

|                                               |                                                                                |                                            |
|-----------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------|
| <b>Well Name:</b> VACA DRAW 20-17<br>FEDERAL  | <b>Well Location:</b> T25S / R33E / SEC 20 /<br>SESW / 32.109742 / -103.596228 | <b>County or Parish/State:</b> LEA /<br>NM |
| <b>Well Number:</b> 12H                       | <b>Type of Well:</b> CONVENTIONAL GAS<br>WELL                                  | <b>Allottee or Tribe Name:</b>             |
| <b>Lease Number:</b> NMNM026394,<br>NMNM26394 | <b>Unit or CA Name:</b>                                                        | <b>Unit or CA Number:</b>                  |
| <b>US Well Number:</b> 3002544358             | <b>Well Status:</b> Approved Application for<br>Permit to Drill                | <b>Operator:</b> CIMAREX ENERGY<br>COMPANY |

Notice of Intent

|                                                       |                                     |
|-------------------------------------------------------|-------------------------------------|
| <b>Type of Submission:</b> Notice of Intent           | <b>Type of Action</b> APD Change    |
| <b>Date Sundry Submitted:</b> 02/21/2021              | <b>Time Sundry Submitted:</b> 04:00 |
| <b>Date proposed operation will begin:</b> 03/14/2021 |                                     |

**Procedure Description:** Cimarex Energy respectfully requests approval to change BHL, target formation, casing design, and perform offline cementing for the Vaca Draw 20-17 Federal 12H well. Proposed BHL: 100' FNL & 1916' FEL Sec. 17, 25S, 33E Target formation: Bone Spring; Classification: Oil Offline Cmt Procedure: 7" Intermediate Casing 1. Land casing on solid body mandrel hanger 2. Engage pack-off and lock-ring 3. Install BPV 4. Skid rig 5. Check for pressure and remove BPV 6. Circulate down casing, taking returns through casing valves 7. Pump lead and tail cement 8. Displace cement and bump the plug 9. Ensure floats are holding pressure 10. RD cement crew 11. Install BPV and TA cap Please see attached previously approved detailed plan and diagram for review. Additional Attachments C102, BOP/Ck Manifold, Directional Plan, Drilling Plan, Multibowl WH, & OLC plan.

Application

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|                                        |                                                                         |                                     |
|----------------------------------------|-------------------------------------------------------------------------|-------------------------------------|
| Well Name: VACA DRAW 20-17<br>FEDERAL  | Well Location: T25S / R33E / SEC 20 /<br>SESW / 32.109742 / -103.596228 | County or Parish/State: LEA /<br>NM |
| Well Number: 12H                       | Type of Well: CONVENTIONAL GAS<br>WELL                                  | Allottee or Tribe Name:             |
| Lease Number: NMNM026394,<br>NMNM26394 | Unit or CA Name:                                                        | Unit or CA Number:                  |
| US Well Number: 3002544358             | Well Status: Approved Application for<br>Permit to Drill                | Operator: CIMAREX ENERGY<br>COMPANY |

Section 1 - General

|                                    |                                                                     |                  |
|------------------------------------|---------------------------------------------------------------------|------------------|
| APD ID: 10400013703                | Tie to previous NOS?                                                | Submission Date: |
| BLM Office: CARLSBAD               | User:                                                               | Title:           |
| Federal/Indian APD: FED            | Is the first lease penetrated for production Federal or Indian? FED |                  |
| Lease number: NMNM026394           | Lease Acres:                                                        |                  |
| Surface access agreement in place? | Allotted?                                                           | Reservation:     |
| Agreement in place? NO             | Federal or Indian agreement:                                        |                  |
| Agreement number:                  |                                                                     |                  |
| Agreement name:                    |                                                                     |                  |
| Keep application confidential? Y   |                                                                     |                  |
| Permitting Agent? NO               | APD Operator: CIMAREX ENERGY COMPANY                                |                  |
| Operator letter of designation:    |                                                                     |                  |

Operator Info

|                                                        |           |            |
|--------------------------------------------------------|-----------|------------|
| Operator Organization Name: CIMAREX ENERGY COMPANY     |           |            |
| Operator Address: 600 N MARIENFELD STREET ST SUITE 600 |           | Zip: 79701 |
| Operator PO Box:                                       |           |            |
| Operator City: MIDLAND                                 | State: TX |            |
| Operator Phone: (432)571-7800                          |           |            |
| Operator Internet Address: tstathem@cimarex.com        |           |            |

Section 2 - Well Information

|                                                                                                   |                                            |                                |
|---------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------------|
| Well in Master Development Plan? NO                                                               | Master Development Plan name:              |                                |
| Well in Master SUPO? NO                                                                           | Master SUPO name:                          |                                |
| Well in Master Drilling Plan? NO                                                                  | Master Drilling Plan name:                 |                                |
| Well Name: VACA DRAW 20-17 FEDERAL                                                                | Well Number: 12H                           | Well API Number: 3002544358    |
| Field/Pool or Exploratory? Field and Pool                                                         | Field Name: purple sage;<br>wolfcamp (gas) | Pool Name: WILDCAT<br>WOLFCAMP |
| Is the proposed well in an area containing other mineral resources? USEABLE WATER,NATURAL GAS,OIL |                                            |                                |
| Is the proposed well in a Helium production area? N                                               | Use Existing Well Pad? NO                  | New surface disturbance?       |
| Type of Well Pad: MULTIPLE WELL                                                                   | Multiple Well Pad Name: VACA Number: 2     |                                |
| Well Class: HORIZONTAL                                                                            | DRAW SUPER PAD<br>Number of Legs: 1        |                                |
| Well Work Type: Drill                                                                             |                                            |                                |
| Well Type: CONVENTIONAL GAS WELL                                                                  |                                            |                                |
| Describe Well Type:                                                                               |                                            |                                |

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County or Parish/State: LEA /  
NM

Well Number: 12H

Type of Well: CONVENTIONAL GAS  
WELL

Allottee or Tribe Name:

Lease Number: NMNM026394,  
NMNM26394

Unit or CA Name:

Unit or CA Number:

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COMPANY

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

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 24 Miles

Distance to nearest well: 20 FT

Distance to lease line: 330 FT

Reservoir well spacing assigned acres Measurement: 640 Acres

Well plat: Vaca\_Draw\_20\_17\_Fed\_12H\_C102\_Plat\_05-10-2017.pdf

Well work start Date: 12/01/2017

Duration: 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number:

Reference Datum: GROUND LEVEL

| Wellbore     | NS-Foot | NS Indicator | EW-Foot | EW Indicator | Twsp | Range | Section | Aliquot/Lot/Tract | Latitude  | Longitude    | County | State      | Meridian   | Lease Type | Lease Number | Elevation | MD    | TVD   | Will this well produce from this lease? |
|--------------|---------|--------------|---------|--------------|------|-------|---------|-------------------|-----------|--------------|--------|------------|------------|------------|--------------|-----------|-------|-------|-----------------------------------------|
| SHL Leg #1   | 330     | FSL          | 2050    | FWL          | 25S  | 33E   | 20      | Aliquot SESW      | 32.109742 | -103.596228  | LEA    | NEW MEXICO | NEW MEXICO | F          | NMNM026394   | 3417      | 0     | 0     | Y                                       |
| KOP Leg #1   | 224     | FSL          | 1915    | FEL          | 25S  | 33E   | 20      | Aliquot SWSE      | 32.109442 | -103.591953  | LEA    | NEW MEXICO | NEW MEXICO | F          | NMNM026394   | -7443     | 11036 | 10860 | Y                                       |
| PPP Leg #1-1 | 332     | FSL          | 1915    | FEL          | 25S  | 33E   | 20      | Aliquot SWSE      | 32.109738 | -103.591953  | LEA    | NEW MEXICO | NEW MEXICO | F          | NMNM026394   | -7443     | 11036 | 10860 | Y                                       |
| EXIT Leg #1  | 100     | FNL          | 1916    | FEL          | 25S  | 33E   | 17      | Aliquot NWNE      | 32.137579 | -103.5919399 | LEA    | NEW MEXICO | NEW MEXICO | F          | NMNM026394   | -7618     | 20218 | 11035 | Y                                       |

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WELL

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NMNM26394

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Unit or CA Number:

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COMPANY

| Wellbore   | NS-Foot | NS Indicator | EW-Foot | EW Indicator | Twsp | Range | Section | Aliquot/Lot/Tract | Latitude  | Longitude    | County | State      | Meridian   | Lease Type | Lease Number | Elevation | MD    | TVD   | Will this well produce from this lease? |
|------------|---------|--------------|---------|--------------|------|-------|---------|-------------------|-----------|--------------|--------|------------|------------|------------|--------------|-----------|-------|-------|-----------------------------------------|
| BHL Leg #1 | 100     | FNL          | 1916    | FEL          | 25S  | 33E   | 17      | Aliquot NWNE      | 32.137579 | -103.5919399 | LEA    | NEW MEXICO | NEW MEXICO | F          | NMNM026394   | -7618     | 20218 | 11035 | Y                                       |

Drilling Plan

Section 1 - Geologic Formations

| Formation ID | Formation Name  | Elevation | True Vertical Depth | Measured Depth | Lithologies | Mineral Resources | Producing Formation |
|--------------|-----------------|-----------|---------------------|----------------|-------------|-------------------|---------------------|
| 1613509      | RUSTLER         | 3418      | 984                 | 984            |             | USEABLE WATER     | N                   |
| 1613503      | SALADO          | 2290      | 1128                | 1128           |             | NONE              | N                   |
| 1613505      | CASTILE         | -1269     | 4687                | 4687           |             | NONE              | N                   |
| 1613506      | BELL CANYON     | -1538     | 4956                | 4956           |             | NONE              | N                   |
| 1613501      | CHERRY CANYON   | -2556     | 5974                | 5974           |             | NATURAL GAS, OIL  | N                   |
| 1613507      | BRUSHY CANYON   | -4066     | 7484                | 7484           |             | NATURAL GAS, OIL  | N                   |
| 1613508      | BONE SPRING     | -5622     | 9040                | 9040           |             | NATURAL GAS, OIL  | N                   |
| 1613502      | BONE SPRING 2ND | -7155     | 10573               | 10573          |             | NATURAL GAS, OIL  | N                   |
| 1613504      | BONE SPRING 3RD | -8308     | 11726               | 11726          |             | NATURAL GAS, OIL  | N                   |
| 1613510      | WOLFCAMP        | -8778     | 12196               | 12196          |             | NATURAL GAS, OIL  | Y                   |

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M

Rating Depth: 11872

**Equipment:** Exhibit "E-1". A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

**Requesting Variance?** YES

**Variance request:** Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached (Please see Exhibit F, F-1, F-2, F-3). The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Variance to include Hammer Union connections on lines downstream of the buffer tank only.

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|                                        |                                                                         |                                     |
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| Well Number: 12H                       | Type of Well: CONVENTIONAL GAS<br>WELL                                  | Allottee or Tribe Name:             |
| Lease Number: NMNM026394,<br>NMNM26394 | Unit or CA Name:                                                        | Unit or CA Number:                  |
| US Well Number: 3002544358             | Well Status: Approved Application for<br>Permit to Drill                | Operator: CIMAREX ENERGY<br>COMPANY |

**Testing Procedure:** A multi-bowl wellhead system will be utilized. After running the 10-3/4" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 10000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 10000 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 10000 psi. The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater. The casing string utilizing steel body pack-off will be tested to 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.

**Choke Diagram Attachment:**

Vaca\_Draw\_20\_17\_Fed\_12H\_Choke\_10M\_20171012114632.pdf

**BOP Diagram Attachment:**

Vaca\_Draw\_20\_17\_Fed\_12H\_BOP\_10M\_20171012114642.pdf

**Pressure Rating (PSI):** 5M                      **Rating Depth:** 1034

**Equipment:** Exhibit "E-1". A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

**Requesting Variance?** YES

**Variance request:** Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached (Please see Exhibit F, F-1, F-2, F-3). The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Variance to include Hammer Union connections on lines downstream of the buffer tank only.

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**Choke Diagram Attachment:**

**BOP Diagram Attachment:**

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County or Parish/State: LEA /  
NM

Well Number: 12H

Type of Well: CONVENTIONAL GAS  
WELL

Allottee or Tribe Name:

Lease Number: NMNM026394,  
NMNM26394

Unit or CA Name:

Unit or CA Number:

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COMPANY

Section 3 - Casing

| Casing ID | String Type  | Hole Size | Csg Size | Condition | Standard | Tapered String | Top Set MD | Bottom Set MD | Top Set TVD | Bottom Set TVD | Top Set MSL | Bottom Set MSL | Calculated casing length MD | Grade | Weight | Joint Type | Collapse SF | Burst SF | Joint SF Type | Joint SF | Body SF Type |       |
|-----------|--------------|-----------|----------|-----------|----------|----------------|------------|---------------|-------------|----------------|-------------|----------------|-----------------------------|-------|--------|------------|-------------|----------|---------------|----------|--------------|-------|
| 1         | SURFACE      | 14.75     | 10.75    | NEW       | API      | N              | 0          | 1034          | 0           | 1034           | 0           | 1034           | 1034                        | J-55  | 40.5   | BUTT       | 3.34        | 6.62     | BUOY          | 15.02    | BUOY         | 15.02 |
| 2         | PRODUCTION   | 6.75      | 5.5      | NEW       | API      | N              | 0          | 11827         | 0           | 11827          | 0           | 11827          | 11827                       | L-80  | 20     | LT&C       | 1.6         | 1.66     | BUOY          | 1.87     | BUOY         | 1.87  |
| 3         | INTERMEDIATE | 9.875     | 7.625    | NEW       | API      | N              | 0          | 12452         | 0           | 12452          | 0           | 12452          | 12452                       | L-80  | 29.7   | BUTT       | 2.48        | 1.2      | BUOY          | 1.82     | BUOY         | 1.82  |
| 4         | PRODUCTION   | 6.75      | 5.0      | NEW       | API      | N              | 11827      | 22262         | 11827       | 22262          | 11827       | 22262          | 10435                       | P-110 | 18     | BUTT       | 2.32        | 2.35     | BUOY          | 59.23    | BUOY         | 59.23 |

Casing Attachments

Casing ID: 1String Type: SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca\_Draw\_20\_17\_Fed\_12H\_Casing\_Assumption\_20171012114814.pdf

Casing ID: 2String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca\_Draw\_20\_17\_Fed\_12H\_Casing\_Assumption\_20171012114959.pdf



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County or Parish/State: LEA /  
NM

Well Number: 12H

Type of Well: CONVENTIONAL GAS  
WELL

Allottee or Tribe Name:

Lease Number: NMNM026394,  
NMNM26394

Unit or CA Name:

Unit or CA Number:

US Well Number: 3002544358

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COMPANY

Casing Attachments

Casing ID: 3String Type:INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca\_Draw\_20\_17\_Fed\_12H\_Casing\_Assumption\_20171012114909.pdf

Casing ID: 4String Type:PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca\_Draw\_20\_17\_Fed\_12H\_Casing\_Assumption\_20171012115105.pdf

Section 4 - Cement

| String Type  | Lead/Tail | Stage Tool Depth | Top MD | Bottom MD | Quantity(sx) | Yield | Density | Cu Ft | Excess% | Cement type   | Additives                                                       |
|--------------|-----------|------------------|--------|-----------|--------------|-------|---------|-------|---------|---------------|-----------------------------------------------------------------|
| SURFACE      | Lead      |                  | 0      | 1034      | 402          | 1.72  | 13.5    | 690   | 50      | Class C       | Bentonite                                                       |
| SURFACE      | Tail      |                  | 0      | 1034      | 107          | 1.34  | 14.8    | 143   | 25      | Class C       | LCM                                                             |
| PRODUCTION   | Lead      |                  | 0      | 1182<br>7 | 738          | 1.3   | 14.2    | 959   | 10      | 50:50 (Poz:H) | Salt, Bentonite, Fluid Loss, Dispersant, SMS                    |
| INTERMEDIATE | Lead      |                  | 0      | 1245<br>2 | 583          | 6.18  | 9.2     | 3599  | 50      | Class C       | Extender, Salt, Strength Enhancement, LCM, Fluid Loss, Retarder |
| INTERMEDIATE | Tail      |                  | 0      | 1245<br>2 | 207          | 1.3   | 14.2    | 268   | 25      | 50:50 (Poz:H) | Salt, Bentonite, Fluid Loss, Dispersant, SMS                    |

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Type of Well: CONVENTIONAL GAS  
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Unit or CA Name:

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NM

Allottee or Tribe Name:

Unit or CA Number:

Operator: CIMAREX ENERGY  
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| String Type | Lead/Tail | Stage Tool<br>Depth | Top MD    | Bottom MD | Quantity(sx) | Yield | Density | Cu Ft | Excess% | Cement type   | Additives                                       |
|-------------|-----------|---------------------|-----------|-----------|--------------|-------|---------|-------|---------|---------------|-------------------------------------------------|
| PRODUCTION  | Lead      |                     | 1182<br>7 | 2226<br>2 | 738          | 1.3   | 14.2    | 959   | 10      | 50:50 (Poz:H) | Salt, Bentonite, Fluid<br>Loss, Dispersant, SMS |

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

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

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

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials will be kept on location at all times in order to combat lost circulation or unexpected kicks. In order to run DSTs, open hole logs, and casing, the viscosity and water loss may have to be adjusted in order to meet these needs.

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

Circulating Medium Table

| Top Depth | Bottom Depth | Mud Type                         | Min Weight (lbs/gal) | Max Weight (lbs/gal) | Density (lbs/cu ft) | Gel Strength (lbs/100 sqft) | PH | Viscosity (CP) | Salinity (ppm) | Filtration (cc) | Additional Characteristics |
|-----------|--------------|----------------------------------|----------------------|----------------------|---------------------|-----------------------------|----|----------------|----------------|-----------------|----------------------------|
| 1034      | 1245<br>2    | OTHER : Brine<br>Diesel Emulsion | 8.5                  | 9                    |                     |                             |    |                |                |                 |                            |
| 1245<br>2 | 2226<br>2    | OIL-BASED<br>MUD                 | 12                   | 12.5                 |                     |                             |    |                |                |                 |                            |
| 0         | 1034         | SPUD MUD                         | 8.3                  | 8.8                  |                     |                             |    |                |                |                 |                            |



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Section 6 - Test, Logging, Coring

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

No DST Planned

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

CNL,DS,GR

Coring operation description for the well:

N/A

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 8041

Anticipated Surface Pressure: 5613

Anticipated Bottom Hole Temperature(F): 191

Anticipated abnormal pressures, temperatures, or potential geologic hazards? YES

Describe:

Lost circulation may be encountered in the Delaware mountain group. Abnormal pressure as well as hole stability issues may be encountered in the Wolfcamp.

Contingency Plans geoharzards description:

Lost circulation material will be available, as well as additional drilling fluid along with the fluid volume in the drilling rig pit system. Drilling fluid can be mixed on location or mixed in vendor mud plant and trucked to location if needed. Sufficient barite will be available to maintain appropriate mud weight for the Wolfcamp interval.

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Vaca\_Draw\_20\_17\_Fed\_12H\_H2S\_Plan\_05-05-2017.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Vaca\_Draw\_20\_17\_Fed\_12H\_Directional\_Plan\_05-05-2017.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Vaca\_Draw\_20\_17\_Fed\_12H\_Flex\_Hose\_20171012115634.pdf

Vaca\_Draw\_20\_17\_Fed\_12H\_Drilling\_Plan\_20171012115808.pdf

Vaca\_Draw\_20\_17\_Fed\_12H\_AntiCollision\_Report\_05-05-2017.pdf

Other Variance attachment:

SUPO

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Section 1 - Existing Roads

Will existing roads be used? NO

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Vaca\_Draw\_20\_17\_Fed\_12H\_Access\_Road\_ROW\_05-05-2017.pdf

New road type: COLLECTOR

|                  |      |                  |
|------------------|------|------------------|
| Length: 785      | Feet | Width (ft.): 30  |
| Max slope (%): 2 |      | Max grade (%): 6 |

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 15

**New road access erosion control:** The side slopes of any drainage channels or swales that are crossed will be re-contoured to original grade and compacted and mulched as necessary to avoid erosion. Where steeper slopes cannot be avoided, water bars or silt fence will be constructed, mulch/rip-rap applied, or other measures employed as necessary to control erosion. Hay bales, straw waddles or silt fence may also be installed to control erosion as needed. All disturbed areas will be seeded with a mix appropriate for the area unless specified otherwise by the landowner.

**New road access plan or profile prepared?** NO

**New road access plan attachment:**

**Access road engineering design?** NO

**Access road engineering design attachment:**

**Turnout?** N

**Access surfacing type:** GRAVEL

**Access topsoil source:** ONSITE

**Access surfacing type description:**

**Access onsite topsoil source depth:** 6

**Offsite topsoil source description:**

**Onsite topsoil removal process:** Push off and stockpile alongside the location.

**Access other construction information:** The operator will prevent and abate fugitive dust as needed, whether created by vehicular traffic, equipment operations or other events.

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|                                        |                                                                         |                                     |
|----------------------------------------|-------------------------------------------------------------------------|-------------------------------------|
| Well Name: VACA DRAW 20-17<br>FEDERAL  | Well Location: T25S / R33E / SEC 20 /<br>SESW / 32.109742 / -103.596228 | County or Parish/State: LEA /<br>NM |
| Well Number: 12H                       | Type of Well: CONVENTIONAL GAS<br>WELL                                  | Allottee or Tribe Name:             |
| Lease Number: NMNM026394,<br>NMNM26394 | Unit or CA Name:                                                        | Unit or CA Number:                  |
| US Well Number: 3002544358             | Well Status: Approved Application for<br>Permit to Drill                | Operator: CIMAREX ENERGY<br>COMPANY |

Access miscellaneous information:

Number of access turnouts:                      Access turnout map:

Drainage Control

New road drainage crossing: CULVERT,LOW WATER,OTHER

**Drainage Control comments:** To control and prevent potentially contaminated precipitation from leaving the pad site, a perimeter berm and settlement pond will be installed. Contaminated water will be removed from pond, stored in waste tanks, and disposed of at a state approved facility. Standing water or puddles will not be allowed. Drainage ditches would be established and maintained on the pad and along access roads to divert water away from operations. Natural drainage areas disturbed during construction would be re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured, and reclaimed to near original condition to re-establish natural drainage.

**Road Drainage Control Structures (DCS) description:** N/A

**Road Drainage Control Structures (DCS) attachment:**

Access Additional Attachments

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Vaca\_Draw\_20\_17\_Fed\_12H\_Mile\_radius\_and\_Existing\_wells\_05-05-2017.pdf

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

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description:

Production Facilities map:

Vaca\_Draw\_20\_17\_Fed\_Battery\_Layout\_05-05-2017.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: MUNICIPAL

|                        |                                |
|------------------------|--------------------------------|
| Water source use type: | SURFACE CASING                 |
|                        | INTERMEDIATE/PRODUCTION CASING |

Source latitude:                                              Source longitude:

Source datum:

|                                               |                                                                                |                                            |
|-----------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------|
| <b>Well Name:</b> VACA DRAW 20-17<br>FEDERAL  | <b>Well Location:</b> T25S / R33E / SEC 20 /<br>SESW / 32.109742 / -103.596228 | <b>County or Parish/State:</b> LEA /<br>NM |
| <b>Well Number:</b> 12H                       | <b>Type of Well:</b> CONVENTIONAL GAS<br>WELL                                  | <b>Allottee or Tribe Name:</b>             |
| <b>Lease Number:</b> NMNM026394,<br>NMNM26394 | <b>Unit or CA Name:</b>                                                        | <b>Unit or CA Number:</b>                  |
| <b>US Well Number:</b> 3002544358             | <b>Well Status:</b> Approved Application for<br>Permit to Drill                | <b>Operator:</b> CIMAREX ENERGY<br>COMPANY |

|                                                    |                                             |
|----------------------------------------------------|---------------------------------------------|
|                                                    | SURFACE CASING                              |
|                                                    | INTERMEDIATE/PRODUCTION<br>CASING           |
| <b>Water source permit type:</b>                   | WATER RIGHT                                 |
| <b>Permit Number:</b>                              |                                             |
| <b>Water source transport method:</b>              | TRUCKING<br><br>PIPELINE                    |
| <b>Source land ownership:</b> STATE                |                                             |
| <b>Source transportation land ownership:</b> STATE |                                             |
| <b>Water source volume (barrels):</b> 5000         | <b>Source volume (acre-feet):</b> 0.6444655 |
| <b>Source volume (gal):</b> 210000                 |                                             |

**Water source and transportation map:**

Vaca\_Draw\_20\_17\_Fed\_12H\_Drlg\_water\_route\_20170908121929.pdf

**Water source comments:**

**New water well?** NO

New Water Well Info

|                                            |                                           |                    |
|--------------------------------------------|-------------------------------------------|--------------------|
| <b>Well latitude:</b>                      | <b>Well Longitude:</b>                    | <b>Well datum:</b> |
| <b>Well target aquifer:</b>                |                                           |                    |
| <b>Est. depth to top of aquifer(ft):</b>   | <b>Est thickness of aquifer:</b>          |                    |
| <b>Aquifer comments:</b>                   |                                           |                    |
| <b>Aquifer documentation:</b>              |                                           |                    |
| <b>Well depth (ft):</b>                    | <b>Well casing type:</b>                  |                    |
| <b>Well casing outside diameter (in.):</b> | <b>Well casing inside diameter (in.):</b> |                    |
| <b>New water well casing?</b>              | <b>Used casing source:</b>                |                    |
| <b>Drilling method:</b>                    | <b>Drill material:</b>                    |                    |
| <b>Grout material:</b>                     | <b>Grout depth:</b>                       |                    |
| <b>Casing length (ft.):</b>                | <b>Casing top depth (ft.):</b>            |                    |
| <b>Well Production type:</b>               | <b>Completion Method:</b>                 |                    |
| <b>Water well additional information:</b>  |                                           |                    |
| <b>State appropriation permit:</b>         |                                           |                    |
| <b>Additional information attachment:</b>  |                                           |                    |

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| Well Number: 12H                       | Type of Well: CONVENTIONAL GAS<br>WELL                                  | Allottee or Tribe Name:             |
| Lease Number: NMNM026394,<br>NMNM26394 | Unit or CA Name:                                                        | Unit or CA Number:                  |
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Section 6 - Construction Materials

Using any construction materials: YES

**Construction Materials description:** The drilling and testing operations will be conducted on a watered and compacted native soil grade. Soft spots will be covered with scoria, free of large rocks (3" diameter). Upon completion as a commercial producer the location will be covered with scoria, free of large rocks (3" dia.) from an existing privately owned gravel pit. Caliche will be used from a pit located in Sec 3-26S-33E, per the Surface Use Agreement we are required to use this pit.

**Construction Materials source location attachment:**

Section 7 - Methods for Handling Waste

Waste type: GARBAGE

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

**Amount of waste:** 32500 pounds

**Waste disposal frequency :** Weekly

**Safe containment description:** n/a

**Safe containmant attachment:**

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

**Disposal type description:**

**Disposal location description:** Windmill Spraying Service hauls trash to Lea County Landfill

Waste type: DRILLING

**Waste content description:** Drilling Fluids, drill cuttings, water and other waste produced from the well during drilling operations.

**Amount of waste:** 15000 barrels

**Waste disposal frequency :** Weekly

**Safe containment description:** n/a

**Safe containmant attachment:**

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

**Disposal type description:**

**Disposal location description:** Haul to R360 commercial Disposal

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

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

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

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

Reserve pit liner

Reserve pit liner specifications and installation description

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| Well Number: 12H                       | Type of Well: CONVENTIONAL GAS<br>WELL                                  | Allottee or Tribe Name:             |
| Lease Number: NMNM026394,<br>NMNM26394 | Unit or CA Name:                                                        | Unit or CA Number:                  |
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Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? NO

Description of cuttings location

|                            |                                |
|----------------------------|--------------------------------|
| Cuttings area length (ft.) | Cuttings area width (ft.)      |
| Cuttings area depth (ft.)  | Cuttings area volume (cu. yd.) |

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

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Vaca\_Draw\_20\_17\_Fed\_12H\_Wellsite\_Layout\_05-05-2017.pdf

Comments:

Section 10 - Plans for Surface Reclamation

|                                              |                                             |
|----------------------------------------------|---------------------------------------------|
| Type of disturbance: New Surface Disturbance | Multiple Well Pad Name: VACA DRAW SUPER PAD |
|                                              | Multiple Well Pad Number: 2                 |

Recontouring attachment:

Vaca\_Draw\_20\_17\_Fed\_12H\_Interim\_Reclaim\_05-05-2017.pdf

**Drainage/Erosion control construction:** To control and prevent potentially contaminated precipitation from leaving the pad site, a perimeter berm and settlement pond will be installed. Contaminated water will be removed from pond, stored in waste tanks, and disposed of at a state approved facility. Standing water or puddles will not be allowed. Drainage ditches would be established and maintained on the pad and along access roads to divert water away from operations. Natural drainage areas disturbed during construction would be re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured, and reclaimed to near original condition to re-establish natural drainage.



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|                                        |                                                                         |                                     |
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| Lease Number: NMNM026394,<br>NMNM26394 | Unit or CA Name:                                                        | Unit or CA Number:                  |
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**Drainage/Erosion control reclamation:** All disturbed and re-contoured areas would be reseeded according to specifications. Approved seed mixtures would be certified weed free and consist of grasses, forbs, or shrubs similar to the surrounding area. Compacted soil areas may need to be obliterated and reclaimed to near natural conditions by re-contouring all slopes to facilitate and re-establish natural drainage.

|                                         |                                                 |                                                   |
|-----------------------------------------|-------------------------------------------------|---------------------------------------------------|
| Well pad proposed disturbance (acres):  | Well pad interim reclamation (acres): 6.903     | Well pad long term disturbance (acres): 6.903     |
| Road proposed disturbance (acres):      | Road interim reclamation (acres): 0.758         | Road long term disturbance (acres): 0.758         |
| Powerline proposed disturbance (acres): | Powerline interim reclamation (acres):          | Powerline long term disturbance (acres):          |
| Pipeline proposed disturbance (acres):  | Pipeline interim reclamation (acres): 0.4275482 | Pipeline long term disturbance (acres): 39.772038 |
| Other proposed disturbance (acres):     | Other interim reclamation (acres): 0            | Other long term disturbance (acres):              |
| Total proposed disturbance:             | Total interim reclamation: 8.088549             | 4.367                                             |
|                                         |                                                 | Total long term disturbance: 51.800037            |

**Disturbance Comments:** Gas Lift: 1,588', Flowline: 1,533', SWD: 40,426', Gas Pipeline: 14,172' Temp Fresh water Route: 3,104'

**Reconstruction method:** After well plugging, all disturbed areas would be returned to the original contour or a contour that blends with the surrounding landform including roads unless the surface owner requests that they be left intact. In consultation with the surface owners it will be determined if any gravel or similar materials used to reinforce an area are to be removed, buried, or left in place during final reclamation. Salvaged topsoil, if any, would be re-spread evenly over the surfaces to be re-vegetated. As necessary, the soil surface would be prepared to provide a seedbed for re-establishment of desirable vegetation. Site preparation may include gouging, scarifying, dozer track-walking, mulching, or fertilizing. Reclamation, Re-vegetation, and Drainage: All disturbed and re-contoured areas would be reseeded using techniques outlined under Phase I and II of this plan or as specified by the land owner. Approved seed mixtures would be certified weed free and consist of grasses, forbs, or shrubs similar to the surrounding area. Compacted soil areas may need to be obliterated and reclaimed to near natural conditions by re-contouring all slopes to facilitate and re-establish natural drainage. **Topsoil redistribution:** Salvaged topsoil, if any, would be re-spread evenly over the surfaces to be re-vegetated.

**Soil treatment:** As necessary, the soil surface would be prepared to provide a seedbed for re-establishment of desirable vegetation. Site preparation may include gouging, scarifying, dozer track-walking, mulching or fertilizing. **Existing Vegetation at the well pad:**

**Existing Vegetation at the well pad attachment:**

**Existing Vegetation Community at the road:**

**Existing Vegetation Community at the road attachment:**

**Existing Vegetation Community at the pipeline:**

**Existing Vegetation Community at the pipeline attachment:**

**Existing Vegetation Community at other disturbances:**

**Existing Vegetation Community at other disturbances attachment:**

**Non native seed used?** NO

**Non native seed description:**

**Seedling transplant description:**

**Will seedlings be transplanted for this project?** NO

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|                                        |                                                                         |                                     |
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Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed Summary

Total pounds/Acre:

Seed Type

Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name:

Last Name:

Phone:

Email:

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: N/A

Weed treatment plan attachment:

Monitoring plan description: N/A

Monitoring plan attachment:

Success standards: N/A

Pit closure description: N/A

Pit closure attachment:

Section 11 - Surface Ownership

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|                                        |                                                                         |                                     |
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| Lease Number: NMNM026394,<br>NMNM26394 | Unit or CA Name:                                                        | Unit or CA Number:                  |
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Disturbance type: WELL PAD

Describe:

Surface Owner:

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Section 12 - Other Information

Right of Way needed? YES

Use APD as ROW? YES

ROW Type(s): 281001 ROW - ROADS,285003 ROW – POWER TRANS,288100 ROW – O&G Pipeline,288101 ROW – O&G Facility Sites,288103 ROW – Salt Water Disposal Pipeline/Facility,288104 ROW – Salt Water Disposal Apln/Fac-FLPMA,289001 ROW- O&G Well Pad,FLPMA (Powerline),Other

ROW Applications

SUPO Additional Information:

Use a previously conducted onsite? YES

Previous Onsite information: Onsite with BLM (Jeff Robertson) and Cimarex (Barry Hunt) on December 8, 2016. 500' X 560' pad (From #2H 190' north, 180' west, 370' south, 320' east). Top soil East. Interim reclamation: All sides. Access road from NW corner of pad, west, to the NE corner of the west pad. Vaca Draw 20-17 Federal off-site battery-Center: 1055 FSL & 1052 FWL, Section 20, T. 25 S., R. 33 E. (450' north/south X 400' east/west pad). Top soil west. Access road from SE corner, south to tie-in at proposed east/west road of Vaca Draw 20-17 Federal East half pad to west half pad.

Other SUPO Attachment

Vaca\_Draw\_20\_17\_Fed\_12H\_Public\_Access\_05-05-2017.pdf

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Vaca\_Draw\_20\_17\_Fed\_12H\_Temp\_water\_route\_05-05-2017.pdf  
Vaca\_Draw\_20\_17\_Fed\_Battery\_Gas\_Sales\_ROW\_05-05-2017.pdf  
Vaca\_Draw\_20\_17\_Fed\_12H\_Gas\_lift\_Flow\_line\_ROW\_05-05-2017.pdf  
Vaca\_Draw\_20\_17\_Fed\_Battery\_SWD\_ROW\_05-05-2017.pdf  
Vaca\_Draw\_20\_17\_Fed\_Battery\_Powerline\_ROW\_05-05-2017.pdf  
Vaca\_Draw\_20\_17\_Fed\_12H\_Road\_Description\_05-05-2017.pdf  
Vaca\_Draw\_20\_17\_Fed\_Battery\_Road\_ROW\_05-05-2017.pdf  
Vaca\_Draw\_20\_17\_Fed\_12H\_SUPO\_05-05-2017.pdf

PWD

Section 1 - General

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

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

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Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD disturbance (acres): PWD surface owner:

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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|                                        |                                                                         |                                     |
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| Well Number: 12H                       | Type of Well: CONVENTIONAL GAS<br>WELL                                  | Allottee or Tribe Name:             |
| Lease Number: NMNM026394,<br>NMNM26394 | Unit or CA Name:                                                        | Unit or CA Number:                  |
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Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: Injection well name:

Assigned injection well API number? Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:



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|                                        |                                                                         |                                     |
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Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

Operator Certification

Operator Certification

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

|                 |                       |      |  |
|-----------------|-----------------------|------|--|
| NAME:           | Signed on: 02/21/2021 |      |  |
| Title:          |                       |      |  |
| Street Address: |                       |      |  |
| City:           | State:                | Zip: |  |
| Phone:          |                       |      |  |
| Email address:  |                       |      |  |

Field Representative

|                      |        |      |  |
|----------------------|--------|------|--|
| Representative Name: |        |      |  |
| Street Address:      |        |      |  |
| City:                | State: | Zip: |  |
| Phone:               |        |      |  |
| Email address:       |        |      |  |

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|                                               |                                                                                |                                            |
|-----------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------|
| <b>Well Name:</b> VACA DRAW 20-17<br>FEDERAL  | <b>Well Location:</b> T25S / R33E / SEC 20 /<br>SESW / 32.109742 / -103.596228 | <b>County or Parish/State:</b> LEA /<br>NM |
| <b>Well Number:</b> 12H                       | <b>Type of Well:</b> CONVENTIONAL GAS<br>WELL                                  | <b>Allottee or Tribe Name:</b>             |
| <b>Lease Number:</b> NMNM026394,<br>NMNM26394 | <b>Unit or CA Name:</b>                                                        | <b>Unit or CA Number:</b>                  |
| <b>US Well Number:</b> 3002544358             | <b>Well Status:</b> Approved Application for<br>Permit to Drill                | <b>Operator:</b> CIMAREX ENERGY<br>COMPANY |

NOI Attachments

Procedure Description

Vaca\_Draw\_2017\_Fed\_12H\_Dir\_Plan\_\_\_AC\_20210221155401.pdf

Vaca\_Draw\_20\_17\_Fed\_12H\_BOP\_Manifold\_\_\_WH\_20210221155120.pdf

OLC\_7\_in\_Csg\_Vaca\_Draw\_20210221155034.pdf

Drill\_Plan\_Vaca\_Draw\_20\_17\_Fed\_12H\_20210221154955.pdf

C102\_Vaca\_Draw\_20\_17\_Fed\_12H\_20210221154933.pdf

Operator Certification

I certify that the foregoing is true and correct. 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. Electronic submission of Sundry Notices through this system satisfies regulations requiring a submission of Form 3160-5 or a Sundry Notice.

|                                                             |                                         |
|-------------------------------------------------------------|-----------------------------------------|
| <b>Operator Electronic Signature:</b> STATHEM               | <b>Signed on:</b> FEB 21, 2021 03:54 PM |
| <b>Name:</b> CIMAREX ENERGY COMPANY                         |                                         |
| <b>Title:</b> Mngr Regulatory Compliance                    |                                         |
| <b>Street Address:</b> 600 N MARIENFELD STREET ST SUITE 600 |                                         |
| <b>City:</b> MIDLAND                                        | <b>State:</b> TX                        |
| <b>Phone:</b> (432) 571-7800                                |                                         |
| <b>Email address:</b> tstathem@cimarex.com                  |                                         |

Field Representative

|                             |               |             |
|-----------------------------|---------------|-------------|
| <b>Representative Name:</b> |               |             |
| <b>Street Address:</b>      |               |             |
| <b>City:</b>                | <b>State:</b> | <b>Zip:</b> |
| <b>Phone:</b>               |               |             |
| <b>Email address:</b>       |               |             |

BLM Point of Contact

|                                        |                                              |
|----------------------------------------|----------------------------------------------|
| <b>BLM POC Name:</b> CHRISTOPHER WALLS | <b>BLM POC Title:</b> Petroleum Engineer     |
| <b>BLM POC Phone:</b> 5752342234       | <b>BLM POC Email Address:</b> cwalls@blm.gov |
| <b>Disposition:</b> Approved           | <b>Disposition Date:</b> 03/01/2021          |
| <b>Signature:</b> Chris Walls          |                                              |

District I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720  
District II  
811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

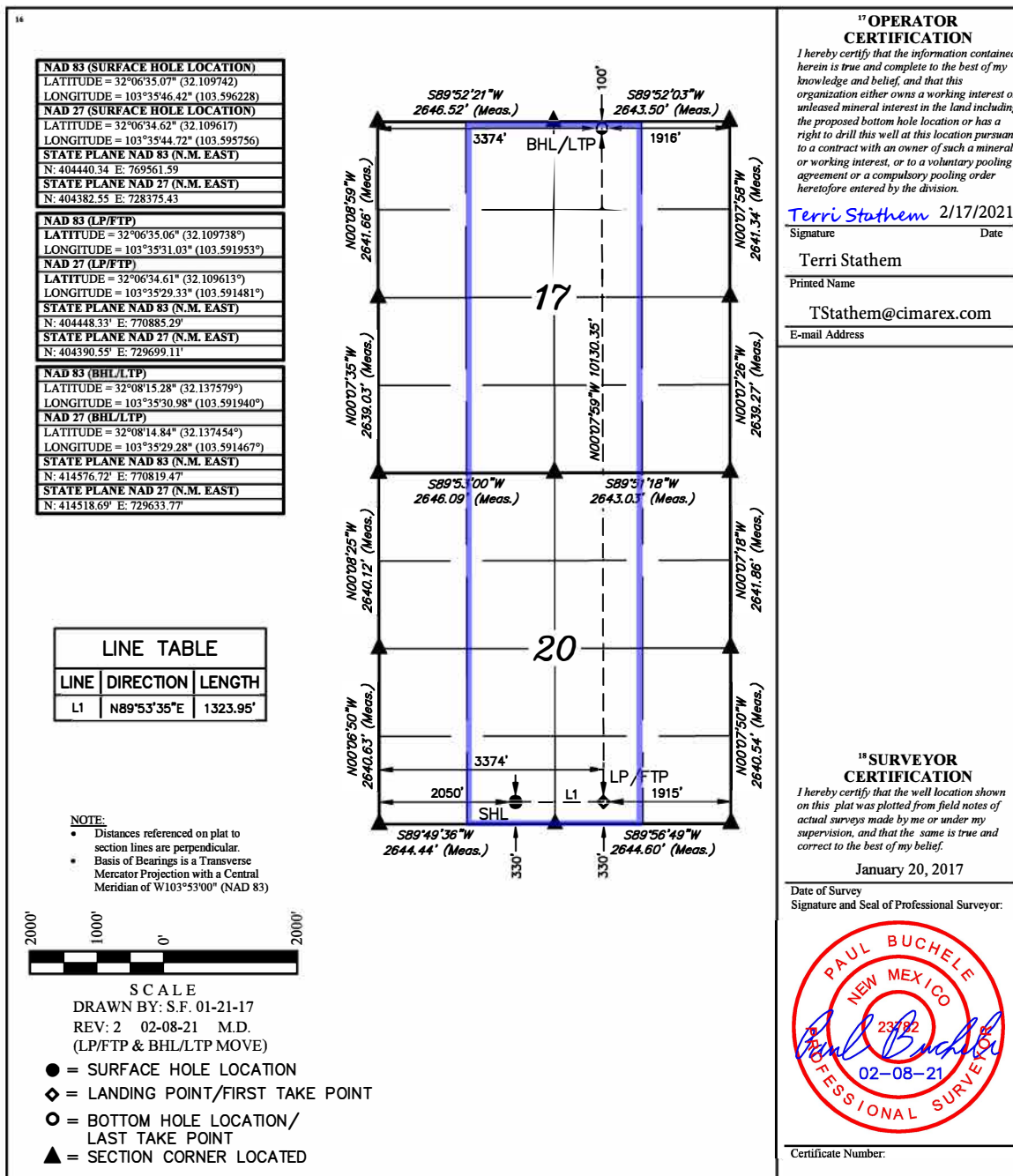
|                                         |                                                       |                                                                     |
|-----------------------------------------|-------------------------------------------------------|---------------------------------------------------------------------|
| <sup>1</sup> API Number<br>30-025-44358 | <sup>2</sup> Pool Code<br>97903                       | <sup>3</sup> Property Name<br>WC-025 G-08 S2532356, LWR BONE SPRING |
| <sup>4</sup> Property Code<br>319775    | <sup>5</sup> Operator Name<br>VACA DRAW 20-17 FEDERAL | <sup>6</sup> Well Number<br>12H                                     |
| <sup>7</sup> OGRID No.<br>215099        | <sup>8</sup> Operator Name<br>CIMAREX ENERGY CO.      | <sup>9</sup> Elevation<br>3417.0'                                   |

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| N             | 20      | 25S      | 33E   |         | 330           | SOUTH            | 2050          | WEST           | LEA    |

<sup>10</sup> Surface Location

| UL or lot no.                        | Section                       | Township                         | Range                   | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|--------------------------------------|-------------------------------|----------------------------------|-------------------------|---------|---------------|------------------|---------------|----------------|--------|
| B                                    | 17                            | 25S                              | 33E                     |         | 100           | NORTH            | 1916          | EAST           | LEA    |
| <sup>12</sup> Dedicated Acres<br>640 | <sup>13</sup> Joint or Infill | <sup>14</sup> Consolidation Code | <sup>15</sup> Order No. |         |               |                  |               |                |        |

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



**1. Geological Formations**

TVD of target 11,035

Pilot Hole TD N/A

MD at TD 21,218

Deepest expected fresh water

| Formation                | Depth (TVD) from KB | Water/Mineral Bearing/Target Zone | Hazards |
|--------------------------|---------------------|-----------------------------------|---------|
| Rustler                  | 984                 | N/A                               |         |
| Salado                   | 1128                | N/A                               |         |
| Castille                 | 4687                | N/A                               |         |
| Bell Canyon              | 4956                | N/A                               |         |
| Cherry Canyon            | 5974                | Hydrocarbons                      |         |
| Brushy Canyon            | 7484                | Hydrocarbons                      |         |
| Bone Spring              | 9040                | Hydrocarbons                      |         |
| 2nd Bone Spring Sand     | 10573               | Hydrocarbons                      |         |
| 3rd Bone Spring Sand     | 11726               | Hydrocarbons                      |         |
| Wolfcamp                 | 12196               | Hydrocarbons                      |         |
| Wolfcamp A1 Shale Target | 12361               | 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                 | 950             | 950               | 13-3/8"     | 48.00          | H-40   | ST&C  | 1.80        | 4.20     | 7.06               |
| 12 1/4                    | 0                 | 4920            | 4920              | 9-5/8"      | 40.00          | HCK-55 | LT&C  | 1.45        | 1.50     | 2.85               |
| 8 3/4                     | 0                 | 9808            | 9808              | 7"          | 26.00          | L-80   | LT&C  | 1.18        | 1.58     | 1.60               |
| 8 3/4                     | 9808              | 11300           | 11020             | 7"          | 29.00          | P-110  | BT&C  | 1.65        | 2.18     | 26.43              |
| 6                         | 9708              | 21218           | 11035             | 4-1/2"      | 11.60          | P-110  | BT&C  | 1.47        | 2.07     | 23.84              |
| 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

## Cimarex Energy Co., Vaca Draw 20-17 Federal 12H

|                                                                                                                                                  | 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            | # Sk | Wt.<br>lb/gal | Yld<br>ft <sup>3</sup> /sack | H <sub>2</sub> O<br>gal/sk | 500# Comp.<br>Strength<br>(hours) | Slurry Description                                                                                       |
|-------------------|------|---------------|------------------------------|----------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------|
| Surface           | 394  | 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      | 937  | 12.90         | 1.88                         | 9.65                       | 12                                | Lead: 35:65 (Poz:C) + Salt + Bentonite                                                                   |
|                   | 284  | 14.80         | 1.36                         | 6.57                       | 9.5                               | Tail: Class C + Retarder                                                                                 |
|                   |      |               |                              |                            |                                   |                                                                                                          |
| Production        | 368  | 10.30         | 3.64                         | 22.18                      |                                   | Lead: Tuned Light + LCM                                                                                  |
|                   | 104  | 14.50         | 1.30                         | 5.79                       | 20                                | Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + Expanding Agent + Retarder + Antifoam |
|                   |      |               |                              |                            |                                   |                                                                                                          |
| Completion System | 736  | 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        | 4720  | 25       |
| Completion System | 11100 | 10       |

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 | 100% of working pressure |
|                                                                                                      |        |                 | Blind Ram  |   | 2M                       |
|                                                                                                      |        |                 | Pipe Ram   |   |                          |
|                                                                                                      |        |                 | Double Ram | X |                          |
|                                                                                                      |        |                 | Other      |   |                          |
| 8 3/4                                                                                                | 13 5/8 | 3M              | Annular    | X | 100% of working pressure |
|                                                                                                      |        |                 | Blind Ram  |   | 3M                       |
|                                                                                                      |        |                 | Pipe Ram   |   |                          |
|                                                                                                      |        |                 | Double Ram | X |                          |
|                                                                                                      |        |                 | Other      |   |                          |
| 6                                                                                                    | 13 5/8 | 5M              | Annular    | X | 100% of working pressure |
|                                                                                                      |        |                 | Blind Ram  |   | 5M                       |
|                                                                                                      |        |                 | Pipe Ram   | X |                          |
|                                                                                                      |        |                 | Double Ram | X |                          |
|                                                                                                      |        |                 | Other      |   |                          |

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

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

|   |                                                                                                                                                                                                                                                                                                               |                                       |  |  |  |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--|--|--|
| X | 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.                                                                                                                                                               |                                       |  |  |  |
|   | Y                                                                                                                                                                                                                                                                                                             | Are anchors required by manufacturer? |  |  |  |

**5. Mud Program**

| Depth            | Type             | Weight (ppg) | Viscosity | Water Loss |
|------------------|------------------|--------------|-----------|------------|
| 0' to 950'       | Fresh Water      | 7.83 - 8.33  | 28        | N/C        |
| 950' to 4920'    | Brine Water      | 9.80 - 10.30 | 30-32     | N/C        |
| 4920' to 11300'  | Cut Brine or OBM | 8.50 - 9.00  | 27-70     | N/C        |
| 11458' to 21218' | OBM              | 8.50 - 9.00  | 50-70     | 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 |                                                                                                                                                             |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             | Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM. |
|                             | No logs are planned based on well control or offset log information.                                                                                        |
|                             | Drill stem test?                                                                                                                                            |
|                             | Coring?                                                                                                                                                     |

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

**7. Drilling Conditions**

| Condition                  |          |
|----------------------------|----------|
| BH Pressure at deepest TVD | 5164 psi |
| Abnormal Temperature       | No       |

Hydrogen Sulfide (H<sub>2</sub>S) monitors will be installed prior to drilling out the surface shoe. If H<sub>2</sub>S 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 | H <sub>2</sub> S is present       |
| X | H <sub>2</sub> S 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 5000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 5000 psi test. Annular will be tested to 100% 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 5000 psi.

A solid steel body pack-off will be utilized after running and cementing the production casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi.

All casing strings will be tested as per Onshore Order No.2 to at least 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.

Drilling 12-1/4" hole  
below 13 3/8" Casing

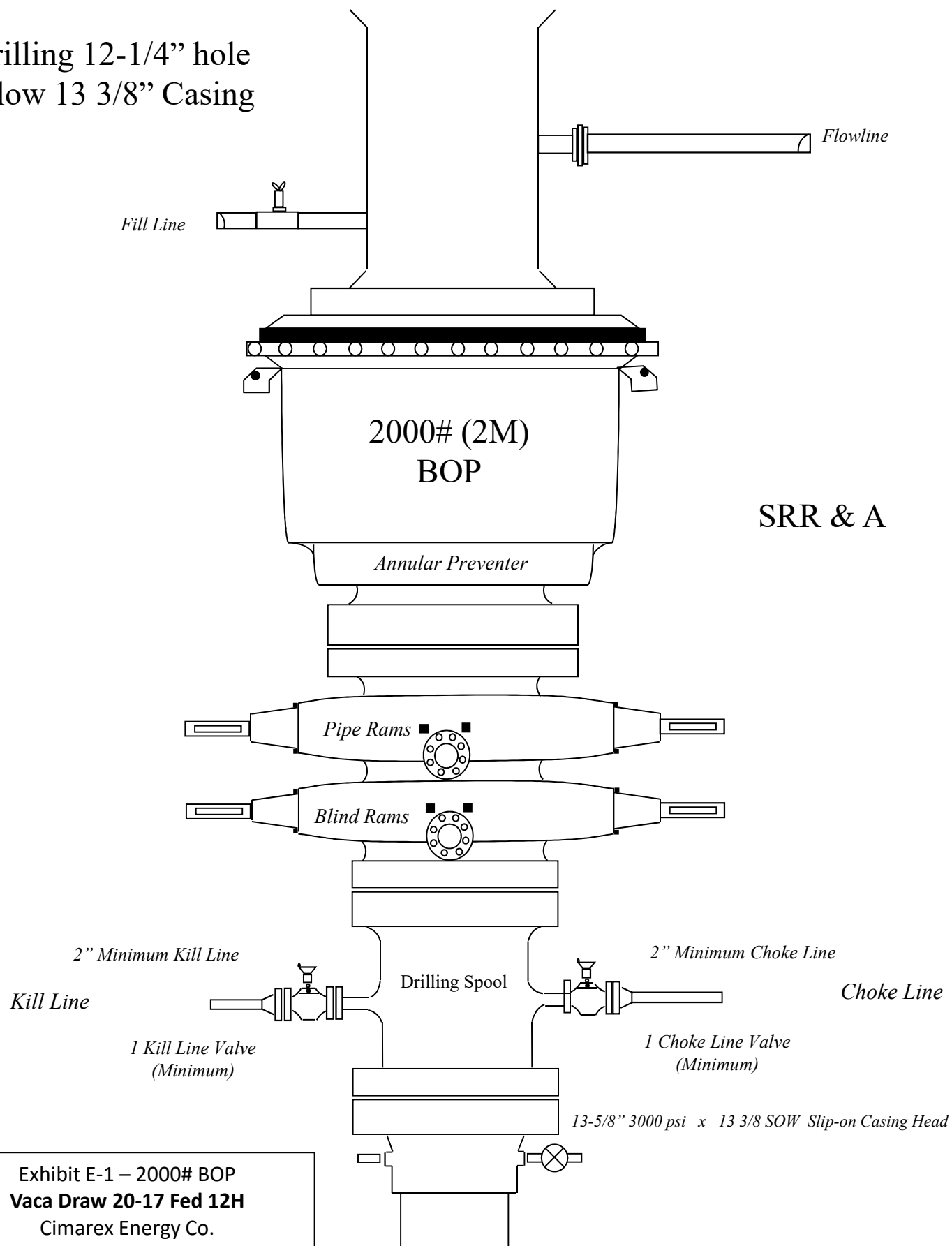


Exhibit E-1 – 2000# BOP  
Vaca Draw 20-17 Fed 12H  
Cimarex Energy Co.  
20-25S-33E  
Lea County, NM

Drilling 8-3/4" hole  
below 9 5/8" Casing

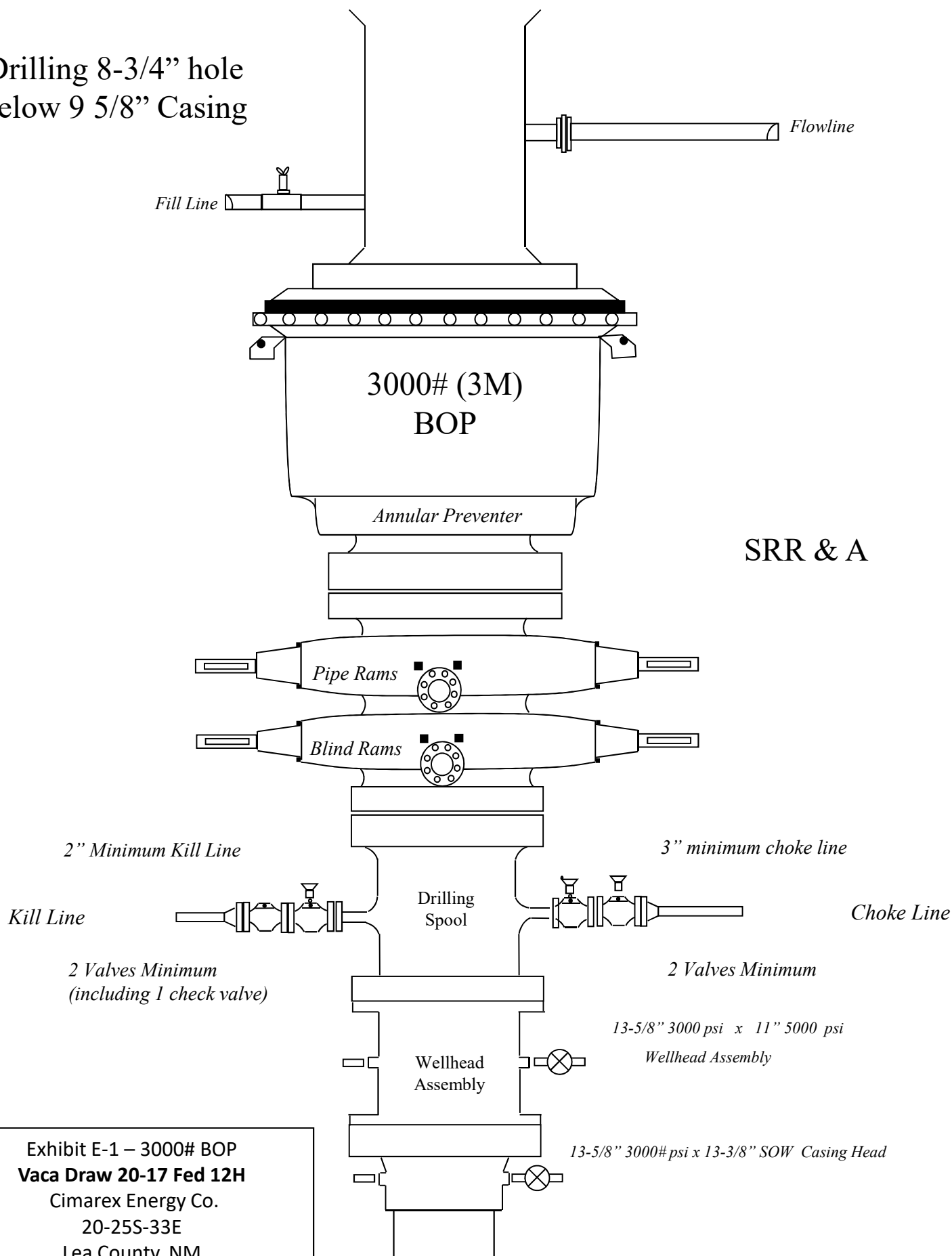


Exhibit E-1 – 3000# BOP  
Vaca Draw 20-17 Fed 12H  
Cimarex Energy Co.  
20-25S-33E  
Lea County, NM

Drilling 6" hole below  
7" Casing

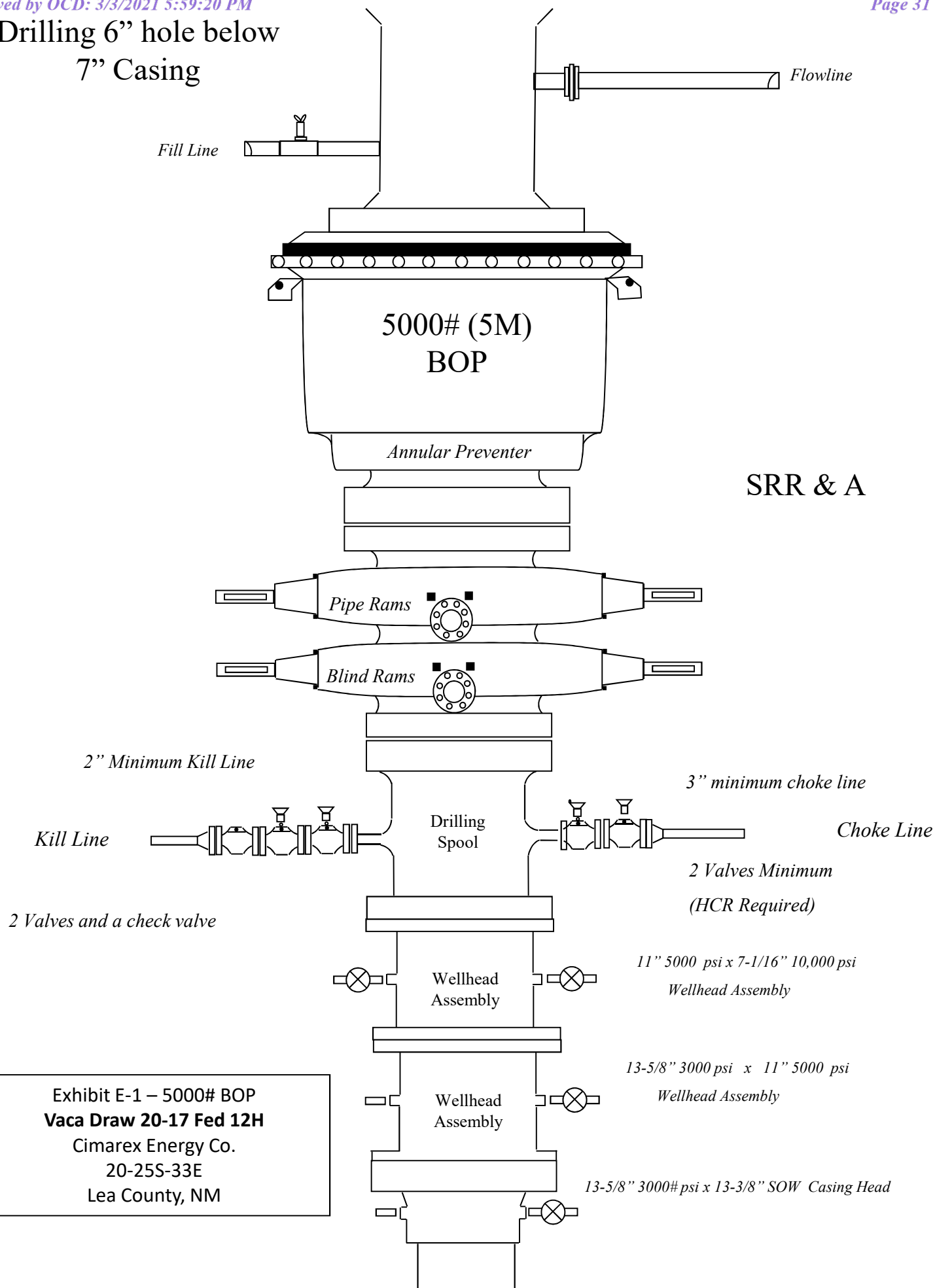


Exhibit E-1 – 5000# BOP  
Vaca Draw 20-17 Fed 12H  
Cimarex Energy Co.  
20-25S-33E  
Lea County, NM

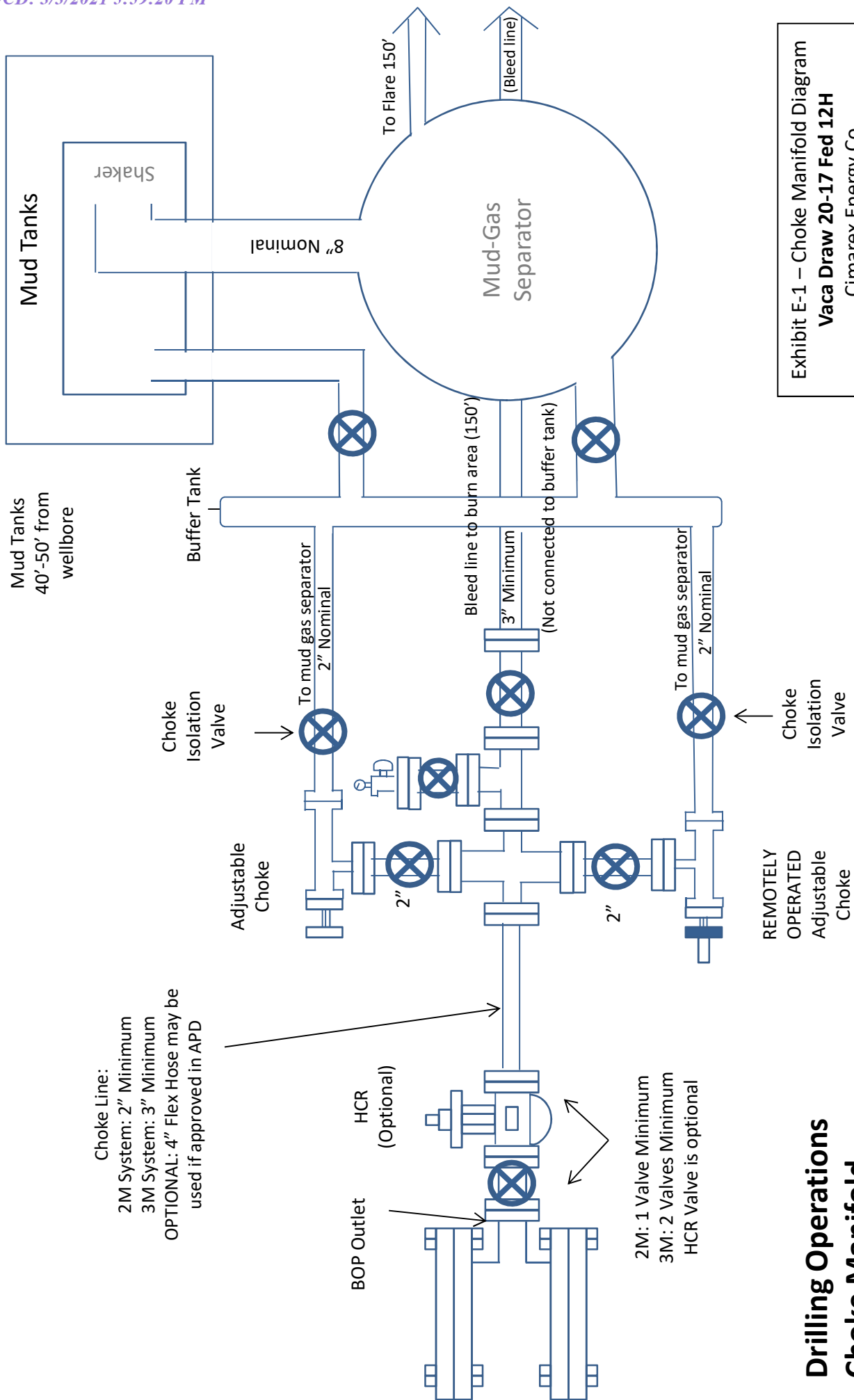
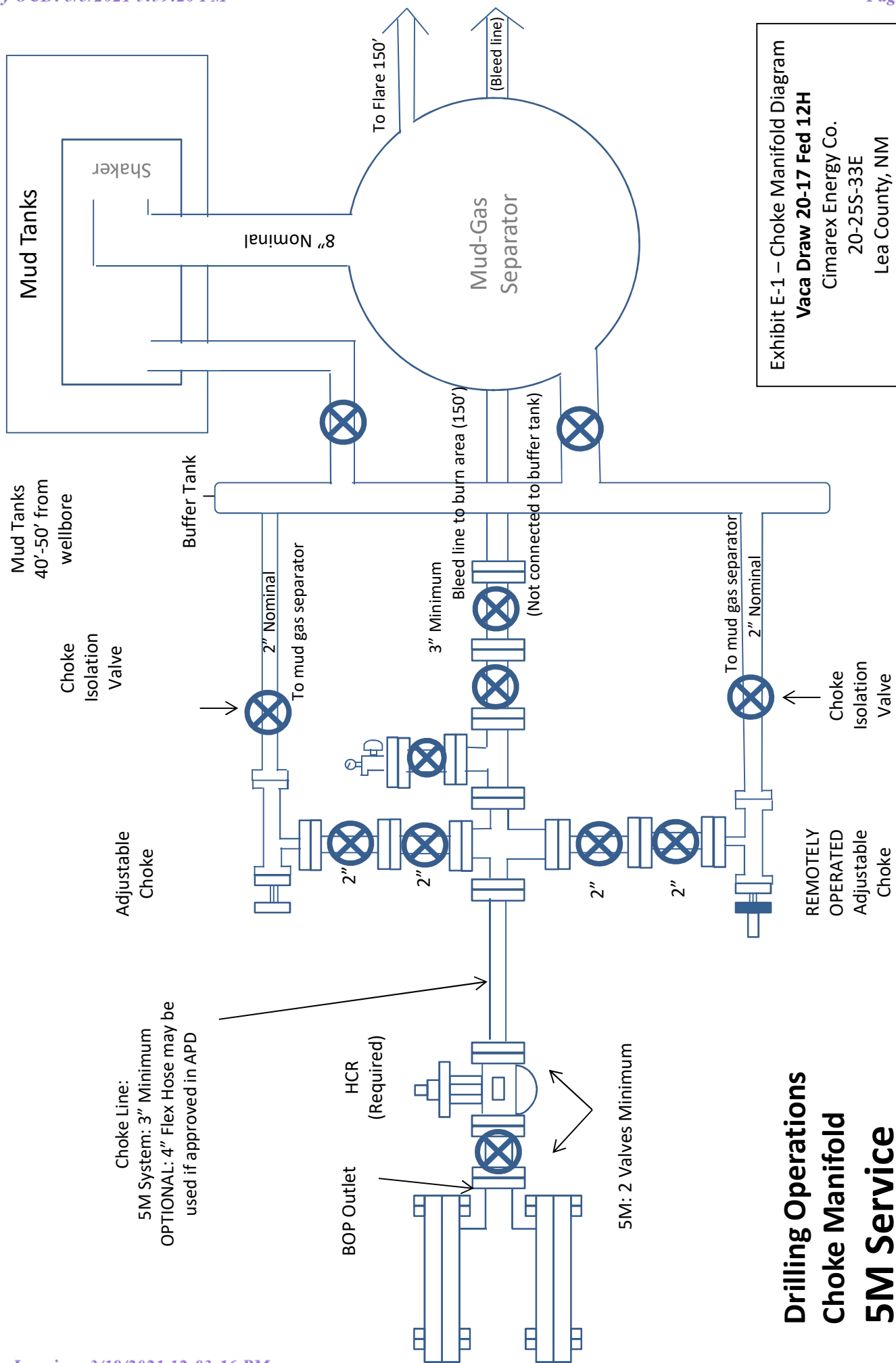


Exhibit E-1 – Choke Manifold Diagram  
Vaca Draw 20-17 Fed 12H

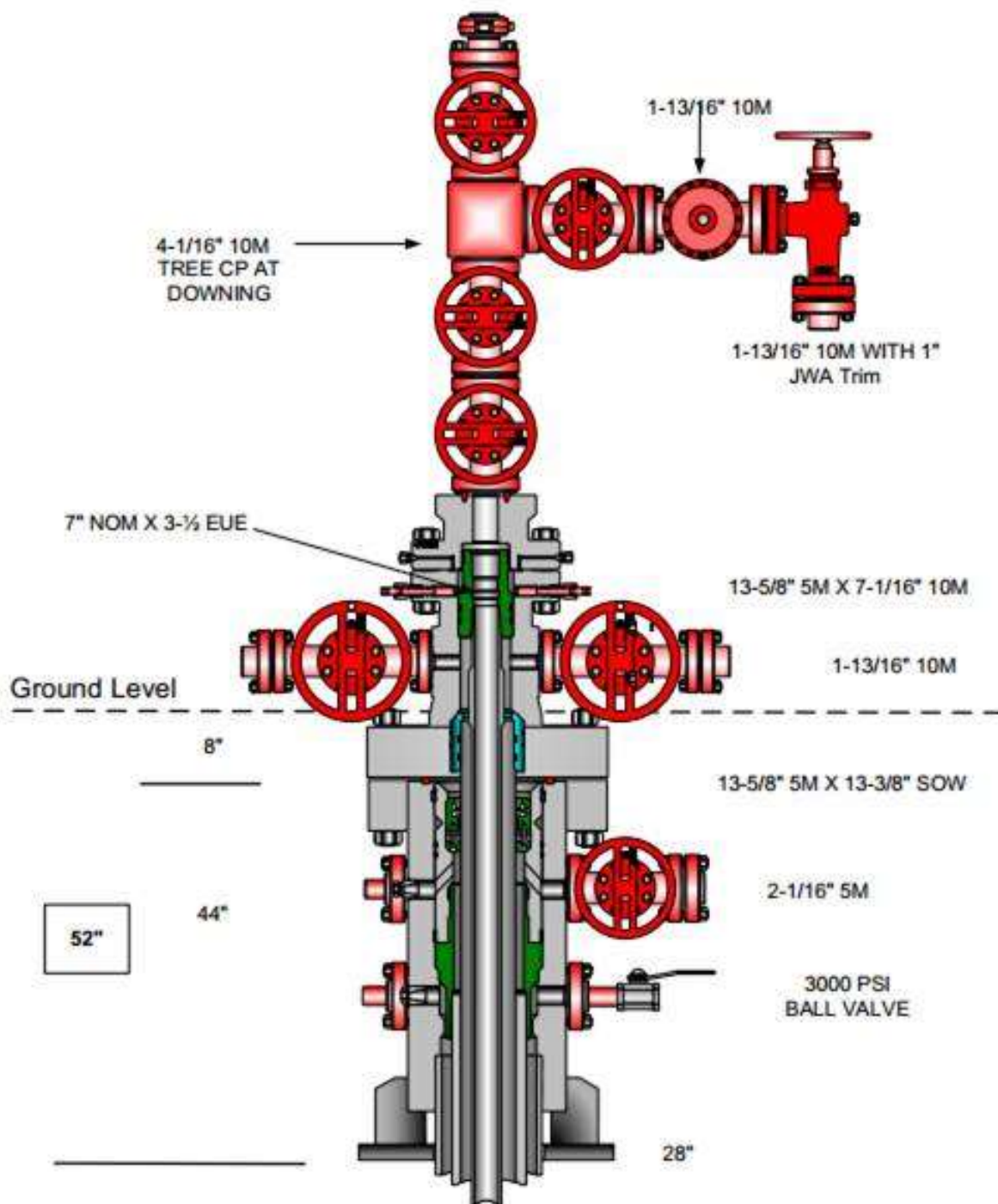
Cimarex Energy Co.  
20-25S-33E  
Lea County, NM

**Drilling Operations  
Choke Manifold  
2M/3M Service**





# Multi-bowl Wellhead Diagram



Multi-bowl Wellhead Diagram  
**Vaca Draw 20-17 Fed 12H**  
Cimarex Energy Co.  
20-25S-33E  
Lea Co., NM



Cimarex Energy Offline Cementing 7" Casing Information for  
Sundry Approval Plan REV0



CIMAREX ENERGY CO. NYSE LISTED: XEC

# Cementing Operational Workflow

## Conventional Cementing

1. Land casing on fluted mandrel hanger
2. Circulate down casing, taking returns through BOP stack
3. Pump lead and tail cement
4. Displace cement and bump the plug
5. Ensure floats are holding pressure
6. RD cement crew
7. Install packoff to isolate pressure
8. Install BPV and skid rig

## Offline Cementing

1. Land casing on solid body mandrel hanger
  - a) Engage packoff and locking
2. Install BPV
3. Skid rig
4. Check for pressure and remove BPV
5. Circulate down casing, taking returns through casing valves
6. Pump lead and tail cement
7. Displace cement and bump the plug
8. Ensure floats are holding pressure
9. RD cement crew
10. Install BPV and TA cap

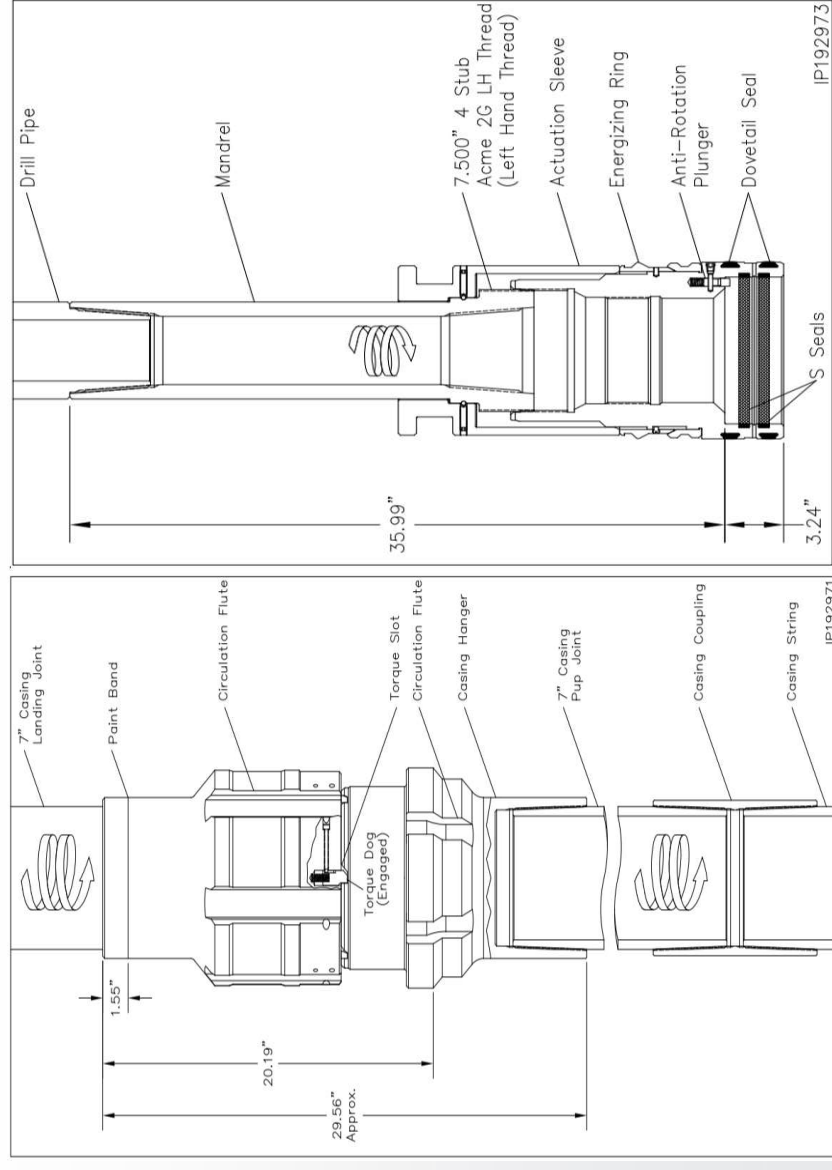


CIMAREX ENERGY CO. NYSE LISTED: XEC

SLIDE TITLE HERE | 2

# Conventional Cementing Equipment-Fluted Mandrel

- Fluted Hanger allows returns up past the hanger body
- Returns throughout cement job flow up through BOP stack and into flowline
- Packoff is installed **after** cement job to isolate pressure above and below hanger
- Lockring engaged during packoff installation

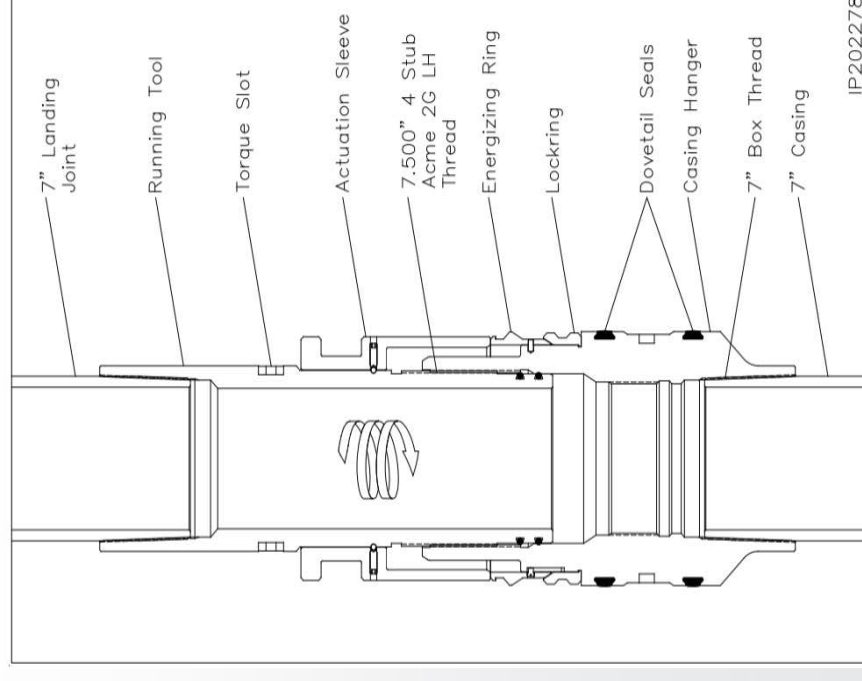


CIMAREX ENERGY CO. NYSE LISTED: XEC

SLIDE TITLE HERE | 3

## Offline Cementing Equipment-Solid Body Mandrel Hanger

- Solid Body Mandrel Hanger allows for casing to be landed and pressure isolated in one step, **prior** to cementing
- Lockring is engaged to lock casing in place
- Casing is isolated and returns throughout cement job flow through the casing valves and through flowback iron independent of rig



IP202278



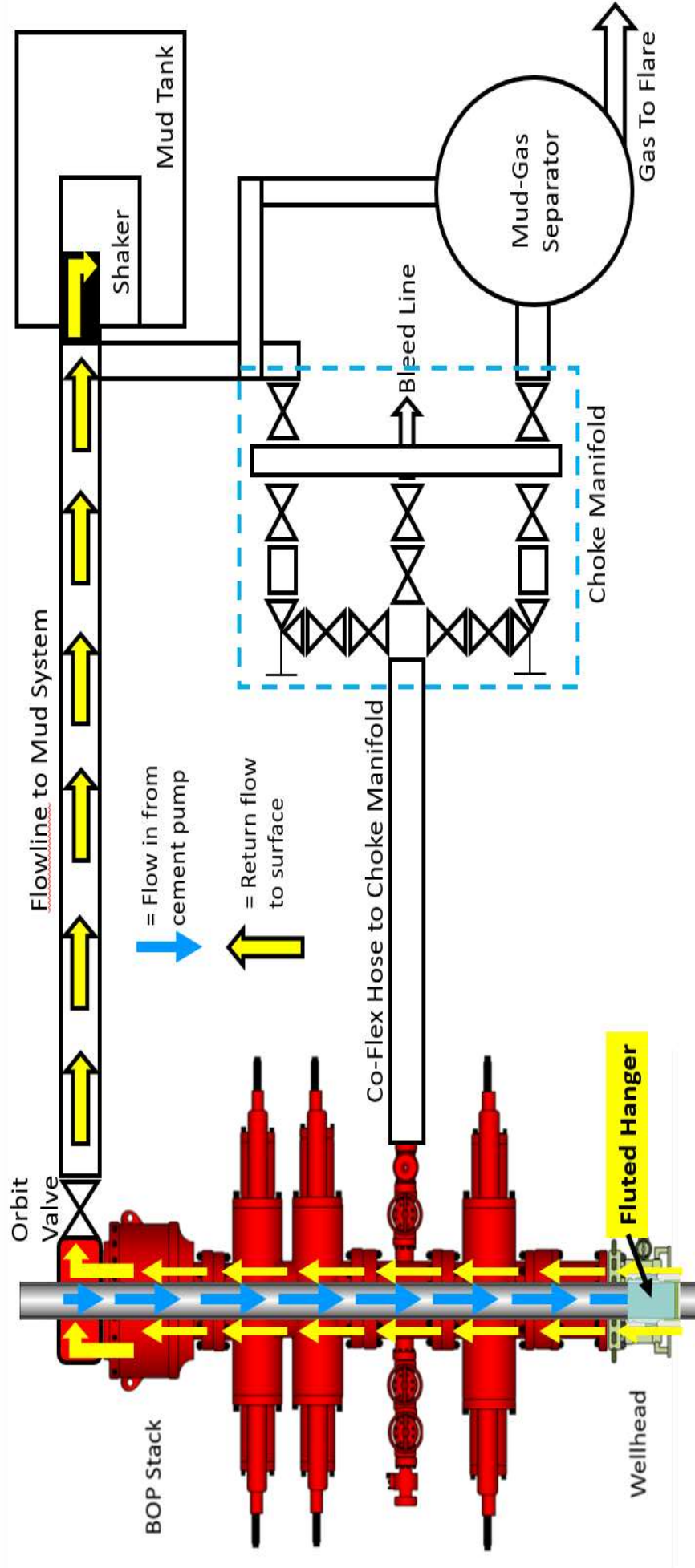
CIMAREX ENERGY CO. NYSE LISTED: XEC

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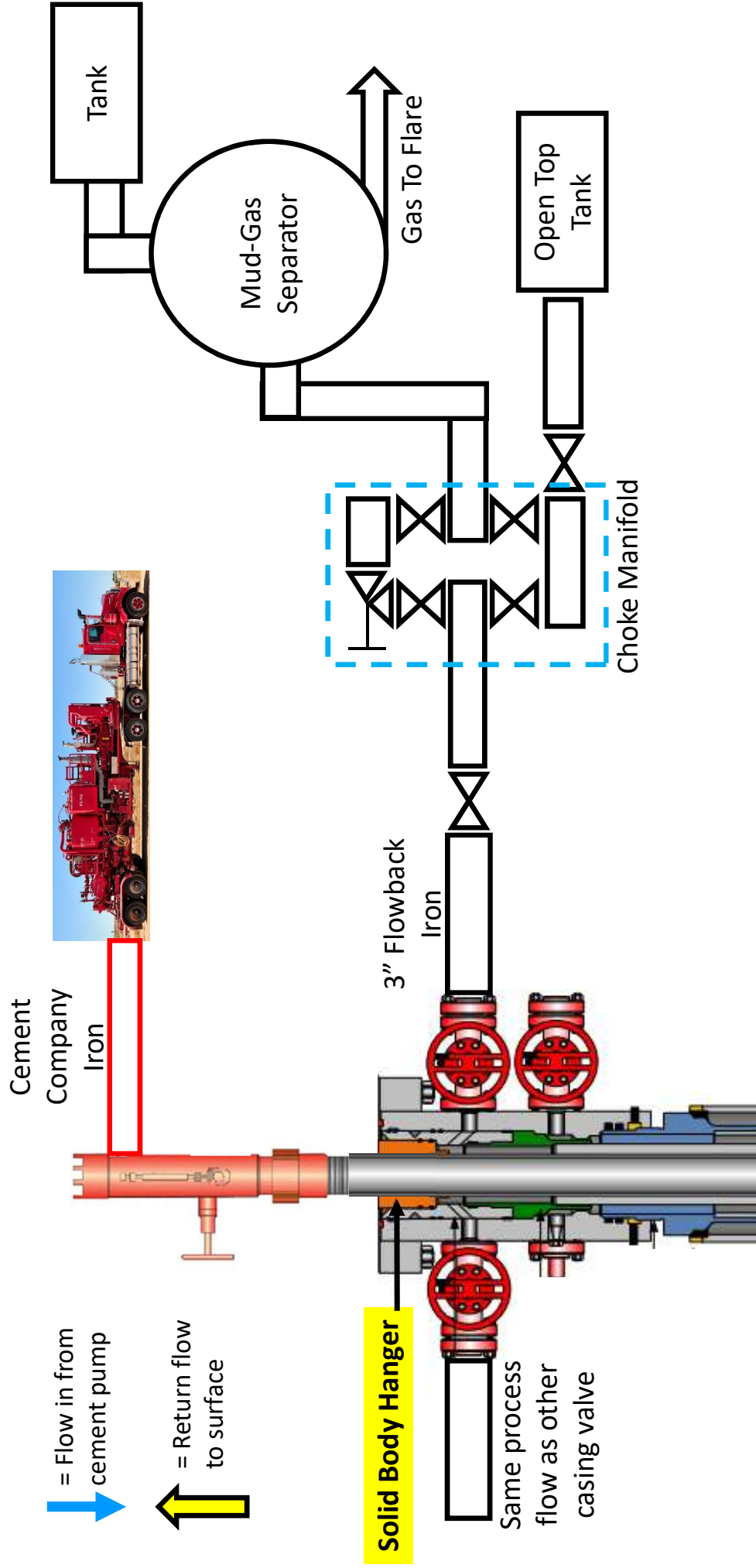
# Conventional Cementing Flow Diagram



CIMAREX ENERGY CO. NYSE LISTED: XEC

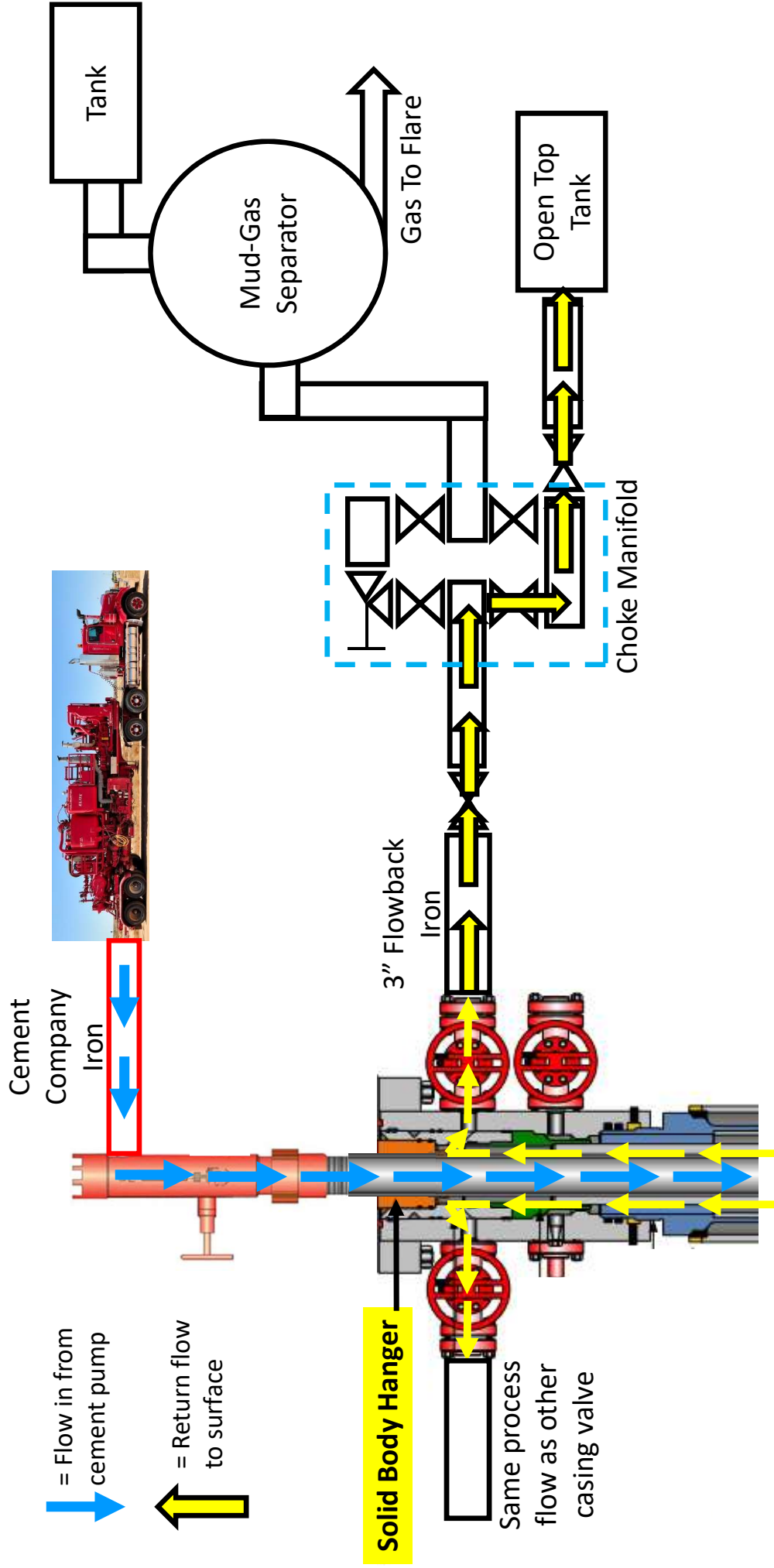
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# Offline Cementing -- Intermediate Casing



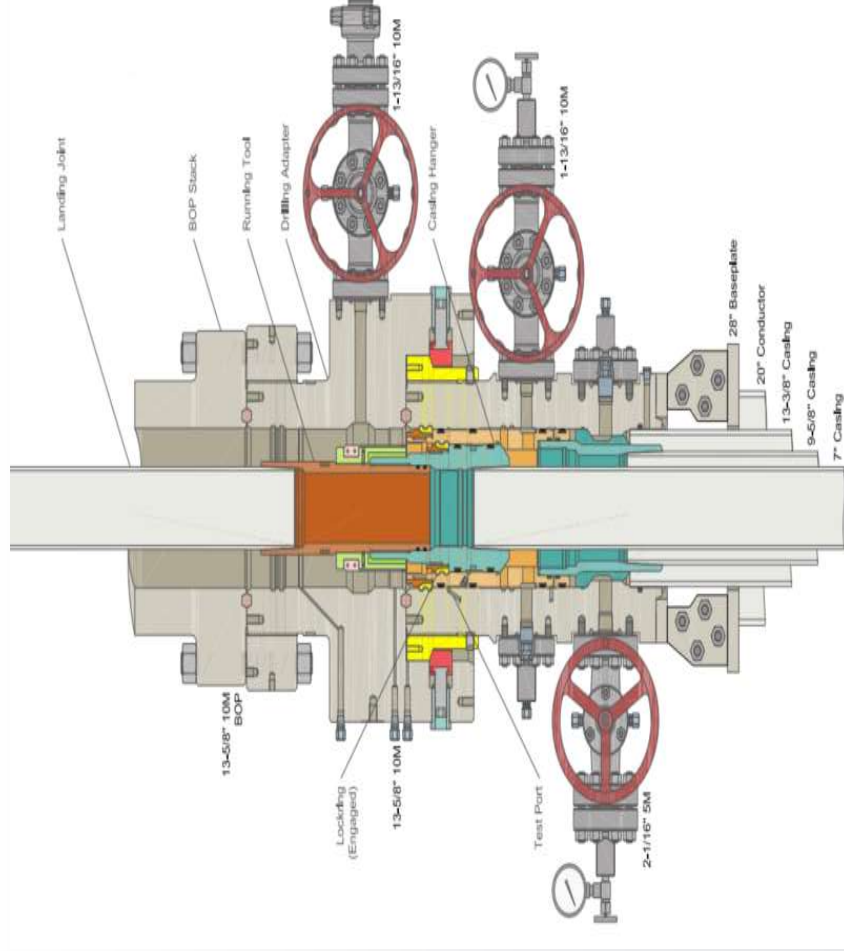


# Offline Cementing -- Intermediate Casing



## Offline Cementing Progression

- Run 7" casing
- Land 11" nominal x 7" hanger
- Test casing hanger
- Energize 11" nom x 7" hanger lock ring and pull test
- Re-test casing hanger
- Barriers & Procedures after landing casing before setting packoff
  - 10K BOP & 5K Annular-Internal and Annular barrier
  - Kill Weight Fluid in annulus and casing (ensure well is static before setting solid body packoff) Internal and Annular barrier
    - **If well is not static we WILL NOT set solid body packoff.**
  - 10K float collar-Internal Barrier
  - 10k float Shoe-Internal Barrier
  - **After circulating a 1.5 casing capacities to ensure full column of mud and no entrained gas pumps will be shut off and floats checked for flow**

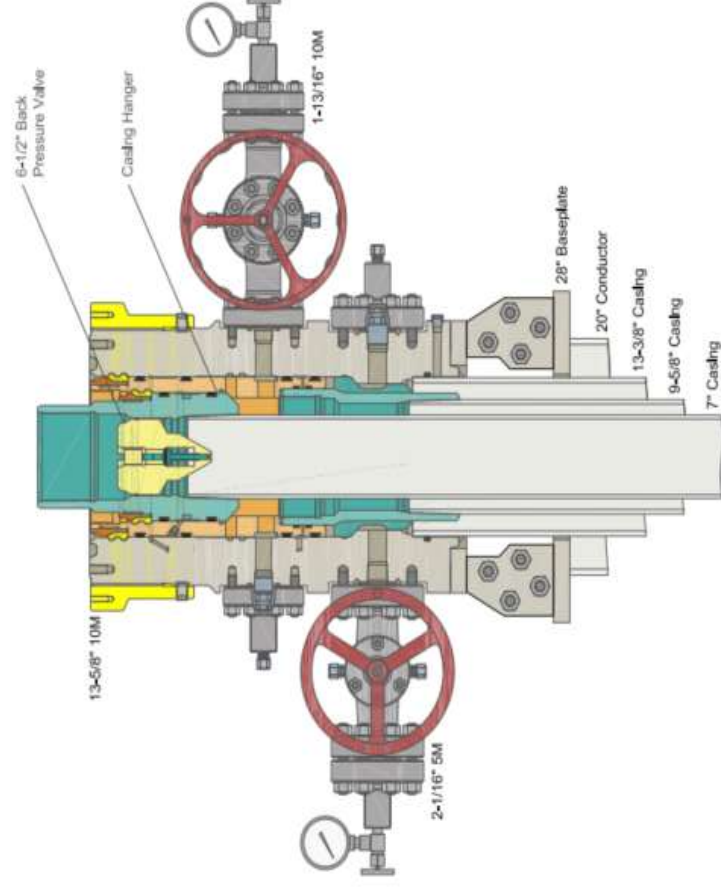


CIMAREX ENERGY CO. NYSE LISTED: XEC

SLIDE TITLE HERE | 9

## Offline Cementing Progression

- Pick up running tool with 6-1/2" nominal Back Pressure valve run into well and set
- Barriers and procedures **BEFORE** removing BOP's
  - Kill weight Fluid in annulus-Annular Barrier
  - Solid Body Packoff-Annular Barrier
  - 10K Float Equipment-Internal Barrier
  - 10K Back pressure valve installed with BOP still on well-Internal Barrier
    - BPV will be tested before it arrives on location by Cactus

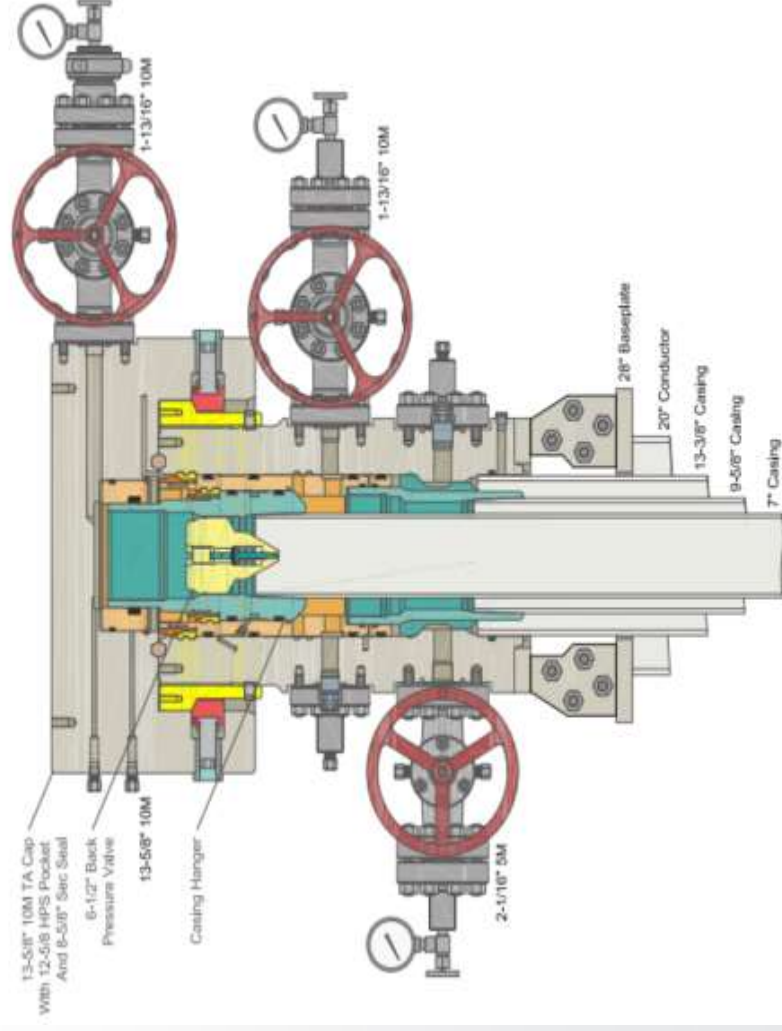


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SLIDE TITLE HERE | 10

## Offline Cementing Progression

- Nipple down BOP
- Nipple up TA Cap and test
- Skid Drilling Rig
- Barriers and procedures **AFTER** removing BOP's
  - Kill weight Fluid in annulus-Annular Barrier
  - Solid Body Packoff-Annular Barrier
  - 10K Float Equipment-Internal Barrier
  - 10K Back pressure valve-Internal Barrier
  - 10K rated TA cap with Valve-Internal Barrier

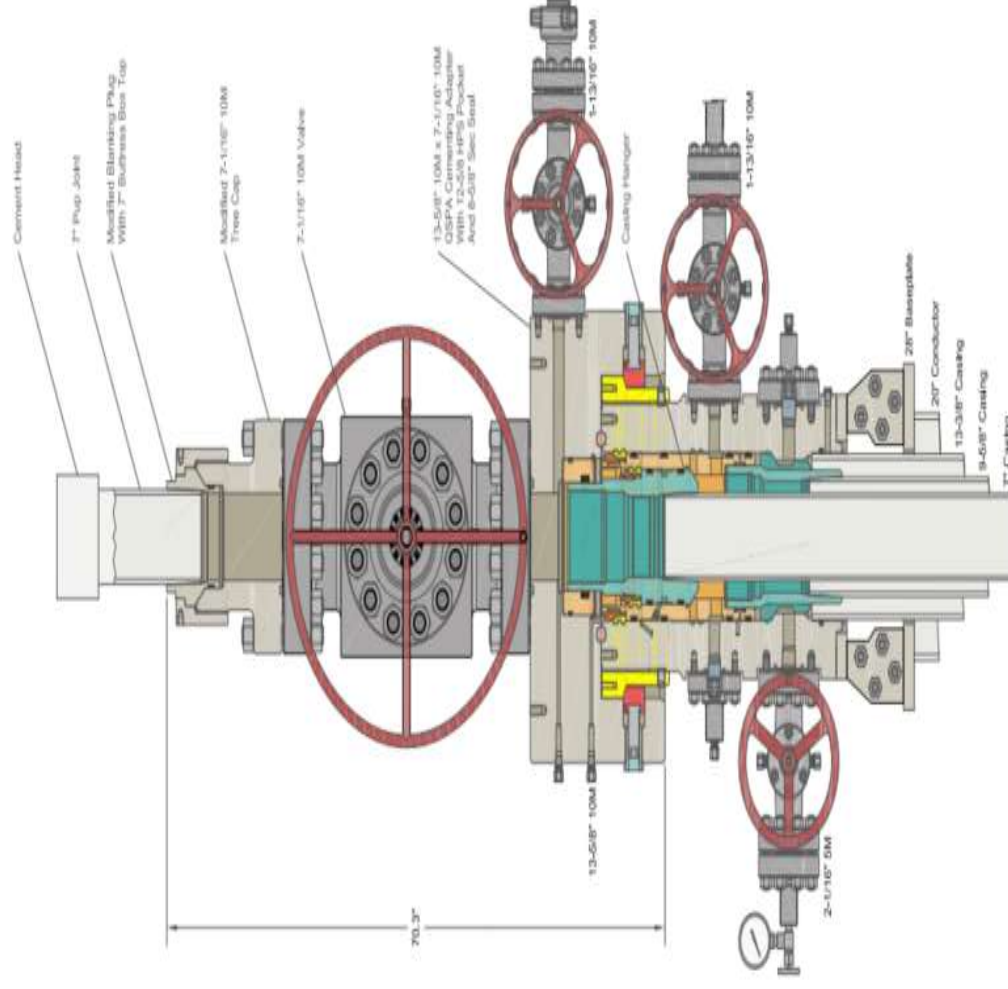


CIMAREX ENERGY CO. NYSE LISTED: XEC

SLIDE TITLE HERE | 11

## Offline Cementing Progression

- Check Pressure on TA Cap and remove
- Install adaptor with Gate valve for off line cementing and test
- Rig up flowback iron independent of rig
- Retrieve Back Pressure Valve
- Shut in well
- Rig up to cement and pump job
- NU 10K TA cap after cement job
- Barriers and procedures before rigging up cementing equipment
  - Address well and ensure no pressure on TA cap
    - Ability to pump into well through casing valves on backside to kill if needed
- Kill weight Fluid in annulus-Annular barrier
- Solid Body Packoff-Annular barrier
- 10K Float Equipment-Internal Barrier
- 10K Back pressure valve-Internal Barrier



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SLIDE TITLE HERE | 12

## Offline Cementing Risk and COA Compliance

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- All testing and breaks tested in accordance with Onshore Order # 2 and COA's
- If no cement to surface, bradenhead squeeze still possible with offline cementing equipment
- Time from skid rig to offline cementing ops typically 24 hours
- **Conditions where we would not Offline Cement**
  - Well is flowing
- All wellhead equipment rated to 10K maintaining APD compliant
  - 10K flowback iron independent of rig circulating system
  - 10K Back Pressure Valve
  - 10K Gate Valve & TA combo for second barrier during operations
  - 10K 1-13/16 Valve coming off TA cap
  - 10K TA Cap



CIMAREX ENERGY CO. NYSE LISTED: XEC

SLIDE TITLE HERE | 13



Vertical Section (ft) Azim = 359.63° Scale = 1:741.17(ft) Origin = 0N/-S, 0E/-W

EW (ft) Scale = 1:544.64(ft)



**Schlumberger****Cimarex Vaca Draw 20-17 Federal #12H Rev1 RM 10Feb21 Proposal****Geodetic Report**

(Def Plan)

**Report Date:** February 10, 2021 - 01:41 PM  
**Client:** Cimarex  
**Field:** NM Lea County (NAD 83)  
**Structure / Slot:** Cimarex Vaca Draw 20-17 Federal #12H / Cimarex Vaca Draw 20-17 Federal #12H  
**Well:** Cimarex Vaca Draw 20-17 Federal #12H  
**Borehole:** Original Borehole  
**UWI / API#:** Unknown / Unknown  
**Survey Name:** Cimarex Vaca Draw 20-17 Federal #12H Rev1 RM 10Feb21  
**Survey Date:** February 10, 2021  
**Tort / AHD / DDI / ERD Ratio:** 117.000 ° / 11565.151 ft / 6.415 / 1.048  
**Coordinate Reference System:** NAD83 New Mexico State Plane, Eastern Zone, US Feet  
**Location Lat / Long:** N 32° 6' 35.06599", W 103° 35' 46.42030"  
**Location Grid N/E Y/X:** N 404440.340 ftUS, E 769561.590 ftUS  
**CRS Grid Convergence Angle:** 0.3918 °  
**Grid Scale Factor:** 0.99996875  
**Version / Patch:** 2.10.824.0

**Survey / DLS Computation:** Minimum Curvature / Lubinski  
**Vertical Section Azimuth:** 359.628 ° (Grid North)  
**Vertical Section Origin:** 0.000 ft, 0.000 ft  
**TVD Reference Datum:** RKB  
**TVD Reference Elevation:** 3440.000 ft above MSL  
**Seabed / Ground Elevation:** 3417.000 ft above MSL  
**Magnetic Declination:** 6.455 °  
**Total Gravity Field Strength:** 998.4305mgn (9.80665 Based)  
**Gravity Model:** GARM  
**Total Magnetic Field Strength:** 47599.224 nT  
**Magnetic Dip Angle:** 59.676 °  
**Declination Date:** February 10, 2021  
**Magnetic Declination Model:** HDGM 2020  
**North Reference:** Grid North  
**Grid Convergence Used:** 0.3918 °  
**Total Corr Mag North-Grid North:** 6.0632 °

Local Coord Referenced To: Structure Reference Point

| Comments                                             | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' ") | Longitude<br>(E/W ° ' ") |
|------------------------------------------------------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|--------------------|-------------------|-------------------------|--------------------------|
| SHL [330' FSL,<br>2050' FWL]<br>Nudge 2°/100'<br>DLS | 0.00       | 0.00        | 0.00             | 0.00        | 0.00         | 0.00       | 0.00       | N/A              | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
| Hold Nudge                                           | 2000.00    | 0.00        | 94.32            | 2000.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
| Drop to Vertical                                     | 2675.00    | 13.50       | 94.32            | 2668.78     | -6.47        | -5.96      | 78.93      | 2.00             | 404434.38          | 769640.52         | N 32 6 35.00            | W 103 35 45.50           |
| 2°/100' DLS                                          | 7686.46    | 13.50       | 94.32            | 7541.76     | -102.13      | -94.04     | 1245.52    | 0.00             | 404346.30          | 770807.07         | N 32 6 34.05            | W 103 35 31.95           |
| Hold Vertical                                        | 8361.46    | 0.00        | 94.32            | 8210.54     | -108.60      | -100.00    | 1324.45    | 2.00             | 404340.34          | 770885.99         | N 32 6 33.99            | W 103 35 31.03           |
| KOP - Build                                          | 10708.46   | 0.00        | 94.32            | 10557.54    | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99            | W 103 35 31.03           |
| 12°/100' DLS                                         | 11458.46   | 90.00       | 359.63           | 11035.00    | 368.87       | 377.45     | 1321.35    | 12.00            | 404817.78          | 770882.89         | N 32 6 38.71            | W 103 35 31.03           |
| Landing Point<br>Cimarex Vaca<br>Draw 20-17          | 21217.93   | 90.00       | 359.63           | 11035.00    | 10128.34     | 10136.72   | 1257.92    | 0.00             | 414576.72          | 770819.47         | N 32 8 15.28            | W 103 35 30.98           |
| Federal #12H -<br>PBHL [100'<br>FNL, 1916' FEL]      |            |             |                  |             |              |            |            |                  |                    |                   |                         |                          |

Survey Type: Def Plan

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

| Comments    | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft)   | VSEC<br>(ft)     | NS<br>(ft)        | EW<br>(ft)              | DLS<br>(°/100ft)                     | Northing<br>(ftUS)         | Easting<br>(ftUS)                                                              | Latitude<br>(N/S ° ' ") | Longitude<br>(E/W ° ' ") |
|-------------|------------|-------------|------------------|---------------|------------------|-------------------|-------------------------|--------------------------------------|----------------------------|--------------------------------------------------------------------------------|-------------------------|--------------------------|
| Description | Part       |             | MD From<br>(ft)  | MD To<br>(ft) | EOU Freq<br>(ft) | Hole Size<br>(in) | Casing Diameter<br>(in) | Expected Max<br>Inclination<br>(deg) | Survey Tool Type           | Borehole / Survey                                                              |                         |                          |
|             | 1          |             | 0.000            | 23.000        | 1/100.000        | 17.500            | 13.375                  | NAL_MWD_IFR1+MS-Depth Only           | NAL_MWD_IFR1+MS-Depth Only | Original Borehole / Cimarex Vaca<br>Draw 20-17 Federal #12H Rev1<br>RM 10Feb21 |                         |                          |
|             | 1          |             | 23.000           | 21217.929     | 1/100.000        | 17.500            | 13.375                  | NAL_MWD_IFR1+MS                      | NAL_MWD_IFR1+MS            | Original Borehole / Cimarex Vaca<br>Draw 20-17 Federal #12H Rev1               |                         |                          |

**Schlumberger**

## Cimarex Vaca Draw 20-17 Federal #12H Rev1 RM 10Feb21 Proposal Geodetic Report



(Def Plan)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Report Date:</b> February 10, 2021 - 01:40 PM<br><b>Client:</b> Cimarex<br><b>Field:</b> NM Lea County (NAD 83)<br><b>Structure / Slot:</b> Cimarex Vaca Draw 20-17 Federal #12H / Cimarex Vaca Draw 20-17 Federal #12H<br><b>Well:</b> Cimarex Vaca Draw 20-17 Federal #12H<br><b>Borehole:</b> Original Borehole<br><b>UWI / API#:</b> Unknown / Unknown<br><b>Survey Name:</b> Cimarex Vaca Draw 20-17 Federal #12H Rev1 RM 10Feb21<br><b>Survey Date:</b> February 10, 2021<br><b>Tort / AHD / DDI / ERD Ratio:</b> 117.000 ° / 11565.151 ft / 6.415 / 1.048<br><b>Coordinate Reference System:</b> NAD83 New Mexico State Plane, Eastern Zone, US Feet<br><b>Location Lat / Long:</b> N 32° 6' 35.06599", W 103° 35' 46.42030"<br><b>Location Grid N/E Y/X:</b> N 404440.340 ftUS, E 769561.590 ftUS<br><b>CRS Grid Convergence Angle:</b> 0.3918 °<br><b>Grid Scale Factor:</b> 0.99996875<br><b>Version / Patch:</b> 2.10.824.0 | <b>Survey / DLS Computation:</b> Minimum Curvature / Lubinski<br><b>Vertical Section Azimuth:</b> 359.628 ° (Grid North)<br><b>Vertical Section Origin:</b> 0.000 ft, 0.000 ft<br><b>TVD Reference Datum:</b> RKB<br><b>TVD Reference Elevation:</b> 3440.000 ft above MSL<br><b>Seabed / Ground Elevation:</b> 3417.000 ft above MSL<br><b>Magnetic Declination:</b> 6.455 °<br><b>Total Gravity Field Strength:</b> 998.4305mgn (9.80665 Based)<br><b>Gravity Model:</b> GARM<br><b>Total Magnetic Field Strength:</b> 47599.224 nT<br><b>Magnetic Dip Angle:</b> 59.676 °<br><b>Declination Date:</b> February 10, 2021<br><b>Magnetic Declination Model:</b> HDGM 2020<br><b>North Reference:</b> Grid North<br><b>Grid Convergence Used:</b> 0.3918 °<br><b>Total Corr Mag North-Grid North:</b> 6.0632 ° |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Local Coord Referenced To: Structure Reference Point

| Comments                     | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' ") | Longitude<br>(E/W ° ' ") |
|------------------------------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|--------------------|-------------------|-------------------------|--------------------------|
| SHL [330' FSL,<br>2050' FWL] | 0.00       | 0.00        | 0.00             | 0.00        | 0.00         | 0.00       | 0.00       | N/A              | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 100.00     | 0.00        | 94.32            | 100.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 200.00     | 0.00        | 94.32            | 200.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 300.00     | 0.00        | 94.32            | 300.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 400.00     | 0.00        | 94.32            | 400.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 500.00     | 0.00        | 94.32            | 500.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 600.00     | 0.00        | 94.32            | 600.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 700.00     | 0.00        | 94.32            | 700.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 800.00     | 0.00        | 94.32            | 800.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 900.00     | 0.00        | 94.32            | 900.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 1000.00    | 0.00        | 94.32            | 1000.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 1100.00    | 0.00        | 94.32            | 1100.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 1200.00    | 0.00        | 94.32            | 1200.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 1300.00    | 0.00        | 94.32            | 1300.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 1400.00    | 0.00        | 94.32            | 1400.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 1500.00    | 0.00        | 94.32            | 1500.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 1600.00    | 0.00        | 94.32            | 1600.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 1700.00    | 0.00        | 94.32            | 1700.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 1800.00    | 0.00        | 94.32            | 1800.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
|                              | 1900.00    | 0.00        | 94.32            | 1900.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
| Nudge 2°/100'                | 2000.00    | 0.00        | 94.32            | 2000.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404440.34          | 769561.59         | N 32 6 35.07            | W 103 35 46.42           |
| DLS                          | 2100.00    | 2.00        | 94.32            | 2099.98     | -0.14        | -0.13      | 1.74       | 2.00             | 404440.21          | 769563.33         | N 32 6 35.06            | W 103 35 46.40           |
|                              | 2200.00    | 4.00        | 94.32            | 2199.84     | -0.57        | -0.53      | 6.96       | 2.00             | 404439.81          | 769568.55         | N 32 6 35.06            | W 103 35 46.34           |

| Comments   | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' ") | Longitude<br>(E/W ° ' ") |
|------------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|--------------------|-------------------|-------------------------|--------------------------|
| Hold Nudge | 2300.00    | 6.00        | 94.32            | 2299.45     | -1.28        | -1.18      | 15.65      | 2.00             | 404439.16          | 769577.24         | N 32 6 35.05            | W 103 35 46.24           |
|            | 2400.00    | 8.00        | 94.32            | 2398.70     | -2.28        | -2.10      | 27.80      | 2.00             | 404438.24          | 769589.39         | N 32 6 35.04            | W 103 35 46.10           |
|            | 2500.00    | 10.00       | 94.32            | 2497.47     | -3.56        | -3.28      | 43.40      | 2.00             | 404437.06          | 769604.99         | N 32 6 35.03            | W 103 35 45.92           |
|            | 2600.00    | 12.00       | 94.32            | 2595.62     | -5.12        | -4.71      | 62.42      | 2.00             | 404435.63          | 769624.01         | N 32 6 35.02            | W 103 35 45.69           |
|            | 2675.00    | 13.50       | 94.32            | 2668.78     | -6.47        | -5.96      | 78.93      | 2.00             | 404434.38          | 769640.52         | N 32 6 35.00            | W 103 35 45.50           |
|            | 2700.00    | 13.50       | 94.32            | 2693.08     | -6.95        | -6.40      | 84.75      | 0.00             | 404433.94          | 769646.34         | N 32 6 35.00            | W 103 35 45.44           |
|            | 2800.00    | 13.50       | 94.32            | 2790.32     | -8.86        | -8.16      | 108.03     | 0.00             | 404432.18          | 769669.61         | N 32 6 34.98            | W 103 35 45.17           |
|            | 2900.00    | 13.50       | 94.32            | 2887.55     | -10.77       | -9.91      | 131.31     | 0.00             | 404430.43          | 769692.89         | N 32 6 34.96            | W 103 35 44.89           |
|            | 3000.00    | 13.50       | 94.32            | 2984.79     | -12.68       | -11.67     | 154.58     | 0.00             | 404428.67          | 769716.17         | N 32 6 34.94            | W 103 35 44.62           |
|            | 3100.00    | 13.50       | 94.32            | 3082.03     | -14.58       | -13.43     | 177.86     | 0.00             | 404426.91          | 769739.45         | N 32 6 34.92            | W 103 35 44.35           |
|            | 3200.00    | 13.50       | 94.32            | 3179.27     | -16.49       | -15.19     | 201.14     | 0.00             | 404425.15          | 769762.72         | N 32 6 34.90            | W 103 35 44.08           |
|            | 3300.00    | 13.50       | 94.32            | 3276.50     | -18.40       | -16.94     | 224.42     | 0.00             | 404423.40          | 769786.00         | N 32 6 34.88            | W 103 35 43.81           |
|            | 3400.00    | 13.50       | 94.32            | 3373.74     | -20.31       | -18.70     | 247.70     | 0.00             | 404421.64          | 769809.28         | N 32 6 34.86            | W 103 35 43.54           |
|            | 3500.00    | 13.50       | 94.32            | 3470.98     | -22.22       | -20.46     | 270.98     | 0.00             | 404419.88          | 769832.56         | N 32 6 34.85            | W 103 35 43.27           |
|            | 3600.00    | 13.50       | 94.32            | 3568.21     | -24.13       | -22.22     | 294.26     | 0.00             | 404418.12          | 769855.84         | N 32 6 34.83            | W 103 35 43.00           |
|            | 3700.00    | 13.50       | 94.32            | 3665.45     | -26.04       | -23.97     | 317.53     | 0.00             | 404416.37          | 769879.11         | N 32 6 34.81            | W 103 35 42.73           |
|            | 3800.00    | 13.50       | 94.32            | 3762.69     | -27.94       | -25.73     | 340.81     | 0.00             | 404414.61          | 769902.39         | N 32 6 34.79            | W 103 35 42.46           |
|            | 3900.00    | 13.50       | 94.32            | 3859.92     | -29.85       | -27.49     | 364.09     | 0.00             | 404412.85          | 769925.67         | N 32 6 34.75            | W 103 35 42.19           |
|            | 4000.00    | 13.50       | 94.32            | 3957.16     | -31.76       | -29.25     | 387.37     | 0.00             | 404411.09          | 769948.95         | N 32 6 34.73            | W 103 35 41.92           |
|            | 4100.00    | 13.50       | 94.32            | 4054.40     | -33.67       | -31.01     | 410.65     | 0.00             | 404409.34          | 769972.22         | N 32 6 34.73            | W 103 35 41.65           |
|            | 4200.00    | 13.50       | 94.32            | 4151.64     | -35.58       | -32.76     | 433.93     | 0.00             | 404407.58          | 769995.50         | N 32 6 34.71            | W 103 35 41.38           |
|            | 4300.00    | 13.50       | 94.32            | 4248.87     | -37.49       | -34.52     | 457.20     | 0.00             | 404405.82          | 770018.78         | N 32 6 34.69            | W 103 35 41.11           |
|            | 4400.00    | 13.50       | 94.32            | 4346.11     | -39.40       | -36.28     | 480.48     | 0.00             | 404404.06          | 770042.06         | N 32 6 34.67            | W 103 35 40.84           |
|            | 4500.00    | 13.50       | 94.32            | 4443.35     | -41.31       | -38.04     | 503.76     | 0.00             | 404402.31          | 770065.33         | N 32 6 34.66            | W 103 35 40.57           |
|            | 4600.00    | 13.50       | 94.32            | 4540.58     | -43.21       | -39.79     | 527.04     | 0.00             | 404400.55          | 770088.61         | N 32 6 34.64            | W 103 35 40.30           |
|            | 4700.00    | 13.50       | 94.32            | 4637.82     | -45.12       | -41.55     | 550.32     | 0.00             | 404398.79          | 770111.89         | N 32 6 34.62            | W 103 35 40.03           |
|            | 4800.00    | 13.50       | 94.32            | 4735.06     | -47.03       | -43.31     | 573.60     | 0.00             | 404397.03          | 770135.17         | N 32 6 34.60            | W 103 35 39.76           |
|            | 4900.00    | 13.50       | 94.32            | 4832.29     | -48.94       | -45.07     | 596.87     | 0.00             | 404395.28          | 770158.44         | N 32 6 34.58            | W 103 35 39.48           |
|            | 5000.00    | 13.50       | 94.32            | 4929.53     | -50.85       | -46.82     | 620.15     | 0.00             | 404393.52          | 770181.72         | N 32 6 34.56            | W 103 35 39.21           |
|            | 5100.00    | 13.50       | 94.32            | 5026.77     | -52.76       | -48.58     | 643.43     | 0.00             | 404391.76          | 770205.00         | N 32 6 34.54            | W 103 35 38.94           |
|            | 5200.00    | 13.50       | 94.32            | 5124.00     | -54.67       | -50.34     | 666.71     | 0.00             | 404390.00          | 770228.28         | N 32 6 34.52            | W 103 35 38.67           |
|            | 5300.00    | 13.50       | 94.32            | 5221.24     | -56.57       | -52.10     | 689.99     | 0.00             | 404388.25          | 770251.56         | N 32 6 34.50            | W 103 35 38.40           |
|            | 5400.00    | 13.50       | 94.32            | 5318.48     | -58.48       | -53.85     | 713.27     | 0.00             | 404386.49          | 770274.83         | N 32 6 34.48            | W 103 35 38.13           |
|            | 5500.00    | 13.50       | 94.32            | 5415.72     | -60.39       | -55.61     | 736.54     | 0.00             | 404384.73          | 770298.11         | N 32 6 34.47            | W 103 35 37.86           |
|            | 5600.00    | 13.50       | 94.32            | 5512.95     | -62.30       | -57.37     | 759.82     | 0.00             | 404382.97          | 770321.39         | N 32 6 34.45            | W 103 35 37.59           |
|            | 5700.00    | 13.50       | 94.32            | 5610.19     | -64.21       | -59.13     | 783.10     | 0.00             | 404381.22          | 770344.67         | N 32 6 34.43            | W 103 35 37.32           |
|            | 5800.00    | 13.50       | 94.32            | 5707.43     | -66.12       | -60.88     | 806.38     | 0.00             | 404379.46          | 770367.94         | N 32 6 34.41            | W 103 35 37.05           |
|            | 5900.00    | 13.50       | 94.32            | 5804.66     | -68.03       | -62.64     | 829.66     | 0.00             | 404377.70          | 770391.22         | N 32 6 34.39            | W 103 35 36.78           |
|            | 6000.00    | 13.50       | 94.32            | 5901.90     | -69.94       | -64.40     | 852.94     | 0.00             | 404375.94          | 770414.50         | N 32 6 34.37            | W 103 35 36.51           |
|            | 6100.00    | 13.50       | 94.32            | 5999.14     | -71.84       | -66.16     | 876.22     | 0.00             | 404374.19          | 770437.78         | N 32 6 34.35            | W 103 35 36.24           |
|            | 6200.00    | 13.50       | 94.32            | 6096.37     | -73.75       | -67.91     | 899.49     | 0.00             | 404372.43          | 770461.05         | N 32 6 34.33            | W 103 35 35.97           |
|            | 6300.00    | 13.50       | 94.32            | 6193.61     | -75.66       | -69.67     | 922.77     | 0.00             | 404370.67          | 770484.33         | N 32 6 34.31            | W 103 35 35.70           |
|            | 6400.00    | 13.50       | 94.32            | 6290.85     | -77.57       | -71.43     | 946.05     | 0.00             | 404368.91          | 770507.61         | N 32 6 34.30            | W 103 35 35.43           |
|            | 6500.00    | 13.50       | 94.32            | 6388.09     | -79.48       | -73.19     | 969.33     | 0.00             | 404367.16          | 770530.89         | N 32 6 34.28            | W 103 35 35.16           |
|            | 6600.00    | 13.50       | 94.32            | 6485.32     | -81.39       | -74.94     | 992.61     | 0.00             | 404365.40          | 770554.16         | N 32 6 34.26            | W 103 35 34.89           |
|            | 6700.00    | 13.50       | 94.32            | 6582.56     | -83.30       | -76.70     | 1015.89    | 0.00             | 404363.64          | 770577.44         | N 32 6 34.24            | W 103 35 34.62           |
|            | 6800.00    | 13.50       | 94.32            | 6679.80     | -85.21       | -78.46     | 1039.16    | 0.00             | 404361.88          | 770600.72         | N 32 6 34.22            | W 103 35 34.35           |
|            | 6900.00    | 13.50       | 94.32            | 6777.03     | -87.11       | -80.22     | 1062.44    | 0.00             | 404360.12          | 770624.00         | N 32 6 34.20            | W 103 35 34.07           |
|            | 7000.00    | 13.50       | 94.32            | 6874.27     | -89.02       | -81.98     | 1085.72    | 0.00             | 404358.37          | 770647.28         | N 32 6 34.18            | W 103 35 33.80           |
|            | 7100.00    | 13.50       | 94.32            | 6971.51     | -90.93       | -83.73     | 1109.00    | 0.00             | 404356.61          | 770670.55         | N 32 6 34.16            | W 103 35 33.53           |
|            | 7200.00    | 13.50       | 94.32            | 7068.74     | -92.84       | -85.49     | 1132.28    | 0.00             | 404354.85          | 770693.83         | N 32 6 34.14            | W 103 35 33.26           |
|            | 7300.00    | 13.50       | 94.32            | 7165.98     | -94.75       | -87.25     | 1155.56    | 0.00             | 404353.09          | 770717.11         | N 32 6 34.12            | W 103 35 32.99           |
|            | 7400.00    | 13.50       | 94.32            | 7263.22     | -96.66       | -89.01     | 1178.83    | 0.00             | 404351.34          | 770740.39         | N 32 6 34.11            | W 103 35 32.72           |
|            | 7500.00    | 13.50       | 94.32            | 7360.45     | -98.57       | -90.76     | 1202.11    | 0.00             | 404349.58          | 770763.66         | N 32 6 34.09            | W 103 35 32.45           |
|            | 7600.00    | 13.50       | 94.32            | 7457.69     | -100.47      | -92.52     | 1225.39    | 0.00             | 404347.82          | 770786.94         | N 32 6 34.07            | W 103 35 32.18           |

| Comments                        | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' '') | Longitude<br>(E/W ° ' '') |
|---------------------------------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|--------------------|-------------------|--------------------------|---------------------------|
| Drop to Vertical<br>2°/100' DLS | 7686.46    | 13.50       | 94.32            | 7541.76     | -102.13      | -94.04     | 1245.52    | 0.00             | 404346.30          | 770807.07         | N 32 6 34.05             | W 103 35 31.95            |
|                                 | 7700.00    | 13.23       | 94.32            | 7554.94     | -102.38      | -94.28     | 1248.64    | 2.00             | 404346.07          | 770810.19         | N 32 6 34.05             | W 103 35 31.91            |
|                                 | 7800.00    | 11.23       | 94.32            | 7652.66     | -104.11      | -95.87     | 1269.76    | 2.00             | 404344.47          | 770831.31         | N 32 6 34.03             | W 103 35 31.67            |
|                                 | 7900.00    | 9.23        | 94.32            | 7751.07     | -105.56      | -97.21     | 1287.47    | 2.00             | 404343.14          | 770849.01         | N 32 6 34.02             | W 103 35 31.46            |
|                                 | 8000.00    | 7.23        | 94.32            | 7850.03     | -106.74      | -98.29     | 1301.74    | 2.00             | 404342.06          | 770863.29         | N 32 6 34.01             | W 103 35 31.29            |
|                                 | 8100.00    | 5.23        | 94.32            | 7949.44     | -107.62      | -99.10     | 1312.56    | 2.00             | 404341.24          | 770874.11         | N 32 6 34.00             | W 103 35 31.17            |
|                                 | 8200.00    | 3.23        | 94.32            | 8049.16     | -108.23      | -99.66     | 1319.91    | 2.00             | 404340.69          | 770881.46         | N 32 6 33.99             | W 103 35 31.08            |
|                                 | 8300.00    | 1.23        | 94.32            | 8149.08     | -108.54      | -99.95     | 1323.79    | 2.00             | 404340.39          | 770885.34         | N 32 6 33.99             | W 103 35 31.04            |
|                                 | 8361.46    | 0.00        | 94.32            | 8210.54     | -108.60      | -100.00    | 1324.45    | 2.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 8400.00    | 0.00        | 94.32            | 8249.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
| Hold Vertical                   | 8500.00    | 0.00        | 94.32            | 8349.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 8600.00    | 0.00        | 94.32            | 8449.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 8700.00    | 0.00        | 94.32            | 8549.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 8800.00    | 0.00        | 94.32            | 8649.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 8900.00    | 0.00        | 94.32            | 8749.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 9000.00    | 0.00        | 94.32            | 8849.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 9100.00    | 0.00        | 94.32            | 8949.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 9200.00    | 0.00        | 94.32            | 9049.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 9300.00    | 0.00        | 94.32            | 9149.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 9400.00    | 0.00        | 94.32            | 9249.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
| KOP - Build<br>12°/100' DLS     | 9500.00    | 0.00        | 94.32            | 9349.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 9600.00    | 0.00        | 94.32            | 9449.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 9700.00    | 0.00        | 94.32            | 9549.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 9800.00    | 0.00        | 94.32            | 9649.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 9900.00    | 0.00        | 94.32            | 9749.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 10000.00   | 0.00        | 94.32            | 9849.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 10100.00   | 0.00        | 94.32            | 9949.07     | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 10200.00   | 0.00        | 94.32            | 10049.07    | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 10300.00   | 0.00        | 94.32            | 10149.07    | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 10400.00   | 0.00        | 94.32            | 10249.07    | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
| FTP [330' FSL,<br>1915' FEL]    | 10500.00   | 0.00        | 94.32            | 10349.07    | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 10600.00   | 0.00        | 94.32            | 10449.07    | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 10700.00   | 0.00        | 94.32            | 10549.07    | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 10708.46   | 0.00        | 94.32            | 10557.54    | -108.60      | -100.00    | 1324.45    | 0.00             | 404340.34          | 770885.99         | N 32 6 33.99             | W 103 35 31.03            |
|                                 | 10800.00   | 10.98       | 359.63           | 10648.51    | -99.85       | -91.25     | 1324.39    | 12.00            | 404349.09          | 770885.94         | N 32 6 34.07             | W 103 35 31.03            |
|                                 | 10900.00   | 22.98       | 359.63           | 10743.98    | -70.69       | -62.09     | 1324.20    | 12.00            | 404378.25          | 770885.75         | N 32 6 34.36             | W 103 35 31.03            |
|                                 | 11000.00   | 34.98       | 359.63           | 10831.29    | -22.32       | -13.73     | 1323.89    | 12.00            | 404426.61          | 770885.43         | N 32 6 34.84             | W 103 35 31.03            |
|                                 | 11035.75   | 39.27       | 359.63           | 10859.79    | -0.75        | 7.85       | 1323.75    | 12.00            | 404448.19          | 770885.29         | N 32 6 35.05             | W 103 35 31.03            |
|                                 | 11100.00   | 46.98       | 359.63           | 10906.64    | 43.14        | 51.74      | 1323.46    | 12.00            | 404492.08          | 770885.01         | N 32 6 35.49             | W 103 35 31.03            |
|                                 | 11200.00   | 58.98       | 359.63           | 10966.74    | 122.85       | 131.44     | 1322.94    | 12.00            | 404571.77          | 770884.49         | N 32 6 36.28             | W 103 35 31.03            |
| Landing Point                   | 11300.00   | 70.98       | 359.63           | 11008.95    | 213.30       | 221.89     | 1322.36    | 12.00            | 404662.22          | 770883.90         | N 32 6 37.17             | W 103 35 31.03            |
|                                 | 11400.00   | 82.98       | 359.63           | 11031.43    | 310.55       | 319.14     | 1321.72    | 12.00            | 404759.47          | 770883.27         | N 32 6 38.13             | W 103 35 31.03            |
|                                 | 11458.46   | 90.00       | 359.63           | 11035.00    | 368.87       | 377.45     | 1321.35    | 12.00            | 404817.78          | 770882.89         | N 32 6 38.71             | W 103 35 31.03            |
|                                 | 11500.00   | 90.00       | 359.63           | 11035.00    | 410.41       | 418.99     | 1321.08    | 0.00             | 404859.32          | 770882.62         | N 32 6 39.12             | W 103 35 31.03            |
|                                 | 11600.00   | 90.00       | 359.63           | 11035.00    | 510.41       | 518.99     | 1320.43    | 0.00             | 404959.31          | 770881.97         | N 32 6 40.11             | W 103 35 31.03            |
|                                 | 11700.00   | 90.00       | 359.63           | 11035.00    | 610.41       | 618.99     | 1319.78    | 0.00             | 405059.31          | 770881.32         | N 32 6 41.10             | W 103 35 31.03            |
|                                 | 11800.00   | 90.00       | 359.63           | 11035.00    | 710.41       | 718.99     | 1319.13    | 0.00             | 405159.30          | 770880.67         | N 32 6 42.09             | W 103 35 31.03            |
|                                 | 11900.00   | 90.00       | 359.63           | 11035.00    | 810.41       | 818.98     | 1318.48    | 0.00             | 405259.30          | 770880.02         | N 32 6 43.08             | W 103 35 31.03            |
|                                 | 12000.00   | 90.00       | 359.63           | 11035.00    | 910.41       | 918.98     | 1317.83    | 0.00             | 405359.29          | 770879.37         | N 32 6 44.07             | W 103 35 31.03            |
|                                 | 12100.00   | 90.00       | 359.63           | 11035.00    | 1010.41      | 1018.98    | 1317.18    | 0.00             | 405459.29          | 770878.72         | N 32 6 45.06             | W 103 35 31.03            |
| Drilling Office 2.10.824.0      | 12200.00   | 90.00       | 359.63           | 11035.00    | 1110.41      | 1118.98    | 1316.53    | 0.00             | 405559.28          | 770878.07         | N 32 6 46.05             | W 103 35 31.03            |
|                                 | 12300.00   | 90.00       | 359.63           | 11035.00    | 1210.41      | 1218.98    | 1315.88    | 0.00             | 405659.28          | 770877.42         | N 32 6 47.04             | W 103 35 31.02            |
|                                 | 12400.00   | 90.00       | 359.63           | 11035.00    | 1310.41      | 1318.97    | 1315.23    | 0.00             | 405759.27          | 770876.77         | N 32 6 48.03             | W 103 35 31.02            |
|                                 | 12400.00   | 90.00       | 359.63           | 11035.00    | 1310.41      | 1318.97    | 1315.23    | 0.00             | 405759.27          | 770876.77         | N 32 6 48.03             | W 103 35 31.02            |

| Comments | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' '') | Longitude<br>(E/W ° ' '') |
|----------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|--------------------|-------------------|--------------------------|---------------------------|
|          | 12500.00   | 90.00       | 359.63           | 11035.00    | 1410.41      | 1418.97    | 1314.58    | 0.00             | 405859.27          | 770876.12         | N 32 6 49.02             | W 103 35 31.02            |
|          | 12600.00   | 90.00       | 359.63           | 11035.00    | 1610.41      | 1518.97    | 1313.93    | 0.00             | 405959.26          | 770875.47         | N 32 6 50.01             | W 103 35 31.02            |
|          | 12700.00   | 90.00       | 359.63           | 11035.00    | 1510.41      | 1618.97    | 1313.28    | 0.00             | 406059.25          | 770874.82         | N 32 6 51.00             | W 103 35 31.02            |
|          | 12800.00   | 90.00       | 359.63           | 11035.00    | 1710.41      | 1718.97    | 1312.63    | 0.00             | 406159.25          | 770874.17         | N 32 6 51.99             | W 103 35 31.02            |
|          | 12900.00   | 90.00       | 359.63           | 11035.00    | 1810.41      | 1818.96    | 1311.98    | 0.00             | 406259.24          | 770873.52         | N 32 6 52.98             | W 103 35 31.02            |
|          | 13000.00   | 90.00       | 359.63           | 11035.00    | 1910.41      | 1918.96    | 1311.33    | 0.00             | 406359.24          | 770872.87         | N 32 6 53.97             | W 103 35 31.02            |
|          | 13100.00   | 90.00       | 359.63           | 11035.00    | 2010.41      | 2018.96    | 1310.68    | 0.00             | 406459.23          | 770872.22         | N 32 6 54.95             | W 103 35 31.02            |
|          | 13200.00   | 90.00       | 359.63           | 11035.00    | 2110.41      | 2118.96    | 1310.03    | 0.00             | 406559.23          | 770871.57         | N 32 6 55.94             | W 103 35 31.02            |
|          | 13300.00   | 90.00       | 359.63           | 11035.00    | 2210.41      | 2218.96    | 1309.38    | 0.00             | 406659.22          | 770870.92         | N 32 6 56.93             | W 103 35 31.02            |
|          | 13400.00   | 90.00       | 359.63           | 11035.00    | 2310.41      | 2318.95    | 1308.73    | 0.00             | 406759.22          | 770870.27         | N 32 6 57.92             | W 103 35 31.02            |
|          | 13500.00   | 90.00       | 359.63           | 11035.00    | 2410.41      | 2418.95    | 1308.08    | 0.00             | 406859.21          | 770869.62         | N 32 6 58.91             | W 103 35 31.02            |
|          | 13600.00   | 90.00       | 359.63           | 11035.00    | 2510.41      | 2518.95    | 1307.43    | 0.00             | 406959.21          | 770868.97         | N 32 6 59.90             | W 103 35 31.02            |
|          | 13700.00   | 90.00       | 359.63           | 11035.00    | 2610.41      | 2618.95    | 1306.78    | 0.00             | 407059.20          | 770868.32         | N 32 7 0 89              | W 103 35 31.02            |
|          | 13800.00   | 90.00       | 359.63           | 11035.00    | 2710.41      | 2718.94    | 1306.13    | 0.00             | 407159.19          | 770867.67         | N 32 7 1 88              | W 103 35 31.02            |
|          | 13900.00   | 90.00       | 359.63           | 11035.00    | 2810.41      | 2818.94    | 1305.48    | 0.00             | 407259.19          | 770867.03         | N 32 7 2 87              | W 103 35 31.02            |
|          | 14000.00   | 90.00       | 359.63           | 11035.00    | 2910.41      | 2918.94    | 1304.83    | 0.00             | 407359.18          | 770866.38         | N 32 7 3 86              | W 103 35 31.02            |
|          | 14100.00   | 90.00       | 359.63           | 11035.00    | 3010.41      | 3018.94    | 1304.18    | 0.00             | 407459.18          | 770865.73         | N 32 7 4 85              | W 103 35 31.02            |
|          | 14200.00   | 90.00       | 359.63           | 11035.00    | 3110.41      | 3118.94    | 1303.53    | 0.00             | 407559.17          | 770865.08         | N 32 7 5 84              | W 103 35 31.02            |
|          | 14300.00   | 90.00       | 359.63           | 11035.00    | 3210.41      | 3218.93    | 1302.88    | 0.00             | 407659.17          | 770864.43         | N 32 7 6 83              | W 103 35 31.02            |
|          | 14400.00   | 90.00       | 359.63           | 11035.00    | 3310.41      | 3318.93    | 1302.23    | 0.00             | 407759.16          | 770863.78         | N 32 7 7 82              | W 103 35 31.02            |
|          | 14500.00   | 90.00       | 359.63           | 11035.00    | 3410.41      | 3418.93    | 1301.58    | 0.00             | 407859.16          | 770863.13         | N 32 7 8 81              | W 103 35 31.01            |
|          | 14600.00   | 90.00       | 359.63           | 11035.00    | 3510.41      | 3518.93    | 1300.93    | 0.00             | 407959.15          | 770862.48         | N 32 7 9 80              | W 103 35 31.01            |
|          | 14700.00   | 90.00       | 359.63           | 11035.00    | 3610.41      | 3618.93    | 1300.28    | 0.00             | 408059.15          | 770861.83         | N 32 7 10 79             | W 103 35 31.01            |
|          | 14800.00   | 90.00       | 359.63           | 11035.00    | 3710.41      | 3718.92    | 1299.63    | 0.00             | 408159.14          | 770861.18         | N 32 7 11 78             | W 103 35 31.01            |
|          | 14900.00   | 90.00       | 359.63           | 11035.00    | 3810.41      | 3818.92    | 1298.98    | 0.00             | 408259.13          | 770860.53         | N 32 7 12 77             | W 103 35 31.01            |
|          | 15000.00   | 90.00       | 359.63           | 11035.00    | 3910.41      | 3918.92    | 1298.33    | 0.00             | 408359.13          | 770859.88         | N 32 7 13 76             | W 103 35 31.01            |
|          | 15100.00   | 90.00       | 359.63           | 11035.00    | 4010.41      | 4018.92    | 1297.68    | 0.00             | 408459.12          | 770859.23         | N 32 7 14 75             | W 103 35 31.01            |
|          | 15200.00   | 90.00       | 359.63           | 11035.00    | 4110.41      | 4118.92    | 1297.03    | 0.00             | 408559.12          | 770858.58         | N 32 7 15 73             | W 103 35 31.01            |
|          | 15300.00   | 90.00       | 359.63           | 11035.00    | 4210.41      | 4218.91    | 1296.38    | 0.00             | 408659.11          | 770857.93         | N 32 7 16 72             | W 103 35 31.01            |
|          | 15400.00   | 90.00       | 359.63           | 11035.00    | 4310.41      | 4318.91    | 1295.73    | 0.00             | 408759.11          | 770857.28         | N 32 7 17 71             | W 103 35 31.01            |
|          | 15500.00   | 90.00       | 359.63           | 11035.00    | 4410.41      | 4418.91    | 1295.08    | 0.00             | 408859.10          | 770856.63         | N 32 7 18 70             | W 103 35 31.01            |
|          | 15600.00   | 90.00       | 359.63           | 11035.00    | 4510.41      | 4518.91    | 1294.43    | 0.00             | 408959.10          | 770855.98         | N 32 7 19 69             | W 103 35 31.01            |
|          | 15700.00   | 90.00       | 359.63           | 11035.00    | 4610.41      | 4618.90    | 1293.78    | 0.00             | 409059.09          | 770855.33         | N 32 7 20 68             | W 103 35 31.01            |
|          | 15800.00   | 90.00       | 359.63           | 11035.00    | 4710.41      | 4718.90    | 1293.13    | 0.00             | 409159.09          | 770854.68         | N 32 7 21 67             | W 103 35 31.01            |
|          | 15900.00   | 90.00       | 359.63           | 11035.00    | 4810.41      | 4818.90    | 1292.48    | 0.00             | 409259.08          | 770854.03         | N 32 7 22 66             | W 103 35 31.01            |
|          | 16000.00   | 90.00       | 359.63           | 11035.00    | 4910.41      | 4918.90    | 1291.83    | 0.00             | 409359.07          | 770853.38         | N 32 7 23 65             | W 103 35 31.01            |
|          | 16100.00   | 90.00       | 359.63           | 11035.00    | 5010.41      | 5018.90    | 1291.18    | 0.00             | 409459.07          | 770852.73         | N 32 7 24 64             | W 103 35 31.01            |
|          | 16200.00   | 90.00       | 359.63           | 11035.00    | 5110.41      | 5118.89    | 1290.53    | 0.00             | 409559.06          | 770852.08         | N 32 7 25 63             | W 103 35 31.01            |
|          | 16300.00   | 90.00       | 359.63           | 11035.00    | 5210.41      | 5218.89    | 1289.88    | 0.00             | 409659.06          | 770851.43         | N 32 7 26 62             | W 103 35 31.01            |
|          | 16400.00   | 90.00       | 359.63           | 11035.00    | 5310.41      | 5318.89    | 1289.23    | 0.00             | 409759.05          | 770850.78         | N 32 7 27 61             | W 103 35 31.01            |
|          | 16500.00   | 90.00       | 359.63           | 11035.00    | 5410.41      | 5418.89    | 1288.58    | 0.00             | 409859.05          | 770850.13         | N 32 7 28 60             | W 103 35 31.01            |
|          | 16600.00   | 90.00       | 359.63           | 11035.00    | 5510.41      | 5518.89    | 1287.93    | 0.00             | 409959.04          | 770849.48         | N 32 7 29 59             | W 103 35 31.01            |
|          | 16700.00   | 90.00       | 359.63           | 11035.00    | 5610.41      | 5618.88    | 1287.28    | 0.00             | 410059.04          | 770848.83         | N 32 7 30 58             | W 103 35 31.01            |
|          | 16800.00   | 90.00       | 359.63           | 11035.00    | 5710.41      | 5718.88    | 1286.63    | 0.00             | 410159.03          | 770848.18         | N 32 7 31 57             | W 103 35 31.00            |
|          | 16900.00   | 90.00       | 359.63           | 11035.00    | 5810.41      | 5818.88    | 1285.98    | 0.00             | 410259.03          | 770847.53         | N 32 7 32 56             | W 103 35 31.00            |
|          | 17000.00   | 90.00       | 359.63           | 11035.00    | 5910.41      | 5918.88    | 1285.33    | 0.00             | 410359.02          | 770846.88         | N 32 7 33 55             | W 103 35 31.00            |
|          | 17100.00   | 90.00       | 359.63           | 11035.00    | 6010.41      | 6018.88    | 1284.68    | 0.00             | 410459.01          | 770846.23         | N 32 7 34 54             | W 103 35 31.00            |
|          | 17200.00   | 90.00       | 359.63           | 11035.00    | 6110.41      | 6118.87    | 1284.03    | 0.00             | 410559.01          | 770845.58         | N 32 7 35 53             | W 103 35 31.00            |
|          | 17300.00   | 90.00       | 359.63           | 11035.00    | 6210.41      | 6218.87    | 1283.38    | 0.00             | 410659.00          | 770844.93         | N 32 7 36 52             | W 103 35 31.00            |
|          | 17400.00   | 90.00       | 359.63           | 11035.00    | 6310.41      | 6318.87    | 1282.73    | 0.00             | 410759.00          | 770844.28         | N 32 7 37 50             | W 103 35 31.00            |
|          | 17500.00   | 90.00       | 359.63           | 11035.00    | 6410.41      | 6418.87    | 1282.08    | 0.00             | 410858.99          | 770843.63         | N 32 7 38 49             | W 103 35 31.00            |
|          | 17600.00   | 90.00       | 359.63           | 11035.00    | 6510.41      | 6518.86    | 1281.43    | 0.00             | 410958.99          | 770842.98         | N 32 7 39 48             | W 103 35 31.00            |
|          | 17700.00   | 90.00       | 359.63           | 11035.00    | 6610.41      | 6618.86    | 1280.78    | 0.00             | 411058.98          | 770842.33         | N 32 7 40 47             | W 103 35 31.00            |
|          | 17800.00   | 90.00       | 359.63           | 11035.00    | 6710.41      | 6718.86    | 1280.13    | 0.00             | 411158.98          | 770841.68         | N 32 7 41 46             | W 103 35 31.00            |
|          | 17900.00   | 90.00       | 359.63           | 11035.00    | 6810.41      | 6818.86    | 1279.48    | 0.00             | 411258.97          | 770841.03         | N 32 7 42 45             | W 103 35 31.00            |
|          | 18000.00   | 90.00       | 359.63           | 11035.00    | 6910.41      | 6918.86    | 1278.83    | 0.00             | 411358.97          | 770840.38         | N 32 7 43 44             | W 103 35 31.00            |

| Comments                                        | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' ") | Longitude<br>(E/W ° ' ") |
|-------------------------------------------------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|--------------------|-------------------|-------------------------|--------------------------|
|                                                 | 18100.00   | 90.00       | 359.63           | 11035.00    | 7010.41      | 7018.85    | 1278.18    | 0.00             | 411458.96          | 770839.73         | N 32 7 44.43            | W 103 35 31.00           |
|                                                 | 18200.00   | 90.00       | 359.63           | 11035.00    | 7110.41      | 7118.85    | 1277.53    | 0.00             | 411558.96          | 770839.08         | N 32 7 45.42            | W 103 35 31.00           |
|                                                 | 18300.00   | 90.00       | 359.63           | 11035.00    | 7210.41      | 7218.85    | 1276.88    | 0.00             | 411658.95          | 770838.43         | N 32 7 46.41            | W 103 35 31.00           |
|                                                 | 18400.00   | 90.00       | 359.63           | 11035.00    | 7310.41      | 7318.85    | 1276.23    | 0.00             | 411758.94          | 770837.78         | N 32 7 47.40            | W 103 35 31.00           |
|                                                 | 18500.00   | 90.00       | 359.63           | 11035.00    | 7410.41      | 7418.85    | 1275.58    | 0.00             | 411858.94          | 770837.13         | N 32 7 48.39            | W 103 35 31.00           |
|                                                 | 18600.00   | 90.00       | 359.63           | 11035.00    | 7510.41      | 7518.84    | 1274.93    | 0.00             | 411958.93          | 770836.48         | N 32 7 49.38            | W 103 35 31.00           |
|                                                 | 18700.00   | 90.00       | 359.63           | 11035.00    | 7610.41      | 7618.84    | 1274.28    | 0.00             | 412058.93          | 770835.83         | N 32 7 50.37            | W 103 35 31.00           |
|                                                 | 18800.00   | 90.00       | 359.63           | 11035.00    | 7710.41      | 7718.84    | 1273.64    | 0.00             | 412158.92          | 770835.18         | N 32 7 51.36            | W 103 35 31.00           |
|                                                 | 18900.00   | 90.00       | 359.63           | 11035.00    | 7810.41      | 7818.84    | 1272.99    | 0.00             | 412258.92          | 770834.53         | N 32 7 52.35            | W 103 35 31.00           |
|                                                 | 19000.00   | 90.00       | 359.63           | 11035.00    | 7910.41      | 7918.84    | 1272.34    | 0.00             | 412358.91          | 770833.88         | N 32 7 53.34            | W 103 35 30.99           |
|                                                 | 19100.00   | 90.00       | 359.63           | 11035.00    | 8010.41      | 8018.83    | 1271.69    | 0.00             | 412458.91          | 770833.23         | N 32 7 54.33            | W 103 35 30.99           |
|                                                 | 19200.00   | 90.00       | 359.63           | 11035.00    | 8110.41      | 8118.83    | 1271.04    | 0.00             | 412558.90          | 770832.58         | N 32 7 55.32            | W 103 35 30.99           |
|                                                 | 19300.00   | 90.00       | 359.63           | 11035.00    | 8210.41      | 8218.83    | 1270.39    | 0.00             | 412658.90          | 770831.93         | N 32 7 56.31            | W 103 35 30.99           |
|                                                 | 19400.00   | 90.00       | 359.63           | 11035.00    | 8310.41      | 8318.83    | 1269.74    | 0.00             | 412758.89          | 770831.28         | N 32 7 57.30            | W 103 35 30.99           |
|                                                 | 19500.00   | 90.00       | 359.63           | 11035.00    | 8410.41      | 8418.82    | 1269.09    | 0.00             | 412858.88          | 770830.63         | N 32 7 58.28            | W 103 35 30.99           |
|                                                 | 19600.00   | 90.00       | 359.63           | 11035.00    | 8510.41      | 8518.82    | 1268.44    | 0.00             | 412958.88          | 770829.98         | N 32 7 59.27            | W 103 35 30.99           |
|                                                 | 19700.00   | 90.00       | 359.63           | 11035.00    | 8610.41      | 8618.82    | 1267.79    | 0.00             | 413058.87          | 770829.33         | N 32 8 0 26             | W 103 35 30.99           |
|                                                 | 19800.00   | 90.00       | 359.63           | 11035.00    | 8710.41      | 8718.82    | 1267.14    | 0.00             | 413158.87          | 770828.68         | N 32 8 1 25             | W 103 35 30.99           |
|                                                 | 19900.00   | 90.00       | 359.63           | 11035.00    | 8810.41      | 8818.82    | 1266.49    | 0.00             | 413258.86          | 770828.03         | N 32 8 2 24             | W 103 35 30.99           |
|                                                 | 20000.00   | 90.00       | 359.63           | 11035.00    | 8910.41      | 8918.81    | 1265.84    | 0.00             | 413358.86          | 770827.38         | N 32 8 3 23             | W 103 35 30.99           |
|                                                 | 20100.00   | 90.00       | 359.63           | 11035.00    | 9010.41      | 9018.81    | 1265.19    | 0.00             | 413458.85          | 770826.73         | N 32 8 4 22             | W 103 35 30.99           |
|                                                 | 20200.00   | 90.00       | 359.63           | 11035.00    | 9110.41      | 9118.81    | 1264.54    | 0.00             | 413558.85          | 770826.08         | N 32 8 5 21             | W 103 35 30.99           |
|                                                 | 20300.00   | 90.00       | 359.63           | 11035.00    | 9210.41      | 9218.81    | 1263.89    | 0.00             | 413658.84          | 770825.44         | N 32 8 6 20             | W 103 35 30.99           |
|                                                 | 20400.00   | 90.00       | 359.63           | 11035.00    | 9310.41      | 9318.81    | 1263.24    | 0.00             | 413758.84          | 770824.79         | N 32 8 7 19             | W 103 35 30.99           |
|                                                 | 20500.00   | 90.00       | 359.63           | 11035.00    | 9410.41      | 9418.80    | 1262.59    | 0.00             | 413858.83          | 770824.14         | N 32 8 8 18             | W 103 35 30.99           |
|                                                 | 20600.00   | 90.00       | 359.63           | 11035.00    | 9510.41      | 9518.80    | 1261.94    | 0.00             | 413958.82          | 770823.49         | N 32 8 9 17             | W 103 35 30.99           |
|                                                 | 20700.00   | 90.00       | 359.63           | 11035.00    | 9610.41      | 9618.80    | 1261.29    | 0.00             | 414058.82          | 770822.84         | N 32 8 10 16            | W 103 35 30.99           |
|                                                 | 20800.00   | 90.00       | 359.63           | 11035.00    | 9710.41      | 9718.80    | 1260.64    | 0.00             | 414158.81          | 770822.19         | N 32 8 11 15            | W 103 35 30.99           |
|                                                 | 20900.00   | 90.00       | 359.63           | 11035.00    | 9810.41      | 9818.79    | 1259.99    | 0.00             | 414258.81          | 770821.54         | N 32 8 12 14            | W 103 35 30.99           |
|                                                 | 21000.00   | 90.00       | 359.63           | 11035.00    | 9910.41      | 9918.79    | 1259.34    | 0.00             | 414358.80          | 770820.89         | N 32 8 13 13            | W 103 35 30.99           |
|                                                 | 21100.00   | 90.00       | 359.63           | 11035.00    | 10010.41     | 10018.79   | 1258.69    | 0.00             | 414458.80          | 770820.24         | N 32 8 14 12            | W 103 35 30.99           |
|                                                 | 21200.00   | 90.00       | 359.63           | 11035.00    | 10110.41     | 10118.79   | 1258.04    | 0.00             | 414558.79          | 770819.59         | N 32 8 15 11            | W 103 35 30.99           |
| Cimarex Vaca<br>Draw 20-17                      |            |             |                  |             |              |            |            |                  |                    |                   |                         |                          |
| Federal #12H -<br>PBHL [100'<br>FNL, 1916' FEL] | 21217.93   | 90.00       | 359.63           | 11035.00    | 10128.34     | 10136.72   | 1257.92    | 0.00             | 414576.72          | 770819.47         | N 32 8 15.28            | W 103 35 30.98           |

Survey Type: Def Plan

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

Survey Program:

| Description | Part | MD From<br>(ft) | MD To<br>(ft) | EOU Freq<br>(ft) | Hole Size Casing Diameter<br>(in) | Expected Max<br>Inclination<br>(deg) | Survey Tool Type           | Borehole / Survey                                                              |
|-------------|------|-----------------|---------------|------------------|-----------------------------------|--------------------------------------|----------------------------|--------------------------------------------------------------------------------|
|             | 1    | 0.000           | 23.000        | 1/100.000        | 17.500                            | NAL_MWD_IFR1+MS-Depth Only           | NAL_MWD_IFR1+MS-Depth Only | Original Borehole / Cimarex Vaca<br>Draw 20-17 Federal #12H Rev1<br>RM 10Feb21 |
|             | 1    | 23.000          | 21217.929     | 1/100.000        | 17.500                            | NAL_MWD_IFR1+MS                      | NAL_MWD_IFR1+MS            | Original Borehole / Cimarex Vaca<br>Draw 20-17 Federal #12H Rev1               |





## Cimarex Vaca Draw 20-17 Federal #12H Rev1 RM 10Feb21 Anti-Collision Summary Report

**Analysis Date-24hr Time:** February 10, 2021 - 13:41

**Client:** Cimarex

**Field:** NM Lea County (NAD 83)

**Structure:** Cimarex Vaca Draw 20-17 Federal #12H

**Slot:** Cimarex Vaca Draw 20-17 Federal #12H

**Well:** Cimarex Vaca Draw 20-17 Federal #12H

**Borehole:** Original Borehole

**Scan MD Range:** 0.00ft ~ 21217.93ft

**Analysis Method:**

**Reference Trajectory:** 3D Least Distance

**Depth Interval:** Cimarex Vaca Draw 20-17 Federal #12H Rev1 RM 10Feb21 (Def Plan)

**Rule Set:** Every 10.00 Measured Depth (ft)

**Min Pts:** NAL Procedure: D&M AntiCollision Standard S002

**Version / Patch:** All local minima indicated.

**Database \ Project:** 2.10.824.0

US1455VSM3115IDRILLING-NM Lea County 2.10

### Trajectory Error Model:

ISWSA0 3-D 95.000% Confidence 2.7955 sigma, for subject well. For offset wells, error model version is specified with each well respectively.

### Offset Selection Criteria

Wellhead distance scan:

Selection filters:

Not performed!  
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 Trajectories Summary

| Offset Trajectory | Separation |          | Allow Dev. (ft) | Sep. Fact. | Controlling Rule | Reference Trajectory |          | Risk Level |       | Alert | Status |
|-------------------|------------|----------|-----------------|------------|------------------|----------------------|----------|------------|-------|-------|--------|
|                   | Ct-Ct (ft) | MAS (ft) | EOU (ft)        |            |                  | MD (ft)              | TVD (ft) | Alert      | Minor | Major |        |

Results highlighted: Sep-Factor separation <= 1.50 ft

EOG Vaca Draw 20 Federal #1  
(Offset) Plugged Inc Only 0ft-  
14200ft (Def Survey)

|         |        |         |         |           |                 |          |          |           |          |          |             |
|---------|--------|---------|---------|-----------|-----------------|----------|----------|-----------|----------|----------|-------------|
| 3667.37 | 32.81  | 3665.40 | 3634.57 | N/A       | MAS = 10.00 (m) | 0.00     | 0.00     |           |          |          | Surface     |
| 3667.33 | 32.81  | 3665.35 | 3634.52 | 619114.43 | MAS = 10.00 (m) | 10.00    | 10.00    |           |          |          | MinPt-O-SF  |
| 3667.31 | 32.81  | 3665.30 | 3634.51 | 107608.65 | MAS = 10.00 (m) | 23.00    | 23.00    |           |          |          | MinPts      |
| 3664.11 | 39.91  | 3636.85 | 3624.21 | 144.83    | OSF1.50         | 800.00   | 800.00   |           |          |          | MinPt-CtCt  |
| 3421.38 | 389.96 | 3160.74 | 3031.42 | 13.22     | OSF1.50         | 7690.00  | 7545.21  |           |          |          | MinPt-CtCt  |
| 3418.60 | 436.96 | 3126.63 | 2981.63 | 11.78     | OSF1.50         | 8600.00  | 8449.07  |           |          |          | MinPt-CtCt  |
| 1884.03 | 571.41 | 1501.52 | 1312.61 | 4.97      | OSF1.50         | 12520.00 | 11035.00 | OSF<45.00 |          |          | Enter Alert |
| 568.91  | 575.33 | 183.08  | -6.42   | 1.48      | OSF1.50         | 13880.00 | 11035.00 |           | OSF<1.50 |          | Enter Minor |
| 386.28  | 576.41 | -0.26   | -190.13 | 1.00      | OSF1.50         | 14100.00 | 11035.00 |           | OSF<1.00 |          | Enter Major |
| 259.10  | 578.75 | -128.05 | -319.65 | 0.67      | OSF1.50         | 14380.00 | 11035.00 |           |          |          | MinPts      |
| 259.03  | 578.72 | -128.03 | -319.69 | 0.67      | OSF1.50         | 14390.00 | 11035.00 |           |          |          | MinPts      |
| 383.87  | 576.49 | -1.12   | -192.62 | 1.00      | OSF1.50         | 14670.00 | 11035.00 |           |          | OSF>1.00 | Exit Major  |
| 574.92  | 574.97 | 190.95  | -0.05   | 1.50      | OSF1.50         | 14900.00 | 11035.00 |           | OSF>1.50 |          | Exit Minor  |
| 1900.80 | 573.88 | 1517.56 | 1326.92 | 4.98      | OSF1.50         | 16270.00 | 11035.00 | OSF<5.00  |          |          | Exit Alert  |
| 6835.51 | 575.49 | 6451.19 | 6260.02 | 17.87     | OSF1.50         | 21217.93 | 11035.00 |           |          |          | TD          |

Cimarex Vaca Draw 20-17  
Federal #11H Rev1 RM  
10Feb21 (Def Plan)

|       |       |       |      |      |                |         |         |  |  |  |               |
|-------|-------|-------|------|------|----------------|---------|---------|--|--|--|---------------|
| 19.98 | 16.24 | 18.69 | 3.74 | N/A  | MAS = 4.95 (m) | 0.00    | 0.00    |  |  |  | Warning Alert |
| 19.98 | 16.24 | 18.69 | 3.74 | N/A  | MAS = 4.95 (m) | 23.00   | 23.00   |  |  |  | Enter Alert   |
| 19.98 | 19.56 | 6.51  | 0.42 | 1.53 | OSF1.50        | 2000.00 | 2000.00 |  |  |  | WRP           |
|       |       |       |      |      |                |         |         |  |  |  | MinPt-CtCt    |

| Offset Trajectory | Separation |          | Allow    | Sep. Fact. | Controlling Rule | Reference Trajectory |          | Risk Level |       | Alert       | Status |
|-------------------|------------|----------|----------|------------|------------------|----------------------|----------|------------|-------|-------------|--------|
|                   | Ct-Ct (ft) | MAS (ft) | EOU (ft) |            |                  | MD (ft)              | TVD (ft) | Minor      | Major |             |        |
|                   | 20.00      | 19.63    | 6.48     | 0.37       | 1.53             | OSF1.50              | 2010.00  |            |       | MINPT-O-EOU |        |
|                   | 20.05      | 19.70    | 6.49     | 0.35       | 1.53             | OSF1.50              | 2020.00  |            |       | MinPts      |        |
|                   | 70.44      | 22.50    | 55.01    | 47.94      | 4.89             | OSF1.50              | 2536.81  | OSF<5.00   |       | Exit Alert  |        |
|                   | 784.02     | 66.92    | 738.98   | 717.10     | 17.89            | OSF1.50              | 10480.00 |            |       | MINPT-O-EOU |        |
|                   | 784.06     | 66.97    | 738.98   | 717.09     | 17.88            | OSF1.50              | 10339.07 |            |       | MinPt-O-ADP |        |
|                   | 785.45     | 67.34    | 740.13   | 718.11     | 17.81            | OSF1.50              | 10449.07 |            |       | MinPt-O-SF  |        |
|                   | 846.69     | 255.06   | 676.22   | 591.63     | 5.00             | OSF1.50              | 18850.00 | OSF<5.00   |       | Enter Alert |        |
|                   | 846.69     | 329.55   | 626.56   | 517.14     | 3.86             | OSF1.50              | 21217.93 |            |       | MinPts      |        |

Cimarex Vaca Draw 20-17  
Federal #10H Rev1 RM  
10Feb21 (Def Plan)

|         |        |         |         |           |                |          |          |                 |  |             |               |
|---------|--------|---------|---------|-----------|----------------|----------|----------|-----------------|--|-------------|---------------|
| 39.98   | 32.24  | 38.70   | 7.74    | N/A       | MAS = 9.83 (m) | 0.00     | 0.00     | CtCt<=15m<15.00 |  | Enter Alert | Warning Alert |
| 39.98   | 32.24  | 38.70   | 7.74    | 174161.95 | MAS = 9.83 (m) | 23.00    | 23.00    |                 |  | WRP         |               |
| 39.98   | 32.24  | 26.51   | 7.74    | 3.18      | MAS = 9.83 (m) | 2000.00  | 2000.00  |                 |  | MinPts      |               |
| 40.00   | 32.24  | 26.48   | 7.76    | 3.17      | MAS = 9.83 (m) | 2010.00  | 2010.00  |                 |  | MINPT-O-EOU |               |
| 40.26   | 32.24  | 26.61   | 8.02    | 3.15      | MAS = 9.83 (m) | 2040.00  | 2040.00  |                 |  | MinPt-O-SF  |               |
| 69.21   | 32.24  | 54.22   | 36.97   | 4.96      | MAS = 9.83 (m) | 2410.00  | 2408.60  | OSF>5.00        |  | Exit Alert  |               |
| 1387.91 | 59.71  | 1347.68 | 1328.20 | 35.60     | OSF1.50        | 7686.46  | 7541.76  |                 |  | MinPt-O-SF  |               |
| 1466.98 | 72.51  | 1418.21 | 1394.48 | 30.87     | OSF1.50        | 10200.00 | 10049.07 |                 |  | MINPT-O-EOU |               |
| 1467.07 | 72.62  | 1418.23 | 1394.45 | 30.82     | OSF1.50        | 10220.00 | 10089.07 |                 |  | MinPt-O-ADP |               |
| 1471.71 | 73.46  | 1422.30 | 1398.24 | 30.56     | OSF1.50        | 10430.00 | 10279.07 |                 |  | MinPt-O-SF  |               |
| 1594.44 | 336.91 | 1369.41 | 1257.54 | 7.12      | OSF1.50        | 21217.93 | 11035.00 |                 |  | MinPts      |               |

Cimarex Vaca Draw 20-17  
Federal #9H Rev1 RM  
10Feb21 (Def Plan)

|         |        |         |         |           |                 |          |          |          |  |             |               |
|---------|--------|---------|---------|-----------|-----------------|----------|----------|----------|--|-------------|---------------|
| 59.97   | 32.81  | 58.69   | 27.17   | N/A       | MAS = 10.00 (m) | 0.00     | 0.00     |          |  | Surface     | Warning Alert |
| 59.97   | 32.81  | 58.69   | 27.17   | 132069.48 | MAS = 10.00 (m) | 23.00    | 23.00    |          |  | WRP         |               |
| 59.97   | 32.81  | 46.94   | 27.17   | 5.00      | MAS = 10.00 (m) | 1930.00  | 1930.00  | OSF<5.00 |  | Enter Alert |               |
| 59.97   | 32.81  | 46.57   | 27.17   | 4.84      | MAS = 10.00 (m) | 1990.00  | 1990.00  |          |  | MinPts      |               |
| 59.97   | 32.81  | 46.51   | 27.17   | 4.82      | MAS = 10.00 (m) | 2000.00  | 2000.00  |          |  | MINPT-O-EOU |               |
| 60.07   | 32.81  | 46.57   | 27.27   | 4.81      | MAS = 10.00 (m) | 2020.00  | 2020.00  |          |  | MinPt-O-SF  |               |
| 62.48   | 32.81  | 48.85   | 29.67   | 4.96      | MAS = 10.00 (m) | 2100.00  | 2099.98  | OSF>5.00 |  | Exit Alert  |               |
| 1389.80 | 56.19  | 1351.91 | 1333.61 | 37.94     | OSF1.50         | 7686.46  | 7541.76  |          |  | MinPt-O-SF  |               |
| 1466.80 | 76.28  | 1415.52 | 1390.52 | 29.31     | OSF1.50         | 11350.00 | 11022.73 |          |  | MinPt-CtCt  |               |
| 1466.83 | 349.08 | 1233.68 | 1117.75 | 6.32      | OSF1.50         | 21217.93 | 11035.00 |          |  | MinPts      |               |

Cimarex Vaca Draw 20-17  
Federal #57H Rev1 RM  
09Feb21 (Def Plan)

|         |        |         |         |           |                 |          |          |          |  |             |               |
|---------|--------|---------|---------|-----------|-----------------|----------|----------|----------|--|-------------|---------------|
| 2319.37 | 32.81  | 2318.09 | 2286.56 | N/A       | MAS = 10.00 (m) | 0.00     | 0.00     |          |  | Surface     | Warning Alert |
| 2319.31 | 32.81  | 2318.02 | 2286.51 | 320447.52 | MAS = 10.00 (m) | 10.00    | 10.00    |          |  | MinPt-O-SF  |               |
| 2319.30 | 32.81  | 2318.01 | 2286.49 | N/A       | MAS = 10.00 (m) | 23.00    | 23.00    |          |  | WRP         |               |
| 2266.35 | 32.81  | 2250.81 | 2233.54 | 159.27    | MAS = 10.00 (m) | 2550.00  | 2546.63  |          |  | MinPt-O-SF  |               |
| 197.05  | 62.28  | 154.12  | 134.77  | 4.98      | OSF1.50         | 8200.00  | 8049.16  | OSF<5.00 |  | Enter Alert |               |
| 191.27  | 61.85  | 148.63  | 129.42  | 4.87      | OSF1.50         | 8350.00  | 8199.07  |          |  | MinPt-O-SF  |               |
| 191.25  | 61.84  | 148.62  | 129.41  | 4.87      | OSF1.50         | 8360.00  | 8209.07  |          |  | MinPts      |               |
| 190.89  | 71.40  | 141.88  | 119.49  | 4.17      | OSF1.50         | 10810.00 | 10658.31 |          |  | MinPt-CtCt  |               |
| 190.90  | 71.44  | 141.86  | 119.45  | 4.17      | OSF1.50         | 10820.00 | 10668.06 |          |  | MINPT-O-EOU |               |
| 190.93  | 71.48  | 141.86  | 119.44  | 4.16      | OSF1.50         | 10830.00 | 10677.77 |          |  | MinPt-O-ADP |               |
| 191.11  | 71.57  | 141.99  | 119.54  | 4.16      | OSF1.50         | 10850.00 | 10697.01 |          |  | MinPt-O-SF  |               |
| 232.54  | 72.68  | 182.94  | 159.86  | 4.96      | OSF1.50         | 11090.00 | 10899.75 | OSF>5.00 |  | Exit Alert  |               |
| 1515.70 | 321.76 | 1300.77 | 1193.94 | 7.09      | OSF1.50         | 21217.93 | 11035.00 |          |  | MinPts      |               |

| Offset Trajectory                                                                                                 |          | Separation |           | Allow    | Sep.<br>Fact.   | Controlling<br>Rule | Reference Trajectory |          | Risk Level |       | Alert       | Status        |
|-------------------------------------------------------------------------------------------------------------------|----------|------------|-----------|----------|-----------------|---------------------|----------------------|----------|------------|-------|-------------|---------------|
| Ct-Ct (ft)                                                                                                        | MAS (ft) | EOU (ft)   | Dev. (ft) | MD (ft)  |                 |                     | TVD (ft)             | Alert    | Minor      | Major |             |               |
| Hankamer Curtis Bass-Federal<br>#1 (Offset) Plugged Blind Off-<br>5074ft (Def Survey)                             |          |            |           |          |                 |                     |                      |          |            |       |             |               |
| 4474.82                                                                                                           | 32.81    | 4472.84    | 4442.01   | N/A      | MAS = 10.00 (m) | 0.00                | 0.00                 |          |            |       | Surface     | Warning Alert |
| 4474.81                                                                                                           | 32.81    | 4471.36    | 4442.00   | 3049.55  | MAS = 10.00 (m) | 23.00               | 23.00                |          |            |       | WRP         |               |
| 4403.89                                                                                                           | 1325.43  | 3519.60    | 3078.46   | 4.99     | OSF1.50         | 4320.00             | 4268.32              | OSF<5.00 |            |       | Enter Alert |               |
| 4387.99                                                                                                           | 1581.51  | 3332.98    | 2806.48   | 4.17     | OSF1.50         | 5190.00             | 5114.28              |          |            |       | MinPt-O-SF  |               |
| 4387.94                                                                                                           | 1581.48  | 3332.95    | 2806.46   | 4.17     | OSF1.50         | 5200.00             | 5124.00              |          |            |       | MinPt-O-ADP |               |
| 4387.91                                                                                                           | 1581.44  | 3332.95    | 2806.47   | 4.17     | OSF1.50         | 5210.00             | 5133.73              |          |            |       | MINPT-O-EOU |               |
| 4387.91                                                                                                           | 1581.40  | 3332.97    | 2806.51   | 4.17     | OSF1.50         | 5220.00             | 5143.45              |          |            |       | MinPt-CtCt  |               |
| 4807.08                                                                                                           | 1443.70  | 3843.95    | 3363.38   | 5.00     | OSF1.50         | 7180.00             | 7049.30              | OSF>5.00 |            |       | Exit Alert  |               |
| 6124.33                                                                                                           | 381.40   | 5869.40    | 5742.93   | 24.20    | OSF1.50         | 13940.00            | 11035.00             |          |            |       | MinPt-O-ADP |               |
| 6026.27                                                                                                           | 263.22   | 5850.13    | 5763.05   | 34.59    | OSF1.50         | 14440.00            | 11035.00             |          |            |       | MINPT-O-EOU |               |
| 5952.28                                                                                                           | 106.36   | 5880.71    | 5845.92   | 85.51    | OSF1.50         | 15380.00            | 11035.00             |          |            |       | MinPt-CtCt  |               |
| 6027.38                                                                                                           | 278.63   | 5840.97    | 5748.75   | 32.67    | OSF1.50         | 16330.00            | 11035.00             |          |            |       | MINPT-O-EOU |               |
| 6123.64                                                                                                           | 394.84   | 5859.76    | 5728.81   | 23.37    | OSF1.50         | 16820.00            | 11035.00             |          |            |       | MinPt-O-ADP |               |
| 8336.31                                                                                                           | 1119.37  | 7589.40    | 7216.94   | 11.19    | OSF1.50         | 21217.93            | 11035.00             |          |            |       | MinPt-O-SF  |               |
| Final Surveys - Cimarex Vaca<br>Draw 20-17 Federal #4H ST01<br>MWD Off-22279ft (Surcon<br>Corrected) (Def Survey) |          |            |           |          |                 |                     |                      |          |            |       |             |               |
| 116.61                                                                                                            | 32.81    | 115.43     | 83.80     | N/A      | MAS = 10.00 (m) | 0.00                | 0.00                 |          |            |       | MinPts      | Pass          |
| 116.62                                                                                                            | 32.81    | 115.44     | 83.81     | 21139.91 | MAS = 10.00 (m) | 23.00               | 23.00                |          |            |       | WRP         |               |
| 116.74                                                                                                            | 32.81    | 115.38     | 83.93     | 636.76   | MAS = 10.00 (m) | 80.00               | 80.00                |          |            |       | MINPT-O-EOU |               |
| 116.90                                                                                                            | 32.81    | 115.39     | 84.10     | 340.74   | MAS = 10.00 (m) | 120.00              | 120.00               |          |            |       | MINPT-O-EOU |               |
| 59.97                                                                                                             | 32.81    | 49.23      | 27.16     | 6.08     | MAS = 10.00 (m) | 2180.00             | 2179.88              |          |            |       | MinPt-O-SF  |               |
| 59.68                                                                                                             | 32.81    | 49.02      | 26.87     | 6.10     | MAS = 10.00 (m) | 2270.00             | 2269.60              |          |            |       | MinPts      |               |
| 59.68                                                                                                             | 32.81    | 49.02      | 26.87     | 6.10     | MAS = 10.00 (m) | 2280.00             | 2279.55              |          |            |       | MINPT-O-EOU |               |
| 59.80                                                                                                             | 32.81    | 49.10      | 26.99     | 6.09     | MAS = 10.00 (m) | 2330.00             | 2329.27              |          |            |       | MinPt-O-SF  |               |
| 61.09                                                                                                             | 32.81    | 50.08      | 28.28     | 6.03     | MAS = 10.00 (m) | 2480.00             | 2477.76              |          |            |       | MinPt-O-SF  |               |
| 61.74                                                                                                             | 32.81    | 50.63      | 28.93     | 6.03     | MAS = 10.00 (m) | 2550.00             | 2546.63              |          |            |       | MinPt-O-SF  |               |
| 542.38                                                                                                            | 47.82    | 510.15     | 494.56    | 17.36    | OSF1.50         | 7300.00             | 7165.98              |          |            |       | MinPt-O-SF  |               |
| 517.46                                                                                                            | 50.57    | 483.40     | 466.89    | 15.64    | OSF1.50         | 9340.00             | 9189.07              |          |            |       | MinPts      |               |
| 517.50                                                                                                            | 50.58    | 483.43     | 466.92    | 15.64    | OSF1.50         | 9360.00             | 9209.07              |          |            |       | MinPt-O-SF  |               |
| 517.63                                                                                                            | 50.59    | 483.55     | 467.04    | 15.64    | OSF1.50         | 9380.00             | 9229.07              |          |            |       | MinPt-O-SF  |               |
| 525.50                                                                                                            | 52.29    | 490.29     | 473.21    | 15.35    | OSF1.50         | 10040.00            | 9889.07              |          |            |       | MinPt-CtCt  |               |
| 525.53                                                                                                            | 52.38    | 490.26     | 473.15    | 15.33    | OSF1.50         | 10080.00            | 9929.07              |          |            |       | MINPT-O-EOU |               |
| 525.57                                                                                                            | 52.43    | 490.27     | 473.14    | 15.31    | OSF1.50         | 10100.00            | 9949.07              |          |            |       | MinPt-O-ADP |               |
| 525.95                                                                                                            | 52.81    | 490.40     | 473.14    | 15.21    | OSF1.50         | 10230.00            | 10079.07             |          |            |       | MinPt-O-ADP |               |
| 510.62                                                                                                            | 55.52    | 473.26     | 455.10    | 14.03    | OSF1.50         | 11080.00            | 10892.70             |          |            |       | MinPts      |               |
| 511.18                                                                                                            | 55.61    | 473.75     | 455.56    | 14.02    | OSF1.50         | 11110.00            | 10913.39             |          |            |       | MinPt-O-SF  |               |
| 1417.58                                                                                                           | 64.63    | 1374.17    | 1352.95   | 33.39    | OSF1.50         | 12590.00            | 11035.00             |          |            |       | MinPt-O-ADP |               |
| 1434.87                                                                                                           | 92.77    | 1372.69    | 1342.10   | 23.43    | OSF1.50         | 13640.00            | 11035.00             |          |            |       | MINPT-O-EOU |               |
| 1435.49                                                                                                           | 93.52    | 1372.82    | 1341.98   | 23.25    | OSF1.50         | 13670.00            | 11035.00             |          |            |       | MinPt-O-ADP |               |
| 1439.35                                                                                                           | 106.48   | 1368.04    | 1332.87   | 20.45    | OSF1.50         | 14120.00            | 11035.00             |          |            |       | MinPt-CtCt  |               |
| 1440.56                                                                                                           | 116.49   | 1362.57    | 1324.07   | 18.69    | OSF1.50         | 14470.00            | 11035.00             |          |            |       | MinPt-CtCt  |               |
| 1442.24                                                                                                           | 125.12   | 1358.49    | 1317.12   | 17.42    | OSF1.50         | 14770.00            | 11035.00             |          |            |       | MinPt-CtCt  |               |
| 1394.09                                                                                                           | 212.39   | 1252.16    | 1181.69   | 9.88     | OSF1.50         | 17720.00            | 11035.00             |          |            |       | MINPT-O-EOU |               |
| 1394.57                                                                                                           | 213.88   | 1251.65    | 1180.69   | 9.82     | OSF1.50         | 17780.00            | 11035.00             |          |            |       | MINPT-O-EOU |               |
| 1399.82                                                                                                           | 221.25   | 1251.99    | 1178.57   | 9.53     | OSF1.50         | 18030.00            | 11035.00             |          |            |       | MINPT-O-EOU |               |
| 1402.65                                                                                                           | 227.42   | 1250.70    | 1175.22   | 9.29     | OSF1.50         | 18240.00            | 11035.00             |          |            |       | MINPT-O-EOU |               |
| 1405.44                                                                                                           | 232.09   | 1250.38    | 1173.35   | 9.12     | OSF1.50         | 18400.00            | 11035.00             |          |            |       | MINPT-O-EOU |               |
| 1406.51                                                                                                           | 233.38   | 1250.59    | 1173.12   | 9.07     | OSF1.50         | 18450.00            | 11035.00             |          |            |       | MinPt-O-ADP |               |

| Offset Trajectory | Separation |          | Allow    | Sep. Fact. | Controlling Rule | Reference Trajectory |          | Risk Level |       | Alert       | Status |
|-------------------|------------|----------|----------|------------|------------------|----------------------|----------|------------|-------|-------------|--------|
|                   | Ct-Ct (ft) | MAS (ft) | EOU (ft) |            |                  | MD (ft)              | TVD (ft) | Alert      | Minor |             |        |
|                   | 1404.03    | 240.18   | 1243.58  | 1163.85    | 8.80             | OSF1.50              | 18670.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1404.53    | 241.62   | 1243.12  | 1162.91    | 8.75             | OSF1.50              | 18730.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1408.86    | 245.41   | 1242.93  | 1161.46    | 8.63             | OSF1.50              | 18860.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1408.40    | 247.28   | 1243.22  | 1161.12    | 8.57             | OSF1.50              | 18930.00 | 11035.00   |       | MinPt-O-ADP |        |
|                   | 1428.65    | 278.41   | 1240.72  | 1148.24    | 7.71             | OSF1.50              | 19940.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1423.46    | 289.72   | 1229.99  | 1133.74    | 7.39             | OSF1.50              | 20320.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1425.29    | 316.62   | 1213.88  | 1108.67    | 6.77             | OSF1.50              | 21217.93 | 11035.00   |       | MinPts      |        |

Final Surveys - Cimarex Vaca  
Draw 20-17 Federal #4H MWD  
0ft-12228ft (Surcon Corrected)  
(Def Survey)

|          |       |          |          |          |                 |          |          |             |      |
|----------|-------|----------|----------|----------|-----------------|----------|----------|-------------|------|
| 116.61   | 32.81 | 114.63   | 83.80    | N/A      | MAS = 10.00 (m) | 0.00     | 0.00     | MinPts      | Pass |
| 116.62   | 32.81 | 114.64   | 83.81    | 20993.03 | MAS = 10.00 (m) | 23.00    | 23.00    | WRP         |      |
| 116.74   | 32.81 | 114.58   | 83.93    | 632.34   | MAS = 10.00 (m) | 80.00    | 80.00    | MINPT-O-EOU |      |
| 116.90   | 32.81 | 114.58   | 84.10    | 338.38   | MAS = 10.00 (m) | 120.00   | 120.00   | MINPT-O-EOU |      |
| 59.90    | 32.81 | 48.29    | 27.09    | 6.02     | MAS = 10.00 (m) | 2190.00  | 2189.86  | MinPt-O-SF  |      |
| 59.79    | 32.81 | 48.21    | 26.99    | 6.02     | MAS = 10.00 (m) | 2210.00  | 2209.81  | MinPt-O-SF  |      |
| 59.68    | 32.81 | 48.13    | 26.87    | 6.03     | MAS = 10.00 (m) | 2270.00  | 2269.60  | MinPts      |      |
| 59.68    | 32.81 | 48.13    | 26.87    | 6.02     | MAS = 10.00 (m) | 2280.00  | 2279.55  | MINPT-O-EOU |      |
| 59.80    | 32.81 | 48.22    | 26.99    | 6.02     | MAS = 10.00 (m) | 2330.00  | 2329.27  | MinPt-O-SF  |      |
| 60.95    | 32.81 | 49.12    | 28.14    | 5.98     | MAS = 10.00 (m) | 2470.00  | 2467.89  | MinPt-O-SF  |      |
| 61.74    | 32.81 | 49.77    | 28.93    | 5.98     | MAS = 10.00 (m) | 2550.00  | 2546.63  | MinPt-O-SF  |      |
| 379.90   | 36.41 | 354.97   | 343.49   | 16.46    | OSF1.50         | 5780.00  | 5687.98  | MinPt-O-SF  |      |
| 542.38   | 48.75 | 509.22   | 493.63   | 17.33    | OSF1.50         | 7300.00  | 7165.98  | MinPt-O-SF  |      |
| 517.46   | 51.51 | 482.47   | 465.96   | 15.61    | OSF1.50         | 9340.00  | 9189.07  | MinPts      |      |
| 517.50   | 51.51 | 482.50   | 465.96   | 15.61    | OSF1.50         | 9360.00  | 9209.07  | MinPt-O-SF  |      |
| 525.50   | 53.22 | 489.36   | 472.28   | 15.32    | OSF1.50         | 10040.00 | 9889.07  | MinPt-CtCt  |      |
| 525.53   | 53.32 | 489.32   | 472.21   | 15.30    | OSF1.50         | 10080.00 | 9929.07  | MINPT-O-EOU |      |
| 525.57   | 53.37 | 489.33   | 472.20   | 15.28    | OSF1.50         | 10100.00 | 9949.07  | MinPt-O-ADP |      |
| 525.95   | 53.74 | 489.47   | 472.21   | 15.18    | OSF1.50         | 10230.00 | 10079.07 | MinPt-O-ADP |      |
| 510.62   | 56.43 | 472.34   | 454.19   | 14.01    | OSF1.50         | 11080.00 | 10892.70 | MinPts      |      |
| 511.18   | 56.53 | 472.83   | 454.65   | 14.00    | OSF1.50         | 11100.00 | 10913.39 | MinPt-O-SF  |      |
| 10110.13 | 56.09 | 10072.07 | 10064.03 | 280.19   | OSF1.50         | 21217.93 | 11035.00 | TD          |      |

Final Surveys - Cimarex Vaca  
Draw 20-17 Federal #3H MWD  
0ft-22454' (Surcon Corrected)  
(Def Survey)

|        |       |        |        |          |                 |         |         |             |      |
|--------|-------|--------|--------|----------|-----------------|---------|---------|-------------|------|
| 134.11 | 32.81 | 132.98 | 101.31 | N/A      | MAS = 10.00 (m) | 0.00    | 0.00    | Surface     | Pass |
| 134.11 | 32.81 | 132.97 | 101.30 | 25522.57 | MAS = 10.00 (m) | 23.00   | 23.00   | WRP         |      |
| 133.69 | 32.81 | 131.88 | 100.88 | 194.09   | MAS = 10.00 (m) | 190.00  | 190.00  | MINPT-O-EOU |      |
| 133.15 | 32.81 | 130.79 | 100.34 | 98.89    | MAS = 10.00 (m) | 320.00  | 320.00  | MinPts      |      |
| 133.17 | 32.81 | 130.77 | 100.36 | 95.72    | MAS = 10.00 (m) | 330.00  | 330.00  | MINPT-O-EOU |      |
| 134.67 | 32.81 | 127.00 | 101.86 | 20.12    | MAS = 10.00 (m) | 1530.00 | 1530.00 | MinPts      |      |
| 129.25 | 32.81 | 119.36 | 96.44  | 14.46    | MAS = 10.00 (m) | 2110.00 | 2109.97 | MinPt-O-SF  |      |
| 129.21 | 32.81 | 119.33 | 96.41  | 14.46    | MAS = 10.00 (m) | 2130.00 | 2129.96 | MinPts      |      |
| 626.61 | 32.81 | 604.84 | 593.80 | 30.16    | MAS = 10.00 (m) | 5610.00 | 5522.68 | MinPt-O-SF  |      |
| 673.07 | 34.40 | 649.80 | 638.67 | 30.20    | OSF1.50         | 5900.00 | 5804.66 | MinPt-O-SF  |      |
| 748.84 | 38.24 | 723.00 | 710.60 | 30.14    | OSF1.50         | 6390.00 | 6281.12 | MinPt-O-SF  |      |
| 821.76 | 42.24 | 793.26 | 779.52 | 29.87    | OSF1.50         | 6890.00 | 6767.31 | MinPt-O-SF  |      |
| 915.00 | 47.27 | 883.15 | 867.73 | 29.65    | OSF1.50         | 7520.00 | 7379.90 | MinPt-O-SF  |      |
| 940.44 | 48.56 | 907.73 | 891.88 | 29.64    | OSF1.50         | 7686.46 | 7541.76 | MinPt-O-SF  |      |
| 926.09 | 48.50 | 893.42 | 877.59 | 29.23    | OSF1.50         | 9380.00 | 9229.07 | MinPt-CtCt  |      |
| 926.11 | 48.57 | 893.39 | 877.54 | 29.19    | OSF1.50         | 9410.00 | 9259.07 | MINPT-O-EOU |      |

| Offset Trajectory | Separation |          | Allow<br>Dev. (ft) | Sep.<br>Fact. | Controlling<br>Rule | Reference Trajectory |          | Risk Level |       | Alert       | Status |
|-------------------|------------|----------|--------------------|---------------|---------------------|----------------------|----------|------------|-------|-------------|--------|
|                   | Ct-Ct (ft) | MAS (ft) | EOU (ft)           |               |                     | MD (ft)              | TVD (ft) | Alert      | Minor | Major       |        |
|                   | 926.14     | 48.61    | 893.39             | 877.53        | 29.16               | OSF1.50              | 9430.00  | 9279.07    |       | MinPt-O-ADP |        |
|                   | 924.15     | 54.15    | 867.71             | 870.00        | 26.06               | OSF1.50              | 11130.00 | 10926.41   |       | MinPts      |        |
|                   | 928.34     | 54.62    | 891.59             | 873.73        | 25.95               | OSF1.50              | 11230.00 | 10981.38   |       | MinPt-O-SF  |        |
|                   | 1761.31    | 71.66    | 1713.21            | 1689.65       | 37.36               | OSF1.50              | 12650.00 | 11035.00   |       | MinPts      |        |
|                   | 1762.94    | 77.13    | 1711.20            | 1685.81       | 34.71               | OSF1.50              | 12860.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1763.72    | 79.48    | 1710.41            | 1684.24       | 33.68               | OSF1.50              | 12960.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1765.17    | 81.19    | 1710.72            | 1683.96       | 33.00               | OSF1.50              | 13030.00 | 11035.00   |       | MinPt-O-ADP |        |
|                   | 1771.59    | 93.88    | 1708.67            | 1677.71       | 28.59               | OSF1.50              | 13500.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1771.38    | 101.40   | 1703.45            | 1689.98       | 26.45               | OSF1.50              | 13760.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1772.21    | 103.60   | 1702.82            | 1668.61       | 25.89               | OSF1.50              | 13850.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1773.47    | 105.09   | 1703.08            | 1668.38       | 25.54               | OSF1.50              | 13910.00 | 11035.00   |       | MinPt-O-ADP |        |
|                   | 1780.08    | 113.36   | 1704.19            | 1666.73       | 23.75               | OSF1.50              | 14190.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1781.97    | 118.06   | 1702.94            | 1683.91       | 22.82               | OSF1.50              | 14370.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1784.50    | 122.06   | 1702.80            | 1662.44       | 22.10               | OSF1.50              | 14510.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1785.57    | 123.31   | 1703.03            | 1682.26       | 21.88               | OSF1.50              | 14700.00 | 11035.00   |       | MinPt-O-ADP |        |
|                   | 1787.52    | 127.87   | 1701.94            | 1659.65       | 21.12               | OSF1.50              | 14910.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1789.44    | 133.56   | 1700.07            | 1655.88       | 20.24               | OSF1.50              | 15200.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1790.47    | 134.78   | 1700.28            | 1655.69       | 20.06               | OSF1.50              | 14960.00 | 11035.00   |       | MinPt-O-ADP |        |
|                   | 1795.38    | 141.81   | 1700.51            | 1653.57       | 19.11               | OSF1.50              | 15200.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1796.66    | 152.64   | 1694.57            | 1644.02       | 17.76               | OSF1.50              | 15560.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1789.51    | 167.64   | 1677.42            | 1621.87       | 16.10               | OSF1.50              | 16070.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1783.24    | 186.54   | 1658.55            | 1596.70       | 14.41               | OSF1.50              | 16710.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1783.84    | 189.07   | 1657.48            | 1594.77       | 14.22               | OSF1.50              | 16810.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1784.63    | 190.00   | 1657.63            | 1594.63       | 14.15               | OSF1.50              | 16850.00 | 11035.00   |       | MinPt-O-ADP |        |
|                   | 1779.93    | 201.64   | 1645.18            | 1578.29       | 13.30               | OSF1.50              | 17220.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1780.76    | 204.15   | 1644.36            | 1576.63       | 13.14               | OSF1.50              | 17320.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1781.10    | 209.64   | 1641.01            | 1571.46       | 12.80               | OSF1.50              | 17490.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1781.33    | 222.40   | 1632.74            | 1558.93       | 12.06               | OSF1.50              | 17920.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1783.60    | 252.52   | 1614.92            | 1531.08       | 10.63               | OSF1.50              | 18930.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1785.43    | 259.74   | 1611.94            | 1525.69       | 10.34               | OSF1.50              | 19190.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1787.41    | 262.20   | 1612.28            | 1525.21       | 10.26               | OSF1.50              | 19280.00 | 11035.00   |       | MinPt-O-ADP |        |
|                   | 1792.08    | 267.21   | 1613.62            | 1524.88       | 10.09               | OSF1.50              | 19440.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1793.98    | 269.39   | 1614.06            | 1524.59       | 10.02               | OSF1.50              | 19520.00 | 11035.00   |       | MinPt-O-ADP |        |
|                   | 1782.73    | 283.64   | 1593.30            | 1499.08       | 9.46                | OSF1.50              | 19970.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1782.67    | 294.71   | 1585.86            | 1487.96       | 9.10                | OSF1.50              | 20340.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1781.70    | 304.53   | 1578.34            | 1477.16       | 8.80                | OSF1.50              | 20670.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1785.87    | 316.66   | 1574.44            | 1469.21       | 8.48                | OSF1.50              | 21090.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1788.30    | 320.82   | 1574.08            | 1467.48       | 8.38                | OSF1.50              | 21217.93 | 11035.00   |       | MinPts      |        |

Final Surveys - Cimarex Vaca  
Draw 20-17 Federal #43H  
MWD 0ft-19167ft (Surcon  
Corrected) (Def Survey)

Pass

|         |       |         |         |           |                 |         |         |             |
|---------|-------|---------|---------|-----------|-----------------|---------|---------|-------------|
| 1100.38 | 32.81 | 1099.10 | 1067.57 | N/A       | MAS = 10.00 (m) | 0.00    | 0.00    | Surface     |
| 1100.36 | 32.81 | 1099.08 | 1067.55 | 985828.45 | MAS = 10.00 (m) | 23.00   | 23.00   | WRP         |
| 1099.30 | 32.81 | 1095.61 | 1066.49 | 456.05    | MAS = 10.00 (m) | 580.00  | 580.00  | MinPts      |
| 1098.80 | 32.81 | 1093.20 | 1085.99 | 254.52    | MAS = 10.00 (m) | 1030.00 | 1030.00 | MinPts      |
| 1098.81 | 32.81 | 1093.04 | 1066.00 | 244.76    | MAS = 10.00 (m) | 1070.00 | 1070.00 | MINPT-O-EOU |
| 142.21  | 42.98 | 113.17  | 99.23   | 5.06      | OSF1.50         | 6830.00 | 6708.97 | MinPt-CtCt  |
| 142.21  | 43.02 | 113.16  | 99.19   | 5.05      | OSF1.50         | 6840.00 | 6718.69 | MINPT-O-EOU |
| 142.24  | 43.06 | 113.17  | 99.18   | 5.05      | OSF1.50         | 6850.00 | 6728.41 | MinPt-O-ADP |
| 143.00  | 43.37 | 113.75  | 99.63   | 5.03      | OSF1.50         | 6920.00 | 6796.48 | MinPt-O-SF  |
| 300.36  | 45.99 | 269.36  | 254.37  | 9.98      | OSF1.50         | 8930.00 | 8779.07 | MinPt-CtCt  |
| 300.37  | 46.01 | 269.36  | 254.36  | 9.98      | OSF1.50         | 8940.00 | 8789.07 | MinPts      |

| Offset Trajectory | Separation |          | Allow    | Sep.<br>Fact. | Controlling<br>Rule | Reference Trajectory |          | Risk Level |       | Alert       | Status |
|-------------------|------------|----------|----------|---------------|---------------------|----------------------|----------|------------|-------|-------------|--------|
|                   | Ct-Ct (ft) | MAS (ft) | EOU (ft) |               |                     | MD (ft)              | TVD (ft) | Alert      | Minor |             |        |
|                   | 300.39     | 46.02    | 269.36   | 254.36        | 9.98                | OSF1.50              | 8950.00  | 8799.07    |       | MinPt-O-SF  |        |
|                   | 1743.58    | 32.81    | 1723.44  | 1710.78       | 91.13               | MAS = 10.00 (m)      | 11680.00 | 11035.00   |       | MinPts      |        |
|                   | 1743.60    | 32.81    | 1723.41  | 1710.79       | 90.93               | MAS = 10.00 (m)      | 11690.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 1745.25    | 42.59    | 1716.53  | 1702.66       | 62.89               | OSF1.50              | 12360.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1722.09    | 80.31    | 1688.23  | 1641.78       | 32.55               | OSF1.50              | 13780.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1722.26    | 83.97    | 1665.95  | 1638.29       | 31.11               | OSF1.50              | 13910.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1698.23    | 131.68   | 1610.11  | 1586.55       | 19.48               | OSF1.50              | 15550.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1697.46    | 146.73   | 1599.31  | 1550.73       | 17.46               | OSF1.50              | 16060.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1700.84    | 162.18   | 1592.39  | 1538.66       | 15.82               | OSF1.50              | 16580.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1691.81    | 197.58   | 1559.76  | 1494.22       | 12.90               | OSF1.50              | 17770.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1682.50    | 240.06   | 1522.13  | 1442.44       | 10.55               | OSF1.50              | 19190.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1685.35    | 250.42   | 1518.08  | 1434.93       | 10.13               | OSF1.50              | 19540.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1687.41    | 268.74   | 1507.92  | 1418.67       | 9.45                | OSF1.50              | 20150.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 1694.01    | 300.87   | 1493.10  | 1393.14       | 8.47                | OSF1.50              | 21217.93 | 11035.00   |       | MinPts      |        |

Final Surveys - Cimarex Vaca  
Draw 20-17 Federal #2H MWD  
0ft-22179ft (Surcon Corrected)  
(Def Survey)

Pass

|         |        |         |         |          |                 |          |          |             |  |  |  |
|---------|--------|---------|---------|----------|-----------------|----------|----------|-------------|--|--|--|
| 152.29  | 32.81  | 151.27  | 119.48  | N/A      | MAS = 10.00 (m) | 0.00     | 0.00     | Surface     |  |  |  |
| 152.28  | 32.81  | 151.26  | 119.47  | 37674.86 | MAS = 10.00 (m) | 23.00    | 23.00    | WRP         |  |  |  |
| 150.99  | 32.81  | 147.11  | 118.18  | 52.42    | MAS = 10.00 (m) | 700.00   | 700.00   | MinPts      |  |  |  |
| 152.93  | 32.81  | 144.06  | 120.12  | 19.34    | MAS = 10.00 (m) | 1760.00  | 1760.00  | MINPT-O-EOU |  |  |  |
| 156.33  | 32.81  | 145.92  | 123.53  | 16.54    | OSF1.50         | 2100.00  | 2099.98  | MinPt-O-SF  |  |  |  |
| 962.33  | 36.36  | 937.75  | 925.97  | 40.80    | OSF1.50         | 6150.00  | 6047.76  | MinPt-O-SF  |  |  |  |
| 1152.87 | 42.89  | 1123.93 | 1109.98 | 41.26    | OSF1.50         | 7020.00  | 6893.72  | MinPt-O-SF  |  |  |  |
| 1257.11 | 46.69  | 1225.64 | 1210.42 | 41.26    | OSF1.50         | 7500.00  | 7360.45  | MinPt-O-SF  |  |  |  |
| 1295.66 | 48.01  | 1263.31 | 1247.65 | 41.33    | OSF1.50         | 7680.00  | 7535.48  | MinPt-O-SF  |  |  |  |
| 1359.83 | 45.69  | 1329.03 | 1314.14 | 45.63    | OSF1.50         | 8380.00  | 8229.07  | MinPt-CtCt  |  |  |  |
| 1337.10 | 49.52  | 1303.74 | 1287.57 | 41.32    | OSF1.50         | 10130.00 | 9979.07  | MinPt-CtCt  |  |  |  |
| 1337.12 | 49.62  | 1303.70 | 1287.51 | 41.24    | OSF1.50         | 10160.00 | 10009.07 | MINPT-O-EOU |  |  |  |
| 1337.15 | 49.65  | 1303.71 | 1287.50 | 41.21    | OSF1.50         | 10170.00 | 10019.07 | MinPt-O-ADP |  |  |  |
| 1333.17 | 53.13  | 1297.41 | 1280.04 | 38.35    | OSF1.50         | 11100.00 | 10906.64 | MinPt-CtCt  |  |  |  |
| 1333.17 | 53.18  | 1297.38 | 1279.99 | 38.31    | OSF1.50         | 11110.00 | 10913.39 | MINPT-O-EOU |  |  |  |
| 1333.22 | 53.23  | 1297.39 | 1279.99 | 38.28    | OSF1.50         | 11120.00 | 10919.98 | MinPt-O-ADP |  |  |  |
| 1348.21 | 54.35  | 1311.64 | 1293.86 | 37.89    | OSF1.50         | 11340.00 | 11020.38 | MinPt-O-SF  |  |  |  |
| 1861.05 | 75.64  | 1810.23 | 1785.41 | 37.37    | OSF1.50         | 12630.00 | 11035.00 | MINPT-O-EOU |  |  |  |
| 1861.75 | 76.49  | 1810.43 | 1785.26 | 36.97    | OSF1.50         | 12670.00 | 11035.00 | MinPt-O-ADP |  |  |  |
| 1865.17 | 79.89  | 1811.59 | 1785.26 | 35.44    | OSF1.50         | 12810.00 | 11035.00 | MinPt-O-ADP |  |  |  |
| 1869.58 | 94.42  | 1806.31 | 1775.16 | 30.00    | OSF1.50         | 13360.00 | 11035.00 | MinPt-CtCt  |  |  |  |
| 1870.00 | 95.73  | 1805.85 | 1774.27 | 29.59    | OSF1.50         | 13420.00 | 11035.00 | MINPT-O-EOU |  |  |  |
| 1870.52 | 96.38  | 1805.94 | 1774.15 | 29.40    | OSF1.50         | 13450.00 | 11035.00 | MinPt-O-ADP |  |  |  |
| 1874.33 | 115.02 | 1797.32 | 1759.31 | 24.64    | OSF1.50         | 14120.00 | 11035.00 | MinPt-CtCt  |  |  |  |
| 1874.52 | 115.61 | 1797.12 | 1758.91 | 24.52    | OSF1.50         | 14150.00 | 11035.00 | MINPT-O-EOU |  |  |  |
| 1874.81 | 116.00 | 1797.15 | 1758.82 | 24.44    | OSF1.50         | 14170.00 | 11035.00 | MinPt-O-ADP |  |  |  |
| 1878.15 | 120.03 | 1797.80 | 1758.12 | 23.65    | OSF1.50         | 14300.00 | 11035.00 | MinPt-CtCt  |  |  |  |
| 1878.15 | 125.07 | 1794.45 | 1753.08 | 22.69    | OSF1.50         | 14480.00 | 11035.00 | MinPt-CtCt  |  |  |  |
| 1878.82 | 126.96 | 1793.86 | 1751.87 | 22.36    | OSF1.50         | 14560.00 | 11035.00 | MINPT-O-EOU |  |  |  |
| 1880.58 | 128.94 | 1794.29 | 1751.64 | 22.03    | OSF1.50         | 14640.00 | 11035.00 | MinPt-O-ADP |  |  |  |
| 1884.31 | 133.14 | 1795.22 | 1751.17 | 21.38    | OSF1.50         | 14780.00 | 11035.00 | MINPT-O-EOU |  |  |  |
| 1889.28 | 142.51 | 1793.94 | 1746.76 | 20.01    | OSF1.50         | 15090.00 | 11035.00 | MinPt-CtCt  |  |  |  |
| 1890.29 | 148.66 | 1790.86 | 1741.63 | 19.19    | OSF1.50         | 15320.00 | 11035.00 | MINPT-O-EOU |  |  |  |
| 1885.89 | 168.49 | 1773.24 | 1717.40 | 16.88    | OSF1.50         | 15990.00 | 11035.00 | MinPt-CtCt  |  |  |  |
| 1886.53 | 170.38 | 1772.61 | 1716.15 | 16.70    | OSF1.50         | 16070.00 | 11035.00 | MINPT-O-EOU |  |  |  |

| Offset Trajectory | Separation |          | Allow    | Sep.<br>Fact. | Controlling<br>Rule | Reference Trajectory |          | Risk Level |       | Alert | Status      |
|-------------------|------------|----------|----------|---------------|---------------------|----------------------|----------|------------|-------|-------|-------------|
|                   | Ct-Ct (ft) | MAS (ft) | EOU (ft) |               |                     | MD (ft)              | TVD (ft) | Alert      | Minor | Major |             |
|                   | 1887.31    | 171.31   | 1772.77  | 16.61         | OSF1.50             | 16110.00             | 11035.00 |            |       |       | MinPt-O-ADP |
|                   | 1888.70    | 190.77   | 1761.19  | 14.92         | OSF1.50             | 16750.00             | 11035.00 |            |       |       | MinPt-CtCt  |
|                   | 1889.08    | 192.11   | 1760.68  | 14.82         | OSF1.50             | 16810.00             | 11035.00 |            |       |       | MINPT-O-EOU |
|                   | 1889.60    | 192.76   | 1760.76  | 14.77         | OSF1.50             | 16840.00             | 11035.00 |            |       |       | MinPt-O-ADP |
|                   | 1892.56    | 196.50   | 1761.23  | 14.51         | OSF1.50             | 16960.00             | 11035.00 |            |       |       | MINPT-O-EOU |
|                   | 1893.33    | 197.45   | 1761.37  | 14.45         | OSF1.50             | 17000.00             | 11035.00 |            |       |       | MinPt-O-ADP |
|                   | 1897.78    | 202.72   | 1762.31  | 14.10         | OSF1.50             | 17170.00             | 11035.00 |            |       |       | MINPT-O-EOU |
|                   | 1898.59    | 203.65   | 1762.49  | 14.04         | OSF1.50             | 17210.00             | 11035.00 |            |       |       | MinPt-O-ADP |
|                   | 1896.18    | 217.64   | 1750.75  | 13.12         | OSF1.50             | 17680.00             | 11035.00 |            |       |       | MinPt-CtCt  |
|                   | 1896.34    | 218.20   | 1750.54  | 13.09         | OSF1.50             | 17690.00             | 11035.00 |            |       |       | MINPT-O-EOU |
|                   | 1896.63    | 218.56   | 1750.59  | 13.07         | OSF1.50             | 17710.00             | 11035.00 |            |       |       | MinPt-O-ADP |
|                   | 1900.45    | 222.67   | 1751.67  | 12.85         | OSF1.50             | 17860.00             | 11035.00 |            |       |       | MinPt-O-ADP |
|                   | 1901.27    | 242.57   | 1739.23  | 11.80         | OSF1.50             | 18500.00             | 11035.00 |            |       |       | MinPt-CtCt  |
|                   | 1902.13    | 244.72   | 1738.65  | 11.70         | OSF1.50             | 18590.00             | 11035.00 |            |       |       | MINPT-O-EOU |
|                   | 1903.39    | 246.21   | 1738.92  | 11.64         | OSF1.50             | 18650.00             | 11035.00 |            |       |       | MinPt-O-ADP |
|                   | 1910.40    | 257.18   | 1738.62  | 11.18         | OSF1.50             | 18990.00             | 11035.00 |            |       |       | MinPt-CtCt  |
|                   | 1906.85    | 265.52   | 1729.51  | 10.81         | OSF1.50             | 19270.00             | 11035.00 |            |       |       | MinPt-CtCt  |
|                   | 1888.96    | 287.65   | 1696.86  | 9.88          | OSF1.50             | 20010.00             | 11035.00 |            |       |       | MinPt-CtCt  |
|                   | 1889.23    | 288.44   | 1696.61  | 9.85          | OSF1.50             | 20050.00             | 11035.00 |            |       |       | MINPT-O-EOU |
|                   | 1889.55    | 288.82   | 1696.67  | 9.84          | OSF1.50             | 20070.00             | 11035.00 |            |       |       | MinPt-O-ADP |
|                   | 1889.45    | 311.44   | 1661.50  | 9.03          | OSF1.50             | 20800.00             | 11035.00 |            |       |       | MinPt-CtCt  |
|                   | 1870.96    | 314.98   | 1660.64  | 8.93          | OSF1.50             | 20940.00             | 11035.00 |            |       |       | MINPT-O-EOU |
|                   | 1862.87    | 324.63   | 1646.13  | 8.63          | OSF1.50             | 21217.93             | 11035.00 |            |       |       | MinPls      |

Final Surveys - Cimarex Vaca  
Draw 20-17 Federal #44H  
MWD 0ft-19884ft (Surcon  
Corrected) (Def Survey)

Pass

|         |        |         |         |         |                 |          |          |             |
|---------|--------|---------|---------|---------|-----------------|----------|----------|-------------|
| 1120.35 | 32.81  | 1119.06 | 1087.54 | N/A     | MAS = 10.00 (m) | 0.00     | 0.00     | Surface     |
| 1120.32 | 32.81  | 1119.04 | 1087.52 | N/A     | MAS = 10.00 (m) | 23.00    | 23.00    | WRP         |
| 1120.27 | 32.81  | 1118.16 | 1087.46 | 1368.39 | MAS = 10.00 (m) | 220.00   | 220.00   | MinPls      |
| 1120.88 | 32.81  | 1115.44 | 1088.07 | 269.77  | MAS = 10.00 (m) | 990.00   | 990.00   | MinPls      |
| 1120.86 | 32.81  | 1115.08 | 1088.06 | 248.67  | MAS = 10.00 (m) | 1070.00  | 1070.00  | MINPT-O-EOU |
| 1112.99 | 32.81  | 1102.87 | 1080.18 | 123.68  | MAS = 10.00 (m) | 2100.00  | 2099.98  | MinPt-O-SF  |
| 371.11  | 48.51  | 338.12  | 322.60  | 11.94   | OSF1.50         | 8200.00  | 8049.16  | MinPt-O-SF  |
| 369.55  | 48.12  | 336.81  | 321.43  | 11.95   | OSF1.50         | 8290.00  | 8139.08  | MinPt-O-ADP |
| 369.52  | 48.08  | 336.81  | 321.44  | 11.96   | OSF1.50         | 8300.00  | 8149.08  | MINPT-O-EOU |
| 369.51  | 48.04  | 336.83  | 321.47  | 11.96   | OSF1.50         | 8310.00  | 8159.08  | MinPt-CtCt  |
| 368.86  | 50.81  | 334.31  | 318.05  | 11.28   | OSF1.50         | 9710.00  | 9559.07  | MinPt-CtCt  |
| 368.89  | 50.91  | 334.28  | 317.98  | 11.25   | OSF1.50         | 9720.00  | 9569.07  | MinPls      |
| 371.25  | 51.56  | 336.22  | 319.70  | 11.17   | OSF1.50         | 9790.00  | 9639.07  | MinPt-O-SF  |
| 1094.21 | 42.32  | 1065.65 | 1051.89 | 39.71   | OSF1.50         | 11700.00 | 11035.00 | MinPt-CtCt  |
| 1094.41 | 43.04  | 1065.39 | 1051.37 | 39.00   | OSF1.50         | 11740.00 | 11035.00 | MINPT-O-EOU |
| 1094.68 | 43.39  | 1065.43 | 1051.29 | 38.69   | OSF1.50         | 11760.00 | 11035.00 | MinPt-O-ADP |
| 1070.66 | 84.86  | 1013.75 | 985.80  | 19.13   | OSF1.50         | 13500.00 | 11035.00 | MinPt-CtCt  |
| 1072.30 | 99.75  | 1005.47 | 972.55  | 16.27   | OSF1.50         | 14010.00 | 11035.00 | MinPt-CtCt  |
| 1030.27 | 168.61 | 917.54  | 861.67  | 9.21    | OSF1.50         | 16390.00 | 11035.00 | MinPt-CtCt  |
| 1030.23 | 175.09 | 913.18  | 855.15  | 8.87    | OSF1.50         | 16610.00 | 11035.00 | MinPt-CtCt  |
| 1031.05 | 177.48 | 912.40  | 853.57  | 8.75    | OSF1.50         | 16700.00 | 11035.00 | MINPT-O-EOU |
| 1032.06 | 184.33 | 908.85  | 847.74  | 8.44    | OSF1.50         | 16920.00 | 11035.00 | MinPt-CtCt  |
| 1032.61 | 189.42 | 906.01  | 843.20  | 8.21    | OSF1.50         | 17090.00 | 11035.00 | MinPt-CtCt  |
| 1021.99 | 230.54 | 867.97  | 791.46  | 6.67    | OSF1.50         | 18490.00 | 11035.00 | MinPt-CtCt  |
| 1020.95 | 247.54 | 855.60  | 773.41  | 6.21    | OSF1.50         | 19050.00 | 11035.00 | MinPt-CtCt  |
| 1022.54 | 252.67 | 853.76  | 769.87  | 6.09    | OSF1.50         | 19230.00 | 11035.00 | MINPT-O-EOU |



| Offset Trajectory | Separation |          | Allow    | Sep.      | Controlling | Reference Trajectory |          | Alert       | Status |
|-------------------|------------|----------|----------|-----------|-------------|----------------------|----------|-------------|--------|
|                   | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Rule        | MD (ft)              | TVD (ft) |             |        |
|                   | 1028.17    | 261.13   | 853.79   | 767.04    | 5.92        | OSF1.50              | 19510.00 | MINPT-O-EOU |        |
|                   | 1038.66    | 291.93   | 843.71   | 746.73    | 5.35        | OSF1.50              | 20540.00 | MinPt-CtCt  |        |
|                   | 1041.30    | 311.93   | 833.02   | 729.37    | 5.02        | OSF1.50              | 21217.93 | MinPts      |        |

Final Surveys - Cimarax Vaca  
Draw 20-17 Federal #45H Off-  
19226ft (Surcon Corrected)  
(Def Survey)

|         |        |         |         |           |                 |          |          |             |      |
|---------|--------|---------|---------|-----------|-----------------|----------|----------|-------------|------|
| 1140.32 | 32.81  | 1139.03 | 1107.51 | N/A       | MAS = 10.00 (m) | 0.00     | 0.00     | Surface     | Pass |
| 1140.29 | 32.81  | 1139.00 | 1107.48 | 459197.48 | MAS = 10.00 (m) | 23.00    | 23.00    | WRP         |      |
| 1138.86 | 32.81  | 1136.07 | 1106.05 | 758.61    | MAS = 10.00 (m) | 350.00   | 350.00   | MinPts      |      |
| 1138.94 | 32.81  | 1136.02 | 1106.13 | 697.36    | MAS = 10.00 (m) | 380.00   | 380.00   | MINPT-O-EOU |      |
| 1144.31 | 32.81  | 1138.29 | 1111.50 | 233.51    | MAS = 10.00 (m) | 1160.00  | 1160.00  | MINPT-O-EOU |      |
| 708.10  | 50.56  | 673.86  | 657.54  | 21.65     | OSF1.50         | 7900.00  | 7751.07  | MinPt-O-SF  |      |
| 698.97  | 48.89  | 665.83  | 650.08  | 22.14     | OSF1.50         | 8320.00  | 8169.08  | MinPt-O-ADP |      |
| 698.95  | 48.86  | 665.83  | 650.09  | 22.15     | OSF1.50         | 8330.00  | 8179.08  | MinPts      |      |
| 699.21  | 48.80  | 666.13  | 650.41  | 22.19     | OSF1.50         | 8380.00  | 8229.07  | MinPt-O-SF  |      |
| 701.74  | 49.57  | 668.15  | 652.17  | 21.91     | OSF1.50         | 8960.00  | 8809.07  | MinPt-CtCt  |      |
| 701.75  | 49.61  | 668.13  | 652.13  | 21.89     | OSF1.50         | 8970.00  | 8819.07  | MINPT-O-EOU |      |
| 701.78  | 49.66  | 668.13  | 652.12  | 21.87     | OSF1.50         | 8980.00  | 8829.07  | MinPt-O-ADP |      |
| 709.00  | 50.69  | 674.88  | 658.31  | 21.61     | OSF1.50         | 9160.00  | 9009.07  | MinPt-CtCt  |      |
| 1766.47 | 141.06 | 1672.09 | 1625.41 | 18.91     | OSF1.50         | 15110.00 | 11035.00 | MinPt-CtCt  |      |
| 1757.73 | 155.35 | 1653.82 | 1602.38 | 17.07     | OSF1.50         | 15590.00 | 11035.00 | MinPt-CtCt  |      |
| 1758.69 | 158.20 | 1652.88 | 1600.49 | 16.77     | OSF1.50         | 15700.00 | 11035.00 | MINPT-O-EOU |      |
| 1766.85 | 177.43 | 1648.22 | 1589.42 | 15.02     | OSF1.50         | 16360.00 | 11035.00 | MINPT-O-EOU |      |
| 1768.60 | 179.51 | 1648.59 | 1589.10 | 14.85     | OSF1.50         | 16440.00 | 11035.00 | MinPt-O-ADP |      |
| 1777.91 | 192.78 | 1649.05 | 1585.13 | 13.90     | OSF1.50         | 16880.00 | 11035.00 | MINPT-O-EOU |      |
| 1784.04 | 205.38 | 1646.78 | 1578.66 | 13.09     | OSF1.50         | 17300.00 | 11035.00 | MINPT-O-EOU |      |
| 1787.48 | 212.68 | 1645.35 | 1574.80 | 12.66     | OSF1.50         | 17540.00 | 11035.00 | MINPT-O-EOU |      |
| 1788.05 | 213.38 | 1645.45 | 1574.67 | 12.62     | OSF1.50         | 17570.00 | 11035.00 | MinPt-O-ADP |      |
| 1782.24 | 224.46 | 1642.26 | 1567.78 | 12.02     | OSF1.50         | 17920.00 | 11035.00 | MinPt-CtCt  |      |
| 1790.26 | 230.46 | 1636.27 | 1559.79 | 11.70     | OSF1.50         | 18120.00 | 11035.00 | MinPt-CtCt  |      |
| 1794.53 | 238.61 | 1635.11 | 1555.91 | 11.32     | OSF1.50         | 18410.00 | 11035.00 | MINPT-O-EOU |      |
| 1797.38 | 246.14 | 1632.94 | 1551.24 | 10.99     | OSF1.50         | 18660.00 | 11035.00 | MINPT-O-EOU |      |
| 1798.63 | 247.66 | 1633.18 | 1550.97 | 10.93     | OSF1.50         | 18720.00 | 11035.00 | MinPt-O-ADP |      |
| 1767.07 | 266.89 | 1588.80 | 1500.18 | 9.96      | OSF1.50         | 19340.00 | 11035.00 | MinPt-CtCt  |      |
| 1766.60 | 282.17 | 1578.15 | 1484.43 | 9.42      | OSF1.50         | 19840.00 | 11035.00 | MinPt-CtCt  |      |
| 1784.82 | 321.91 | 1569.87 | 1462.91 | 8.34      | OSF1.50         | 21180.00 | 11035.00 | MINPT-O-EOU |      |
| 1785.59 | 323.00 | 1569.92 | 1462.59 | 8.31      | OSF1.50         | 21217.93 | 11035.00 | MinPts      |      |

Cimarax Vaca Draw 20-17  
Federal #31H Rev1 RM  
20Feb20 (Def Plan)

|         |        |         |         |          |                 |          |          |             |      |
|---------|--------|---------|---------|----------|-----------------|----------|----------|-------------|------|
| 759.21  | 32.81  | 757.92  | 726.40  | N/A      | MAS = 10.00 (m) | 0.00     | 0.00     | Surface     | Pass |
| 759.21  | 32.81  | 757.92  | 726.40  | 92196.14 | MAS = 10.00 (m) | 23.00    | 23.00    | WRP         |      |
| 759.21  | 32.81  | 745.73  | 726.40  | 62.13    | MAS = 10.00 (m) | 2000.00  | 2000.00  | MinPts      |      |
| 759.23  | 32.81  | 745.70  | 726.42  | 61.90    | MAS = 10.00 (m) | 2010.00  | 2010.00  | MINPT-O-EOU |      |
| 800.88  | 32.81  | 745.56  | 768.07  | 56.98    | MAS = 10.00 (m) | 2490.00  | 2487.61  | MinPt-O-SF  |      |
| 2125.73 | 53.64  | 2089.54 | 2072.09 | 60.87    | OSF1.50         | 7686.46  | 7541.76  | MinPt-O-SF  |      |
| 2200.75 | 67.88  | 2155.07 | 2132.88 | 49.55    | OSF1.50         | 10710.00 | 10559.07 | MinPt-CtCt  |      |
| 2200.76 | 67.91  | 2155.06 | 2132.85 | 49.52    | OSF1.50         | 10720.00 | 10569.07 | MINPT-O-EOU |      |
| 2200.79 | 67.95  | 2155.06 | 2132.84 | 49.49    | OSF1.50         | 10730.00 | 10579.07 | MinPt-O-ADP |      |
| 2223.37 | 344.06 | 1983.57 | 1879.31 | 9.72     | OSF1.50         | 21217.93 | 11035.00 | MinPts      |      |

| Offset Trajectory                                                                                             | Separation |          | Allow Dev. (ft) | Sep. Fact. | Controlling Rule | Reference Trajectory |          | Risk Level |       | Alert       | Status |
|---------------------------------------------------------------------------------------------------------------|------------|----------|-----------------|------------|------------------|----------------------|----------|------------|-------|-------------|--------|
|                                                                                                               | Ct-Ct (ft) | MAS (ft) |                 |            |                  | EOU (ft)             | MD (ft)  | TVD (ft)   | Alert |             |        |
| Cimarex Vaca Draw 20-17<br>Federal #30H Rev1 RM<br>20Feb20 (Def Plan)                                         |            |          |                 |            |                  |                      |          |            |       |             |        |
|                                                                                                               | 779.19     | 32.81    | 777.91          | 746.38     | N/A              | MAS = 10.00 (m)      | 0.00     | 0.00       |       | Surface     | Pass   |
|                                                                                                               | 779.19     | 32.81    | 777.90          | 746.38     | 85394.91         | MAS = 10.00 (m)      | 23.00    | 23.00      |       | WRP         |        |
|                                                                                                               | 779.19     | 32.81    | 765.77          | 746.38     | 64.09            | MAS = 10.00 (m)      | 1990.00  | 1990.00    |       | MinPts      |        |
|                                                                                                               | 779.20     | 32.81    | 765.73          | 746.39     | 63.85            | MAS = 10.00 (m)      | 2000.00  | 2000.00    |       | MINPT-O-EOU |        |
|                                                                                                               | 782.45     | 32.81    | 768.74          | 749.64     | 62.91            | MAS = 10.00 (m)      | 2100.00  | 2099.98    |       | MinPt-O-SF  |        |
|                                                                                                               | 2516.34    | 50.06    | 2482.53         | 2466.28    | 77.35            | OSF1.50              | 6760.00  | 6640.90    |       | MinPt-O-SF  |        |
|                                                                                                               | 2733.61    | 56.56    | 2695.48         | 2677.05    | 74.15            | OSF1.50              | 7686.46  | 7541.76    |       | MinPt-O-SF  |        |
|                                                                                                               | 2812.18    | 62.87    | 2769.84         | 2749.31    | 66.47            | OSF1.50              | 10050.00 | 9899.07    |       | MinPts      |        |
|                                                                                                               | 2820.16    | 63.27    | 2777.54         | 2756.88    | 68.21            | OSF1.50              | 10290.00 | 10139.07   |       | MinPt-O-SF  |        |
|                                                                                                               | 3003.04    | 342.03   | 2774.59         | 2661.01    | 13.21            | OSF1.50              | 21217.93 | 11035.00   |       | MinPts      |        |
| Cimarex Vaca Draw 20-17<br>Federal #29H Rev1 RM<br>20Feb20 (Def Plan)                                         |            |          |                 |            |                  |                      |          |            |       |             |        |
|                                                                                                               | 799.21     | 32.81    | 797.93          | 766.40     | N/A              | MAS = 10.00 (m)      | 0.00     | 0.00       |       | Surface     | Pass   |
|                                                                                                               | 799.21     | 32.81    | 797.92          | 766.40     | 97062.21         | MAS = 10.00 (m)      | 23.00    | 23.00      |       | WRP         |        |
|                                                                                                               | 799.21     | 32.81    | 788.93          | 766.40     | 88.72            | MAS = 10.00 (m)      | 1490.00  | 1490.00    |       | MinPts      |        |
|                                                                                                               | 799.25     | 32.81    | 788.88          | 766.44     | 87.86            | MAS = 10.00 (m)      | 1510.00  | 1510.00    |       | MINPT-O-EOU |        |
|                                                                                                               | 833.24     | 32.81    | 821.29          | 800.43     | 78.04            | MAS = 10.00 (m)      | 2000.00  | 2000.00    |       | MinPt-O-SF  |        |
|                                                                                                               | 2712.63    | 55.39    | 2675.27         | 2657.23    | 75.16            | OSF1.50              | 7070.00  | 6942.34    |       | MinPt-O-SF  |        |
|                                                                                                               | 2856.85    | 58.96    | 2817.12         | 2797.89    | 74.26            | OSF1.50              | 7686.46  | 7541.76    |       | MinPt-O-SF  |        |
|                                                                                                               | 2933.60    | 345.04   | 2703.15         | 2588.56    | 12.80            | OSF1.50              | 21217.93 | 11035.00   |       | MinPts      |        |
| Cimarex Vaca Draw 20-17<br>Federal #58H Rev1 RM<br>09Feb21 (Def Plan)                                         |            |          |                 |            |                  |                      |          |            |       |             |        |
|                                                                                                               | 2339.41    | 32.81    | 2338.13         | 2306.60    | N/A              | MAS = 10.00 (m)      | 0.00     | 0.00       |       | Surface     | Pass   |
|                                                                                                               | 2339.36    | 32.81    | 2338.06         | 2306.55    | 337938.74        | MAS = 10.00 (m)      | 10.00    | 10.00      |       | MinPt-O-SF  |        |
|                                                                                                               | 2339.34    | 32.81    | 2338.06         | 2306.53    | N/A              | MAS = 10.00 (m)      | 23.00    | 23.00      |       | WRP         |        |
|                                                                                                               | 2163.66    | 32.81    | 2145.80         | 2130.85    | 131.43           | MAS = 10.00 (m)      | 3090.00  | 3072.31    |       | MinPt-O-SF  |        |
|                                                                                                               | 874.81     | 73.80    | 824.52          | 801.00     | 18.53            | OSF1.50              | 10790.00 | 10638.68   |       | MinPt-CtCt  |        |
|                                                                                                               | 874.91     | 74.19    | 824.37          | 800.72     | 18.43            | OSF1.50              | 10850.00 | 10697.01   |       | MINPT-O-EOU |        |
|                                                                                                               | 874.96     | 74.26    | 824.38          | 800.70     | 18.41            | OSF1.50              | 10860.00 | 10706.54   |       | MinPt-O-ADP |        |
|                                                                                                               | 880.15     | 75.23    | 828.93          | 804.92     | 18.26            | OSF1.50              | 11030.00 | 10855.32   |       | MinPt-O-SF  |        |
|                                                                                                               | 1574.34    | 319.54   | 1360.88         | 1254.79    | 7.41             | OSF1.50              | 21217.93 | 11035.00   |       | MinPts      |        |
| Final Surveys - Cimarex Vaca<br>Draw 20-17 Federal #71H<br>MWD 0ft-19978ft (Surcon<br>Corrected) (Def Survey) |            |          |                 |            |                  |                      |          |            |       |             |        |
|                                                                                                               | 2869.13    | 32.81    | 2867.84         | 2836.32    | N/A              | MAS = 10.00 (m)      | 0.00     | 0.00       |       | Surface     | Pass   |
|                                                                                                               | 2869.08    | 32.81    | 2867.79         | 2836.27    | 508363.35        | MAS = 10.00 (m)      | 10.00    | 10.00      |       | MinPt-O-SF  |        |
|                                                                                                               | 2869.07    | 32.81    | 2867.78         | 2836.26    | N/A              | MAS = 10.00 (m)      | 20.00    | 20.00      |       | MinPts      |        |
|                                                                                                               | 2869.07    | 32.81    | 2867.78         | 2836.26    | N/A              | MAS = 10.00 (m)      | 23.00    | 23.00      |       | WRP         |        |
|                                                                                                               | 2869.45    | 32.81    | 2867.62         | 2836.64    | 5283.20          | MAS = 10.00 (m)      | 170.00   | 170.00     |       | MINPT-O-EOU |        |
|                                                                                                               | 2866.33    | 32.81    | 2860.10         | 2833.52    | 579.47           | MAS = 10.00 (m)      | 1060.00  | 1060.00    |       | MINPT-O-EOU |        |
|                                                                                                               | 949.97     | 52.08    | 913.96          | 897.88     | 29.42            | OSF1.50              | 9600.00  | 9449.07    |       | MinPts      |        |
|                                                                                                               | 910.20     | 54.02    | 872.88          | 856.18     | 27.14            | OSF1.50              | 9950.00  | 9799.07    |       | MinPt-CtCt  |        |
|                                                                                                               | 910.21     | 54.12    | 872.82          | 856.09     | 27.08            | OSF1.50              | 9960.00  | 9809.07    |       | MINPT-O-EOU |        |
|                                                                                                               | 910.30     | 54.21    | 872.85          | 856.09     | 27.03            | OSF1.50              | 9970.00  | 9819.07    |       | MinPt-O-ADP |        |
|                                                                                                               | 916.93     | 55.03    | 878.97          | 861.91     | 26.76            | OSF1.50              | 10080.00 | 9929.07    |       | MinPt-O-SF  |        |
|                                                                                                               | 1378.58    | 51.63    | 1343.82         | 1326.96    | 40.83            | OSF1.50              | 11500.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                                                                                               | 1378.67    | 51.90    | 1343.72         | 1326.76    | 40.61            | OSF1.50              | 11520.00 | 11035.00   |       | MINPT-O-EOU |        |

| Offset Trajectory | Separation |          | Allow    | Sep.<br>Fact. | Controlling<br>Rule | Reference Trajectory |          | Risk Level |       | Alert       | Status |
|-------------------|------------|----------|----------|---------------|---------------------|----------------------|----------|------------|-------|-------------|--------|
|                   | Ct-Ct (ft) | MAS (ft) | EOU (ft) |               |                     | MD (ft)              | TVD (ft) | Minor      | Major |             |        |
|                   | 1378.78    | 52.04    | 1343.75  | 40.51         | OSF1.50             | 11530.00             | 11035.00 |            |       | MinPt-O-ADP |        |
|                   | 1339.80    | 93.94    | 1276.85  | 21.60         | OSF1.50             | 13350.00             | 11035.00 |            |       | MinPt-CtCt  |        |
|                   | 1343.38    | 102.57   | 1274.67  | 19.82         | OSF1.50             | 13680.00             | 11035.00 |            |       | MINPT-O-EOU |        |
|                   | 1336.72    | 144.27   | 1240.22  | 13.98         | OSF1.50             | 15150.00             | 11035.00 |            |       | MinPt-CtCt  |        |
|                   | 1331.86    | 166.08   | 1220.81  | 12.09         | OSF1.50             | 15900.00             | 11035.00 |            |       | MinPt-CtCt  |        |
|                   | 1335.03    | 189.48   | 1208.38  | 10.62         | OSF1.50             | 16700.00             | 11035.00 |            |       | MinPt-CtCt  |        |
|                   | 1330.66    | 200.39   | 1196.17  | 10.00         | OSF1.50             | 17070.00             | 11035.00 |            |       | MinPt-CtCt  |        |
|                   | 1330.66    | 202.18   | 1195.55  | 9.91          | OSF1.50             | 17140.00             | 11035.00 |            |       | MINPT-O-EOU |        |
|                   | 1331.31    | 202.93   | 1195.70  | 9.88          | OSF1.50             | 17170.00             | 11035.00 |            |       | MinPt-O-ADP |        |
|                   | 1332.61    | 210.43   | 1192.00  | 9.54          | OSF1.50             | 17410.00             | 11035.00 |            |       | MinPt-CtCt  |        |
|                   | 1332.11    | 219.61   | 1185.38  | 9.13          | OSF1.50             | 17720.00             | 11035.00 |            |       | MinPt-CtCt  |        |
|                   | 1334.48    | 232.99   | 1178.83  | 8.62          | OSF1.50             | 18180.00             | 11035.00 |            |       | MINPT-O-EOU |        |
|                   | 1337.86    | 237.78   | 1179.02  | 8.47          | OSF1.50             | 18340.00             | 11035.00 |            |       | MINPT-O-EOU |        |
|                   | 1349.06    | 272.08   | 1167.35  | 7.46          | OSF1.50             | 19480.00             | 11035.00 |            |       | MinPt-CtCt  |        |
|                   | 1349.55    | 288.81   | 1156.68  | 7.03          | OSF1.50             | 20040.00             | 11035.00 |            |       | MinPt-CtCt  |        |
|                   | 1356.91    | 323.98   | 1140.59  | 6.30          | OSF1.50             | 21217.93             | 11035.00 |            |       | MinPts      |        |

Final Surveys - Cimarex Vaca  
Draw 20-17 Federal #13H  
MWD Off-22542ft (Surcon  
Corrected) (Def Survey)

|  |         |        |         |         |           |                 |          |          |  |             |      |
|--|---------|--------|---------|---------|-----------|-----------------|----------|----------|--|-------------|------|
|  | 1319.80 | 32.81  | 1317.82 | 1286.99 | N/A       | MAS = 10.00 (m) | 0.00     | 0.00     |  | MinPts      | Pass |
|  | 1319.80 | 32.81  | 1317.81 | 1287.00 | 101391.56 | MAS = 10.00 (m) | 23.00    | 23.00    |  | WRP         |      |
|  | 1320.09 | 32.81  | 1317.43 | 1287.28 | 1927.65   | MAS = 10.00 (m) | 190.00   | 190.00   |  | MINPT-O-EOU |      |
|  | 1182.71 | 32.81  | 1171.48 | 1149.91 | 117.64    | MAS = 10.00 (m) | 2359.05  | 2359.05  |  | MinPt-O-SF  |      |
|  | 1182.61 | 32.81  | 1171.38 | 1149.80 | 117.69    | MAS = 10.00 (m) | 2380.00  | 2378.89  |  | MinPts      |      |
|  | 1797.57 | 50.68  | 1763.41 | 1746.89 | 54.38     | OSF1.50         | 7686.46  | 7541.76  |  | MinPt-O-SF  |      |
|  | 1740.56 | 52.12  | 1705.44 | 1688.44 | 51.17     | OSF1.50         | 9710.00  | 9559.07  |  | MinPt-CtCt  |      |
|  | 1740.59 | 52.21  | 1705.41 | 1688.39 | 51.09     | OSF1.50         | 9740.00  | 9589.07  |  | MINPT-O-EOU |      |
|  | 1740.64 | 52.26  | 1705.42 | 1688.38 | 51.03     | OSF1.50         | 9760.00  | 9609.07  |  | MinPt-O-ADP |      |
|  | 1764.97 | 55.69  | 1727.47 | 1709.28 | 48.49     | OSF1.50         | 10980.00 | 10814.67 |  | MinPt-CtCt  |      |
|  | 1764.98 | 55.72  | 1727.45 | 1709.26 | 48.47     | OSF1.50         | 10990.00 | 10823.04 |  | MINPT-O-EOU |      |
|  | 1765.00 | 55.75  | 1727.46 | 1709.25 | 48.44     | OSF1.50         | 11000.00 | 10831.29 |  | MinPt-O-ADP |      |
|  | 1786.35 | 57.03  | 1747.95 | 1729.32 | 47.90     | OSF1.50         | 11340.00 | 11020.38 |  | MinPt-O-SF  |      |
|  | 2279.57 | 78.96  | 2226.60 | 2200.61 | 43.83     | OSF1.50         | 12620.00 | 11035.00 |  | MinPt-CtCt  |      |
|  | 2279.75 | 79.64  | 2226.33 | 2200.11 | 43.46     | OSF1.50         | 12680.00 | 11035.00 |  | MINPT-O-EOU |      |
|  | 2280.02 | 79.98  | 2226.37 | 2200.04 | 43.27     | OSF1.50         | 12680.00 | 11035.00 |  | MinPt-O-ADP |      |
|  | 2293.80 | 98.41  | 2227.87 | 2195.39 | 35.30     | OSF1.50         | 13400.00 | 11035.00 |  | MinPt-CtCt  |      |
|  | 2296.06 | 103.97 | 2226.42 | 2192.09 | 33.43     | OSF1.50         | 13630.00 | 11035.00 |  | MINPT-O-EOU |      |
|  | 2296.61 | 104.64 | 2226.52 | 2191.97 | 33.22     | OSF1.50         | 13660.00 | 11035.00 |  | MinPt-O-ADP |      |
|  | 2308.47 | 124.05 | 2225.44 | 2184.42 | 28.12     | OSF1.50         | 14350.00 | 11035.00 |  | MinPt-CtCt  |      |
|  | 2303.47 | 137.25 | 2211.64 | 2166.22 | 25.35     | OSF1.50         | 14820.00 | 11035.00 |  | MinPt-CtCt  |      |
|  | 2304.45 | 140.04 | 2210.79 | 2164.41 | 24.85     | OSF1.50         | 14940.00 | 11035.00 |  | MINPT-O-EOU |      |
|  | 2307.74 | 146.63 | 2209.66 | 2161.11 | 23.76     | OSF1.50         | 15170.00 | 11035.00 |  | MINPT-O-EOU |      |
|  | 2308.92 | 148.02 | 2209.91 | 2160.90 | 23.54     | OSF1.50         | 15230.00 | 11035.00 |  | MinPt-O-ADP |      |
|  | 2318.15 | 160.20 | 2211.03 | 2157.95 | 21.83     | OSF1.50         | 15640.00 | 11035.00 |  | MINPT-O-EOU |      |
|  | 2318.67 | 160.83 | 2211.12 | 2157.84 | 21.75     | OSF1.50         | 15670.00 | 11035.00 |  | MinPt-O-ADP |      |
|  | 2323.20 | 164.96 | 2212.90 | 2158.24 | 21.24     | OSF1.50         | 15820.00 | 11035.00 |  | MINPT-O-EOU |      |
|  | 2295.01 | 194.51 | 2165.01 | 2100.50 | 17.78     | OSF1.50         | 16800.00 | 11035.00 |  | MinPt-CtCt  |      |
|  | 2294.53 | 198.38 | 2161.94 | 2096.14 | 17.43     | OSF1.50         | 16930.00 | 11035.00 |  | MinPt-CtCt  |      |
|  | 2294.60 | 209.57 | 2154.56 | 2085.03 | 16.49     | OSF1.50         | 17310.00 | 11035.00 |  | MinPt-CtCt  |      |
|  | 2295.07 | 211.03 | 2154.06 | 2084.04 | 16.38     | OSF1.50         | 17380.00 | 11035.00 |  | MINPT-O-EOU |      |
|  | 2298.98 | 220.79 | 2151.46 | 2078.19 | 15.68     | OSF1.50         | 17710.00 | 11035.00 |  | MINPT-O-EOU |      |
|  | 2299.49 | 221.41 | 2151.56 | 2078.09 | 15.64     | OSF1.50         | 17740.00 | 11035.00 |  | MinPt-O-ADP |      |

| Offset Trajectory | Separation |          | Allow<br>Dev. (ft) | Sep.<br>Fact. | Controlling<br>Rule | Reference Trajectory |          | Risk Level |       | Alert       | Status |
|-------------------|------------|----------|--------------------|---------------|---------------------|----------------------|----------|------------|-------|-------------|--------|
|                   | Ct-Ct (ft) | MAS (ft) | EOU (ft)           |               |                     | MD (ft)              | TVD (ft) | Alert      | Minor |             |        |
|                   | 2297.36    | 235.31   | 2140.16            | 2062.05       | 14.70               | OSF1.50              | 18180.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 2297.81    | 236.51   | 2139.81            | 2061.31       | 14.63               | OSF1.50              | 18240.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 2294.96    | 250.19   | 2127.84            | 2044.77       | 13.81               | OSF1.50              | 18680.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 2295.96    | 253.07   | 2126.92            | 2042.89       | 13.66               | OSF1.50              | 18800.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 2292.43    | 282.74   | 2103.61            | 2009.69       | 12.20               | OSF1.50              | 19770.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 2292.76    | 287.80   | 2100.58            | 2004.98       | 11.99               | OSF1.50              | 19940.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 2291.61    | 297.04   | 2093.25            | 1994.56       | 11.61               | OSF1.50              | 20250.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 2283.15    | 323.46   | 2067.18            | 1959.69       | 10.62               | OSF1.50              | 21130.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 2283.23    | 325.99   | 2065.58            | 1957.25       | 10.53               | OSF1.50              | 21217.93 | 11035.00   |       | MinPts      |        |

Final Surveys - Cimarex Vaca  
Draw 20-17 Federal #6H MWD  
0ft-22328ft (Surcon Corrected)  
(Def Survey)

|  |         |        |         |         |           |                 |          |          |  |             |  |
|--|---------|--------|---------|---------|-----------|-----------------|----------|----------|--|-------------|--|
|  | 1339.79 | 32.81  | 1338.66 | 1306.96 | N/A       | MAS = 10.00 (m) | 0.00     | 0.00     |  | MinPts      |  |
|  | 1339.80 | 32.81  | 1338.65 | 1306.99 | 105113.19 | MAS = 10.00 (m) | 23.00    | 23.00    |  | WRP         |  |
|  | 1340.34 | 32.81  | 1338.03 | 1307.53 | 1135.79   | MAS = 10.00 (m) | 310.00   | 310.00   |  | MinPts      |  |
|  | 1341.19 | 32.81  | 1337.53 | 1308.38 | 530.40    | MAS = 10.00 (m) | 590.00   | 590.00   |  | MINPT-O-EOU |  |
|  | 1335.99 | 32.81  | 1328.01 | 1303.16 | 195.13    | MAS = 10.00 (m) | 1560.00  | 1560.00  |  | MinPts      |  |
|  | 1336.13 | 32.81  | 1327.90 | 1303.32 | 188.12    | MAS = 10.00 (m) | 1610.00  | 1610.00  |  | MINPT-O-EOU |  |
|  | 1319.53 | 32.81  | 1309.42 | 1286.72 | 146.96    | MAS = 10.00 (m) | 2270.00  | 2269.60  |  | MinPts      |  |
|  | 1377.55 | 32.81  | 1366.55 | 1344.74 | 139.50    | MAS = 10.00 (m) | 2830.00  | 2819.49  |  | MinPts      |  |
|  | 2179.76 | 48.46  | 2147.08 | 2131.30 | 69.04     | OSF1.50         | 7686.46  | 7541.76  |  | MinPt-O-SF  |  |
|  | 2214.98 | 46.85  | 2183.37 | 2168.13 | 72.64     | OSF1.50         | 8320.00  | 8169.08  |  | MinPt-O-SF  |  |
|  | 2164.83 | 47.91  | 2132.52 | 2116.93 | 69.36     | OSF1.50         | 9220.00  | 9069.07  |  | MinPt-CtCt  |  |
|  | 2164.88 | 48.05  | 2132.47 | 2116.83 | 69.18     | OSF1.50         | 9280.00  | 9129.07  |  | MINPT-O-EOU |  |
|  | 2164.92 | 48.09  | 2132.48 | 2116.83 | 69.12     | OSF1.50         | 9300.00  | 9149.07  |  | MinPt-O-ADP |  |
|  | 2162.19 | 53.25  | 2126.31 | 2108.94 | 62.20     | OSF1.50         | 11020.00 | 10847.43 |  | MinPt-CtCt  |  |
|  | 2162.22 | 53.32  | 2126.29 | 2108.90 | 62.15     | OSF1.50         | 11030.00 | 10855.32 |  | MINPT-O-EOU |  |
|  | 2183.70 | 54.56  | 2146.95 | 2129.14 | 61.27     | OSF1.50         | 11040.00 | 10863.07 |  | MinPt-O-ADP |  |
|  | 2189.71 | 54.68  | 2152.88 | 2135.03 | 61.31     | OSF1.50         | 11370.00 | 11026.83 |  | MinPt-O-SF  |  |
|  | 2522.09 | 70.77  | 2474.58 | 2451.32 | 54.19     | OSF1.50         | 11410.00 | 11032.54 |  | MinPt-O-SF  |  |
|  | 2526.10 | 72.73  | 2477.28 | 2453.37 | 52.79     | OSF1.50         | 12360.00 | 11035.00 |  | MinPts      |  |
|  | 2528.24 | 74.55  | 2478.21 | 2453.69 | 51.53     | OSF1.50         | 12400.00 | 11035.00 |  | MinPts      |  |
|  | 2537.88 | 81.96  | 2482.92 | 2455.93 | 47.00     | OSF1.50         | 12460.00 | 11035.00 |  | MinPt-O-ADP |  |
|  | 2527.84 | 95.01  | 2464.17 | 2432.83 | 40.31     | OSF1.50         | 12770.00 | 11035.00 |  | MINPT-O-EOU |  |
|  | 2530.00 | 106.02 | 2458.99 | 2423.98 | 36.12     | OSF1.50         | 13280.00 | 11035.00 |  | MinPt-CtCt  |  |
|  | 2530.71 | 112.49 | 2455.39 | 2418.22 | 34.03     | OSF1.50         | 13700.00 | 11035.00 |  | MinPt-CtCt  |  |
|  | 2531.91 | 120.96 | 2450.94 | 2410.95 | 31.64     | OSF1.50         | 13940.00 | 11035.00 |  | MinPt-CtCt  |  |
|  | 2531.58 | 130.14 | 2444.49 | 2401.44 | 29.39     | OSF1.50         | 14250.00 | 11035.00 |  | MinPt-CtCt  |  |
|  | 2532.07 | 131.59 | 2444.01 | 2400.48 | 29.07     | OSF1.50         | 14580.00 | 11035.00 |  | MinPt-CtCt  |  |
|  | 2532.76 | 132.41 | 2444.16 | 2400.35 | 28.90     | OSF1.50         | 14650.00 | 11035.00 |  | MINPT-O-EOU |  |
|  | 2533.09 | 136.89 | 2441.50 | 2396.20 | 27.95     | OSF1.50         | 14690.00 | 11035.00 |  | MinPt-O-ADP |  |
|  | 2526.21 | 157.73 | 2420.74 | 2368.49 | 24.17     | OSF1.50         | 14820.00 | 11035.00 |  | MinPt-CtCt  |  |
|  | 2525.80 | 163.50 | 2416.47 | 2362.30 | 23.30     | OSF1.50         | 15550.00 | 11035.00 |  | MinPt-CtCt  |  |
|  | 2525.04 | 168.42 | 2412.43 | 2356.62 | 22.61     | OSF1.50         | 15750.00 | 11035.00 |  | MinPt-CtCt  |  |
|  | 2525.32 | 169.35 | 2412.10 | 2355.97 | 22.49     | OSF1.50         | 15920.00 | 11035.00 |  | MINPT-O-EOU |  |
|  | 2525.76 | 169.90 | 2412.19 | 2355.86 | 22.42     | OSF1.50         | 15970.00 | 11035.00 |  | MinPt-O-ADP |  |
|  | 2529.32 | 173.52 | 2413.31 | 2355.80 | 21.98     | OSF1.50         | 16000.00 | 11035.00 |  | MINPT-O-EOU |  |
|  | 2530.27 | 174.54 | 2413.58 | 2355.73 | 21.86     | OSF1.50         | 16130.00 | 11035.00 |  | MinPt-O-ADP |  |
|  | 2529.73 | 183.00 | 2407.40 | 2346.73 | 20.84     | OSF1.50         | 16170.00 | 11035.00 |  | MinPt-CtCt  |  |
|  | 2530.16 | 184.39 | 2406.93 | 2345.79 | 20.68     | OSF1.50         | 16420.00 | 11035.00 |  | MinPt-CtCt  |  |
|  | 2530.88 | 185.21 | 2407.08 | 2345.67 | 20.60     | OSF1.50         | 16490.00 | 11035.00 |  | MINPT-O-EOU |  |
|  |         |        |         |         |           | OSF1.50         | 16530.00 | 11035.00 |  | MinPt-O-ADP |  |

| Offset Trajectory | Separation |          | Allow    | Sep.    | Controlling | Reference Trajectory |          | Risk Level |       | Alert       | Status |
|-------------------|------------|----------|----------|---------|-------------|----------------------|----------|------------|-------|-------------|--------|
|                   | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Fact.   | Rule        | MD (ft)              | TVD (ft) | Minor      | Major |             |        |
|                   | 2551.35    | 212.64   | 2409.26  | 2338.71 | 18.07       | OSF1.50              | 17430.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 2551.88    | 214.69   | 2408.43  | 2337.20 | 17.91       | OSF1.50              | 17520.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 2552.56    | 215.50   | 2408.57  | 2337.06 | 17.84       | OSF1.50              | 17560.00 | 11035.00   |       | MinPt-O-ADP |        |
|                   | 2537.56    | 235.15   | 2380.46  | 2302.41 | 16.25       | OSF1.50              | 18190.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 2537.00    | 240.15   | 2376.57  | 2296.85 | 15.91       | OSF1.50              | 18380.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 2537.30    | 241.09   | 2376.25  | 2296.22 | 15.85       | OSF1.50              | 18410.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 2537.77    | 241.63   | 2376.35  | 2296.14 | 15.81       | OSF1.50              | 18440.00 | 11035.00   |       | MinPt-O-ADP |        |
|                   | 2541.85    | 245.26   | 2378.02  | 2296.59 | 15.60       | OSF1.50              | 18580.00 | 11035.00   |       | MinPt-O-ADP |        |
|                   | 2518.84    | 310.26   | 2311.67  | 2208.58 | 12.21       | OSF1.50              | 20710.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 2519.28    | 311.65   | 2311.18  | 2207.63 | 12.16       | OSF1.50              | 20780.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 2519.78    | 312.23   | 2311.30  | 2207.55 | 12.14       | OSF1.50              | 20810.00 | 11035.00   |       | MinPt-O-ADP |        |
|                   | 2521.46    | 313.97   | 2311.82  | 2207.49 | 12.08       | OSF1.50              | 20880.00 | 11035.00   |       | MinPt-O-ADP |        |
|                   | 2524.96    | 321.02   | 2310.62  | 2203.94 | 11.83       | OSF1.50              | 21070.00 | 11035.00   |       | MinPt-CtCt  |        |
|                   | 2525.88    | 324.18   | 2309.44  | 2201.70 | 11.72       | OSF1.50              | 21200.00 | 11035.00   |       | MINPT-O-EOU |        |
|                   | 2526.17    | 324.58   | 2309.48  | 2201.59 | 11.71       | OSF1.50              | 21217.93 | 11035.00   |       | MinPls      |        |

Final Surveys - Cimarex Vaca  
Draw 20-17 Federal #12H MWD  
0ft-22544ft (Surcon Corrected)  
(Def Survey)

Pass

|         |        |         |         |          |                 |          |          |  |  |             |  |
|---------|--------|---------|---------|----------|-----------------|----------|----------|--|--|-------------|--|
| 1359.79 | 32.81  | 1358.61 | 1326.98 | N/A      | MAS = 10.00 (m) | 0.00     | 0.00     |  |  | MinPls      |  |
| 1359.82 | 32.81  | 1358.63 | 1327.01 | 90741.36 | MAS = 10.00 (m) | 23.00    | 23.00    |  |  | WRP         |  |
| 1359.86 | 32.81  | 1358.62 | 1327.05 | 21982.86 | MAS = 10.00 (m) | 40.00    | 40.00    |  |  | MINPT-O-EOU |  |
| 1374.76 | 32.81  | 1364.62 | 1341.95 | 151.08   | MAS = 10.00 (m) | 2040.00  | 2040.00  |  |  | MinPls      |  |
| 1374.77 | 32.81  | 1364.62 | 1341.97 | 150.76   | MAS = 10.00 (m) | 2050.00  | 2050.00  |  |  | MINPT-O-EOU |  |
| 1375.22 | 32.81  | 1364.96 | 1342.41 | 149.12   | MAS = 10.00 (m) | 2100.00  | 2099.98  |  |  | MinPt-O-SF  |  |
| 1381.92 | 32.81  | 1371.53 | 1349.11 | 147.83   | MAS = 10.00 (m) | 2280.00  | 2289.50  |  |  | MinPt-O-SF  |  |
| 1387.60 | 32.81  | 1377.16 | 1354.79 | 147.74   | MAS = 10.00 (m) | 2370.00  | 2368.97  |  |  | MinPt-O-SF  |  |
| 2504.40 | 47.42  | 2472.44 | 2456.99 | 80.98    | OSF1.50         | 7686.46  | 7541.76  |  |  | MinPt-CtCt  |  |
| 2609.09 | 48.94  | 2576.12 | 2560.15 | 81.68    | OSF1.50         | 10000.00 | 9849.07  |  |  | MINPT-O-EOU |  |
| 2609.13 | 49.08  | 2576.07 | 2560.06 | 81.45    | OSF1.50         | 10050.00 | 9899.07  |  |  | MinPt-O-ADP |  |
| 2609.15 | 49.10  | 2576.07 | 2560.05 | 81.42    | OSF1.50         | 10060.00 | 9909.07  |  |  | MinPt-CtCt  |  |
| 2606.25 | 52.76  | 2570.73 | 2553.49 | 75.57    | OSF1.50         | 11040.00 | 10870.68 |  |  | MinPls      |  |
| 2606.27 | 52.79  | 2570.72 | 2553.47 | 75.52    | OSF1.50         | 11050.00 | 10870.68 |  |  | MinPt-O-SF  |  |
| 2626.68 | 54.29  | 2590.14 | 2572.39 | 73.97    | OSF1.50         | 11390.00 | 11030.10 |  |  | MinPt-O-SF  |  |
| 2641.82 | 54.66  | 2605.03 | 2587.16 | 73.89    | OSF1.50         | 11490.00 | 11035.00 |  |  | MinPt-O-SF  |  |
| 2650.82 | 54.85  | 2613.90 | 2595.97 | 73.87    | OSF1.50         | 11540.00 | 11035.00 |  |  | MinPt-CtCt  |  |
| 2954.42 | 90.35  | 2893.86 | 2864.07 | 49.57    | OSF1.50         | 13100.00 | 11035.00 |  |  | MINPT-O-EOU |  |
| 2954.83 | 91.48  | 2893.51 | 2863.34 | 48.96    | OSF1.50         | 13160.00 | 11035.00 |  |  | MinPt-O-ADP |  |
| 2956.54 | 93.43  | 2893.93 | 2863.11 | 47.96    | OSF1.50         | 13250.00 | 11035.00 |  |  | MinPt-O-ADP |  |
| 2976.45 | 107.54 | 2904.43 | 2868.91 | 41.89    | OSF1.50         | 13800.00 | 11035.00 |  |  | MinPt-O-ADP |  |
| 2985.63 | 112.79 | 2910.11 | 2872.84 | 40.04    | OSF1.50         | 14000.00 | 11035.00 |  |  | MinPt-O-ADP |  |
| 2968.15 | 136.70 | 2876.69 | 2831.45 | 32.80    | OSF1.50         | 14810.00 | 11035.00 |  |  | MinPt-CtCt  |  |
| 2968.39 | 137.42 | 2876.45 | 2830.97 | 32.63    | OSF1.50         | 14850.00 | 11035.00 |  |  | MINPT-O-EOU |  |
| 2968.61 | 141.34 | 2874.06 | 2827.27 | 31.72    | OSF1.50         | 14970.00 | 11035.00 |  |  | MinPt-CtCt  |  |
| 2968.10 | 149.09 | 2868.38 | 2819.01 | 30.05    | OSF1.50         | 15240.00 | 11035.00 |  |  | MinPt-CtCt  |  |
| 2968.48 | 150.24 | 2868.00 | 2818.25 | 29.82    | OSF1.50         | 15300.00 | 11035.00 |  |  | MINPT-O-EOU |  |
| 2968.97 | 150.80 | 2868.11 | 2818.17 | 29.72    | OSF1.50         | 15330.00 | 11035.00 |  |  | MinPt-O-ADP |  |
| 2969.65 | 153.72 | 2866.85 | 2815.94 | 29.16    | OSF1.50         | 15400.00 | 11035.00 |  |  | MinPt-CtCt  |  |
| 2969.85 | 154.40 | 2866.59 | 2815.45 | 29.03    | OSF1.50         | 15440.00 | 11035.00 |  |  | MINPT-O-EOU |  |
| 2970.27 | 154.90 | 2866.67 | 2815.36 | 28.94    | OSF1.50         | 15470.00 | 11035.00 |  |  | MinPt-O-ADP |  |
| 2987.64 | 217.10 | 2842.57 | 2770.53 | 20.73    | OSF1.50         | 17570.00 | 11035.00 |  |  | MinPt-CtCt  |  |
| 2992.96 | 229.91 | 2839.38 | 2763.07 | 19.60    | OSF1.50         | 18030.00 | 11035.00 |  |  | MINPT-O-EOU |  |
| 2995.39 | 232.67 | 2839.95 | 2762.72 | 19.39    | OSF1.50         | 18140.00 | 11035.00 |  |  | MinPt-O-ADP |  |

| Offset Trajectory                    | Separation |          | Allow    | Sep.<br>Fact. | Controlling<br>Rule | Reference Trajectory |          | Risk Level |       | Alert       | Status |
|--------------------------------------|------------|----------|----------|---------------|---------------------|----------------------|----------|------------|-------|-------------|--------|
|                                      | Ct-Ct (ft) | MAS (ft) | EOU (ft) |               |                     | MD (ft)              | TVD (ft) | Alert      | Major |             |        |
|                                      | 2988.29    | 254.79   | 2818.10  | 2733.50       | 17.66               | OSF1.50              | 18840.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 2991.17    | 270.55   | 2810.48  | 2720.62       | 16.64               | OSF1.50              | 19370.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 2991.98    | 274.24   | 2808.82  | 2717.74       | 16.42               | OSF1.50              | 19520.00 | 11035.00   |       | MINPT-O-EOU |        |
|                                      | 2992.71    | 275.11   | 2808.98  | 2717.60       | 16.37               | OSF1.50              | 19560.00 | 11035.00   |       | MinPt-O-ADP |        |
|                                      | 2995.65    | 277.96   | 2810.02  | 2717.69       | 16.22               | OSF1.50              | 19670.00 | 11035.00   |       | MinPt-O-ADP |        |
|                                      | 2994.32    | 290.55   | 2800.29  | 2703.77       | 15.51               | OSF1.50              | 20040.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 2987.74    | 303.10   | 2785.34  | 2684.63       | 14.83               | OSF1.50              | 20460.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 2986.83    | 308.88   | 2780.58  | 2677.95       | 14.55               | OSF1.50              | 20650.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 2987.34    | 310.53   | 2779.99  | 2676.81       | 14.47               | OSF1.50              | 20730.00 | 11035.00   |       | MINPT-O-EOU |        |
|                                      | 2988.03    | 311.33   | 2780.14  | 2676.69       | 14.44               | OSF1.50              | 20770.00 | 11035.00   |       | MinPt-O-ADP |        |
|                                      | 2994.10    | 322.64   | 2778.68  | 2671.46       | 13.96               | OSF1.50              | 21110.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 2993.36    | 326.42   | 2775.42  | 2666.94       | 13.79               | OSF1.50              | 21217.93 | 11035.00   |       | MinPts      |        |
| Cinmarex Vaca Draw 20-17             |            |          |          |               |                     |                      |          |            |       |             |        |
| Federal #6H MWD                      |            |          |          |               |                     |                      |          |            |       |             |        |
| Final(Surcon Corrected) (Def Survey) |            |          |          |               |                     |                      |          |            |       |             |        |
|                                      | 1421.07    | 32.81    | 1419.09  | 1388.26       | N/A                 | MAS = 10.00 (m)      | 0.00     | 0.00       |       | Surface     |        |
|                                      | 1421.04    | 32.81    | 1419.04  | 1388.23       | 57882.43            | MAS = 10.00 (m)      | 23.00    | 23.00      |       | WRP         |        |
|                                      | 1417.43    | 32.81    | 1412.38  | 1384.62       | 460.48              | MAS = 10.00 (m)      | 720.00   | 720.00     |       | MinPts      |        |
|                                      | 1418.08    | 32.81    | 1412.09  | 1385.28       | 352.98              | MAS = 10.00 (m)      | 940.00   | 940.00     |       | MINPT-O-EOU |        |
|                                      | 1416.51    | 32.81    | 1405.71  | 1383.70       | 160.42              | MAS = 10.00 (m)      | 2040.00  | 2040.00    |       | MinPts      |        |
|                                      | 1444.92    | 32.81    | 1433.36  | 1412.11       | 150.62              | MAS = 10.00 (m)      | 2480.00  | 2477.76    |       | MinPt-O-SF  |        |
|                                      | 1457.94    | 32.81    | 1446.29  | 1425.13       | 150.49              | MAS = 10.00 (m)      | 2570.00  | 2566.25    |       | MinPt-O-SF  |        |
|                                      | 2706.95    | 47.89    | 2674.37  | 2659.07       | 88.38               | OSF1.50              | 7686.46  | 7541.76    |       | MinPt-O-SF  |        |
|                                      | 2800.57    | 46.53    | 2768.89  | 2754.04       | 94.23               | OSF1.50              | 8940.00  | 8789.07    |       | MinPt-O-SF  |        |
|                                      | 3476.06    | 44.96    | 3445.43  | 3431.10       | 121.23              | OSF1.50              | 11180.00 | 10956.08   |       | MinPts      |        |
|                                      | 3481.46    | 45.31    | 3450.59  | 3436.15       | 120.46              | OSF1.50              | 11210.00 | 10971.80   |       | MinPts      |        |
|                                      | 3482.00    | 46.87    | 3450.09  | 3435.12       | 116.28              | OSF1.50              | 11820.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 3482.02    | 46.92    | 3450.08  | 3435.10       | 116.15              | OSF1.50              | 11830.00 | 11035.00   |       | MINPT-O-EOU |        |
|                                      | 3482.06    | 46.97    | 3450.08  | 3435.09       | 116.03              | OSF1.50              | 11840.00 | 11035.00   |       | MinPt-O-ADP |        |
|                                      | 3492.64    | 50.26    | 3458.48  | 3442.38       | 108.45              | OSF1.50              | 12160.00 | 11035.00   |       | MinPts      |        |
|                                      | 3496.85    | 55.27    | 3459.34  | 3441.56       | 98.37               | OSF1.50              | 12370.00 | 11035.00   |       | MINPT-O-EOU |        |
|                                      | 3497.04    | 55.50    | 3459.38  | 3441.54       | 97.96               | OSF1.50              | 12390.00 | 11035.00   |       | MinPt-O-ADP |        |
|                                      | 3482.23    | 66.64    | 3437.14  | 3415.59       | 80.73               | OSF1.50              | 12900.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 3482.42    | 67.25    | 3436.93  | 3415.17       | 79.98               | OSF1.50              | 12950.00 | 11035.00   |       | MINPT-O-EOU |        |
|                                      | 3482.63    | 67.49    | 3436.98  | 3415.14       | 79.69               | OSF1.50              | 12970.00 | 11035.00   |       | MinPt-O-ADP |        |
|                                      | 3481.42    | 95.29    | 3397.23  | 3366.13       | 55.61               | OSF1.50              | 14030.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 3461.55    | 95.68    | 3397.10  | 3365.87       | 55.38               | OSF1.50              | 14060.00 | 11035.00   |       | MINPT-O-EOU |        |
|                                      | 3461.74    | 95.93    | 3397.12  | 3365.81       | 55.24               | OSF1.50              | 14080.00 | 11035.00   |       | MinPt-O-ADP |        |
|                                      | 3482.60    | 109.99   | 3408.61  | 3372.61       | 48.34               | OSF1.50              | 14560.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 3482.51    | 120.12   | 3401.77  | 3362.39       | 44.19               | OSF1.50              | 14920.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 3481.75    | 139.64   | 3387.99  | 3342.10       | 37.92               | OSF1.50              | 15600.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 3482.28    | 141.39   | 3387.36  | 3340.89       | 37.45               | OSF1.50              | 15690.00 | 11035.00   |       | MINPT-O-EOU |        |
|                                      | 3482.90    | 142.15   | 3387.47  | 3340.75       | 37.25               | OSF1.50              | 15730.00 | 11035.00   |       | MinPt-O-ADP |        |
|                                      | 3485.66    | 153.19   | 3382.88  | 3332.47       | 34.56               | OSF1.50              | 16070.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 3482.94    | 171.59   | 3367.88  | 3311.35       | 30.78               | OSF1.50              | 16700.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 3482.54    | 180.36   | 3361.64  | 3302.18       | 29.27               | OSF1.50              | 17000.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 3482.32    | 185.37   | 3358.09  | 3296.96       | 28.47               | OSF1.50              | 17170.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 3475.01    | 226.21   | 3323.54  | 3248.80       | 23.23               | OSF1.50              | 18550.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 3475.65    | 228.26   | 3322.82  | 3247.39       | 23.03               | OSF1.50              | 18650.00 | 11035.00   |       | MINPT-O-EOU |        |
|                                      | 3474.48    | 299.14   | 3274.39  | 3175.34       | 17.53               | OSF1.50              | 20990.00 | 11035.00   |       | MinPt-CtCt  |        |
|                                      | 3474.54    | 299.34   | 3274.32  | 3175.20       | 17.52               | OSF1.50              | 21010.00 | 11035.00   |       | MINPT-O-EOU |        |
|                                      | 3474.62    | 299.44   | 3274.33  | 3175.18       | 17.51               | OSF1.50              | 21020.00 | 11035.00   |       | MinPt-O-ADP |        |

Cinmarex Vaca Draw 20-17  
Federal #6H MWD  
Final(Surcon Corrected) (Def Survey)

Pass

| Offset Trajectory                                                                  |          | Separation |         | Allow<br>Dev. (ft) | Sep.<br>Fact. | Controlling<br>Rule | Reference Trajectory |          | Risk Level |       | Alert       | Status |
|------------------------------------------------------------------------------------|----------|------------|---------|--------------------|---------------|---------------------|----------------------|----------|------------|-------|-------------|--------|
| Ct-Ct (ft)                                                                         | MAS (ft) | EOU (ft)   | MD (ft) |                    |               |                     | TVD (ft)             | Alert    | Minor      | Major |             |        |
| 3481.53                                                                            | 300.86   | 3280.30    | 3180.67 | 17.46              |               | OSF1.50             | 21210.00             | 11035.00 |            |       | MinPt-O-SF  | TD     |
| 3482.05                                                                            | 300.90   | 3280.79    | 3181.14 | 17.46              |               | OSF1.50             | 21217.93             | 11035.00 |            |       |             |        |
| Cimarex Vaca Draw 20-17<br>Federal #SH Final<br>MWD(Surcon Corrected) (Def Survey) |          |            |         |                    |               |                     |                      |          |            |       |             |        |
| 1441.05                                                                            | 32.81    | 1439.07    | 1408.24 | N/A                |               | MAS = 10.00 (m)     | 0.00                 | 0.00     |            |       | Surface     | Pass   |
| 1441.04                                                                            | 32.81    | 1439.04    | 1408.23 | 73443.01           |               | MAS = 10.00 (m)     | 23.00                | 23.00    |            |       | WRP         |        |
| 1439.13                                                                            | 32.81    | 1434.95    | 1406.33 | 652.18             |               | MAS = 10.00 (m)     | 540.00               | 540.00   |            |       | MinPts      | MinPts |
| 1439.23                                                                            | 32.81    | 1434.17    | 1406.42 | 466.56             |               | MAS = 10.00 (m)     | 750.00               | 750.00   |            |       | MinPts      |        |
| 1439.45                                                                            | 32.81    | 1433.82    | 1406.64 | 393.06             |               | MAS = 10.00 (m)     | 870.00               | 870.00   |            |       | MINPT-O-EOU | MinPts |
| 1441.46                                                                            | 32.81    | 1432.32    | 1408.66 | 200.80             |               | MAS = 10.00 (m)     | 1650.00              | 1650.00  |            |       | MinPts      |        |
| 1441.55                                                                            | 32.81    | 1432.19    | 1408.74 | 194.93             |               | MAS = 10.00 (m)     | 1700.00              | 1700.00  |            |       | MINPT-O-EOU | MinPts |
| 1452.45                                                                            | 32.81    | 1441.63    | 1419.64 | 164.07             |               | MAS = 10.00 (m)     | 2100.00              | 2099.98  |            |       | MinPt-O-SF  |        |
| 1468.17                                                                            | 32.81    | 1457.25    | 1435.36 | 164.06             |               | MAS = 10.00 (m)     | 2280.00              | 2279.55  |            |       | MinPt-O-SF  | MinPts |
| 1585.67                                                                            | 32.81    | 1574.12    | 1552.86 | 165.48             |               | MAS = 10.00 (m)     | 2860.00              | 2848.66  |            |       | MinPt-O-SF  |        |
| 2809.32                                                                            | 47.85    | 2776.76    | 2761.47 | 91.80              |               | OSF1.50             | 7686.46              | 7541.76  |            |       | MinPt-O-SF  | MinPts |
| 2885.30                                                                            | 46.09    | 2853.91    | 2839.21 | 98.04              |               | OSF1.50             | 8510.00              | 8359.07  |            |       | MinPts      |        |
| 2885.31                                                                            | 46.10    | 2853.92    | 2839.21 | 98.03              |               | OSF1.50             | 8520.00              | 8369.07  |            |       | MinPt-O-ADP | MinPts |
| 2885.46                                                                            | 46.33    | 2853.91    | 2839.13 | 97.52              |               | OSF1.50             | 8650.00              | 8499.07  |            |       | MINPT-O-EOU |        |
| 2885.48                                                                            | 46.36    | 2853.91    | 2839.12 | 97.45              |               | OSF1.50             | 8670.00              | 8519.07  |            |       | MinPt-O-ADP | MinPts |
| 2895.99                                                                            | 48.49    | 2863.00    | 2847.50 | 93.34              |               | OSF1.50             | 9710.00              | 9559.07  |            |       | MinPt-O-SF  |        |
| 3197.55                                                                            | 48.32    | 3164.68    | 3149.23 | 103.43             |               | OSF1.50             | 11208.46             | 10971.03 |            |       | MinPts      | MinPts |
| 3201.67                                                                            | 49.24    | 3168.18    | 3152.43 | 101.56             |               | OSF1.50             | 11250.00             | 10990.21 |            |       | MinPt-O-ADP |        |
| 3182.98                                                                            | 53.70    | 3146.52    | 3129.28 | 92.26              |               | OSF1.50             | 11930.00             | 11035.00 |            |       | MinPt-CtCt  | MinPts |
| 3183.15                                                                            | 54.18    | 3146.37    | 3128.97 | 91.41              |               | OSF1.50             | 11980.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 3183.41                                                                            | 54.48    | 3146.43    | 3128.93 | 90.90              |               | OSF1.50             | 12010.00             | 11035.00 |            |       | MinPt-O-ADP | MinPts |
| 3174.99                                                                            | 63.34    | 3132.10    | 3111.65 | 77.56              |               | OSF1.50             | 12520.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 3175.10                                                                            | 63.68    | 3131.98    | 3111.41 | 77.14              |               | OSF1.50             | 12550.00             | 11035.00 |            |       | MINPT-O-EOU | MinPts |
| 3175.27                                                                            | 63.91    | 3132.00    | 3111.36 | 76.86              |               | OSF1.50             | 12570.00             | 11035.00 |            |       | MinPt-O-ADP |        |
| 3173.39                                                                            | 82.21    | 3117.92    | 3091.18 | 59.29              |               | OSF1.50             | 13350.00             | 11035.00 |            |       | MinPt-CtCt  | MinPts |
| 3173.99                                                                            | 84.29    | 3117.14    | 3089.70 | 57.81              |               | OSF1.50             | 13460.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 3174.72                                                                            | 85.19    | 3117.27    | 3089.54 | 57.19              |               | OSF1.50             | 13510.00             | 11035.00 |            |       | MinPt-O-ADP | MinPts |
| 3167.89                                                                            | 106.46   | 3096.25    | 3061.43 | 45.45              |               | OSF1.50             | 14280.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 3168.16                                                                            | 107.29   | 3095.98    | 3060.87 | 45.10              |               | OSF1.50             | 14330.00             | 11035.00 |            |       | MINPT-O-EOU | MinPts |
| 3168.55                                                                            | 107.78   | 3096.04    | 3060.77 | 44.89              |               | OSF1.50             | 14360.00             | 11035.00 |            |       | MinPt-O-ADP |        |
| 3176.02                                                                            | 123.44   | 3093.07    | 3052.58 | 39.20              |               | OSF1.50             | 14920.00             | 11035.00 |            |       | MINPT-O-EOU | MinPts |
| 3177.51                                                                            | 125.25   | 3093.35    | 3052.26 | 38.64              |               | OSF1.50             | 15000.00             | 11035.00 |            |       | MinPt-O-ADP |        |
| 3179.61                                                                            | 128.44   | 3093.32    | 3051.17 | 37.69              |               | OSF1.50             | 15100.00             | 11035.00 |            |       | MINPT-O-EOU | MinPts |
| 3168.63                                                                            | 149.33   | 3068.41    | 3019.29 | 32.23              |               | OSF1.50             | 15800.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 3169.39                                                                            | 155.67   | 3064.95    | 3013.72 | 30.91              |               | OSF1.50             | 16020.00             | 11035.00 |            |       | MinPt-CtCt  | MinPts |
| 3161.44                                                                            | 192.49   | 3032.45    | 2988.95 | 24.88              |               | OSF1.50             | 17280.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 3166.09                                                                            | 206.64   | 3027.67    | 2959.45 | 23.19              |               | OSF1.50             | 17790.00             | 11035.00 |            |       | MinPt-O-ADP | MinPts |
| 3170.89                                                                            | 215.12   | 3026.82    | 2955.77 | 22.30              |               | OSF1.50             | 18080.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 3173.46                                                                            | 220.51   | 3025.79    | 2952.95 | 21.77              |               | OSF1.50             | 18260.00             | 11035.00 |            |       | MinPt-O-EOU | MinPts |
| 3175.97                                                                            | 226.75   | 3024.14    | 2949.22 | 21.18              |               | OSF1.50             | 18470.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 3176.47                                                                            | 227.48   | 3024.16    | 2948.99 | 21.12              |               | OSF1.50             | 18500.00             | 11035.00 |            |       | MINPT-O-EOU | MinPts |
| 3167.57                                                                            | 269.13   | 2987.49    | 2898.44 | 17.77              |               | OSF1.50             | 19860.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 3170.05                                                                            | 274.81   | 2986.18    | 2895.24 | 17.42              |               | OSF1.50             | 20090.00             | 11035.00 |            |       | MINPT-O-EOU | MinPts |
| 3179.18                                                                            | 286.15   | 2987.75    | 2893.02 | 16.77              |               | OSF1.50             | 20480.00             | 11035.00 |            |       | MinPt-O-ADP |        |
| 3173.01                                                                            | 302.80   | 2970.49    | 2870.22 | 15.81              |               | OSF1.50             | 20990.00             | 11035.00 |            |       | MinPt-CtCt  | MinPts |
| 3173.09                                                                            | 303.00   | 2970.43    | 2870.09 | 15.80              |               | OSF1.50             | 21010.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 3173.18                                                                            | 303.09   | 2970.46    | 2870.08 | 15.80              |               | OSF1.50             | 21020.00             | 11035.00 |            |       | MinPt-O-ADP |        |



| Offset Trajectory | Separation |          | Allow    | Sep.<br>Fact. | Controlling<br>Rule | Reference Trajectory |          | Risk Level |       | Alert | Status |
|-------------------|------------|----------|----------|---------------|---------------------|----------------------|----------|------------|-------|-------|--------|
|                   | Ct-Ct (ft) | MAS (ft) | EOU (ft) |               |                     | MD (ft)              | TVD (ft) | Minor      | Major |       |        |

3177.69 304.13 2974.28 2873.58 15.77 OSF1.50 21160.00 11035.00  
3181.36 304.39 2977.77 2876.97 15.77 OSF1.50 21217.93 11035.00

Cimarex Vaca Draw 20-17  
Federal #1H Surcon 0ft-12740  
(Def Survey)

|          |       |          |          |          |                 |          |          |  |  |             |      |
|----------|-------|----------|----------|----------|-----------------|----------|----------|--|--|-------------|------|
| 1461.02  | 32.81 | 1459.04  | 1428.21  | N/A      | MAS = 10.00 (m) | 0.00     | 0.00     |  |  | Surface     | Pass |
| 1460.98  | 32.81 | 1458.97  | 1428.17  | 47846.76 | MAS = 10.00 (m) | 23.00    | 23.00    |  |  | WRP         |      |
| 1459.12  | 32.81 | 1455.92  | 1426.31  | 1194.47  | MAS = 10.00 (m) | 300.00   | 300.00   |  |  | MinPts      |      |
| 1459.54  | 32.81 | 1455.63  | 1426.73  | 753.86   | MAS = 10.00 (m) | 430.00   | 430.00   |  |  | MINPT-O-EOU |      |
| 1494.71  | 32.81 | 1483.77  | 1461.90  | 166.59   | MAS = 10.00 (m) | 2100.00  | 2099.98  |  |  | MinPt-O-SF  |      |
| 1506.06  | 32.81 | 1495.08  | 1473.25  | 167.18   | MAS = 10.00 (m) | 2220.00  | 2219.78  |  |  | MinPt-O-SF  |      |
| 2943.27  | 48.20 | 2910.48  | 2895.07  | 95.45    | OSF1.50         | 7686.46  | 7541.76  |  |  | MinPt-O-SF  |      |
| 3035.26  | 46.90 | 3003.33  | 2988.36  | 101.30   | OSF1.50         | 8450.00  | 8299.07  |  |  | MinPt-O-ADP |      |
| 3040.57  | 49.34 | 3007.02  | 2991.23  | 96.24    | OSF1.50         | 9690.00  | 9539.07  |  |  | MinPt-CtCt  |      |
| 3021.56  | 54.23 | 2984.74  | 2967.33  | 86.69    | OSF1.50         | 11140.00 | 10932.68 |  |  | MinPt-CtCt  |      |
| 3021.63  | 54.42 | 2984.69  | 2967.21  | 86.38    | OSF1.50         | 11170.00 | 10950.48 |  |  | MINPT-O-EOU |      |
| 3021.68  | 54.48 | 2984.71  | 2967.26  | 86.28    | OSF1.50         | 11180.00 | 10956.08 |  |  | MinPt-O-ADP |      |
| 3134.70  | 58.43 | 3095.09  | 3076.27  | 83.24    | OSF1.50         | 11970.00 | 11035.00 |  |  | MinPt-O-SF  |      |
| 3151.38  | 58.73 | 3111.57  | 3092.65  | 83.24    | OSF1.50         | 12030.00 | 11035.00 |  |  | MinPt-O-SF  |      |
| 10532.42 | 69.79 | 10485.23 | 10462.62 | 232.93   | OSF1.50         | 21217.93 | 11035.00 |  |  | TD          |      |

Cimarex Vaca Draw 20-17  
Federal #1H ST01 0ft-21966ft  
(Def Survey)

|         |        |         |         |          |                 |          |          |  |  |             |      |
|---------|--------|---------|---------|----------|-----------------|----------|----------|--|--|-------------|------|
| 1461.02 | 32.81  | 1459.89 | 1428.21 | N/A      | MAS = 10.00 (m) | 0.00     | 0.00     |  |  | Surface     | Pass |
| 1460.98 | 32.81  | 1459.82 | 1428.17 | 47874.28 | MAS = 10.00 (m) | 23.00    | 23.00    |  |  | WRP         |      |
| 1459.12 | 32.81  | 1456.77 | 1426.31 | 1195.16  | MAS = 10.00 (m) | 300.00   | 300.00   |  |  | MinPts      |      |
| 1459.54 | 32.81  | 1456.48 | 1426.73 | 754.30   | MAS = 10.00 (m) | 430.00   | 430.00   |  |  | MINPT-O-EOU |      |
| 1494.71 | 32.81  | 1484.62 | 1461.90 | 166.69   | MAS = 10.00 (m) | 2100.00  | 2099.98  |  |  | MinPt-O-SF  |      |
| 1506.06 | 32.81  | 1495.93 | 1473.25 | 167.28   | MAS = 10.00 (m) | 2220.00  | 2219.78  |  |  | MinPt-O-SF  |      |
| 2943.27 | 47.35  | 2911.33 | 2895.92 | 95.48    | OSF1.50         | 7686.46  | 7541.76  |  |  | MinPt-O-SF  |      |
| 3035.26 | 46.05  | 3004.18 | 2989.21 | 101.33   | OSF1.50         | 8450.00  | 8299.07  |  |  | MinPt-O-ADP |      |
| 3040.57 | 48.49  | 3007.87 | 2992.08 | 96.27    | OSF1.50         | 9690.00  | 9539.07  |  |  | MinPt-CtCt  |      |
| 3021.56 | 53.38  | 2985.59 | 2968.18 | 86.71    | OSF1.50         | 11140.00 | 10932.68 |  |  | MinPt-CtCt  |      |
| 3021.63 | 53.57  | 2985.54 | 2968.06 | 86.40    | OSF1.50         | 11170.00 | 10950.48 |  |  | MINPT-O-EOU |      |
| 3021.68 | 53.63  | 2985.55 | 2968.05 | 86.30    | OSF1.50         | 11180.00 | 10956.08 |  |  | MinPt-O-ADP |      |
| 3134.70 | 57.58  | 3095.94 | 3077.12 | 83.28    | OSF1.50         | 11970.00 | 11035.00 |  |  | MinPt-O-SF  |      |
| 3151.38 | 57.88  | 3112.42 | 3093.50 | 83.26    | OSF1.50         | 12030.00 | 11035.00 |  |  | MinPt-O-SF  |      |
| 3279.44 | 76.58  | 3228.01 | 3202.86 | 65.18    | OSF1.50         | 12520.00 | 11035.00 |  |  | MinPt-CtCt  |      |
| 3279.75 | 77.58  | 3227.65 | 3202.17 | 64.33    | OSF1.50         | 12580.00 | 11035.00 |  |  | MINPT-O-EOU |      |
| 3280.18 | 78.08  | 3227.75 | 3202.10 | 63.92    | OSF1.50         | 12610.00 | 11035.00 |  |  | MinPt-O-ADP |      |
| 3286.92 | 88.48  | 3227.55 | 3198.43 | 56.42    | OSF1.50         | 13030.00 | 11035.00 |  |  | MinPt-CtCt  |      |
| 3284.38 | 95.74  | 3220.18 | 3188.64 | 52.06    | OSF1.50         | 13320.00 | 11035.00 |  |  | MinPt-CtCt  |      |
| 3283.06 | 102.40 | 3214.42 | 3180.66 | 48.61    | OSF1.50         | 13580.00 | 11035.00 |  |  | MinPt-CtCt  |      |
| 3284.42 | 106.68 | 3212.94 | 3177.77 | 46.67    | OSF1.50         | 13760.00 | 11035.00 |  |  | MINPT-O-EOU |      |
| 3284.91 | 107.20 | 3213.06 | 3177.70 | 46.44    | OSF1.50         | 13790.00 | 11035.00 |  |  | MinPt-O-ADP |      |
| 3267.98 | 143.93 | 3171.66 | 3124.06 | 34.32    | OSF1.50         | 15100.00 | 11035.00 |  |  | MinPt-CtCt  |      |
| 3268.95 | 146.33 | 3171.02 | 3122.62 | 33.76    | OSF1.50         | 15210.00 | 11035.00 |  |  | MINPT-O-EOU |      |
| 3270.75 | 148.48 | 3171.39 | 3122.27 | 33.28    | OSF1.50         | 15300.00 | 11035.00 |  |  | MinPt-O-ADP |      |
| 3272.57 | 153.20 | 3170.06 | 3119.37 | 32.27    | OSF1.50         | 15450.00 | 11035.00 |  |  | MINPT-O-EOU |      |
| 3275.57 | 156.74 | 3170.70 | 3118.84 | 31.56    | OSF1.50         | 15590.00 | 11035.00 |  |  | MinPt-O-ADP |      |
| 3289.88 | 165.67 | 3179.05 | 3124.21 | 29.98    | OSF1.50         | 15920.00 | 11035.00 |  |  | MinPt-O-ADP |      |
| 3291.66 | 173.91 | 3175.34 | 3117.75 | 28.57    | OSF1.50         | 16140.00 | 11035.00 |  |  | MinPt-CtCt  |      |

| Offset Trajectory |          | Separation |           | Allow | Sep.    | Controlling Rule | Reference Trajectory |       | Risk Level |       |  | Alert       | Status |
|-------------------|----------|------------|-----------|-------|---------|------------------|----------------------|-------|------------|-------|--|-------------|--------|
| Ct-Ct (ft)        | MAS (ft) | EOU (ft)   | Dev. (ft) | Fact. | MD (ft) |                  | TVD (ft)             | Alert | Minor      | Major |  |             |        |
| 3293.89           | 181.26   | 3172.68    | 3112.64   | 27.42 | OSF1.50 | 16420.00         | 11035.00             |       |            |       |  | MINPT-O-EOU |        |
| 3295.31           | 182.90   | 3172.99    | 3112.40   | 27.18 | OSF1.50 | 16490.00         | 11035.00             |       |            |       |  | MinPt-O-ADP |        |
| 3274.32           | 214.47   | 3130.97    | 3059.85   | 23.01 | OSF1.50 | 17530.00         | 11035.00             |       |            |       |  | MinPt-CtCt  |        |
| 3274.74           | 215.62   | 3130.62    | 3059.13   | 22.89 | OSF1.50 | 17590.00         | 11035.00             |       |            |       |  | MINPT-O-EOU |        |
| 3275.23           | 216.18   | 3130.73    | 3059.05   | 22.84 | OSF1.50 | 17620.00         | 11035.00             |       |            |       |  | MinPt-O-ADP |        |
| 3305.67           | 238.06   | 3146.59    | 3067.61   | 20.92 | OSF1.50 | 18320.00         | 11035.00             |       |            |       |  | MinPt-CtCt  |        |
| 3267.00           | 264.13   | 3090.54    | 3002.87   | 18.63 | OSF1.50 | 19200.00         | 11035.00             |       |            |       |  | MinPt-CtCt  |        |
| 3268.28           | 268.07   | 3089.19    | 3000.21   | 18.36 | OSF1.50 | 19360.00         | 11035.00             |       |            |       |  | MINPT-O-EOU |        |
| 3269.87           | 269.98   | 3089.51    | 2999.89   | 18.24 | OSF1.50 | 19440.00         | 11035.00             |       |            |       |  | MinPt-O-ADP |        |
| 3275.11           | 275.77   | 3090.89    | 2999.34   | 17.88 | OSF1.50 | 19640.00         | 11035.00             |       |            |       |  | MinPt-O-ADP |        |
| 3281.84           | 282.95   | 3092.83    | 2998.89   | 17.46 | OSF1.50 | 19860.00         | 11035.00             |       |            |       |  | MINPT-O-EOU |        |
| 3279.93           | 295.13   | 3082.79    | 2984.79   | 16.73 | OSF1.50 | 20240.00         | 11035.00             |       |            |       |  | MinPt-CtCt  |        |
| 3281.31           | 299.64   | 3081.17    | 2981.67   | 16.48 | OSF1.50 | 20420.00         | 11035.00             |       |            |       |  | MINPT-O-EOU |        |
| 3282.49           | 301.02   | 3081.43    | 2981.47   | 16.41 | OSF1.50 | 20480.00         | 11035.00             |       |            |       |  | MinPt-O-ADP |        |
| 3284.63           | 304.37   | 3081.34    | 2980.26   | 16.24 | OSF1.50 | 20570.00         | 11035.00             |       |            |       |  | MINPT-O-EOU |        |
| 3285.07           | 304.93   | 3081.41    | 2980.14   | 16.21 | OSF1.50 | 20600.00         | 11035.00             |       |            |       |  | MinPt-O-ADP |        |
| 3287.91           | 317.58   | 3075.81    | 2970.33   | 15.58 | OSF1.50 | 20990.00         | 11035.00             |       |            |       |  | MinPt-CtCt  |        |
| 3288.06           | 317.98   | 3075.71    | 2970.09   | 15.56 | OSF1.50 | 21020.00         | 11035.00             |       |            |       |  | MINPT-O-EOU |        |
| 3288.19           | 318.12   | 3075.74    | 2970.07   | 15.55 | OSF1.50 | 21030.00         | 11035.00             |       |            |       |  | MinPt-O-ADP |        |
| 3296.02           | 320.05   | 3082.28    | 2975.98   | 15.50 | OSF1.50 | 21217.93         | 11035.00             |       |            |       |  | MinPt-O-SF  |        |

Cimarex Vaca Draw 20-17  
Federal #1H Rev0 RM  
10Apr17 (Non-Def Plan)

Pass

|          |       |          |  |          |           |                 |          |          |  |  |  |             |
|----------|-------|----------|--|----------|-----------|-----------------|----------|----------|--|--|--|-------------|
| 1461.03  | 32.81 | 1459.05  |  | 1428.22  | N/A       | MAS = 10.00 (m) | 0.00     | 0.00     |  |  |  | Surface     |
| 1461.03  | 32.81 | 1459.03  |  | 1428.22  | 104235.94 | MAS = 10.00 (m) | 23.00    | 23.00    |  |  |  | WRP         |
| 1461.03  | 32.81 | 1446.84  |  | 1428.22  | 119.50    | MAS = 10.00 (m) | 2000.00  | 2000.00  |  |  |  | MinPts      |
| 1461.04  | 32.81 | 1446.81  |  | 1428.23  | 119.05    | MAS = 10.00 (m) | 2010.00  | 2010.00  |  |  |  | MINPT-O-EOU |
| 2712.64  | 69.90 | 2665.38  |  | 2642.74  | 59.86     | OSF1.50         | 7700.00  | 7554.94  |  |  |  | MinPt-O-SF  |
| 2783.61  | 90.66 | 2722.51  |  | 2692.95  | 47.05     | OSF1.50         | 11120.00 | 10919.98 |  |  |  | MinPt-CtCt  |
| 2783.64  | 90.77 | 2722.47  |  | 2692.87  | 46.99     | OSF1.50         | 11140.00 | 10932.68 |  |  |  | MINPT-O-EOU |
| 2783.70  | 90.83 | 2722.48  |  | 2692.87  | 46.96     | OSF1.50         | 11150.00 | 10938.78 |  |  |  | MinPt-O-ADP |
| 2794.08  | 91.95 | 2732.12  |  | 2702.13  | 46.55     | OSF1.50         | 11390.00 | 11030.10 |  |  |  | MinPt-O-SF  |
| 2796.82  | 92.04 | 2734.80  |  | 2704.78  | 46.55     | OSF1.50         | 11420.00 | 11033.45 |  |  |  | MinPt-O-SF  |
| 10447.06 | 98.16 | 10380.96 |  | 10348.90 | 162.89    | OSF1.50         | 21217.93 | 11035.00 |  |  |  | TD          |

Final Surveys - Cimarex Vaca  
Draw 20-17 Federal #72H  
Surveys oft to 19073ft (Surcon  
Corrected) (Def Survey)

Pass

|         |        |         |  |         |           |                 |          |          |  |  |  |             |
|---------|--------|---------|--|---------|-----------|-----------------|----------|----------|--|--|--|-------------|
| 2889.12 | 32.81  | 2887.84 |  | 2856.32 | N/A       | MAS = 10.00 (m) | 0.00     | 0.00     |  |  |  | Surface     |
| 2889.08 | 32.81  | 2887.78 |  | 2856.27 | 485851.25 | MAS = 10.00 (m) | 10.00    | 10.00    |  |  |  | MinPt-O-SF  |
| 2889.06 | 32.81  | 2887.78 |  | 2856.26 | N/A       | MAS = 10.00 (m) | 23.00    | 23.00    |  |  |  | WRP         |
| 2886.64 | 32.81  | 2880.62 |  | 2853.83 | 609.69    | MAS = 10.00 (m) | 1060.00  | 1060.00  |  |  |  | MINPT-O-EOU |
| 2488.92 | 32.81  | 2473.58 |  | 2456.11 | 179.12    | MAS = 10.00 (m) | 4110.00  | 4064.12  |  |  |  | MinPt-O-SF  |
| 1524.97 | 48.78  | 1491.51 |  | 1476.19 | 49.68     | OSF1.50         | 8010.00  | 7859.96  |  |  |  | MinPt-O-SF  |
| 1504.00 | 47.62  | 1471.30 |  | 1456.38 | 50.31     | OSF1.50         | 8360.00  | 8209.07  |  |  |  | MinPts      |
| 1500.25 | 48.81  | 1466.75 |  | 1451.44 | 48.90     | OSF1.50         | 8900.00  | 8749.07  |  |  |  | MinPt-CtCt  |
| 1500.27 | 48.88  | 1466.72 |  | 1451.39 | 48.82     | OSF1.50         | 8920.00  | 8769.07  |  |  |  | MinPts      |
| 1519.18 | 50.24  | 1484.76 |  | 1468.94 | 47.93     | OSF1.50         | 9260.00  | 9109.07  |  |  |  | MinPt-O-SF  |
| 1522.97 | 50.34  | 1488.49 |  | 1472.63 | 47.93     | OSF1.50         | 9290.00  | 9139.07  |  |  |  | MinPt-O-SF  |
| 2339.09 | 58.61  | 2299.69 |  | 2280.48 | 60.86     | OSF1.50         | 11910.00 | 11035.00 |  |  |  | MinPt-CtCt  |
| 2339.41 | 59.64  | 2299.32 |  | 2279.77 | 59.80     | OSF1.50         | 11970.00 | 11035.00 |  |  |  | MINPT-O-EOU |
| 2283.96 | 113.30 | 2208.10 |  | 2170.66 | 30.49     | OSF1.50         | 14120.00 | 11035.00 |  |  |  | MinPt-CtCt  |

| Offset Trajectory | Separation |          | Allow<br>Dev. (ft) | Sep.<br>Fact. | Controlling<br>Rule | Reference Trajectory |          | Alert       | Risk Level |       | Alert | Status |
|-------------------|------------|----------|--------------------|---------------|---------------------|----------------------|----------|-------------|------------|-------|-------|--------|
|                   | Ct-Ct (ft) | MAS (ft) | EOU (ft)           |               |                     | MD (ft)              | TVD (ft) |             | Minor      | Major |       |        |
| 2285.12           | 122.52     | 2203.11  | 2162.60            | 28.19         | OSF1.50             | 14450.00             | 11035.00 | MinPt-CtCt  |            |       |       |        |
| 2286.55           | 126.65     | 2201.79  | 2159.90            | 27.28         | OSF1.50             | 14610.00             | 11035.00 | MINPT-O-EOU |            |       |       |        |
| 2294.38           | 142.22     | 2199.24  | 2152.16            | 24.36         | OSF1.50             | 15160.00             | 11035.00 | MINPT-O-EOU |            |       |       |        |
| 2296.00           | 185.88     | 2171.75  | 2110.12            | 18.62         | OSF1.50             | 16650.00             | 11035.00 | MinPt-CtCt  |            |       |       |        |
| 2284.45           | 206.14     | 2146.70  | 2078.31            | 16.70         | OSF1.50             | 17340.00             | 11035.00 | MinPt-CtCt  |            |       |       |        |
| 2285.21           | 208.41     | 2145.95  | 2076.81            | 16.52         | OSF1.50             | 17430.00             | 11035.00 | MINPT-O-EOU |            |       |       |        |
| 2286.05           | 209.40     | 2146.12  | 2076.65            | 16.45         | OSF1.50             | 17470.00             | 11035.00 | MinPt-O-ADP |            |       |       |        |
| 2297.28           | 219.33     | 2150.74  | 2077.95            | 15.78         | OSF1.50             | 17800.00             | 11035.00 | MINPT-O-EOU |            |       |       |        |
| 2289.84           | 248.87     | 2133.59  | 2050.96            | 13.91         | OSF1.50             | 18780.00             | 11035.00 | MinPt-CtCt  |            |       |       |        |
| 2301.73           | 254.15     | 2131.97  | 2047.58            | 13.63         | OSF1.50             | 18970.00             | 11035.00 | MINPT-O-EOU |            |       |       |        |
| 2303.51           | 256.31     | 2132.31  | 2047.20            | 13.53         | OSF1.50             | 19050.00             | 11035.00 | MinPt-O-ADP |            |       |       |        |
| 2289.16           | 288.22     | 2096.69  | 2000.94            | 11.95         | OSF1.50             | 20100.00             | 11035.00 | MinPt-CtCt  |            |       |       |        |
| 2287.98           | 297.76     | 2089.15  | 1990.23            | 11.56         | OSF1.50             | 20420.00             | 11035.00 | MinPt-CtCt  |            |       |       |        |
| 2290.93           | 310.94     | 2083.31  | 1979.99            | 11.08         | OSF1.50             | 20860.00             | 11035.00 | MinPt-CtCt  |            |       |       |        |
| 2291.40           | 312.41     | 2082.80  | 1978.99            | 11.03         | OSF1.50             | 20920.00             | 11035.00 | MINPT-O-EOU |            |       |       |        |
| 2292.18           | 313.36     | 2082.95  | 1978.83            | 11.00         | OSF1.50             | 20960.00             | 11035.00 | MinPt-O-ADP |            |       |       |        |
| 2300.71           | 320.07     | 2087.00  | 1980.64            | 10.81         | OSF1.50             | 21180.00             | 11035.00 | MINPT-O-EOU |            |       |       |        |
| 2301.63           | 321.11     | 2067.23  | 1980.52            | 10.78         | OSF1.50             | 21217.93             | 11035.00 | MinPis      |            |       |       |        |

Cimarex Vaca Draw 20-17  
Federal #59H Rev1 RM  
09Feb21 (Def Plan)

Pass

|         |        |         |         |           |                 |          |          |             |  |  |  |  |
|---------|--------|---------|---------|-----------|-----------------|----------|----------|-------------|--|--|--|--|
| 2359.41 | 32.81  | 2357.43 | 2326.60 | N/A       | MAS = 10.00 (m) | 0.00     | 0.00     | Surface     |  |  |  |  |
| 2359.35 | 32.81  | 2357.37 | 2326.54 | 335458.99 | MAS = 10.00 (m) | 10.00    | 10.00    | MinPt-O-SF  |  |  |  |  |
| 2359.34 | 32.81  | 2357.36 | 2326.53 | N/A       | MAS = 10.00 (m) | 23.00    | 23.00    | WRP         |  |  |  |  |
| 1822.49 | 51.65  | 1787.18 | 1770.83 | 55.66     | OSF1.50         | 6890.00  | 6767.31  | MinPt-O-SF  |  |  |  |  |
| 1561.87 | 57.20  | 1522.69 | 1504.67 | 43.24     | OSF1.50         | 8250.00  | 8099.10  | MinPt-O-SF  |  |  |  |  |
| 1559.79 | 57.13  | 1520.66 | 1502.66 | 43.24     | OSF1.50         | 8340.00  | 8189.07  | MinPt-O-SF  |  |  |  |  |
| 1559.70 | 69.11  | 1512.58 | 1490.59 | 35.39     | OSF1.50         | 10780.00 | 10628.81 | MinPt-CtCt  |  |  |  |  |
| 1559.81 | 69.56  | 1512.39 | 1490.25 | 35.15     | OSF1.50         | 10860.00 | 10706.54 | MINPT-O-EOU |  |  |  |  |
| 1559.90 | 69.67  | 1512.42 | 1490.23 | 35.09     | OSF1.50         | 10880.00 | 10725.41 | MinPt-O-ADP |  |  |  |  |
| 1574.83 | 71.15  | 1526.39 | 1503.68 | 34.61     | OSF1.50         | 11190.00 | 10961.49 | MinPt-O-SF  |  |  |  |  |
| 1578.61 | 71.29  | 1530.08 | 1507.32 | 34.61     | OSF1.50         | 11220.00 | 10976.68 | MinPt-O-SF  |  |  |  |  |
| 2167.08 | 317.47 | 1954.77 | 1849.61 | 10.29     | OSF1.50         | 21217.93 | 11035.00 | MinPis      |  |  |  |  |

Final Surveys - Cimarex Vaca  
Draw 20-17 Federal #73H  
ST01 0ft- 19719ft (Surcon  
Corrected) (Def Survey)

Pass

|         |       |         |         |           |                 |          |         |             |  |  |  |  |
|---------|-------|---------|---------|-----------|-----------------|----------|---------|-------------|--|--|--|--|
| 2909.12 | 32.81 | 2907.83 | 2876.31 | N/A       | MAS = 10.00 (m) | 0.00     | 0.00    | Surface     |  |  |  |  |
| 2909.07 | 32.81 | 2907.78 | 2876.26 | 498329.35 | MAS = 10.00 (m) | 10.00    | 10.00   | MinPt-O-SF  |  |  |  |  |
| 2909.06 | 32.81 | 2907.77 | 2876.25 | N/A       | MAS = 10.00 (m) | 23.00    | 23.00   | WRP         |  |  |  |  |
| 2908.77 | 32.81 | 2906.32 | 2875.96 | 2494.18   | MAS = 10.00 (m) | 310.00   | 310.00  | MinPis      |  |  |  |  |
| 2908.02 | 32.81 | 2903.28 | 2875.21 | 841.90    | MAS = 10.00 (m) | 820.00   | 820.00  | MINPT-O-EOU |  |  |  |  |
| 2908.18 | 32.81 | 2903.08 | 2875.37 | 763.46    | MAS = 10.00 (m) | 910.00   | 910.00  | MinPt-O-SF  |  |  |  |  |
| 1677.53 | 48.67 | 1644.18 | 1628.86 | 54.67     | OSF1.50         | 8000.00  | 7850.03 | MinPt-O-ADP |  |  |  |  |
| 1658.72 | 47.46 | 1626.16 | 1611.26 | 55.57     | OSF1.50         | 8320.00  | 8169.08 | MinPis      |  |  |  |  |
| 1658.69 | 47.43 | 1626.15 | 1611.27 | 55.61     | OSF1.50         | 8330.00  | 8179.08 | MinPis      |  |  |  |  |
| 1658.89 | 48.71 | 1625.49 | 1610.18 | 54.06     | OSF1.50         | 9250.00  | 9099.07 | MinPt-O-SF  |  |  |  |  |
| 1625.46 | 48.85 | 1591.95 | 1576.60 | 52.86     | OSF1.50         | 9510.00  | 9359.07 | MinPt-CtCt  |  |  |  |  |
| 1610.42 | 50.55 | 1575.80 | 1559.88 | 50.48     | OSF1.50         | 9760.00  | 9609.07 | MINPT-O-EOU |  |  |  |  |
| 1610.43 | 50.62 | 1575.75 | 1559.80 | 50.40     | OSF1.50         | 9770.00  | 9619.07 | MinPt-O-ADP |  |  |  |  |
| 1610.48 | 50.70 | 1575.76 | 1559.78 | 50.32     | OSF1.50         | 9780.00  | 9629.07 | MinPt-O-SF  |  |  |  |  |
| 1630.75 | 52.15 | 1595.11 | 1578.61 | 49.31     | OSF1.50         | 10040.00 | 9889.07 | MinPt-O-SF  |  |  |  |  |

| Offset Trajectory | Separation |          | Allow Dev. (ft) | Sep. Fact. | Controlling Rule | Reference Trajectory |          | Risk Level |       | Alert       | Status |
|-------------------|------------|----------|-----------------|------------|------------------|----------------------|----------|------------|-------|-------------|--------|
|                   | Ct-Ct (ft) | MAS (ft) | EOU (ft)        |            |                  | MD (ft)              | TVD (ft) | Alert      | Minor | Major       |        |
| 1694.68           | 52.78      | 1698.75  | 1641.89         | 50.21      | OSF1.50          | 10330.00             | 10179.07 |            |       | MinPt-O-SF  |        |
| 1871.90           | 69.16      | 1825.46  | 1802.74         | 41.16      | OSF1.50          | 12220.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 1872.62           | 71.26      | 1824.79  | 1801.36         | 39.95      | OSF1.50          | 12320.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 1877.27           | 77.79      | 1825.08  | 1799.48         | 36.64      | OSF1.50          | 12600.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 1877.69           | 79.10      | 1824.63  | 1798.59         | 36.04      | OSF1.50          | 12660.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 1878.40           | 79.97      | 1824.76  | 1798.43         | 35.65      | OSF1.50          | 12700.00             | 11035.00 |            |       | MinPt-O-ADP |        |
| 1878.80           | 94.19      | 1815.68  | 1784.62         | 30.23      | OSF1.50          | 13280.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 1879.46           | 96.10      | 1815.06  | 1783.36         | 29.63      | OSF1.50          | 13340.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 1880.07           | 96.81      | 1815.19  | 1783.26         | 29.42      | OSF1.50          | 13370.00             | 11035.00 |            |       | MinPt-O-ADP |        |
| 1844.06           | 121.31     | 1762.85  | 1722.75         | 22.98      | OSF1.50          | 14260.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 1844.46           | 122.52     | 1762.44  | 1721.94         | 22.76      | OSF1.50          | 14310.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 1845.05           | 123.24     | 1762.55  | 1721.81         | 22.63      | OSF1.50          | 14340.00             | 11035.00 |            |       | MinPt-O-ADP |        |
| 1845.01           | 133.60     | 1755.59  | 1711.41         | 20.86      | OSF1.50          | 14700.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 1845.40           | 134.83     | 1755.17  | 1710.56         | 20.68      | OSF1.50          | 14750.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 1845.98           | 135.56     | 1755.26  | 1710.42         | 20.57      | OSF1.50          | 14780.00             | 11035.00 |            |       | MinPt-O-ADP |        |
| 1849.59           | 149.56     | 1749.54  | 1700.03         | 18.67      | OSF1.50          | 15260.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 1850.13           | 151.35     | 1748.88  | 1698.78         | 18.45      | OSF1.50          | 15330.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 1850.98           | 152.36     | 1749.06  | 1698.62         | 18.34      | OSF1.50          | 15370.00             | 11035.00 |            |       | MinPt-O-ADP |        |
| 1830.20           | 168.11     | 1717.77  | 1682.09         | 16.42      | OSF1.50          | 15900.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 1832.29           | 172.19     | 1717.15  | 1660.10         | 16.05      | OSF1.50          | 16050.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 1834.57           | 174.94     | 1717.59  | 1659.63         | 15.82      | OSF1.50          | 16150.00             | 11035.00 |            |       | MinPt-O-ADP |        |
| 1837.68           | 180.02     | 1717.30  | 1657.65         | 15.40      | OSF1.50          | 16310.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 1838.43           | 182.40     | 1716.47  | 1656.03         | 15.20      | OSF1.50          | 16400.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 1841.72           | 188.25     | 1715.86  | 1653.47         | 14.75      | OSF1.50          | 16600.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 1843.29           | 190.17     | 1716.15  | 1653.12         | 14.61      | OSF1.50          | 16670.00             | 11035.00 |            |       | MinPt-O-ADP |        |
| 1847.68           | 215.95     | 1703.35  | 1631.73         | 12.89      | OSF1.50          | 17530.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 1836.41           | 251.94     | 1668.09  | 1584.47         | 10.97      | OSF1.50          | 19000.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 1832.49           | 259.71     | 1658.99  | 1572.78         | 10.62      | OSF1.50          | 19000.00             | 11035.00 |            |       | MINPT-O-EOU |        |
| 1834.33           | 263.85     | 1658.07  | 1570.48         | 10.46      | OSF1.50          | 19150.00             | 11035.00 |            |       | MinPt-O-ADP |        |
| 1840.03           | 271.67     | 1658.56  | 1568.36         | 10.19      | OSF1.50          | 19420.00             | 11035.00 |            |       | MinPt-O-ADP |        |
| 1848.95           | 280.89     | 1661.33  | 1568.05         | 9.91       | OSF1.50          | 19730.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 1856.00           | 301.99     | 1654.30  | 1554.00         | 9.25       | OSF1.50          | 20420.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 1854.48           | 313.98     | 1644.80  | 1540.50         | 8.88       | OSF1.50          | 20820.00             | 11035.00 |            |       | MinPt-CtCt  |        |
| 1853.49           | 325.94     | 1635.83  | 1527.54         | 8.55       | OSF1.50          | 21217.93             | 11035.00 |            |       | MinPts      |        |

Final Surveys - Cimarex Vaca  
Draw 20-17 Federal #73H Off-  
19583ft (Surcon Corrected)  
(Def Survey)

Pass

|         |        |         |         |           |                 |          |          |  |  |             |  |
|---------|--------|---------|---------|-----------|-----------------|----------|----------|--|--|-------------|--|
| 2909.12 | 32.81  | 2907.83 | 2876.31 | N/A       | MAS = 10.00 (m) | 0.00     | 0.00     |  |  | Surface     |  |
| 2909.07 | 32.81  | 2907.78 | 2876.26 | 498329.35 | MAS = 10.00 (m) | 10.00    | 10.00    |  |  | MinPt-O-SF  |  |
| 2909.06 | 32.81  | 2907.77 | 2876.25 | N/A       | MAS = 10.00 (m) | 23.00    | 23.00    |  |  | WRP         |  |
| 2908.77 | 32.81  | 2906.32 | 2875.96 | 2494.18   | MAS = 10.00 (m) | 310.00   | 310.00   |  |  | MinPts      |  |
| 2908.02 | 32.81  | 2903.28 | 2875.21 | 841.90    | MAS = 10.00 (m) | 820.00   | 820.00   |  |  | MinPts      |  |
| 2908.18 | 32.81  | 2903.08 | 2875.37 | 763.46    | MAS = 10.00 (m) | 910.00   | 910.00   |  |  | MINPT-O-EOU |  |
| 1677.53 | 48.67  | 1644.18 | 1628.86 | 54.67     | OSF1.50         | 8000.00  | 7850.03  |  |  | MinPt-O-SF  |  |
| 1658.72 | 47.46  | 1626.16 | 1611.26 | 55.57     | OSF1.50         | 8320.00  | 8169.08  |  |  | MinPt-O-ADP |  |
| 1658.69 | 47.43  | 1626.15 | 1611.27 | 55.61     | OSF1.50         | 8330.00  | 8179.08  |  |  | MinPts      |  |
| 1658.89 | 48.71  | 1625.49 | 1610.16 | 54.06     | OSF1.50         | 9250.00  | 9099.07  |  |  | MinPts      |  |
| 1617.46 | 50.30  | 1582.99 | 1567.16 | 51.02     | OSF1.50         | 9700.00  | 9549.07  |  |  | MinPt-CtCt  |  |
| 1617.48 | 50.37  | 1582.96 | 1567.12 | 50.95     | OSF1.50         | 9710.00  | 9559.07  |  |  | MINPT-O-EOU |  |
| 1617.55 | 50.44  | 1582.99 | 1567.11 | 50.87     | OSF1.50         | 9720.00  | 9569.07  |  |  | MinPt-O-ADP |  |
| 1643.34 | 52.13  | 1607.71 | 1591.21 | 49.72     | OSF1.50         | 10030.00 | 9879.07  |  |  | MinPt-O-SF  |  |
| 1989.07 | 122.44 | 1907.10 | 1866.63 | 24.56     | OSF1.50         | 14280.00 | 11035.00 |  |  | MinPt-CtCt  |  |

| Offset Trajectory | Separation |          |          | Allow<br>Dev. (ft) | Sep.<br>Fact. | Controlling<br>Rule | Reference Trajectory |          | Risk Level |       | Alert | Status      |
|-------------------|------------|----------|----------|--------------------|---------------|---------------------|----------------------|----------|------------|-------|-------|-------------|
|                   | Ct-Ct (ft) | MAS (ft) | EOU (ft) |                    |               |                     | MD (ft)              | TVD (ft) | Alert      | Minor | Major |             |
| 1985.27           | 130.92     | 1897.65  | 1854.35  | 22.91              | OSF1.50       | OSF1.50             | 14580.00             | 11035.00 |            |       |       | MinPt-CtCt  |
| 1981.53           | 140.29     | 1887.66  | 1841.24  | 21.33              | OSF1.50       | OSF1.50             | 14910.00             | 11035.00 |            |       |       | MinPt-CtCt  |
| 1977.19           | 171.05     | 1862.81  | 1806.14  | 17.43              | OSF1.50       | OSF1.50             | 15980.00             | 11035.00 |            |       |       | MinPt-CtCt  |
| 1978.51           | 174.87     | 1861.59  | 1803.64  | 17.06              | OSF1.50       | OSF1.50             | 16120.00             | 11035.00 |            |       |       | MINPT-O-EOU |
| 1979.56           | 182.79     | 1857.36  | 1796.77  | 16.33              | OSF1.50       | OSF1.50             | 16380.00             | 11035.00 |            |       |       | MinPt-CtCt  |
| 1980.04           | 191.32     | 1852.16  | 1788.73  | 15.60              | OSF1.50       | OSF1.50             | 16670.00             | 11035.00 |            |       |       | MinPt-CtCt  |
| 1981.49           | 216.21     | 1817.01  | 1745.28  | 13.67              | OSF1.50       | OSF1.50             | 17510.00             | 11035.00 |            |       |       | MinPt-CtCt  |
| 1967.69           | 252.10     | 1799.28  | 1715.59  | 11.75              | OSF1.50       | OSF1.50             | 18720.00             | 11035.00 |            |       |       | MinPt-CtCt  |
| 1989.01           | 263.19     | 1793.21  | 1705.82  | 11.26              | OSF1.50       | OSF1.50             | 19090.00             | 11035.00 |            |       |       | MinPt-CtCt  |
| 1915.96           | 308.53     | 1709.93  | 1607.43  | 9.34               | OSF1.50       | OSF1.50             | 20600.00             | 11035.00 |            |       |       | MinPt-CtCt  |
| 1919.40           | 315.45     | 1708.79  | 1603.95  | 9.15               | OSF1.50       | OSF1.50             | 20840.00             | 11035.00 |            |       |       | MINPT-O-EOU |
| 1920.53           | 316.79     | 1709.00  | 1603.74  | 9.12               | OSF1.50       | OSF1.50             | 20890.00             | 11035.00 |            |       |       | MinPt-O-ADP |
| 1934.76           | 326.03     | 1717.06  | 1608.72  | 8.92               | OSF1.50       | OSF1.50             | 21217.93             | 11035.00 |            |       |       | MinPt-O-SF  |

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**District IV**  
1220 S. St Francis Dr., Santa Fe, NM 87505  
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS  
  
Action 19632

CONDITIONS OF APPROVAL

|                                                                  |                          |                  |                         |                        |
|------------------------------------------------------------------|--------------------------|------------------|-------------------------|------------------------|
| Operator:<br>CIMAREX ENERGY CO.<br>Suite 600<br>Midland, TX79701 | 600 N. Marienfeld Street | OGRID:<br>215099 | Action Number:<br>19632 | Action Type:<br>C-103A |
| OCD Reviewer<br>pkautz                                           | Condition<br>None        |                  |                         |                        |