 | -0.28 | 0.00 | 43.54 | 2.00 | 404435.75 | 768865.93 | N 32 6 35.07 | W 103 35 54.51 |
| | 2600.00 | 10.00 | 90.00 | 2595.95 | -0.40 | 0.00 | 60.89 | 0.00 | 404435.75 | 768883.29 | N 32 6 35.07 | W 103 35 54.31 |
| | 2700.00 | 10.00 | 90.00 | 2694.43 | -0.51 | 0.00 | 78.26 | 0.00 | 404435.75 | 768900.65 | N 32 6 35.07 | W 103 35 54.10 |
| | 2800.00 | 10.00 | 90.00 | 2792.91 | -0.62 | 0.00 | 95.62 | 0.00 | 404435.75 | 768918.02 | N 32 6 35.06 | W 103 35 53.90 |
| | 2900.00 | 10.00 | 90.00 | 2891.39 | -0.73 | 0.00 | 112.99 | 0.00 | 404435.75 | 768935.39 | N 32 6 35.06 | W 103 35 53.70 |
| | 3000.00 | 10.00 | 90.00 | 2989.87 | -0.85 | 0.00 | 130.36 | 0.00 | 404435.75 | 768952.76 | N 32 6 35.06 | W 103 35 53.50 |
| | 3100.00 | 10.00 | 90.00 | 3088.35 | -0.96 | 0.00 | 147.73 | 0.00 | 404435.75 | 768970.12 | N 32 6 35.06 | W 103 35 53.30 |
| | 3200.00 | 10.00 | 90.00 | 3186.83 | -1.07 | 0.00 | 165.09 | 0.00 | 404435.75 | 768987.49 | N 32 6 35.06 | W 103 35 53.10 |
| | 3300.00 | 10.00 | 90.00 | 3285.31 | -1.18 | 0.00 | 182.46 | 0.00 | 404435.75 | 769004.86 | N 32 6 35.06 | W 103 35 52.89 |
| | 3400.00 | 10.00 | 90.00 | 3383.79 | -1.30 | 0.00 | 199.83 | 0.00 | 404435.75 | 769022.22 | N 32 6 35.06 | W 103 35 52.69 |
| | 3500.00 | 10.00 | 90.00 | 3482.27 | -1.41 | 0.00 | 217.20 | 0.00 | 404435.75 | 769039.59 | N 32 6 35.06 | W 103 35 52.49 |
| | 3600.00 | 10.00 | 90.00 | 3580.75 | -1.52 | 0.00 | 234.56 | 0.00 | 404435.75 | 769056.96 | N 32 6 35.05 | W 103 35 52.29 |
| | 3700.00 | 10.00 | 90.00 | 3679.23 | -1.64 | 0.00 | 251.93 | 0.00 | 404435.75 | 769074.32 | N 32 6 35.05 | W 103 35 52.09 |
| | 3800.00 | 10.00 | 90.00 | 3777.71 | -1.75 | 0.00 | 269.30 | 0.00 | 404435.75 | 769091.69 | N 32 6 35.05 | W 103 35 51.88 |
| | 3900.00 | 10.00 | 90.00 | 3876.19 | -1.86 | 0.00 | 286.67 | 0.00 | 404435.75 | 769109.06 | N 32 6 35.05 | W 103 35 51.68 |
| | 4000.00 | 10.00 | 90.00 | 3974.67 | -1.97 | 0.00 | 304.03 | 0.00 | 404435.75 | 769126.42 | N 32 6 35.05 | W 103 35 51.48 |
| | 4100.00 | 10.00 | 90.00 | 4073.15 | -2.09 | 0.00 | 321.40 | 0.00 | 404435.75 | 769143.79 | N 32 6 35.05 | W 103 35 51.28 |
| | 4200.00 | 10.00 | 90.00 | 4171.63 | -2.20 | 0.00 | 338.77 | 0.00 | 404435.75 | 769161.16 | N 32 6 35.05 | W 103 35 51.08 |
| | 4300.00 | 10.00 | 90.00 | 4270.11 | -2.31 | 0.00 | 356.14 | 0.00 | 404435.75 | 769178.52 | N 32 6 35.05 | W 103 35 50.87 |
| | 4400.00 | 10.00 | 90.00 | 4368.59 | -2.42 | 0.00 | 373.50 | 0.00 | 404435.75 | 769195.89 | N 32 6 35.05 | W 103 35 50.67 |
| | 4500.00 | 10.00 | 90.00 | 4467.07 | -2.54 | 0.00 | 390.87 | 0.00 | 404435.75 | 769213.26 | N 32 6 35.04 | W 103 35 50.47 |
| | 4600.00 | 10.00 | 90.00 | 4565.55 | -2.65 | 0.00 | 408.24 | 0.00 | 404435.75 | 769230.62 | N 32 6 35.04 | W 103 35 50.27 |
| | 4700.00 | 10.00 | 90.00 | 4664.03 | -2.76 | 0.00 | 425.61 | 0.00 | 404435.75 | 769247.99 | N 32 6 35.04 | W 103 35 50.07 |
| *Base of Salt* | *4750.74* | *10.00* | *90.00* | *4714.00* | *-2.82* | *0.00* | *434.42* | *0.00* | *404435.75* | *769256.80* | *N 32 6 35.04* | *W 103 35 49.96* |
| | 4800.00 | 10.00 | 90.00 | 4762.51 | -2.88 | 0.00 | 442.97 | 0.00 | 404435.75 | 769265.36 | N 32 6 35.04 | W 103 35 49.86 |
| | 4900.00 | 10.00 | 90.00 | 4860.99 | -2.99 | 0.00 | 460.34 | 0.00 | 404435.75 | 769282.72 | N 32 6 35.04 | W 103 35 49.66 |
| *Lamar* | *4948.75* | *10.00* | *90.00* | *4909.00* | *-3.04* | *0.00* | *468.81* | *0.00* | *404435.75* | *769291.19* | *N 32 6 35.04* | *W 103 35 49.56* |
| *Bell Canyon* | *4977.18* | *10.00* | *90.00* | *4937.00* | *-3.08* | *0.00* | *473.74* | *0.00* | *404435.75* | *769296.13* | *N 32 6 35.04* | *W 103 35 49.51* |
| | 5000.00 | 10.00 | 90.00 | 4959.47 | -3.10 | 0.00 | 477.71 | 0.00 | 404435.75 | 769300.09 | N 32 6 35.04 | W 103 35 49.46 |
| | 5100.00 | 10.00 | 90.00 | 5057.95 | -3.21 | 0.00 | 495.07 | 0.00 | 404435.75 | 769317.46 | N 32 6 35.04 | W 103 35 49.26 |
| | 5200.00 | 10.00 | 90.00 | 5156.43 | -3.33 | 0.00 | 512.44 | 0.00 | 404435.75 | 769334.83 | N 32 6 35.04 | W 103 35 49.06 |
| | 5300.00 | 10.00 | 90.00 | 5254.91 | -3.44 | 0.00 | 529.81 | 0.00 | 404435.75 | 769352.19 | N 32 6 35.03 | W 103 35 48.86 |
| | 5400.00 | 10.00 | 90.00 | 5353.39 | -3.55 | 0.00 | 547.18 | 0.00 | 404435.75 | 769369.56 | N 32 6 35.03 | W 103 35 48.65 |
| | 5500.00 | 10.00 | 90.00 | 5451.88 | -3.67 | 0.00 | 564.54 | 0.00 | 404435.75 | 769386.93 | N 32 6 35.03 | W 103 35 48.45 |
| | 5600.00 | 10.00 | 90.00 | 5550.36 | -3.78 | 0.00 | 581.91 | 0.00 | 404435.75 | 769404.29 | N 32 6 35.03 | W 103 35 48.25 |
| | 5700.00 | 10.00 | 90.00 | 5648.84 | -3.89 | 0.00 | 599.28 | 0.00 | 404435.75 | 769421.66 | N 32 6 35.03 | W 103 35 48.05 |
| | 5800.00 | 10.00 | 90.00 | 5747.32 | -4.00 | 0.00 | 616.65 | 0.00 | 404435.75 | 769439.03 | N 32 6 35.03 | W 103 35 47.85 |
| | 5900.00 | 10.00 | 90.00 | 5845.80 | -4.12 | 0.00 | 634.01 | 0.00 | 404435.75 | 769456.39 | N 32 6 35.03 | W 103 35 47.64 |
| | 6000.00 | 10.00 | 90.00 | 5944.28 | -4.23 | 0.00 | 651.38 | 0.00 | 404435.75 | 769473.76 | N 32 6 35.03 | W 103 35 47.44 |
| *Cherry Canyon* | *6046.43* | *10.00* | *90.00* | *5990.00* | *-4.28* | *0.00* | *659.44* | *0.00* | *404435.75* | *769481.82* | *N 32 6 35.03* | *W 103 35 47.35* |
| | 6100.00 | 10.00 | 90.00 | 6042.76 | -4.34 | 0.00 | 668.75 | 0.00 | 404435.75 | 769491.13 | N 32 6 35.03 | W 103 35 47.24 |
| | 6200.00 | 10.00 | 90.00 | 6141.24 | -4.45 | 0.00 | 686.12 | 0.00 | 404435.75 | 769508.49 | N 32 6 35.02 | W 103 35 47.04 |
| | 6300.00 | 10.00 | 90.00 | 6239.72 | -4.57 | 0.00 | 703.48 | 0.00 | 404435.75 | 769525.86 | N 32 6 35.02 | W 103 35 46.84 |
| | 6400.00 | 10.00 | 90.00 | 6338.20 | -4.68 | 0.00 | 720.85 | 0.00 | 404435.75 | 769543.23 | N 32 6 35.02 | W 103 35 46.63 |
| | 6500.00 | 10.00 | 90.00 | 6436.68 | -4.79 | 0.00 | 738.22 | 0.00 | 404435.75 | 769560.59 | N 32 6 35.02 | W 103 35 46.43 |
| | 6600.00 | 10.00 | 90.00 | 6535.16 | -4.91 | 0.00 | 755.59 | 0.00 | 404435.75 | 769577.96 | N 32 6 35.02 | W 103 35 46.23 |
| | 6700.00 | 10.00 | 90.00 | 6633.64 | -5.02 | 0.00 | 772.95 | 0.00 | 404435.75 | 769595.33 | N 32 6 35.02 | W 103 35 46.03 |
| | 6800.00 | 10.00 | 90.00 | 6732.12 | -5.13 | 0.00 | 790.32 | 0.00 | 404435.75 | 769612.69 | N 32 6 35.02 | W 103 35 45.83 |
| | 6900.00 | 10.00 | 90.00 | 6830.60 | -5.24 | 0.00 | 807.69 | 0.00 | 404435.75 | 769630.06 | N 32 6 35.02 | W 103 35 45.62 |
| | 7000.00 | 10.00 | 90.00 | 6929.08 | -5.36 | 0.00 | 825.06 | 0.00 | 404435.75 | 769647.43 | N 32 6 35.01 | W 103 35 45.42 |
| Drop to Vertical 2°/100' DLS | 7072.01 | 10.00 | 90.00 | 7000.00 | -5.44 | 0.00 | 837.56 | 0.00 | 404435.75 | 769659.93 | N 32 6 35.01 | W 103 35 45.28 |
| | 7100.00 | 9.44 | 90.00 | 7027.58 | -5.47 | 0.00 | 842.29 | 2.00 | 404435.75 | 769664.66 | N 32 6 35.01 | W 103 35 45.22 |
| | 7200.00 | 7.44 | 90.00 | 7126.49 | -5.56 | 0.00 | 856.97 | 2.00 | 404435.75 | 769679.34 | N 32 6 35.01 | W 103 35 45.05 |
| | 7300.00 | 5.44 | 90.00 | 7225.86 | -5.64 | 0.00 | 868.19 | 2.00 | 404435.75 | 769690.56 | N 32 6 35.01 | W 103 35 44.92 |
| | 7400.00 | 3.44 | 90.00 | 7325.55 | -5.69 | 0.00 | 875.93 | 2.00 | 404435.75 | 769698.30 | N 32 6 35.01 | W 103 35 44.83 |
| | 7500.00 | 1.44 | 90.00 | 7425.46 | -5.71 | 0.00 | 880.19 | 2.00 | 404435.75 | 769702.56 | N 32 6 35.01 | W 103 35 44.78 |
| Hold Vertical | 7572.09 | 0.00 | 90.00 | 7497.54 | -5.72 | 0.00 | 881.10 | 2.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7600.00 | 0.00 | 90.00 | 7525.45 | -5.72 | 0.00 | 881.10 | 0.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| *Brushy Canyon* | *7610.55* | *0.00* | *90.00* | *7536.00* | *-5.72* | *0.00* | *881.10* | *0.00* | *404435.75* | *769703.47* | *N 32 6 35.01* | *W 103 35 44.77* |
| | 7700.00 | 0.00 | 90.00 | 7625.45 | -5.72 | 0.00 | 881.10 | 0.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| | 7800.00 | 0.00 | 90.00 | 7725.45 | -5.72 | 0.00 | 881.10 | 0.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| | 7900.00 | 0.00 | 90.00 | 7825.45 | -5.72 | 0.00 | 881.10 | 0.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| | 8000.00 | 0.00 | 90.00 | 7925.45 | -5.72 | 0.00 | 881.10 | 0.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| | 8100.00 | 0.00 | 90.00 | 8025.45 | -5.72 | 0.00 | 881.10 | 0.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| | 8200.00 | 0.00 | 90.00 | 8125.45 | -5.72 | 0.00 | 881.10 | 0.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| | 8300.00 | 0.00 | 90.00 | 8225.45 | -5.72 | 0.00 | 881.10 | 0.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| | 8400.00 | 0.00 | 90.00 | 8325.45 | -5.72 | 0.00 | 881.10 | 0.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| | 8500.00 | 0.00 | 90.00 | 8425.45 | -5.72 | 0.00 | 881.10 | 0.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| | 8600.00 | 0.00 | 90.00 | 8525.45 | -5.72 | 0.00 | 881.10 | 0.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| | 8700.00 | 0.00 | 90.00 | 8625.45 | -5.72 | 0.00 | 881.10 | 0.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| | 8800.00 | 0.00 | 90.00 | 8725.45 | -5.72 | 0.00 | 881.10 | 0.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| KOP - Build 12°/100' DLS | 8897.09 | 0.00 | 90.00 | 8822.54 | -5.72 | 0.00 | 881.10 | 0.00 | 404435.75 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| | 8900.00 | 0.35 | 359.63 | 8825.45 | -5.71 | 0.01 | 881.10 | 12.00 | 404435.76 | 769703.47 | N 32 6 35.01 | W 103 35 44.77 |
| | 9000.00 | 12.35 | 359.63 | 8924.65 | 5.33 | 11.05 | 881.03 | 12.00 | 404446.80 | 769703.40 | N 32 6 35.12 | W 103 35 44.77 |
| | 9100.00 | 24.35 | 359.63 | 9019.40 | 36.75 | 42.47 | 880.82 | 12.00 | 404478.22 | 769703.19 | N 32 6 35.43 | W 103 35 44.77 |
| *Bone Spring* | *9113.93* | *26.02* | *359.63* | *9032.00* | *42.68* | *48.40* | *880.78* | *12.00* | *404484.15* | *769703.15* | *N 32 6 35.49* | *W 103 35 44.77* |
| *Leonard Shale* | *9177.37* | *33.63* | *359.63* | *9087.00* | *74.21* | *79.93* | *880.58* | *12.00* | *404515.68* | *769702.95* | *N 32 6 35.80* | *W 103 35 44.77* |
| | 9200.00 | 36.35 | 359.63 | 9105.53 | 87.19 | 92.91 | 880.50 | 12.00 | 404528.65 | 769702.87 | N 32 6 35.93 | W 103 35 44.77 |
| | 9300.00 | 48.35 | 359.63 | 9179.30 | 154.43 | 160.15 | 880.06 | 12.00 | 404595.89 | 769702.43 | N 32 6 36.60 | W 103 35 44.77 |
| | 9400.00 | 60.35 | 359.63 | 9237.48 | 235.54 | 241.26 | 879.53 | 12.00 | 404677.00 | 769701.90 | N 32 6 37.40 | W 103 35 44.77 |
| | 9500.00 | 72.35 | 359.63 | 9277.52 | 326.97 | 332.69 | 878.94 | 12.00 | 404768.43 | 769701.31 | N 32 6 38.30 | W 103 35 44.77 |
| | 9600.00 | 84.35 | 359.63 | 9297.68 | 424.74 | 430.45 | 878.30 | 12.00 | 404866.18 | 769700.67 | N 32 6 39.27 | W 103 35 44.77 |
| Landing Point | 9647.09 | 90.00 | 359.63 | 9300.00 | 471.74 | 477.45 | 878.00 | 12.00 | 404913.19 | 769700.37 | N 32 6 39.74 | W 103 35 44.77 |
| | 9700.00 | 90.00 | 359.63 | 9300.00 | 524.66 | 530.37 | 877.66 | 0.00 | 404966.10 | 769700.03 | N 32 6 40.26 | W 103 35 44.77 |
| | 9800.00 | 90.00 | 359.63 | 9300.00 | 624.66 | 630.37 | 877.01 | 0.00 | 405066.09 | 769699.38 | N 32 6 41.25 | W 103 35 44.77 |
| | 9900.00 | 90.00 | 359.63 | 9300.00 | 724.66 | 730.36 | 876.36 | 0.00 | 405166.09 | 769698.73 | N 32 6 42.24 | W 103 35 44.77 |
| | 10000.00 | 90.00 | 359.63 | 9300.00 | 824.66 | 830.36 | 875.71 | 0.00 | 405266.08 | 769698.08 | N 32 6 43.23 | W 103 35 44.77 |
| | 10100.00 | 90.00 | 359.63 | 9300.00 | 924.66 | 930.36 | 875.06 | 0.00 | 405366.08 | 769697.43 | N 32 6 44.22 | W 103 35 44.77 |
| | 10200.00 | 90.00 | 359.63 | 9300.00 | 1024.66 | 1030.36 | 874.41 | 0.00 | 405466.07 | 769696.78 | N 32 6 45.21 | W 103 35 44.77 |
| | 10300.00 | 90.00 | 359.63 | 9300.00 | 1124.66 | 1130.36 | 873.76 | 0.00 | 405566.07 | 769696.13 | N 32 6 46.20 | W 103 35 44.77 |
| | 10400.00 | 90.00 | 359.63 | 9300.00 | 1224.66 | 1230.35 | 873.11 | 0.00 | 405666.06 | 769695.48 | N 32 6 47.19 | W 103 35 44.77 |
| | 10500.00 | 90.00 | 359.63 | 9300.00 | 1324.66 | 1330.35 | 872.46 | 0.00 | 405766.06 | 769694.83 | N 32 6 48.18 | W 103 35 44.77 |
| | 10600.00 | 90.00 | 359.63 | 9300.00 | 1424.66 | 1430.35 | 871.81 | 0.00 | 405866.05 | 769694.19 | N 32 6 49.17 | W 103 35 44.77 |
| | 10700.00 | 90.00 | 359.63 | 9300.00 | 1524.66 | 1530.35 | 871.17 | 0.00 | 405966.05 | 769693.54 | N 32 6 50.15 | W 103 35 44.76 |
| | 10800.00 | 90.00 | 359.63 | 9300.00 | 1624.66 | 1630.34 | 870.52 | 0.00 | 406066.04 | 769692.89 | N 32 6 51.14 | W 103 35 44.76 |
| | 10900.00 | 90.00 | 359.63 | 9300.00 | 1724.66 | 1730.34 | 869.87 | 0.00 | 406166.03 | 769692.24 | N 32 6 52.13 | W 103 35 44.76 |
| | 11000.00 | 90.00 | 359.63 | 9300.00 | 1824.66 | 1830.34 | 869.22 | 0.00 | 406266.03 | 769691.59 | N 32 6 53.12 | W 103 35 44.76 |
| | 11100.00 | 90.00 | 359.63 | 9300.00 | 1924.66 | 1930.34 | 868.57 | 0.00 | 406366.02 | 769690.94 | N 32 6 54.11 | W 103 35 44.76 |
| | 11200.00 | 90.00 | 359.63 | 9300.00 | 2024.66 | 2030.34 | 867.92 | 0.00 | 406466.02 | 769690.29 | N 32 6 55.10 | W 103 35 44.76 |
| | 11300.00 | 90.00 | 359.63 | 9300.00 | 2124.66 | 2130.33 | 867.27 | 0.00 | 406566.01 | 769689.64 | N 32 6 56.09 | W 103 35 44.76 |
| | 11400.00 | 90.00 | 359.63 | 9300.00 | 2224.66 | 2230.33 | 866.62 | 0.00 | 406666.01 | 769688.99 | N 32 6 57.08 | W 103 35 44.76 |
| | 11500.00 | 90.00 | 359.63 | 9300.00 | 2324.66 | 2330.33 | 865.97 | 0.00 | 406766.00 | 769688.34 | N 32 6 58.07 | W 103 35 44.76 |
| | 11600.00 | 90.00 | 359.63 | 9300.00 | 2424.66 | 2430.33 | 865.32 | 0.00 | 406866.00 | 769687.70 | N 32 6 59.06 | W 103 35 44.76 |
| | 11700.00 | 90.00 | 359.63 | 9300.00 | 2524.66 | 2530.33 | 864.68 | 0.00 | 406965.99 | 769687.05 | N 32 7 0.05 | W 103 35 44.76 |
| | 11800.00 | 90.00 | 359.63 | 9300.00 | 2624.66 | 2630.32 | 864.03 | 0.00 | 407065.99 | 769686.40 | N 32 7 1.04 | W 103 35 44.76 |
| | 11900.00 | 90.00 | 359.63 | 9300.00 | 2724.66 | 2730.32 | 863.38 | 0.00 | 407165.98 | 769685.75 | N 32 7 2.03 | W 103 35 44.76 |
| | 12000.00 | 90.00 | 359.63 | 9300.00 | 2824.66 | 2830.32 | 862.73 | 0.00 | 407265.97 | 769685.10 | N 32 7 3.02 | W 103 35 44.76 |
| | 12100.00 | 90.00 | 359.63 | 9300.00 | 2924.66 | 2930.32 | 862.08 | 0.00 | 407365.97 | 769684.45 | N 32 7 4.01 | W 103 35 44.76 |
| | 12200.00 | 90.00 | 359.63 | 9300.00 | 3024.66 | 3030.32 | 861.43 | 0.00 | 407465.96 | 769683.80 | N 32 7 5.00 | W 103 35 44.76 |
| | 12300.00 | 90.00 | 359.63 | 9300.00 | 3124.66 | 3130.31 | 860.78 | 0.00 | 407565.96 | 769683.15 | N 32 7 5.99 | W 103 35 44.76 |
| | 12400.00 | 90.00 | 359.63 | 9300.00 | 3224.66 | 3230.31 | 860.13 | 0.00 | 407665.95 | 769682.50 | N 32 7 6.98 | W 103 35 44.76 |
| | 12500.00 | 90.00 | 359.63 | 9300.00 | 3324.66 | 3330.31 | 859.48 | 0.00 | 407765.95 | 769681.85 | N 32 7 7.97 | W 103 35 44.76 |
| | 12600.00 | 90.00 | 359.63 | 9300.00 | 3424.66 | 3430.31 | 858.83 | 0.00 | 407865.94 | 769681.21 | N 32 7 8.96 | W 103 35 44.76 |
| | 12700.00 | 90.00 | 359.63 | 9300.00 | 3524.66 | 3530.30 | 858.19 | 0.00 | 407965.94 | 769680.56 | N 32 7 9.95 | W 103 35 44.76 |
| | 12800.00 | 90.00 | 359.63 | 9300.00 | 3624.66 | 3630.30 | 857.54 | 0.00 | 408065.93 | 769679.91 | N 32 7 10.93 | W 103 35 44.76 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12900.00 | 90.00 | 359.63 | 9300.00 | 3724.66 | 3730.30 | 856.89 | 0.00 | 408165.93 | 769679.26 | N 32 7 11.92 | W 103 35 44.76 |
| | 13000.00 | 90.00 | 359.63 | 9300.00 | 3824.66 | 3830.30 | 856.24 | 0.00 | 408265.92 | 769678.61 | N 32 7 12.91 | W 103 35 44.76 |
| | 13100.00 | 90.00 | 359.63 | 9300.00 | 3924.66 | 3930.30 | 855.59 | 0.00 | 408365.91 | 769677.96 | N 32 7 13.90 | W 103 35 44.75 |
| | 13200.00 | 90.00 | 359.63 | 9300.00 | 4024.66 | 4030.29 | 854.94 | 0.00 | 408465.91 | 769677.31 | N 32 7 14.89 | W 103 35 44.75 |
| | 13300.00 | 90.00 | 359.63 | 9300.00 | 4124.66 | 4130.29 | 854.29 | 0.00 | 408565.90 | 769676.66 | N 32 7 15.88 | W 103 35 44.75 |
| | 13400.00 | 90.00 | 359.63 | 9300.00 | 4224.66 | 4230.29 | 853.64 | 0.00 | 408665.90 | 769676.01 | N 32 7 16.87 | W 103 35 44.75 |
| | 13500.00 | 90.00 | 359.63 | 9300.00 | 4324.66 | 4330.29 | 852.99 | 0.00 | 408765.89 | 769675.36 | N 32 7 17.86 | W 103 35 44.75 |
| | 13600.00 | 90.00 | 359.63 | 9300.00 | 4424.66 | 4430.29 | 852.34 | 0.00 | 408865.89 | 769674.72 | N 32 7 18.85 | W 103 35 44.75 |
| | 13700.00 | 90.00 | 359.63 | 9300.00 | 4524.66 | 4530.28 | 851.70 | 0.00 | 408965.88 | 769674.07 | N 32 7 19.84 | W 103 35 44.75 |
| | 13800.00 | 90.00 | 359.63 | 9300.00 | 4624.66 | 4630.28 | 851.05 | 0.00 | 409065.88 | 769673.42 | N 32 7 20.83 | W 103 35 44.75 |
| | 13900.00 | 90.00 | 359.63 | 9300.00 | 4724.66 | 4730.28 | 850.40 | 0.00 | 409165.87 | 769672.77 | N 32 7 21.82 | W 103 35 44.75 |
| | 14000.00 | 90.00 | 359.63 | 9300.00 | 4824.66 | 4830.28 | 849.75 | 0.00 | 409265.87 | 769672.12 | N 32 7 22.81 | W 103 35 44.75 |
| | 14100.00 | 90.00 | 359.63 | 9300.00 | 4924.66 | 4930.28 | 849.10 | 0.00 | 409365.86 | 769671.47 | N 32 7 23.80 | W 103 35 44.75 |
| | 14200.00 | 90.00 | 359.63 | 9300.00 | 5024.66 | 5030.27 | 848.45 | 0.00 | 409465.85 | 769670.82 | N 32 7 24.79 | W 103 35 44.75 |
| | 14300.00 | 90.00 | 359.63 | 9300.00 | 5124.66 | 5130.27 | 847.80 | 0.00 | 409565.85 | 769670.17 | N 32 7 25.78 | W 103 35 44.75 |
| | 14400.00 | 90.00 | 359.63 | 9300.00 | 5224.66 | 5230.27 | 847.15 | 0.00 | 409665.84 | 769669.52 | N 32 7 26.77 | W 103 35 44.75 |
| | 14500.00 | 90.00 | 359.63 | 9300.00 | 5324.66 | 5330.27 | 846.50 | 0.00 | 409765.84 | 769668.87 | N 32 7 27.76 | W 103 35 44.75 |
| | 14600.00 | 90.00 | 359.63 | 9300.00 | 5424.66 | 5430.26 | 845.85 | 0.00 | 409865.83 | 769668.23 | N 32 7 28.75 | W 103 35 44.75 |
| | 14700.00 | 90.00 | 359.63 | 9300.00 | 5524.66 | 5530.26 | 845.20 | 0.00 | 409965.83 | 769667.58 | N 32 7 29.74 | W 103 35 44.75 |
| | 14800.00 | 90.00 | 359.63 | 9300.00 | 5624.66 | 5630.26 | 844.56 | 0.00 | 410065.82 | 769666.93 | N 32 7 30.73 | W 103 35 44.75 |
| | 14900.00 | 90.00 | 359.63 | 9300.00 | 5724.66 | 5730.26 | 843.91 | 0.00 | 410165.82 | 769666.28 | N 32 7 31.71 | W 103 35 44.75 |
| | 15000.00 | 90.00 | 359.63 | 9300.00 | 5824.66 | 5830.26 | 843.26 | 0.00 | 410265.81 | 769665.63 | N 32 7 32.70 | W 103 35 44.75 |
| | 15100.00 | 90.00 | 359.63 | 9300.00 | 5924.66 | 5930.25 | 842.61 | 0.00 | 410365.80 | 769664.98 | N 32 7 33.69 | W 103 35 44.75 |
| | 15200.00 | 90.00 | 359.63 | 9300.00 | 6024.66 | 6030.25 | 841.96 | 0.00 | 410465.80 | 769664.33 | N 32 7 34.68 | W 103 35 44.75 |
| | 15300.00 | 90.00 | 359.63 | 9300.00 | 6124.66 | 6130.25 | 841.31 | 0.00 | 410565.79 | 769663.68 | N 32 7 35.67 | W 103 35 44.75 |
| | 15400.00 | 90.00 | 359.63 | 9300.00 | 6224.66 | 6230.25 | 840.66 | 0.00 | 410665.79 | 769663.03 | N 32 7 36.66 | W 103 35 44.75 |
| | 15500.00 | 90.00 | 359.63 | 9300.00 | 6324.66 | 6330.25 | 840.01 | 0.00 | 410765.78 | 769662.38 | N 32 7 37.65 | W 103 35 44.75 |
| | 15600.00 | 90.00 | 359.63 | 9300.00 | 6424.66 | 6430.24 | 839.36 | 0.00 | 410865.78 | 769661.74 | N 32 7 38.64 | W 103 35 44.74 |
| | 15700.00 | 90.00 | 359.63 | 9300.00 | 6524.66 | 6530.24 | 838.71 | 0.00 | 410965.77 | 769661.09 | N 32 7 39.63 | W 103 35 44.74 |
| | 15800.00 | 90.00 | 359.63 | 9300.00 | 6624.66 | 6630.24 | 838.07 | 0.00 | 411065.77 | 769660.44 | N 32 7 40.62 | W 103 35 44.74 |
| | 15900.00 | 90.00 | 359.63 | 9300.00 | 6724.66 | 6730.24 | 837.42 | 0.00 | 411165.76 | 769659.79 | N 32 7 41.61 | W 103 35 44.74 |
| | 16000.00 | 90.00 | 359.63 | 9300.00 | 6824.66 | 6830.24 | 836.77 | 0.00 | 411265.76 | 769659.14 | N 32 7 42.60 | W 103 35 44.74 |
| | 16100.00 | 90.00 | 359.63 | 9300.00 | 6924.66 | 6930.23 | 836.12 | 0.00 | 411365.75 | 769658.49 | N 32 7 43.59 | W 103 35 44.74 |
| | 16200.00 | 90.00 | 359.63 | 9300.00 | 7024.66 | 7030.23 | 835.47 | 0.00 | 411465.74 | 769657.84 | N 32 7 44.58 | W 103 35 44.74 |
| | 16300.00 | 90.00 | 359.63 | 9300.00 | 7124.66 | 7130.23 | 834.82 | 0.00 | 411565.74 | 769657.19 | N 32 7 45.57 | W 103 35 44.74 |
| | 16400.00 | 90.00 | 359.63 | 9300.00 | 7224.66 | 7230.23 | 834.17 | 0.00 | 411665.73 | 769656.54 | N 32 7 46.56 | W 103 35 44.74 |
| | 16500.00 | 90.00 | 359.63 | 9300.00 | 7324.66 | 7330.22 | 833.52 | 0.00 | 411765.73 | 769655.89 | N 32 7 47.55 | W 103 35 44.74 |
| | 16600.00 | 90.00 | 359.63 | 9300.00 | 7424.66 | 7430.22 | 832.87 | 0.00 | 411865.72 | 769655.25 | N 32 7 48.54 | W 103 35 44.74 |
| | 16700.00 | 90.00 | 359.63 | 9300.00 | 7524.66 | 7530.22 | 832.22 | 0.00 | 411965.72 | 769654.60 | N 32 7 49.53 | W 103 35 44.74 |
| | 16800.00 | 90.00 | 359.63 | 9300.00 | 7624.66 | 7630.22 | 831.58 | 0.00 | 412065.71 | 769653.95 | N 32 7 50.52 | W 103 35 44.74 |
| | 16900.00 | 90.00 | 359.63 | 9300.00 | 7724.66 | 7730.22 | 830.93 | 0.00 | 412165.71 | 769653.30 | N 32 7 51.51 | W 103 35 44.74 |
| | 17000.00 | 90.00 | 359.63 | 9300.00 | 7824.66 | 7830.21 | 830.28 | 0.00 | 412265.70 | 769652.65 | N 32 7 52.49 | W 103 35 44.74 |
| | 17100.00 | 90.00 | 359.63 | 9300.00 | 7924.66 | 7930.21 | 829.63 | 0.00 | 412365.70 | 769652.00 | N 32 7 53.48 | W 103 35 44.74 |
| | 17200.00 | 90.00 | 359.63 | 9300.00 | 8024.66 | 8030.21 | 828.98 | 0.00 | 412465.69 | 769651.35 | N 32 7 54.47 | W 103 35 44.74 |
| | 17300.00 | 90.00 | 359.63 | 9300.00 | 8124.66 | 8130.21 | 828.33 | 0.00 | 412565.68 | 769650.70 | N 32 7 55.46 | W 103 35 44.74 |
| | 17400.00 | 90.00 | 359.63 | 9300.00 | 8224.66 | 8230.21 | 827.68 | 0.00 | 412665.68 | 769650.05 | N 32 7 56.45 | W 103 35 44.74 |
| | 17500.00 | 90.00 | 359.63 | 9300.00 | 8324.66 | 8330.20 | 827.03 | 0.00 | 412765.67 | 769649.40 | N 32 7 57.44 | W 103 35 44.74 |
| | 17600.00 | 90.00 | 359.63 | 9300.00 | 8424.66 | 8430.20 | 826.38 | 0.00 | 412865.67 | 769648.76 | N 32 7 58.43 | W 103 35 44.74 |
| | 17700.00 | 90.00 | 359.63 | 9300.00 | 8524.66 | 8530.20 | 825.73 | 0.00 | 412965.66 | 769648.11 | N 32 7 59.42 | W 103 35 44.74 |
| | 17800.00 | 90.00 | 359.63 | 9300.00 | 8624.66 | 8630.20 | 825.09 | 0.00 | 413065.66 | 769647.46 | N 32 8 0.41 | W 103 35 44.74 |
| | 17900.00 | 90.00 | 359.63 | 9300.00 | 8724.66 | 8730.20 | 824.44 | 0.00 | 413165.65 | 769646.81 | N 32 8 1.40 | W 103 35 44.74 |
| | 18000.00 | 90.00 | 359.63 | 9300.00 | 8824.66 | 8830.19 | 823.79 | 0.00 | 413265.65 | 769646.16 | N 32 8 2.39 | W 103 35 44.73 |
| | 18100.00 | 90.00 | 359.63 | 9300.00 | 8924.66 | 8930.19 | 823.14 | 0.00 | 413365.64 | 769645.51 | N 32 8 3.38 | W 103 35 44.73 |
| | 18200.00 | 90.00 | 359.63 | 9300.00 | 9024.66 | 9030.19 | 822.49 | 0.00 | 413465.64 | 769644.86 | N 32 8 4.37 | W 103 35 44.73 |
| | 18300.00 | 90.00 | 359.63 | 9300.00 | 9124.66 | 9130.19 | 821.84 | 0.00 | 413565.63 | 769644.21 | N 32 8 5.36 | W 103 35 44.73 |
| | 18400.00 | 90.00 | 359.63 | 9300.00 | 9224.66 | 9230.18 | 821.19 | 0.00 | 413665.62 | 769643.56 | N 32 8 6.35 | W 103 35 44.73 |
| | 18500.00 | 90.00 | 359.63 | 9300.00 | 9324.66 | 9330.18 | 820.54 | 0.00 | 413765.62 | 769642.91 | N 32 8 7.34 | W 103 35 44.73 |
| | 18600.00 | 90.00 | 359.63 | 9300.00 | 9424.66 | 9430.18 | 819.89 | 0.00 | 413865.61 | 769642.27 | N 32 8 8.33 | W 103 35 44.73 |
| | 18700.00 | 90.00 | 359.63 | 9300.00 | 9524.66 | 9530.18 | 819.24 | 0.00 | 413965.61 | 769641.62 | N 32 8 9.32 | W 103 35 44.73 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 18800.00 | 90.00 | 359.63 | 9300.00 | 9624.66 | 9630.18 | 818.60 | 0.00 | 414065.60 | 769640.97 | N 32 8 10.31 | W 103 35 44.73 |
| | 18900.00 | 90.00 | 359.63 | 9300.00 | 9724.66 | 9730.17 | 817.95 | 0.00 | 414165.60 | 769640.32 | N 32 8 11.30 | W 103 35 44.73 |
| | 19000.00 | 90.00 | 359.63 | 9300.00 | 9824.66 | 9830.17 | 817.30 | 0.00 | 414265.59 | 769639.67 | N 32 8 12.29 | W 103 35 44.73 |
| | 19100.00 | 90.00 | 359.63 | 9300.00 | 9924.66 | 9930.17 | 816.65 | 0.00 | 414365.59 | 769639.02 | N 32 8 13.28 | W 103 35 44.73 |
| | 19200.00 | 90.00 | 359.63 | 9300.00 | 10024.66 | 10030.17 | 816.00 | 0.00 | 414465.58 | 769638.37 | N 32 8 14.26 | W 103 35 44.73 |
| | 19300.00 | 90.00 | 359.63 | 9300.00 | 10124.66 | 10130.17 | 815.35 | 0.00 | 414565.58 | 769637.72 | N 32 8 15.25 | W 103 35 44.73 |
| Cimarex Vaca Draw 20-17 Federal #32H - PBHL [100' FNL, 2192' FWL] | 19303.51 | 90.00 | 359.63 | 9300.00 | 10128.17 | 10133.68 | 815.33 | 0.00 | 414569.09 | 769637.70 | N 32 8 15.29 | W 103 35 44.73 |

**Survey Type:** Non-Def Plan

**Survey Error Model:** ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

**Survey Program:**

| Description | Part | MD From (ft) | MD To (ft) | EOU Freq (ft) | Hole Size (in) | Casing Diameter (in) | Expected Max Inclination (deg) | Survey Tool Type | Borehole / Survey |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 0.000 | 26.000 | 1/100.000 | 30.000 | 30.000 | | NAL_MWD_IFR1+MS-Depth Only | Vaca Draw 20-17 Federal #32H / Cimarex Vaca Draw 20-17 Federal #32H Rev0 RM 12Mar19 |
| | 1 | 26.000 | 19303.515 | 1/100.000 | 30.000 | 30.000 | | NAL_MWD_IFR1+MS | Vaca Draw 20-17 Federal #32H / Cimarex Vaca Draw 20-17 |

Schlumberger

# Cimarex Energy

Rev 0

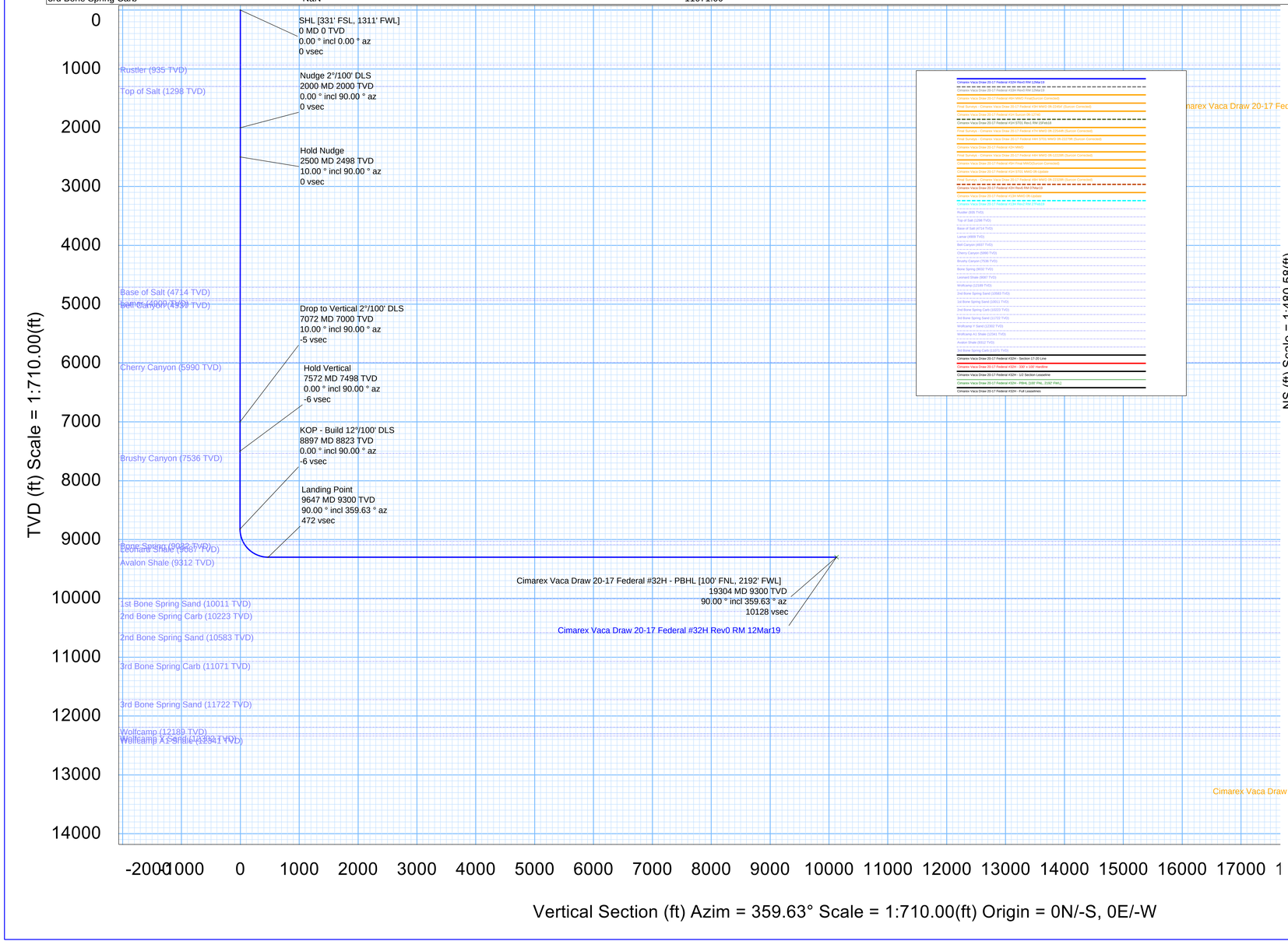
CIMAREX

| Borehole: | Well: | Field: | Structure: |
|---|---|---|---|
| Vaca Draw 20-17 Federal #32H | Vaca Draw 20-17 Federal #32H | NM Lea County (NAD 83) | Cimarex Vaca Draw 20-17 Federal #32H |

| Gravity & Magnetic Parameters | | | | | | Surface Location | NAD83 New Mexico State Plane, Eastern Zone, US Feet | | | | Miscellaneous | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model: | HDGM 2019 | Dip: | 59.73° | Date: | 12-Mar-2019 | Lat: | N 32 6 35.07 | Northing: | 404435.75ftUS | Grid Conv: | 0.3905° | Slot: | New Slot | TVD Ref: | RKB(3446.3ft above MSL) |
| MagDec: | 6.67° | FS: | 47800.604nT | Gravity FS: | 998.43mgn (9.80665 Based) | Lon: | W 103 35 55.01 | Easting: | 768822.4ftUS | Scale Fact: | 0.99996836 | Plan: | Cimarex Vaca Draw 20-17 Federal #32H Rev0 RM 12Mar19 | | |

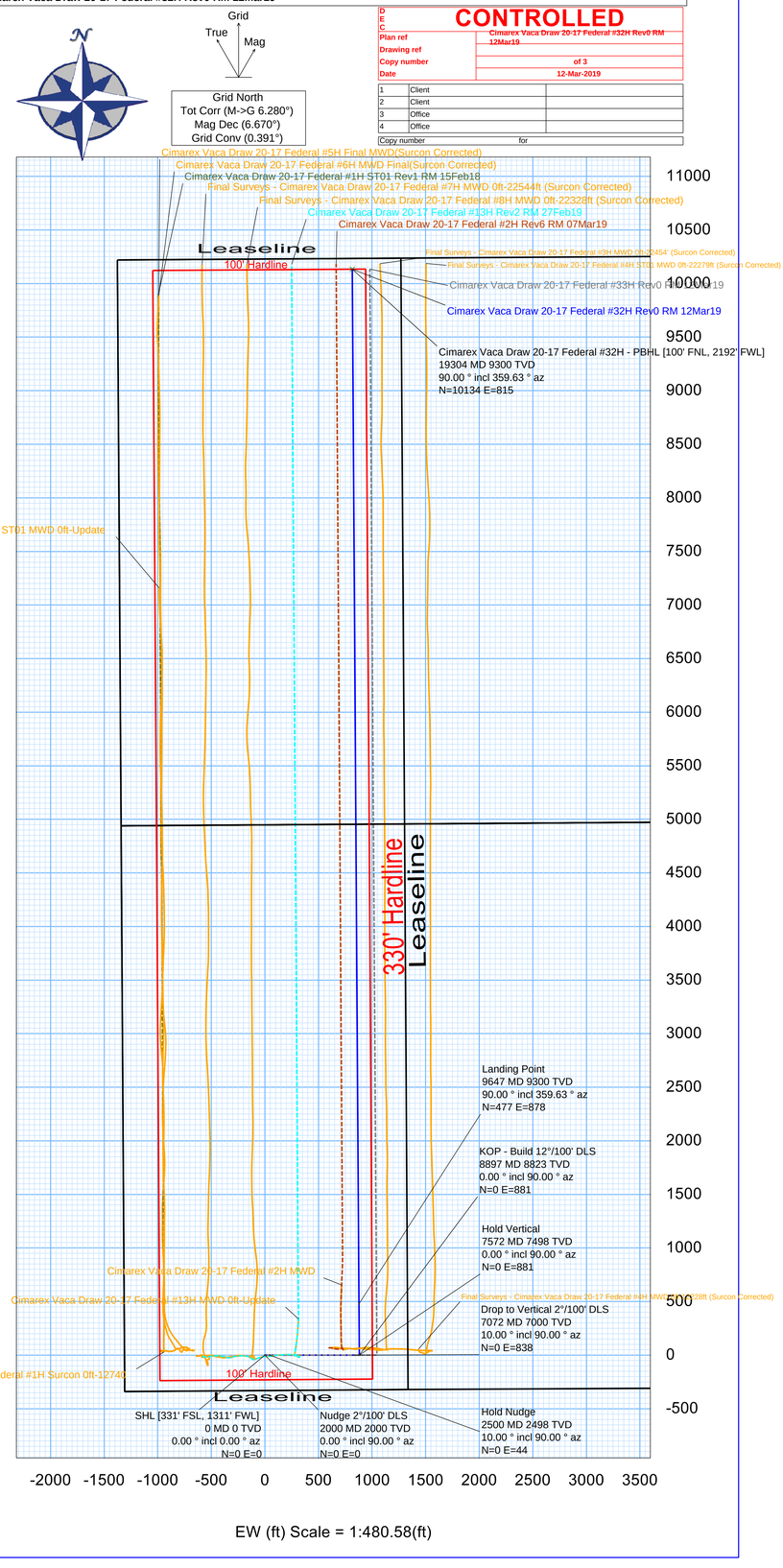
**Critical Points**

| Critical Point | MD | INCL | AZIM | TVD | VSEC | N(+)/S(-) | E(+)/W(-) | DLS |
|---|---|---|---|---|---|---|---|---|
| SHL [331' FSL, 1311' FWL] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Rustler | 935.00 | 0.00 | 90.00 | 935.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Top of Salt | 1298.00 | 0.00 | 90.00 | 1298.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nudge 2°/100' DLS | 2000.00 | 0.00 | 90.00 | 2000.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hold Nudge | 2500.08 | 10.00 | 90.00 | 2497.54 | -0.28 | 0.00 | 43.54 | 2.00 |
| Base of Salt | 4750.74 | 10.00 | 90.00 | 4714.00 | -2.82 | 0.00 | 434.42 | 0.00 |
| Lamar | 4948.75 | 10.00 | 90.00 | 4909.00 | -3.04 | 0.00 | 468.81 | 0.00 |
| Bell Canyon | 4977.18 | 10.00 | 90.00 | 4937.00 | -3.08 | 0.00 | 473.74 | 0.00 |
| Cherry Canyon | 6046.43 | 10.00 | 90.00 | 5990.00 | -4.28 | 0.00 | 659.44 | 0.00 |
| Drop to Vertical 2°/100' DLS | 7072.01 | 10.00 | 90.00 | 7000.00 | -5.44 | 0.00 | 837.56 | 0.00 |
| Hold Vertical | 7572.09 | 0.00 | 90.00 | 7497.54 | -5.72 | 0.00 | 881.10 | 2.00 |
| Brushy Canyon | 7610.55 | 0.00 | 90.00 | 7536.00 | -5.72 | 0.00 | 881.10 | 0.00 |
| KOP - Build 12°/100' DLS | 8897.09 | 0.00 | 90.00 | 8822.54 | -5.72 | 0.00 | 881.10 | 0.00 |
| Bone Spring | 9113.93 | 26.02 | 359.63 | 9032.00 | 42.68 | 48.40 | 880.78 | 12.00 |
| Leonard Shale | 9177.37 | 33.63 | 359.63 | 9087.00 | 74.21 | 79.93 | 880.58 | 12.00 |
| Landing Point | 9647.09 | 90.00 | 359.63 | 9300.00 | 471.74 | 477.45 | 878.00 | 12.00 |
| Cimarex Vaca Draw 20-17 Federal #32H - PBHL [100' FNL, 2192' FWL] | 19303.51 | 90.00 | 359.63 | 9300.00 | 10128.17 | 10133.68 | 815.33 | 0.00 |
| Wolfcamp | NaN | | | 12189.00 | | | | |
| 2nd Bone Spring Sand | NaN | | | 10583.00 | | | | |
| 1st Bone Spring Sand | NaN | | | 10011.00 | | | | |
| 2nd Bone Spring Carb | NaN | | | 10223.00 | | | | |
| 3rd Bone Spring Sand | NaN | | | 11722.00 | | | | |
| Wolfcamp Y Sand | NaN | | | 12302.00 | | | | |
| Wolfcamp A1 Shale | NaN | | | 12341.00 | | | | |
| Avalon Shale | NaN | | | 9312.00 | | | | |
| 3rd Bone Spring Carb | NaN | | | 11071.00 | | | | |









Schlumberger

CIMAREX

# Cimarex Vaca Draw 20-17 Federal #32H Rev0 RM 12Mar19 Anti-Collision Summary Report

| | | | |
|---|---|---|---|
| **Analysis Date-24hr Time:** | March 12, 2019 - 11:09 | **Analysis Method:** | 3D Least Distance |
| **Client:** | Cimarex Energy | **Reference Trajectory:** | Cimarex Vaca Draw 20-17 Federal #32H Rev0 RM 12Mar19 (Non-Def Plan) |
| **Field:** | NM Lea County (NAD 83) | **Depth Interval:** | Every 10.00 Measured Depth (ft) |
| **Structure:** | Cimarex Vaca Draw 20-17 Federal #32H | **Rule Set:** | NAL Procedure: D&M AntiCollision Standard S002 |
| **Slot:** | New Slot | **Min Pts:** | All local minima indicated. |
| **Well:** | Vaca Draw 20-17 Federal #32H | **Version / Patch:** | 2.10.753.0 |
| **Borehole:** | Vaca Draw 20-17 Federal #32H | **Database \ Project:** | US1153APP452.dir.slb.com\drilling-NM Lea County 2.10 |
| **Scan MD Range:** | 0.00ft ~ 19303.51ft | | |

**Trajectory Error Model:** ISCWSA0 3-D 95.000% Confidence 2.7955 sigma, for subject well. For offset wells, error model version is specified with each well respectively.

**Offset Trajectories Summary**

**Offset Selection Criteria**

Wellhead distance scan: Not performed!

Selection filters: Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans
- All Non-Def Surveys when no Def-Survey is set in a borehole - All Non-Def Plans when no Def-Plan is set in a borehole

| Offset Trajectory | Separation | | | Allow | Sep. | Controlling | Reference Trajectory | | Risk Level | | | Alert | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Fact. | Rule | MD (ft) | TVD (ft) | Alert | Minor | Major | | |
| Results highlighted: Sep-Factor separation <= 1.50 ft | | | | | | | | | | | | | |
| Cimarex Vaca Draw 20-17 Federal #33H Rev0 RM 12Mar19 (Non-Def Plan) | | | | | | | | | | | | | Warning Alert |
| | 20.01 | 16.50 | 17.51 | 3.50 | N/A | MAS = 5.03 (m) | 0.00 | 0.00 | CtCt<=15m<15.00 | | | Enter Alert | |
| | 20.00 | 16.50 | 17.50 | 3.50 | N/A | MAS = 5.03 (m) | 26.00 | 26.00 | | | | WRP | |
| | 20.00 | 16.50 | 8.47 | 3.50 | 1.94 | MAS = 5.03 (m) | 1500.00 | 1500.00 | | | | MinPts | |
| | 20.02 | 16.50 | 8.44 | 3.52 | 1.93 | MAS = 5.03 (m) | 1510.00 | 1510.00 | | | | MINPT-O-EOU | |
| | 20.15 | 16.50 | 8.48 | 3.65 | 1.92 | MAS = 5.03 (m) | 1530.00 | 1530.00 | | | | MinPt-O-SF | |
| | 56.38 | 18.67 | 43.11 | 37.72 | 5.00 | OSF1.50 | 1960.00 | 1960.00 | OSF>5.00 | | | Exit Alert | |
| | 233.54 | 57.14 | 194.62 | 176.40 | 6.34 | OSF1.50 | 6610.00 | 6545.01 | | | | MinPt-O-SF | |
| | 183.22 | 56.82 | 144.50 | 126.40 | 4.99 | OSF1.50 | 7240.00 | 7166.19 | OSF<5.00 | | | Enter Alert | |
| | 164.02 | 56.24 | 125.69 | 107.78 | 4.51 | OSF1.50 | 7560.00 | 7485.45 | | | | MinPt-O-SF | |
| | 163.99 | 56.23 | 125.67 | 107.77 | 4.51 | OSF1.50 | 7570.00 | 7495.45 | | | | MinPts | |
| | 163.99 | 61.50 | 122.16 | 102.49 | 4.11 | OSF1.50 | 8897.09 | 8822.54 | | | | MinPt-CtCt | |
| | 164.03 | 61.73 | 122.04 | 102.30 | 4.09 | OSF1.50 | 8950.00 | 8875.34 | | | | MINPT-O-EOU | |
| | 164.06 | 61.77 | 122.05 | 102.29 | 4.09 | OSF1.50 | 8960.00 | 8885.27 | | | | MinPt-O-ADP | |
| | 164.29 | 61.89 | 122.19 | 102.40 | 4.09 | OSF1.50 | 8990.00 | 8914.86 | | | | MinPt-O-SF | |
| | 202.51 | 63.34 | 159.45 | 139.17 | 4.93 | OSF1.50 | 9240.00 | 9136.72 | OSF>5.00 | | | Exit Alert | |
| | 641.71 | 194.35 | 511.31 | 447.36 | 5.00 | OSF1.50 | 15510.00 | 9300.00 | OSF<5.00 | | | Enter Alert | |
| | 641.70 | 310.90 | 433.60 | 330.80 | 3.11 | OSF1.50 | 19303.51 | 9300.00 | | | | MinPts | |
| Cimarex Vaca Draw 20-17 Federal #2H MWD (Non-Def Survey) | | | | | | | | | | | | | Warning Alert |
| | 602.20 | 32.81 | 599.70 | 569.39 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 602.17 | 32.81 | 599.67 | 569.37 | N/A | MAS = 10.00 (m) | 10.00 | 10.00 | | | | MinPts | |
| | 602.18 | 32.81 | 599.68 | 569.37 | 543518.25 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |

| Offset Trajectory | Separation | | | Allow | Sep. | Controlling | Reference Trajectory | | Risk Level | | | Alert | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Fact. | Rule | MD (ft) | TVD (ft) | Alert | Minor | Major | | |
| | 602.66 | 32.81 | 594.97 | 569.85 | 115.57 | MAS = 10.00 (m) | 1230.00 | 1230.00 | | | | MinPts | |
| | 104.48 | 33.81 | 80.95 | 70.66 | 4.93 | OSF1.50 | 5590.00 | 5540.51 | OSF<5.00 | | | Enter Alert | |
| | 56.48 | 37.56 | 30.61 | 18.93 | 2.31 | OSF1.50 | 6120.00 | 6062.45 | | | | MinPts | |
| | 56.52 | 37.60 | 30.62 | 18.92 | 2.31 | OSF1.50 | 6130.00 | 6072.30 | | | | MinPt-O-ADP | |
| | 56.60 | 37.65 | 30.67 | 18.95 | 2.31 | OSF1.50 | 6140.00 | 6082.15 | | | | MinPt-O-SF | |
| | 132.54 | 41.53 | 104.02 | 91.01 | 5.00 | OSF1.50 | 6870.00 | 6801.06 | OSF>5.00 | | | Exit Alert | |
| | 154.35 | 45.70 | 123.05 | 108.65 | 5.27 | OSF1.50 | 9140.00 | 9055.11 | | | | MinPt-CtCt | |
| | 154.38 | 45.75 | 123.04 | 108.62 | 5.27 | OSF1.50 | 9147.09 | 9061.27 | | | | MinPts | |
| | 154.66 | 45.84 | 123.26 | 108.81 | 5.27 | OSF1.50 | 9160.00 | 9072.36 | | | | MinPt-O-SF | |
| | 7954.31 | 92.39 | 7891.89 | 7861.93 | 132.70 | OSF1.50 | 17180.00 | 9300.00 | | | | MinPts | |
| | 9950.73 | 93.75 | 9887.40 | 9856.99 | 163.54 | OSF1.50 | 19303.51 | 9300.00 | | | | TD | |
| Cimarex Vaca Draw 20-17 Federal #2H Rev6 RM 07Mar19 (Def Plan) | | | | | | | | | | | | | Warning Alert |
| | 602.20 | 32.81 | 599.70 | 569.39 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 602.17 | 32.81 | 599.67 | 569.37 | N/A | MAS = 10.00 (m) | 10.00 | 10.00 | | | | MinPts | |
| | 602.18 | 32.81 | 599.68 | 569.37 | 543518.25 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 602.66 | 32.81 | 594.97 | 569.85 | 115.57 | MAS = 10.00 (m) | 1230.00 | 1230.00 | | | | MinPts | |
| | 104.48 | 33.81 | 80.95 | 70.66 | 4.93 | OSF1.50 | 5590.00 | 5540.51 | OSF<5.00 | | | Enter Alert | |
| | 56.48 | 37.56 | 30.61 | 18.93 | 2.31 | OSF1.50 | 6120.00 | 6062.45 | | | | MinPts | |
| | 56.52 | 37.60 | 30.62 | 18.92 | 2.31 | OSF1.50 | 6130.00 | 6072.30 | | | | MinPt-O-ADP | |
| | 56.60 | 37.65 | 30.67 | 18.95 | 2.31 | OSF1.50 | 6140.00 | 6082.15 | | | | MinPt-O-SF | |
| | 132.54 | 41.53 | 104.02 | 91.01 | 5.00 | OSF1.50 | 6870.00 | 6801.06 | OSF>5.00 | | | Exit Alert | |
| | 154.35 | 45.70 | 123.05 | 108.65 | 5.27 | OSF1.50 | 9140.00 | 9055.11 | | | | MinPt-CtCt | |
| | 154.38 | 45.75 | 123.04 | 108.62 | 5.27 | OSF1.50 | 9147.09 | 9061.27 | | | | MinPts | |
| | 154.66 | 45.84 | 123.26 | 108.81 | 5.27 | OSF1.50 | 9160.00 | 9072.36 | | | | MinPt-O-SF | |
| | 3009.23 | 314.95 | 2798.43 | 2694.28 | 14.43 | OSF1.50 | 19303.51 | 9300.00 | | | | MinPts | |
| Final Surveys - Cimarex Vaca Draw 20-17 Federal #3H MWD 0ft-22454' (Surcon Corrected) (Def Survey) | | | | | | | | | | | | | Pass |
| | 622.12 | 32.81 | 620.47 | 589.32 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 622.10 | 32.81 | 620.45 | 589.29 | 967840.89 | MAS = 10.00 (m) | 10.00 | 10.00 | | | | MinPts | |
| | 622.11 | 32.81 | 620.46 | 589.31 | 101110.74 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 622.19 | 32.81 | 620.44 | 589.38 | 5997.94 | MAS = 10.00 (m) | 60.00 | 60.00 | | | | MINPT-O-EOU | |
| | 618.77 | 32.81 | 614.47 | 585.96 | 224.46 | MAS = 10.00 (m) | 650.00 | 650.00 | | | | MinPts | |
| | 618.81 | 32.81 | 614.45 | 586.00 | 218.53 | MAS = 10.00 (m) | 670.00 | 670.00 | | | | MINPT-O-EOU | |
| | 625.96 | 32.81 | 617.29 | 593.15 | 87.61 | MAS = 10.00 (m) | 1640.00 | 1640.00 | | | | MinPts | |
| | 626.07 | 32.81 | 617.18 | 593.26 | 85.03 | MAS = 10.00 (m) | 1690.00 | 1690.00 | | | | MINPT-O-EOU | |
| | 170.63 | 42.89 | 141.34 | 127.74 | 6.20 | OSF1.50 | 7300.00 | 7225.86 | | | | MinPt-O-SF | |
| | 170.38 | 42.78 | 141.17 | 127.61 | 6.20 | OSF1.50 | 7330.00 | 7255.74 | | | | MinPts | |
| | 170.37 | 42.74 | 141.18 | 127.63 | 6.21 | OSF1.50 | 7340.00 | 7265.70 | | | | MinPt-CtCt | |
| | 267.25 | 45.92 | 236.01 | 221.33 | 9.04 | OSF1.50 | 9100.00 | 9019.40 | | | | MinPts | |
| | 267.38 | 45.96 | 236.11 | 221.42 | 9.04 | OSF1.50 | 9120.00 | 9037.44 | | | | MinPt-O-SF | |
| | 3282.92 | 101.91 | 3214.50 | 3181.01 | 48.99 | OSF1.50 | 12640.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3284.45 | 103.72 | 3214.82 | 3180.72 | 48.15 | OSF1.50 | 12710.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3284.97 | 106.55 | 3213.45 | 3178.42 | 46.86 | OSF1.50 | 12780.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3286.87 | 113.13 | 3210.97 | 3173.74 | 44.12 | OSF1.50 | 13020.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3287.90 | 114.34 | 3211.20 | 3173.56 | 43.66 | OSF1.50 | 13070.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3294.08 | 120.12 | 3213.51 | 3173.95 | 41.61 | OSF1.50 | 13270.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3291.11 | 148.03 | 3191.94 | 3143.07 | 33.66 | OSF1.50 | 14180.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3283.63 | 166.20 | 3172.35 | 3117.43 | 29.88 | OSF1.50 | 14790.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3284.68 | 169.82 | 3170.98 | 3114.86 | 29.25 | OSF1.50 | 14930.00 | 9300.00 | | | | MINPT-O-EOU | |

| Offset Trajectory | Separation | | | Allow | Sep. | Controlling | Reference Trajectory | | Risk Level | | | Alert | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Fact. | Rule | MD (ft) | TVD (ft) | Alert | Minor | Major | | |
| | 3286.13 | 171.58 | 3171.27 | 3114.55 | 28.96 | OSF1.50 | 15000.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3281.30 | 181.73 | 3159.67 | 3099.58 | 27.29 | OSF1.50 | 15310.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3282.38 | 185.02 | 3158.55 | 3097.35 | 26.81 | OSF1.50 | 15440.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3282.64 | 189.79 | 3155.63 | 3092.85 | 26.13 | OSF1.50 | 15580.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3283.63 | 199.05 | 3150.44 | 3084.57 | 24.91 | OSF1.50 | 15890.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3287.64 | 231.69 | 3132.70 | 3055.95 | 21.41 | OSF1.50 | 16980.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3289.91 | 244.88 | 3126.18 | 3045.03 | 20.26 | OSF1.50 | 17440.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3290.36 | 247.63 | 3124.79 | 3042.72 | 20.04 | OSF1.50 | 17510.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3284.13 | 263.79 | 3107.79 | 3020.34 | 18.77 | OSF1.50 | 18050.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3285.01 | 273.99 | 3101.87 | 3011.02 | 18.07 | OSF1.50 | 18390.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3285.89 | 281.77 | 3097.56 | 3004.12 | 17.57 | OSF1.50 | 18650.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3285.48 | 296.53 | 3087.31 | 2988.95 | 16.69 | OSF1.50 | 19140.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3284.39 | 301.98 | 3082.59 | 2982.41 | 16.39 | OSF1.50 | 19303.51 | 9300.00 | | | | MinPts | |
| Cimarex Vaca Draw 20-17 Federal #13H MWD 0ft-Update (Non-Def Survey) | | | | | | | | | | | | | Pass |
| | 580.57 | 32.81 | 578.07 | 547.76 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | MinPts | |
| | 580.58 | 32.81 | 578.07 | 547.77 | 88233.71 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 451.56 | 32.81 | 438.98 | 418.75 | 44.82 | MAS = 10.00 (m) | 2420.00 | 2418.50 | | | | MinPts | |
| | 452.25 | 32.81 | 439.63 | 419.44 | 44.72 | MAS = 10.00 (m) | 2470.00 | 2467.89 | | | | MinPt-O-SF | |
| | 453.38 | 32.81 | 440.75 | 420.57 | 44.78 | MAS = 10.00 (m) | 2500.08 | 2497.54 | | | | MinPt-O-SF | |
| | 717.54 | 45.39 | 686.45 | 672.15 | 25.00 | OSF1.50 | 7100.00 | 7027.58 | | | | MinPt-O-SF | |
| | 568.23 | 49.40 | 534.44 | 518.83 | 18.12 | OSF1.50 | 9110.00 | 9028.46 | | | | MinPt-CtCt | |
| | 568.23 | 49.45 | 534.41 | 518.79 | 18.10 | OSF1.50 | 9120.00 | 9037.44 | | | | MinPts | |
| | 569.87 | 49.72 | 535.87 | 520.15 | 18.05 | OSF1.50 | 9180.00 | 9089.18 | | | | MinPt-O-SF | |
| | 10155.13 | 49.45 | 10121.33 | 10105.68 | 324.40 | OSF1.50 | 19303.51 | 9300.00 | | | | TD | |
| Cimarex Vaca Draw 20-17 Federal #13H Rev2 RM 27Feb19 (Def Plan) | | | | | | | | | | | | | Pass |
| | 580.57 | 32.81 | 578.07 | 547.76 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | MinPts | |
| | 580.58 | 32.81 | 578.07 | 547.77 | 88233.71 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 451.56 | 32.81 | 438.98 | 418.75 | 44.82 | MAS = 10.00 (m) | 2420.00 | 2418.50 | | | | MinPts | |
| | 452.25 | 32.81 | 439.63 | 419.44 | 44.72 | MAS = 10.00 (m) | 2470.00 | 2467.89 | | | | MinPt-O-SF | |
| | 453.38 | 32.81 | 440.75 | 420.57 | 44.78 | MAS = 10.00 (m) | 2500.08 | 2497.54 | | | | MinPt-O-SF | |
| | 717.54 | 45.39 | 686.45 | 672.15 | 25.00 | OSF1.50 | 7100.00 | 7027.58 | | | | MinPt-O-SF | |
| | 568.23 | 49.40 | 534.44 | 518.83 | 18.12 | OSF1.50 | 9110.00 | 9028.46 | | | | MinPt-CtCt | |
| | 568.23 | 49.45 | 534.41 | 518.79 | 18.10 | OSF1.50 | 9120.00 | 9037.44 | | | | MinPts | |
| | 569.87 | 49.72 | 535.87 | 520.15 | 18.05 | OSF1.50 | 9180.00 | 9089.18 | | | | MinPt-O-SF | |
| | 3302.09 | 322.32 | 3086.37 | 2979.76 | 15.48 | OSF1.50 | 19303.51 | 9300.00 | | | | MinPts | |
| Final Surveys - Cimarex Vaca Draw 20-17 Federal #4H ST01 MWD 0ft-22279ft (Surcon Corrected) (Def Survey) | | | | | | | | | | | | | Pass |
| | 642.00 | 32.81 | 640.30 | 609.19 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 641.97 | 32.81 | 640.26 | 609.16 | 143414.71 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 640.43 | 32.81 | 637.09 | 607.62 | 390.43 | MAS = 10.00 (m) | 420.00 | 420.00 | | | | MinPts | |
| | 640.49 | 32.81 | 637.02 | 607.68 | 360.94 | MAS = 10.00 (m) | 450.00 | 450.00 | | | | MINPT-O-EOU | |
| | 729.35 | 32.81 | 718.16 | 696.54 | 75.66 | MAS = 10.00 (m) | 2190.00 | 2189.86 | | | | MinPt-O-SF | |
| | 734.42 | 32.81 | 723.15 | 701.61 | 75.55 | MAS = 10.00 (m) | 2270.00 | 2269.60 | | | | MinPt-O-SF | |
| | 500.88 | 45.05 | 470.24 | 455.83 | 17.31 | OSF1.50 | 7140.00 | 7067.09 | | | | MinPt-O-SF | |
| | 500.13 | 44.93 | 469.58 | 455.20 | 17.34 | OSF1.50 | 7200.00 | 7126.49 | | | | MinPts | |
| | 681.43 | 48.21 | 648.77 | 633.22 | 21.86 | OSF1.50 | 9140.00 | 9055.11 | | | | MinPt-O-SF | |

| Offset Trajectory | Separation | | | Allow | Sep. | Controlling | Reference Trajectory | | Risk Level | | | Alert | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Fact. | Rule | MD (ft) | TVD (ft) | Alert | Minor | Major | | |
| | 3168.38 | 91.99 | 3106.58 | 3076.39 | 52.46 | OSF1.50 | 12370.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3164.43 | 149.11 | 3064.55 | 3015.32 | 32.13 | OSF1.50 | 14300.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3119.75 | 196.30 | 2988.40 | 2923.45 | 24.00 | OSF1.50 | 15880.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3120.75 | 200.89 | 2986.34 | 2919.85 | 23.46 | OSF1.50 | 16050.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3121.99 | 202.39 | 2986.58 | 2919.60 | 23.29 | OSF1.50 | 16110.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3127.67 | 208.19 | 2988.40 | 2919.48 | 22.68 | OSF1.50 | 16300.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3129.31 | 210.09 | 2988.77 | 2919.22 | 22.49 | OSF1.50 | 16370.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3134.86 | 215.72 | 2990.57 | 2919.15 | 21.93 | OSF1.50 | 16560.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3138.03 | 219.67 | 2991.11 | 2918.36 | 21.56 | OSF1.50 | 16680.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3139.76 | 221.75 | 2991.44 | 2918.01 | 21.37 | OSF1.50 | 16760.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3148.44 | 230.92 | 2994.01 | 2917.52 | 20.57 | OSF1.50 | 17060.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3150.54 | 233.38 | 2994.48 | 2917.16 | 20.37 | OSF1.50 | 17150.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3152.44 | 254.46 | 2982.32 | 2897.97 | 18.68 | OSF1.50 | 17820.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3153.15 | 272.14 | 2971.25 | 2881.01 | 17.46 | OSF1.50 | 18410.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3152.45 | 285.09 | 2961.91 | 2867.36 | 16.66 | OSF1.50 | 18840.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3154.49 | 298.74 | 2954.84 | 2855.74 | 15.91 | OSF1.50 | 19303.51 | 9300.00 | | | | MinPts | |
| Final Surveys - Cimarex Vaca Draw 20-17 Federal #4H MWD 0ft-12228ft (Surcon Corrected) (Def Survey) | | | | | | | | | | | | | Pass |
| | 642.00 | 32.81 | 639.50 | 609.19 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 641.97 | 32.81 | 639.46 | 609.16 | 143235.05 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 640.43 | 32.81 | 636.29 | 607.62 | 389.94 | MAS = 10.00 (m) | 420.00 | 420.00 | | | | MinPts | |
| | 640.49 | 32.81 | 636.22 | 607.68 | 360.48 | MAS = 10.00 (m) | 450.00 | 450.00 | | | | MINPT-O-EOU | |
| | 729.35 | 32.81 | 717.29 | 696.54 | 76.04 | MAS = 10.00 (m) | 2190.00 | 2189.86 | | | | MinPt-O-SF | |
| | 734.84 | 32.81 | 722.69 | 702.04 | 75.83 | MAS = 10.00 (m) | 2280.00 | 2279.55 | | | | MinPt-O-SF | |
| | 501.13 | 46.01 | 469.54 | 455.12 | 17.28 | OSF1.50 | 7130.00 | 7057.20 | | | | MinPt-O-SF | |
| | 500.13 | 45.86 | 468.64 | 454.27 | 17.31 | OSF1.50 | 7200.00 | 7126.49 | | | | MinPts | |
| | 681.43 | 49.16 | 647.82 | 632.27 | 21.83 | OSF1.50 | 9140.00 | 9055.11 | | | | MinPt-O-SF | |
| | 10122.86 | 61.83 | 10080.81 | 10061.03 | 255.85 | OSF1.50 | 19303.51 | 9300.00 | | | | TD | |
| Final Surveys - Cimarex Vaca Draw 20-17 Federal #8H MWD 0ft-22328ft (Surcon Corrected) (Def Survey) | | | | | | | | | | | | | Pass |
| | 600.56 | 32.81 | 598.91 | 567.75 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | MinPts | |
| | 600.57 | 32.81 | 598.91 | 567.76 | 91614.14 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 601.11 | 32.81 | 598.24 | 568.30 | 493.37 | MAS = 10.00 (m) | 320.00 | 320.00 | | | | MinPts | |
| | 601.99 | 32.81 | 597.77 | 569.18 | 233.49 | MAS = 10.00 (m) | 600.00 | 600.00 | | | | MINPT-O-EOU | |
| | 596.76 | 32.81 | 588.28 | 563.95 | 87.14 | MAS = 10.00 (m) | 1560.00 | 1560.00 | | | | MinPts | |
| | 596.88 | 32.81 | 588.14 | 564.07 | 83.98 | MAS = 10.00 (m) | 1610.00 | 1610.00 | | | | MINPT-O-EOU | |
| | 584.56 | 32.81 | 573.88 | 551.75 | 64.59 | MAS = 10.00 (m) | 2290.00 | 2289.50 | | | | MinPts | |
| | 631.44 | 32.81 | 619.66 | 598.64 | 62.13 | MAS = 10.00 (m) | 2880.00 | 2871.69 | | | | MinPt-O-SF | |
| | 1069.69 | 42.55 | 1040.77 | 1027.13 | 39.17 | OSF1.50 | 7072.01 | 7000.00 | | | | MinPt-O-SF | |
| | 981.19 | 45.19 | 950.51 | 936.00 | 33.75 | OSF1.50 | 9070.00 | 8991.69 | | | | MinPts | |
| | 989.33 | 45.93 | 958.16 | 943.40 | 33.46 | OSF1.50 | 9260.00 | 9151.50 | | | | MinPt-O-SF | |
| | 3210.33 | 107.85 | 3137.95 | 3102.48 | 45.23 | OSF1.50 | 12510.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3210.07 | 113.07 | 3134.21 | 3097.00 | 43.12 | OSF1.50 | 12690.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3210.90 | 115.45 | 3133.45 | 3095.45 | 42.22 | OSF1.50 | 12790.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3211.37 | 118.06 | 3132.18 | 3093.31 | 41.29 | OSF1.50 | 12860.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3208.16 | 128.32 | 3122.13 | 3079.84 | 37.91 | OSF1.50 | 13210.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3205.55 | 135.38 | 3114.82 | 3070.17 | 35.88 | OSF1.50 | 13450.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3207.61 | 141.84 | 3112.57 | 3065.77 | 34.25 | OSF1.50 | 13690.00 | 9300.00 | | | | MINPT-O-EOU | |

| Offset Trajectory | Separation | | | Allow | Sep. | Controlling | Reference Trajectory | | Risk Level | | | Alert | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Fact. | Rule | MD (ft) | TVD (ft) | Alert | Minor | Major | | |
| | 3208.62 | 143.02 | 3112.79 | 3065.59 | 33.98 | OSF1.50 | 13740.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3209.53 | 145.98 | 3111.73 | 3063.54 | 33.29 | OSF1.50 | 13810.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3209.83 | 151.91 | 3108.08 | 3057.92 | 31.98 | OSF1.50 | 14010.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3202.00 | 169.25 | 3088.69 | 3032.76 | 28.61 | OSF1.50 | 14590.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3202.57 | 171.10 | 3088.03 | 3031.48 | 28.30 | OSF1.50 | 14670.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3203.29 | 171.98 | 3088.16 | 3031.31 | 28.16 | OSF1.50 | 14710.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3244.78 | 192.39 | 3116.04 | 3052.38 | 25.48 | OSF1.50 | 15370.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3243.63 | 199.51 | 3110.14 | 3044.12 | 24.55 | OSF1.50 | 15610.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3244.17 | 201.04 | 3109.67 | 3043.14 | 24.37 | OSF1.50 | 15680.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3244.71 | 201.68 | 3109.78 | 3043.03 | 24.29 | OSF1.50 | 15710.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3245.04 | 208.75 | 3105.39 | 3036.29 | 23.47 | OSF1.50 | 15920.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3229.85 | 225.50 | 3079.04 | 3004.35 | 21.61 | OSF1.50 | 16480.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3230.27 | 229.48 | 3076.80 | 3000.79 | 21.24 | OSF1.50 | 16610.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3230.99 | 231.84 | 3075.94 | 2999.14 | 21.03 | OSF1.50 | 16710.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3231.83 | 235.27 | 3074.50 | 2996.56 | 20.72 | OSF1.50 | 16800.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3232.46 | 237.35 | 3073.75 | 2995.11 | 20.54 | OSF1.50 | 16890.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3233.19 | 238.25 | 3073.87 | 2994.93 | 20.47 | OSF1.50 | 16930.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3227.51 | 256.32 | 3056.15 | 2971.19 | 18.99 | OSF1.50 | 17500.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3222.22 | 267.61 | 3043.33 | 2954.61 | 18.15 | OSF1.50 | 17880.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3218.79 | 279.00 | 3032.31 | 2939.79 | 17.39 | OSF1.50 | 18260.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3198.99 | 298.17 | 2999.73 | 2900.82 | 16.16 | OSF1.50 | 18900.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3197.29 | 307.22 | 2991.99 | 2890.07 | 15.68 | OSF1.50 | 19200.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3198.10 | 309.71 | 2991.15 | 2888.39 | 15.55 | OSF1.50 | 19303.51 | 9300.00 | | | | MinPts | |
| Final Surveys - Cimarex Vaca Draw 20-17 Federal #7H MWD 0ft-22544ft (Surcon Corrected) (Def Survey) | | | | | | | | | | | | | Pass |
| | 620.56 | 32.81 | 618.86 | 587.75 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | MinPts | |
| | 620.59 | 32.81 | 618.88 | 587.78 | 54507.21 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 620.65 | 32.81 | 618.87 | 587.84 | 7606.18 | MAS = 10.00 (m) | 50.00 | 50.00 | | | | MINPT-O-EOU | |
| | 635.71 | 32.81 | 625.05 | 602.91 | 69.70 | MAS = 10.00 (m) | 2040.00 | 2040.00 | | | | MinPts | |
| | 635.72 | 32.81 | 625.04 | 602.92 | 69.56 | MAS = 10.00 (m) | 2050.00 | 2050.00 | | | | MINPT-O-EOU | |
| | 636.65 | 32.81 | 625.85 | 603.84 | 68.81 | MAS = 10.00 (m) | 2120.00 | 2119.96 | | | | MinPt-O-SF | |
| | 646.31 | 32.81 | 635.30 | 613.50 | 68.32 | MAS = 10.00 (m) | 2330.00 | 2329.27 | | | | MinPt-O-SF | |
| | 663.86 | 32.81 | 652.73 | 631.05 | 69.23 | MAS = 10.00 (m) | 2500.08 | 2497.54 | | | | MinPt-O-SF | |
| | 722.95 | 32.81 | 711.24 | 690.14 | 71.12 | MAS = 10.00 (m) | 2910.00 | 2901.23 | | | | MinPt-O-SF | |
| | 1031.38 | 32.81 | 1013.22 | 998.57 | 62.08 | MAS = 10.00 (m) | 4840.00 | 4801.90 | | | | MinPt-O-SF | |
| | 1363.02 | 41.66 | 1334.73 | 1321.37 | 50.94 | OSF1.50 | 7072.01 | 7000.00 | | | | MinPt-O-SF | |
| | 1399.55 | 40.05 | 1372.33 | 1359.50 | 54.49 | OSF1.50 | 7810.00 | 7735.45 | | | | MinPt-CtCt | |
| | 1399.56 | 40.07 | 1372.32 | 1359.49 | 54.46 | OSF1.50 | 7820.00 | 7745.45 | | | | MINPT-O-EOU | |
| | 1399.58 | 40.09 | 1372.33 | 1359.49 | 54.43 | OSF1.50 | 7830.00 | 7755.45 | | | | MinPt-O-ADP | |
| | 1440.18 | 45.03 | 1409.64 | 1395.16 | 49.65 | OSF1.50 | 9360.00 | 9216.26 | | | | MinPt-O-SF | |
| | 3517.73 | 110.34 | 3443.68 | 3407.38 | 48.43 | OSF1.50 | 12490.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3515.66 | 116.06 | 3437.81 | 3399.60 | 45.99 | OSF1.50 | 12690.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3516.10 | 117.30 | 3437.42 | 3398.80 | 45.50 | OSF1.50 | 12750.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3516.60 | 117.92 | 3437.51 | 3398.68 | 45.27 | OSF1.50 | 12780.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3516.68 | 120.72 | 3435.72 | 3395.96 | 44.21 | OSF1.50 | 12850.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3517.16 | 122.20 | 3435.22 | 3394.97 | 43.67 | OSF1.50 | 12920.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3517.67 | 122.83 | 3435.31 | 3394.85 | 43.45 | OSF1.50 | 12950.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3520.82 | 135.46 | 3430.03 | 3385.36 | 39.39 | OSF1.50 | 13350.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3520.20 | 139.86 | 3426.49 | 3380.35 | 38.13 | OSF1.50 | 13500.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3520.65 | 141.07 | 3426.13 | 3379.58 | 37.80 | OSF1.50 | 13560.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3521.18 | 141.67 | 3426.25 | 3379.51 | 37.65 | OSF1.50 | 13590.00 | 9300.00 | | | | MinPt-O-ADP | |

| Offset Trajectory | Separation | | | Allow | Sep. | Controlling | Reference Trajectory | | Risk Level | | | Alert | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Fact. | Rule | MD (ft) | TVD (ft) | Alert | Minor | Major | | |
| | 3550.96 | 191.85 | 3422.57 | 3359.10 | 27.96 | OSF1.50 | 15250.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3549.10 | 204.38 | 3412.37 | 3344.72 | 26.22 | OSF1.50 | 15670.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3549.41 | 216.72 | 3404.45 | 3332.69 | 24.72 | OSF1.50 | 16080.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3545.16 | 247.56 | 3379.64 | 3297.60 | 21.60 | OSF1.50 | 17110.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3544.97 | 252.95 | 3375.85 | 3292.01 | 21.13 | OSF1.50 | 17290.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3543.79 | 261.08 | 3369.26 | 3282.71 | 20.46 | OSF1.50 | 17560.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3546.06 | 269.21 | 3366.10 | 3276.85 | 19.86 | OSF1.50 | 17830.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3545.38 | 277.31 | 3360.02 | 3268.06 | 19.27 | OSF1.50 | 18100.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3541.27 | 290.17 | 3347.34 | 3251.10 | 18.39 | OSF1.50 | 18530.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3539.99 | 297.71 | 3341.04 | 3242.28 | 17.92 | OSF1.50 | 18780.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3542.54 | 309.51 | 3335.72 | 3233.03 | 17.24 | OSF1.50 | 19170.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3542.48 | 313.68 | 3332.88 | 3228.80 | 17.01 | OSF1.50 | 19303.51 | 9300.00 | | | | MinPts | |
| Cimarex Vaca Draw 20-17 Federal #6H MWD Final(Surcon Corrected) (Def Survey) | | | | | | | | | | | | | Pass |
| | 683.15 | 32.81 | 680.65 | 650.34 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 683.12 | 32.81 | 680.61 | 650.32 | 47018.85 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 679.21 | 32.81 | 673.60 | 646.40 | 217.47 | MAS = 10.00 (m) | 730.00 | 730.00 | | | | MinPts | |
| | 679.99 | 32.81 | 673.26 | 647.18 | 160.20 | MAS = 10.00 (m) | 990.00 | 990.00 | | | | MINPT-O-EOU | |
| | 678.26 | 32.81 | 666.98 | 645.45 | 76.98 | MAS = 10.00 (m) | 2030.00 | 2030.00 | | | | MinPts | |
| | 678.26 | 32.81 | 666.95 | 645.45 | 76.73 | MAS = 10.00 (m) | 2040.00 | 2040.00 | | | | MINPT-O-EOU | |
| | 711.42 | 32.81 | 699.18 | 678.61 | 72.82 | MAS = 10.00 (m) | 2510.00 | 2507.31 | | | | MinPt-O-SF | |
| | 847.43 | 32.81 | 833.57 | 814.62 | 74.42 | MAS = 10.00 (m) | 3320.00 | 3305.00 | | | | MinPt-O-SF | |
| | 903.68 | 32.81 | 889.06 | 870.87 | 74.40 | MAS = 10.00 (m) | 3620.00 | 3600.44 | | | | MinPt-O-SF | |
| | 1555.24 | 42.27 | 1526.23 | 1512.97 | 58.56 | OSF1.50 | 7072.01 | 7000.00 | | | | MinPt-O-SF | |
| | 1615.15 | 43.59 | 1585.26 | 1571.56 | 58.86 | OSF1.50 | 8850.00 | 8775.45 | | | | MinPt-O-SF | |
| | 1815.37 | 52.58 | 1779.48 | 1762.79 | 54.30 | OSF1.50 | 9920.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1815.47 | 52.70 | 1779.50 | 1762.77 | 54.18 | OSF1.50 | 9930.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 1828.74 | 62.87 | 1785.99 | 1765.87 | 45.38 | OSF1.50 | 10460.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1805.07 | 74.45 | 1754.60 | 1730.61 | 37.58 | OSF1.50 | 10980.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1805.30 | 75.11 | 1754.40 | 1730.19 | 37.24 | OSF1.50 | 11020.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1805.60 | 75.45 | 1754.47 | 1730.16 | 37.08 | OSF1.50 | 11040.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 1787.08 | 103.96 | 1716.94 | 1683.12 | 26.38 | OSF1.50 | 12110.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1787.24 | 104.46 | 1716.76 | 1682.78 | 26.26 | OSF1.50 | 12140.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1787.52 | 104.79 | 1716.83 | 1682.73 | 26.18 | OSF1.50 | 12160.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 1811.70 | 117.29 | 1732.67 | 1694.41 | 23.64 | OSF1.50 | 12590.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1813.28 | 128.36 | 1726.88 | 1684.92 | 21.58 | OSF1.50 | 12980.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1814.97 | 148.86 | 1714.90 | 1666.11 | 18.58 | OSF1.50 | 13690.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1815.50 | 150.38 | 1714.41 | 1665.12 | 18.39 | OSF1.50 | 13760.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1816.06 | 151.02 | 1714.54 | 1665.03 | 18.32 | OSF1.50 | 13790.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 1819.99 | 162.46 | 1710.85 | 1657.54 | 17.04 | OSF1.50 | 14160.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1812.74 | 202.42 | 1676.96 | 1610.32 | 13.58 | OSF1.50 | 15520.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1806.15 | 234.57 | 1648.94 | 1571.59 | 11.66 | OSF1.50 | 16600.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1807.10 | 237.53 | 1647.92 | 1569.58 | 11.52 | OSF1.50 | 16720.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1815.12 | 249.75 | 1647.78 | 1565.37 | 11.00 | OSF1.50 | 17130.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1819.02 | 255.06 | 1648.14 | 1563.95 | 10.79 | OSF1.50 | 17310.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1806.62 | 308.72 | 1599.97 | 1497.89 | 8.84 | OSF1.50 | 19070.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1806.68 | 308.93 | 1599.90 | 1497.75 | 8.83 | OSF1.50 | 19090.00 | 9300.00 | | | | MinPts | |
| | 1807.48 | 309.23 | 1600.49 | 1498.25 | 8.83 | OSF1.50 | 19130.00 | 9300.00 | | | | MinPt-O-SF | |
| | 1821.14 | 308.85 | 1614.41 | 1512.29 | 8.90 | OSF1.50 | 19303.51 | 9300.00 | | | | TD | |

| Offset Trajectory | Separation | | | Allow | Sep. | Controlling | Reference Trajectory | | Risk Level | | | Alert | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Fact. | Rule | MD (ft) | TVD (ft) | Alert | Minor | Major | | |
| Cimarex Vaca Draw 20-17 Federal #5H Final MWD(Surcon Corrected) (Def Survey) | | | | | | | | | | | | | Pass |
| | 703.07 | 32.81 | 700.57 | 670.27 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 703.06 | 32.81 | 700.55 | 670.25 | 66208.22 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 701.23 | 32.81 | 696.49 | 668.43 | 312.04 | MAS = 10.00 (m) | 550.00 | 550.00 | | | | MinPts | |
| | 701.32 | 32.81 | 695.70 | 668.51 | 224.04 | MAS = 10.00 (m) | 760.00 | 760.00 | | | | MinPts | |
| | 701.53 | 32.81 | 695.39 | 668.73 | 191.56 | MAS = 10.00 (m) | 870.00 | 870.00 | | | | MINPT-O-EOU | |
| | 703.78 | 32.81 | 694.12 | 670.97 | 97.92 | MAS = 10.00 (m) | 1650.00 | 1650.00 | | | | MinPts | |
| | 703.87 | 32.81 | 693.98 | 671.06 | 95.03 | MAS = 10.00 (m) | 1700.00 | 1700.00 | | | | MINPT-O-EOU | |
| | 714.83 | 32.81 | 703.47 | 682.02 | 80.46 | MAS = 10.00 (m) | 2100.00 | 2099.98 | | | | MinPt-O-SF | |
| | 762.56 | 32.81 | 750.82 | 729.76 | 82.26 | MAS = 10.00 (m) | 2500.08 | 2497.54 | | | | MinPt-O-SF | |
| | 906.87 | 32.81 | 893.70 | 874.06 | 84.74 | MAS = 10.00 (m) | 3250.00 | 3236.07 | | | | MinPt-O-SF | |
| | 1652.48 | 42.13 | 1623.57 | 1610.36 | 62.46 | OSF1.50 | 7072.01 | 7000.00 | | | | MinPt-O-SF | |
| | 1699.62 | 42.57 | 1670.40 | 1657.04 | 63.53 | OSF1.50 | 8440.00 | 8365.45 | | | | MinPt-CtCt | |
| | 1699.62 | 42.59 | 1670.39 | 1657.03 | 63.49 | OSF1.50 | 8450.00 | 8375.45 | | | | MINPT-O-EOU | |
| | 1699.84 | 43.10 | 1670.27 | 1656.74 | 62.71 | OSF1.50 | 8610.00 | 8535.45 | | | | MINPT-O-EOU | |
| | 1699.95 | 43.23 | 1670.30 | 1656.72 | 62.51 | OSF1.50 | 8650.00 | 8575.45 | | | | MinPt-O-ADP | |
| | 1736.50 | 46.79 | 1704.48 | 1689.72 | 58.73 | OSF1.50 | 9560.00 | 9292.08 | | | | MinPt-O-SF | |
| | 1929.38 | 67.11 | 1883.81 | 1862.27 | 44.73 | OSF1.50 | 10550.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1929.70 | 68.04 | 1883.51 | 1861.66 | 44.11 | OSF1.50 | 10600.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1930.18 | 68.60 | 1883.61 | 1861.58 | 43.75 | OSF1.50 | 10630.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 1931.47 | 88.61 | 1871.56 | 1842.86 | 33.60 | OSF1.50 | 11410.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1932.24 | 91.12 | 1870.67 | 1841.13 | 32.66 | OSF1.50 | 11520.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1932.59 | 91.52 | 1870.75 | 1841.08 | 32.52 | OSF1.50 | 11540.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 1933.19 | 109.54 | 1859.33 | 1823.65 | 27.06 | OSF1.50 | 12180.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1933.69 | 111.10 | 1858.79 | 1822.59 | 26.67 | OSF1.50 | 12250.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1935.57 | 115.88 | 1857.48 | 1819.69 | 25.58 | OSF1.50 | 12420.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1944.25 | 137.83 | 1851.53 | 1806.42 | 21.52 | OSF1.50 | 13170.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1932.15 | 158.16 | 1825.87 | 1773.99 | 18.59 | OSF1.50 | 13870.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1933.40 | 161.40 | 1824.96 | 1772.00 | 18.23 | OSF1.50 | 14000.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1934.10 | 164.27 | 1823.75 | 1769.83 | 17.91 | OSF1.50 | 14080.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1934.90 | 166.74 | 1822.90 | 1768.16 | 17.65 | OSF1.50 | 14180.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1926.98 | 202.43 | 1791.19 | 1724.55 | 14.44 | OSF1.50 | 15370.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1931.64 | 217.06 | 1786.10 | 1714.58 | 13.49 | OSF1.50 | 15880.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1936.00 | 225.41 | 1784.89 | 1710.58 | 13.01 | OSF1.50 | 16160.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1938.56 | 230.18 | 1784.27 | 1708.37 | 12.75 | OSF1.50 | 16320.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1939.28 | 235.24 | 1781.62 | 1704.04 | 12.48 | OSF1.50 | 16470.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1940.77 | 238.48 | 1780.95 | 1702.29 | 12.32 | OSF1.50 | 16600.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1935.59 | 264.61 | 1758.35 | 1670.98 | 11.06 | OSF1.50 | 17450.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1929.31 | 280.75 | 1741.31 | 1648.56 | 10.39 | OSF1.50 | 17990.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1932.96 | 288.77 | 1739.62 | 1644.19 | 10.12 | OSF1.50 | 18280.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1937.99 | 296.41 | 1739.55 | 1641.58 | 9.88 | OSF1.50 | 18530.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1938.56 | 297.06 | 1739.69 | 1641.50 | 9.86 | OSF1.50 | 18560.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 1929.92 | 313.24 | 1720.26 | 1616.68 | 9.30 | OSF1.50 | 19070.00 | 9300.00 | | | | MinPt-CtCt | |
| | 1929.99 | 313.50 | 1720.16 | 1616.49 | 9.30 | OSF1.50 | 19090.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 1930.11 | 313.62 | 1720.19 | 1616.48 | 9.29 | OSF1.50 | 19100.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 1931.88 | 314.17 | 1721.60 | 1617.71 | 9.29 | OSF1.50 | 19160.00 | 9300.00 | | | | MinPt-O-SF | |
| | 1943.62 | 314.29 | 1733.27 | 1629.34 | 9.34 | OSF1.50 | 19303.51 | 9300.00 | | | | TD | |
| Cimarex Vaca Draw 20-17 Federal #1H Surcon 0ft-12740 (Def Survey) | | | | | | | | | | | | | Pass |
| | 723.00 | 32.81 | 720.50 | 690.19 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 722.96 | 32.81 | 720.44 | 690.15 | 39744.21 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |

| Offset Trajectory | Separation | | | Allow | Sep. | Controlling | Reference Trajectory | | Risk Level | | | Alert | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Fact. | Rule | MD (ft) | TVD (ft) | Alert | Minor | Major | | |
| | 721.22 | 32.81 | 717.51 | 688.41 | 595.09 | MAS = 10.00 (m) | 300.00 | 300.00 | | | | MinPts | |
| | 721.72 | 32.81 | 717.30 | 688.91 | 373.66 | MAS = 10.00 (m) | 430.00 | 430.00 | | | | MINPT-O-EOU | |
| | 757.70 | 32.81 | 746.23 | 724.89 | 84.19 | MAS = 10.00 (m) | 2100.00 | 2099.98 | | | | MinPt-O-SF | |
| | 811.99 | 32.81 | 800.26 | 779.18 | 87.76 | MAS = 10.00 (m) | 2500.08 | 2497.54 | | | | MinPt-O-SF | |
| | 908.25 | 32.81 | 895.72 | 875.44 | 90.30 | MAS = 10.00 (m) | 2980.00 | 2970.17 | | | | MinPt-O-SF | |
| | 927.26 | 32.81 | 914.51 | 894.45 | 90.20 | MAS = 10.00 (m) | 3070.00 | 3058.80 | | | | MinPt-O-SF | |
| | 1777.64 | 42.37 | 1748.56 | 1735.27 | 66.79 | OSF1.50 | 7072.01 | 7000.00 | | | | MinPt-O-SF | |
| | 1850.03 | 43.39 | 1820.26 | 1806.63 | 67.77 | OSF1.50 | 8380.00 | 8305.45 | | | | MINPT-O-EOU | |
| | 1850.39 | 43.80 | 1820.35 | 1806.59 | 67.11 | OSF1.50 | 8510.00 | 8435.45 | | | | MinPt-O-ADP | |
| | 1888.43 | 47.73 | 1855.77 | 1840.69 | 62.54 | OSF1.50 | 9580.00 | 9295.29 | | | | MinPt-O-SF | |
| | 1894.24 | 47.87 | 1861.49 | 1846.37 | 62.55 | OSF1.50 | 9610.00 | 9298.56 | | | | MinPt-O-SF | |
| | 10247.21 | 52.55 | 10211.34 | 10194.65 | 307.00 | OSF1.50 | 19303.51 | 9300.00 | | | | TD | |
| Cimarex Vaca Draw 20-17 Federal #1H ST01 Rev1 RM 15Feb18 (Def Plan) | | | | | | | | | | | | | Pass |
| | 723.00 | 32.81 | 720.50 | 690.19 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 722.96 | 32.81 | 720.44 | 690.15 | 39744.21 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 721.22 | 32.81 | 717.51 | 688.41 | 595.09 | MAS = 10.00 (m) | 300.00 | 300.00 | | | | MinPts | |
| | 721.72 | 32.81 | 717.30 | 688.91 | 373.66 | MAS = 10.00 (m) | 430.00 | 430.00 | | | | MINPT-O-EOU | |
| | 757.70 | 32.81 | 746.23 | 724.89 | 84.19 | MAS = 10.00 (m) | 2100.00 | 2099.98 | | | | MinPt-O-SF | |
| | 811.99 | 32.81 | 800.26 | 779.18 | 87.76 | MAS = 10.00 (m) | 2500.08 | 2497.54 | | | | MinPt-O-SF | |
| | 908.25 | 32.81 | 895.72 | 875.44 | 90.30 | MAS = 10.00 (m) | 2980.00 | 2970.17 | | | | MinPt-O-SF | |
| | 927.26 | 32.81 | 914.51 | 894.45 | 90.20 | MAS = 10.00 (m) | 3070.00 | 3058.80 | | | | MinPt-O-SF | |
| | 1777.64 | 42.37 | 1748.56 | 1735.27 | 66.79 | OSF1.50 | 7072.01 | 7000.00 | | | | MinPt-O-SF | |
| | 1850.03 | 43.39 | 1820.26 | 1806.63 | 67.77 | OSF1.50 | 8380.00 | 8305.45 | | | | MINPT-O-EOU | |
| | 1850.39 | 43.80 | 1820.35 | 1806.59 | 67.11 | OSF1.50 | 8510.00 | 8435.45 | | | | MinPt-O-ADP | |
| | 1888.43 | 47.73 | 1855.77 | 1840.69 | 62.54 | OSF1.50 | 9580.00 | 9295.29 | | | | MinPt-O-SF | |
| | 1894.24 | 47.87 | 1861.49 | 1846.37 | 62.55 | OSF1.50 | 9610.00 | 9298.56 | | | | MinPt-O-SF | |
| | 3575.90 | 319.19 | 3362.28 | 3256.72 | 16.93 | OSF1.50 | 19070.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3576.09 | 319.85 | 3362.02 | 3256.24 | 16.89 | OSF1.50 | 19110.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3576.35 | 320.17 | 3362.07 | 3256.18 | 16.88 | OSF1.50 | 19130.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3583.28 | 322.53 | 3367.42 | 3260.75 | 16.78 | OSF1.50 | 19303.51 | 9300.00 | | | | MinPt-O-SF | |
| Cimarex Vaca Draw 20-17 Federal #1H ST01 MWD 0ft-Update (Non-Def Survey) | | | | | | | | | | | | | Pass |
| | 723.00 | 32.81 | 720.50 | 690.19 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 722.96 | 32.81 | 720.44 | 690.15 | 39744.21 | MAS = 10.00 (m) | 26.00 | 26.00 | | | | WRP | |
| | 721.22 | 32.81 | 717.51 | 688.41 | 595.09 | MAS = 10.00 (m) | 300.00 | 300.00 | | | | MinPts | |
| | 721.72 | 32.81 | 717.30 | 688.91 | 373.66 | MAS = 10.00 (m) | 430.00 | 430.00 | | | | MINPT-O-EOU | |
| | 757.70 | 32.81 | 746.23 | 724.89 | 84.19 | MAS = 10.00 (m) | 2100.00 | 2099.98 | | | | MinPt-O-SF | |
| | 811.99 | 32.81 | 800.26 | 779.18 | 87.76 | MAS = 10.00 (m) | 2500.08 | 2497.54 | | | | MinPt-O-SF | |
| | 908.25 | 32.81 | 895.72 | 875.44 | 90.30 | MAS = 10.00 (m) | 2980.00 | 2970.17 | | | | MinPt-O-SF | |
| | 927.26 | 32.81 | 914.51 | 894.45 | 90.20 | MAS = 10.00 (m) | 3070.00 | 3058.80 | | | | MinPt-O-SF | |
| | 1777.64 | 42.37 | 1748.56 | 1735.27 | 66.79 | OSF1.50 | 7072.01 | 7000.00 | | | | MinPt-O-SF | |
| | 1850.03 | 43.39 | 1820.26 | 1806.63 | 67.77 | OSF1.50 | 8380.00 | 8305.45 | | | | MINPT-O-EOU | |
| | 1850.39 | 43.80 | 1820.35 | 1806.59 | 67.11 | OSF1.50 | 8510.00 | 8435.45 | | | | MinPt-O-ADP | |
| | 1888.43 | 47.73 | 1855.77 | 1840.69 | 62.54 | OSF1.50 | 9580.00 | 9295.29 | | | | MinPt-O-SF | |
| | 1894.24 | 47.87 | 1861.49 | 1846.37 | 62.55 | OSF1.50 | 9610.00 | 9298.56 | | | | MinPt-O-SF | |
| | 3592.47 | 118.30 | 3512.77 | 3474.17 | 46.50 | OSF1.50 | 12630.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3574.99 | 133.34 | 3485.26 | 3441.65 | 40.96 | OSF1.50 | 13150.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3575.56 | 135.11 | 3484.66 | 3440.45 | 40.42 | OSF1.50 | 13230.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3576.27 | 135.98 | 3484.78 | 3440.29 | 40.16 | OSF1.50 | 13270.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3581.80 | 146.50 | 3483.30 | 3435.31 | 37.29 | OSF1.50 | 13620.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3582.97 | 147.98 | 3483.48 | 3434.99 | 36.92 | OSF1.50 | 13680.00 | 9300.00 | | | | MinPt-O-ADP | |

| Offset Trajectory | Separation | | | Allow | Sep. | Controlling | Reference Trajectory | | Risk Level | | | Alert | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Fact. | Rule | MD (ft) | TVD (ft) | Alert | Minor | Major | | |
| | 3598.69 | 164.64 | 3488.09 | 3434.04 | 33.27 | OSF1.50 | 14210.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3598.88 | 169.70 | 3484.91 | 3429.18 | 32.26 | OSF1.50 | 14380.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3600.32 | 173.73 | 3483.66 | 3426.59 | 31.52 | OSF1.50 | 14540.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3581.70 | 205.62 | 3443.79 | 3376.09 | 26.43 | OSF1.50 | 15590.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3582.11 | 206.83 | 3443.39 | 3375.28 | 26.28 | OSF1.50 | 15650.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3582.61 | 207.42 | 3443.50 | 3375.20 | 26.21 | OSF1.50 | 15680.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3617.05 | 228.12 | 3464.14 | 3388.94 | 24.03 | OSF1.50 | 16340.00 | 9300.00 | | | | MinPt-CtCt | |
| | 3617.27 | 228.83 | 3463.89 | 3388.44 | 23.96 | OSF1.50 | 16380.00 | 9300.00 | | | | MINPT-O-EOU | |
| | 3617.55 | 229.17 | 3463.93 | 3388.37 | 23.92 | OSF1.50 | 16400.00 | 9300.00 | | | | MinPt-O-ADP | |
| | 3655.64 | 235.39 | 3497.88 | 3420.25 | 23.53 | OSF1.50 | 16870.00 | 9300.00 | | | | MinPt-O-SF | |
| | 4675.90 | 222.37 | 4526.82 | 4453.53 | 31.88 | OSF1.50 | 19303.51 | 9300.00 | | | | TD | |