

**District I**

1625 N. French Dr., Hobbs, NM 88240  
Phone:(575) 393-6161 Fax:(575) 393-0720

**District II**

811 S. First St., Artesia, NM 88210  
Phone:(575) 748-1283 Fax:(575) 748-9720

**District III**

1000 Rio Brazos Rd., Aztec, NM 87410  
Phone:(505) 334-6178 Fax:(505) 334-6170

**District IV**

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

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

Form C-101  
August 1, 2011

Permit 274120

**APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE**

|                                                                                                             |  |                               |
|-------------------------------------------------------------------------------------------------------------|--|-------------------------------|
| 1. Operator Name and Address<br>CHISHOLM ENERGY OPERATING, LLC<br>801 Cherry Street<br>Fort Worth, TX 76102 |  | 2. OGRID Number<br>372137     |
| 4. Property Code<br>317782                                                                                  |  | 3. API Number<br>30-025-46537 |
| 5. Property Name<br>GRAMA RIDGE EAST 34 STATE 2BS                                                           |  | 6. Well No.<br>009H           |

**7. Surface Location**

|               |               |                 |              |              |                  |               |                   |               |               |
|---------------|---------------|-----------------|--------------|--------------|------------------|---------------|-------------------|---------------|---------------|
| UL - Lot<br>P | Section<br>34 | Township<br>21S | Range<br>34E | Lot Idn<br>P | Feet From<br>226 | N/S Line<br>S | Feet From<br>1273 | E/W Line<br>E | County<br>Lea |
|---------------|---------------|-----------------|--------------|--------------|------------------|---------------|-------------------|---------------|---------------|

**8. Proposed Bottom Hole Location**

|               |               |                 |              |              |                  |               |                  |               |               |
|---------------|---------------|-----------------|--------------|--------------|------------------|---------------|------------------|---------------|---------------|
| UL - Lot<br>A | Section<br>34 | Township<br>21S | Range<br>34E | Lot Idn<br>A | Feet From<br>100 | N/S Line<br>N | Feet From<br>460 | E/W Line<br>E | County<br>Lea |
|---------------|---------------|-----------------|--------------|--------------|------------------|---------------|------------------|---------------|---------------|

**9. Pool Information**

|                             |       |
|-----------------------------|-------|
| GRAMA RIDGE;BONE SPRING, NE | 28435 |
|-----------------------------|-------|

**Additional Well Information**

|                           |                             |                                        |                         |                                    |
|---------------------------|-----------------------------|----------------------------------------|-------------------------|------------------------------------|
| 11. Work Type<br>New Well | 12. Well Type<br>OIL        | 13. Cable/Rotary                       | 14. Lease Type<br>State | 15. Ground Level Elevation<br>3616 |
| 16. Multiple<br>N         | 17. Proposed Depth<br>15074 | 18. Formation<br>2nd Bone Spring Sand  | 19. Contractor          | 20. Spud Date<br>12/12/2019        |
| Depth to Ground water     |                             | Distance from nearest fresh water well |                         | Distance to nearest surface water  |

☒ We will be using a closed-loop system in lieu of lined pits

**21. Proposed Casing and Cement Program**

| Type | Hole Size | Casing Size | Casing Weight/ft | Setting Depth | Sacks of Cement | Estimated TOC |
|------|-----------|-------------|------------------|---------------|-----------------|---------------|
| Surf | 17.5      | 13.375      | 54.5             | 1750          | 1390            | 0             |
| Int1 | 12.25     | 9.625       | 40               | 5600          | 2045            | 0             |
| Prod | 8.75      | 5.5         | 20               | 15074         | 1505            | 4500          |

**Casing/Cement Program: Additional Comments**

|                     |
|---------------------|
| DV TOOL SET @ 3800' |
|---------------------|

**22. Proposed Blowout Prevention Program**

| Type       | Working Pressure | Test Pressure | Manufacturer |
|------------|------------------|---------------|--------------|
| Annular    | 2500             | 2500          | CAMERON      |
| Double Ram | 5000             | 5000          | CAMERON      |
| Pipe       | 5000             | 5000          | CAMERON      |

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.  
I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒ if applicable.

**OIL CONSERVATION DIVISION**

|                |                                        |                                 |              |
|----------------|----------------------------------------|---------------------------------|--------------|
| Signature:     |                                        |                                 |              |
| Printed Name:  | Electronically filed by Jennifer Elrod | Approved By:                    | Paul F Kautz |
| Title:         | Sr. Regulatory Tech                    | Title:                          | Geologist    |
| Email Address: | jelrod@chisholmenergy.com              | Approved Date:                  | 11/25/2019   |
| Date:          | 11/19/2019                             | Expiration Date:                | 11/25/2021   |
| Phone:         | 817-953-3728                           | Conditions of Approval Attached |              |

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## DISTRICT IV

1226 S. St. Francis Dr., Santa Fe, NM 87505  
Phone (505) 476-3460 Fax: (505) 476-3462State of New Mexico  
Energy, Minerals and Natural Resources Department

## OIL CONSERVATION DIVISION

1226 South St. Francis Dr.  
Santa Fe, New Mexico 87505

Form C-102

Revised August 1, 2011

Submit one copy to appropriate  
District Office

## WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

|                     |                                                    |                                           |
|---------------------|----------------------------------------------------|-------------------------------------------|
| API Number          | Pool Code<br>28435                                 | Pool Name<br>GRAMA RIDGE; BONE SPRING, NE |
| Property Code       | Property Name<br>GRAMA RIDGE EAST 34 2BS STATE COM | Well Number<br>9H                         |
| OGRID No.<br>372137 | Operator Name<br>CHISHOLM ENERGY OPERATING, LLC    | Elevation<br>3616'                        |

## Surface Location

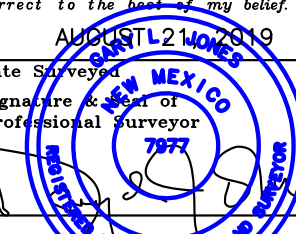
| UL or lot No. | Section | Township | Range | Lot Idn | FEET from the | North/South line | FEET from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| P             | 34      | 21 S     | 34 E  |         | 226           | SOUTH            | 1273          | EAST           | LEA    |

## Bottom Hole Location If Different From Surface

| UL or lot No. | Section | Township | Range | Lot Idn | FEET from the | North/South line | FEET from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| A             | 34      | 21 S     | 34 E  |         | 100           | NORTH            | 460           | EAST           | LEA    |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No. |
|-----------------|-----------------|--------------------|-----------|
| 160             | INFILL          |                    |           |

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

|                                        |                                        |                                                                                                                                         |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| N: 525857.8<br>E: 808809.9<br>(NAD 83) | N: 525883.7<br>E: 811449.7<br>(NAD 83) | <b>PROPOSED BOTTOM HOLE LOCATION</b><br>Lat - N 32.442408°<br>Long - W 103.450681°<br>NMSPCE- N 525804.5<br>E 813631.8<br>(NAD-83)      | N: 525908.9<br>E: 814090.9<br>(NAD 83) | <b>OPERATOR CERTIFICATION</b><br>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.<br><br><i>Jennifer Elrod</i> 11/08/19<br>Signature Date<br><b>JENNIFER ELROD</b><br>Printed Name<br>jelrod@chisholmenenergy.com<br>Email Address |                                                                                                                                                                                                                                                                                                                                                                                                                              |
| N: 523215.0<br>E: 808832.6<br>(NAD 83) | N: 523268.7<br>E: 814113.1<br>(NAD 83) | <b>LANDING POINT</b><br>100 FSL & 460 FEL<br>Lat - N 32.428436°<br>Long - W 103.450675°<br>NMSPCE- N 520721.4<br>E 813675.4<br>(NAD-83) | N: 520626.5<br>E: 814136.3<br>(NAD 83) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>SURVEYOR CERTIFICATION</b><br>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.<br><br>AUGUST 21, 2019<br>Date Surveyed<br>Signature & Seal of Professional Surveyor<br> |
| N: 520568.2<br>E: 808855.9<br>(NAD 83) | N: 520597.5<br>E: 811496.6<br>(NAD 83) | <b>SURFACE LOCATION</b><br>Lat - N 32.428777°<br>Long - W 103.453312°<br>NMSPCE- N 520838.5<br>E 812861.1<br>(NAD-83)                   | N: 520626.5<br>E: 814136.3<br>(NAD 83) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Certificate No. Gary L. Jones 7977<br>BASIN SURVEYS<br>SCALE: 1" = 2000'<br>WO Num.: 34819                                                                                                                                                                                                                                                                                                                                   |

Intent ☐ As Drilled ☐API # 

|                |                |             |
|----------------|----------------|-------------|
| Operator Name: | Property Name: | Well Number |
|----------------|----------------|-------------|

## Kick Off Point (KOP)

|          |         |          |       |     |           |          |      |          |        |
|----------|---------|----------|-------|-----|-----------|----------|------|----------|--------|
| UL       | Section | Township | Range | Lot | Feet      | From N/S | Feet | From E/W | County |
| Latitude |         |          |       |     | Longitude |          |      |          | NAD    |

## First Take Point (FTP)

|          |         |          |       |     |           |          |      |          |        |
|----------|---------|----------|-------|-----|-----------|----------|------|----------|--------|
| UL       | Section | Township | Range | Lot | Feet      | From N/S | Feet | From E/W | County |
| Latitude |         |          |       |     | Longitude |          |      |          | NAD    |

## Last Take Point (LTP)

|          |         |          |       |     |           |          |      |          |        |
|----------|---------|----------|-------|-----|-----------|----------|------|----------|--------|
| UL       | Section | Township | Range | Lot | Feet      | From N/S | Feet | From E/W | County |
| Latitude |         |          |       |     | Longitude |          |      |          | NAD    |

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

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

API # 

|                |                |             |
|----------------|----------------|-------------|
| Operator Name: | Property Name: | Well Number |
|----------------|----------------|-------------|

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

## GAS CAPTURE PLAN

Date: 11/25/2019

☒ Original

Operator & OGRID No.: [372137] CHISHOLM ENERGY OPERATING, LLC

☐ Amended - Reason for  
Amendment: \_\_\_\_\_

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

*Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).*

### Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

| Well Name                           | API          | Well Location<br>(ULSTR) | Footages    | Expected<br>MCF/D | Flared or<br>Vented | Comments                |
|-------------------------------------|--------------|--------------------------|-------------|-------------------|---------------------|-------------------------|
| GRAMA RIDGE EAST 34 STATE 2BS #009H | 30-025-46537 | P-34-21S-34E             | 0226S 1273E | 1200              | Flared              | FLARED ONLY WHEN NEEDED |

### Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to 3BEAR FIELD SERVICES, LLC and will be connected to 3BEAR FIELD SERVICES, LLC Low Pressure gathering system located in Lea County, New Mexico. It will require 50' of pipeline to connect the facility to Low Pressure gathering system. CHISHOLM ENERGY OPERATING, LLC provides (periodically) to 3BEAR FIELD SERVICES, LLC a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, CHISHOLM ENERGY OPERATING, LLC and 3BEAR FIELD SERVICES, LLC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at 3BEAR FIELD SERVICES, LLC Processing Plant located in Sec. 26, Twn. 20S, Rng. 34E, Lea County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

### Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on 3BEAR FIELD SERVICES, LLC system at that time. Based on current information, it is CHISHOLM ENERGY OPERATING, LLC's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

### Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

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

Form APD Comments

Permit 274120

**PERMIT COMMENTS**

|                                                                                                                    |                                              |
|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| Operator Name and Address:<br>CHISHOLM ENERGY OPERATING, LLC [372137]<br>801 Cherry Street<br>Fort Worth, TX 76102 | API Number:<br>30-025-46537                  |
|                                                                                                                    | Well:<br>GRAMA RIDGE EAST 34 STATE 2BS #009H |

| Created By | Comment                                                                                                                                                                                                                                                                                                                                                                 | Comment Date |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| pkautz     | REJECTED When you attach more than 1 Directional Drill Plan, we are unable to review your Directional Drill Plan. 1) Submit only one Directional Drill Plan as a PDF File. 2) DO NOT SUBMIT AN ANTICOLLISION PLAN. We do not want or need it. The fees are a onetime non-refundable fee. After correcting you will need to resubmit the above APD and pay for it again. | 11/18/2019   |
| pkautz     | When you attach more than 1 Directional Drill Plan, we are unable to review your Directional Drill Plan. 1) Submit only one Directional Drill Plan as a PDF File. 2) DO NOT SUBMIT AN ANTICOLLISION PLAN. We do not want or need it. The fees are a onetime non-refundable fee. After correcting you will need to resubmit the above APD and pay for it again.          | 11/18/2019   |

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Form APD Conditions

Permit 274120

**PERMIT CONDITIONS OF APPROVAL**

|                                                                                                                    |                                              |
|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| Operator Name and Address:<br>CHISHOLM ENERGY OPERATING, LLC [372137]<br>801 Cherry Street<br>Fort Worth, TX 76102 | API Number:<br>30-025-46537                  |
|                                                                                                                    | Well:<br>GRAMA RIDGE EAST 34 STATE 2BS #009H |

|              |                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OCD Reviewer | Condition                                                                                                                                                                                                                                                                                                                                                                                              |
| pkautz       | Will require a directional survey with the C-104                                                                                                                                                                                                                                                                                                                                                       |
| pkautz       | 1) SURFACE & INTERMEDIATE CASING - Cement must circulate to surface -- 2) PRODUCTION CASING - Cement must tie back into intermediate casing --                                                                                                                                                                                                                                                         |
| pkautz       | If cement does not circulate to surface, must run temperature survey or other log to determine top of cement                                                                                                                                                                                                                                                                                           |
| pkautz       | Surface casing must be set 25' below top of Rustler Anhydrite in order to seal off protectable water                                                                                                                                                                                                                                                                                                   |
| pkautz       | 1)- The Operator is to notify NMOC by sundry (Form C-103) within ten (10) days of the well being spud 2)- Drilling Sundries Form C-103 (Casing and Cement test are to be submitted within 10 days 3)- Completion Reports & Logs are to be submitted within 45 days 4)- Deviation / Directional Drill Survey are to be filed with or prior to C-104                                                     |
| pkautz       | It is the operator's responsibility to monitor cancellation dates of approved APDs. APD's are good for 2 years and may be extended for one year. Only one 1 year extension will be granted if submitted by C-103 before expiration date. After expiration date or after a 1 year extension must submit new APD. If an APD expires and if site construction has occurred, site remediation is required. |
| pkautz       | Stage Tool 1) Must notify OCD Hobbs Office prior to running Stage Tool at 5753703186 2) If using Stage Tool on Surface casing, Stage Tool must be set greater than 350' from surface and a minimum of 200 feet above surface shoe. 3) When using a Stage Tool on Intermediate or Production Casing Stage must be a minimum of 50 feet below previous casing shoe.                                      |



Grama Ridge East 34 State Com 2BS 9H

API # 30-025-xxxxx

Updated: 10/03/2019

| TVD    |        | Geological       |  | Wellbore Sketch |                        | Hole Size    |                                   | Casing                                      |                                                                                                                                         | Drilling Fluids                                                                                                                                                                                                                      |  | Cement |  | OH Evaluation/Logs        |  |
|--------|--------|------------------|--|-----------------|------------------------|--------------|-----------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------|--|---------------------------|--|
| ft-RKB |        | Tops             |  |                 |                        |              |                                   |                                             |                                                                                                                                         |                                                                                                                                                                                                                                      |  |        |  |                           |  |
| 2,000  | 1,705  | Rustler          |  | 1,750'          | DV Tool & ECP @ 3,800' | 17-1/2"      | Surface:<br>13-3/8" 54.5# J55 BTC | FW Spud Mud<br>8.4 - 9.4 ppg<br>32 - 34 Vis | Top of Lead: Surface<br>12.8 ppg 2.01 cuft/sk<br>865 sks - 100% XS<br>Top of Tail: 1,250'<br>14.8 ppg 1.33 cuft/sk<br>525 sks - 100% XS |                                                                                                                                                                                                                                      |  |        |  |                           |  |
|        | 3,000  | 3,740            |  |                 |                        | Yates        | 12-1/4"                           | Intermediate:<br>9-5/8" 40# J55 LTC         | Brine<br>10.0 ppg<br>28 Vis                                                                                                             | Stage 1<br>Top of Lead: 3,800'<br>11.5 ppg 2.43 cuft/sk<br>340 sks - 100% XS<br>Top of Tail: 5,100'<br>14.8 ppg 1.33 cuft/sk<br>235 sks - 100% XS<br>Stage 2<br>Top of Lead: Surface<br>11.5 ppg 2.43 cuft/sk<br>1,470 sks - 200% XS |  |        |  |                           |  |
|        | 4,000  | 4,320            |  |                 |                        | Capitan Reef | 8-3/4"<br>8-1/2" Lateral          | Production:<br>5-1/2" 20# P110 BTC          | Curve & Lateral<br>OBM<br>8.9 - 9.1 ppg<br>50 - 70 Vis<br>75/25 OWR                                                                     | Scavenger: Surface<br>10.5 ppg 2.01 cuft/sk<br>645 sks - 10% XS<br>Top of Lead: 4,500'<br>11.3 ppg 2.62 cuft/sk<br>530 sks - 10% XS<br>Top of Tail: 9,500'<br>13.2 ppg 1.82 cuft/sk<br>975 sks - 10% XS                              |  |        |  |                           |  |
| 5,000  | 5,560  | Delaware Mtn Grp |  |                 |                        |              |                                   |                                             |                                                                                                                                         |                                                                                                                                                                                                                                      |  |        |  |                           |  |
| 6,000  |        |                  |  |                 |                        |              |                                   |                                             |                                                                                                                                         |                                                                                                                                                                                                                                      |  |        |  |                           |  |
| 7,000  |        |                  |  |                 |                        |              |                                   |                                             |                                                                                                                                         |                                                                                                                                                                                                                                      |  |        |  |                           |  |
| 8,000  | 8,375  | Bone Spring      |  |                 |                        |              |                                   |                                             |                                                                                                                                         |                                                                                                                                                                                                                                      |  |        |  |                           |  |
| 9,000  | 9,475  | 1st Bone Sprg SS |  |                 |                        |              |                                   |                                             |                                                                                                                                         |                                                                                                                                                                                                                                      |  |        |  |                           |  |
| 10,000 | 10,040 | 2nd Bone Sprg SS |  |                 |                        |              |                                   |                                             |                                                                                                                                         |                                                                                                                                                                                                                                      |  |        |  |                           |  |
|        | 10,315 | Target LP        |  |                 |                        |              |                                   |                                             |                                                                                                                                         |                                                                                                                                                                                                                                      |  |        |  |                           |  |
| 11,000 | 10,915 | 3rd Bone Sprg SS |  |                 |                        |              |                                   |                                             |                                                                                                                                         |                                                                                                                                                                                                                                      |  |        |  |                           |  |
|        |        |                  |  |                 |                        |              |                                   |                                             |                                                                                                                                         |                                                                                                                                                                                                                                      |  |        |  | 15,870' MD<br>10,315' TVD |  |



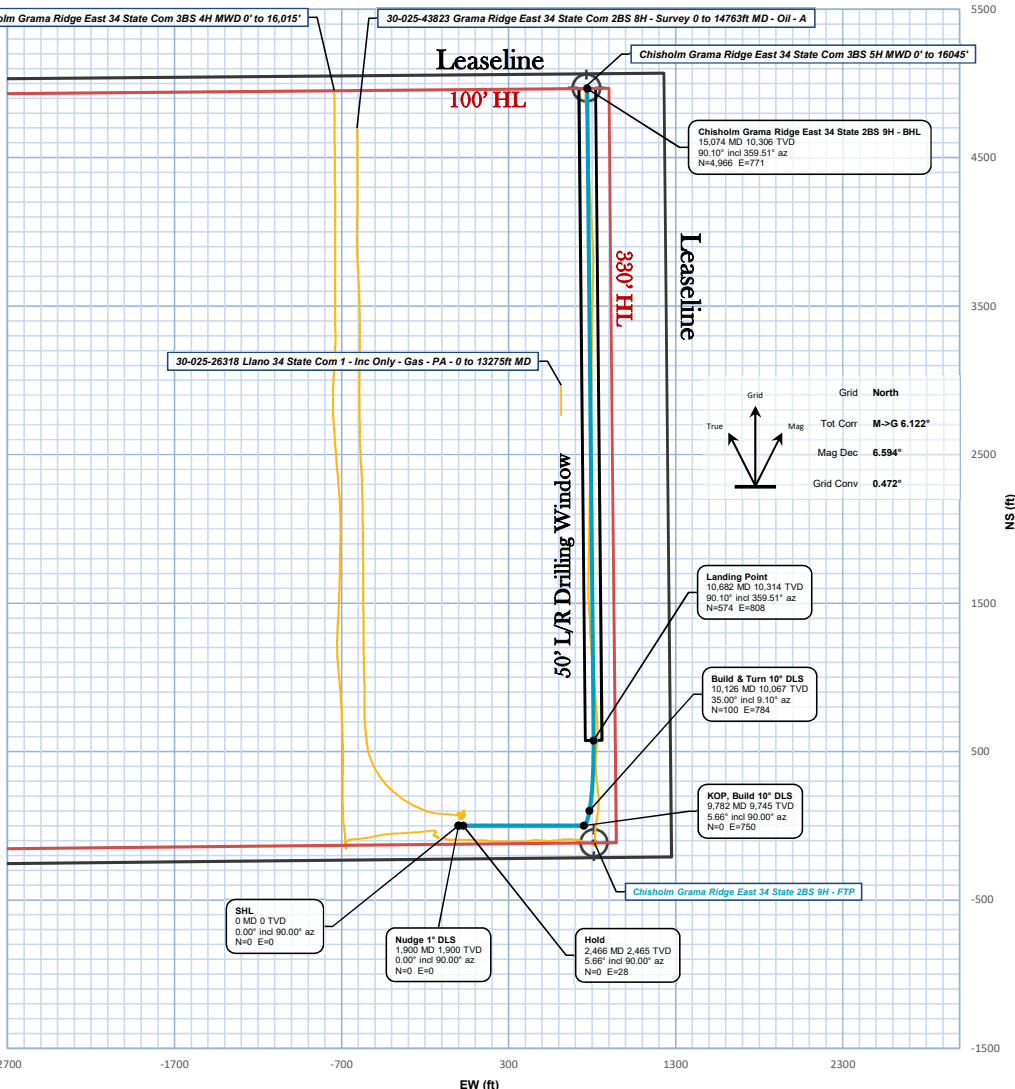
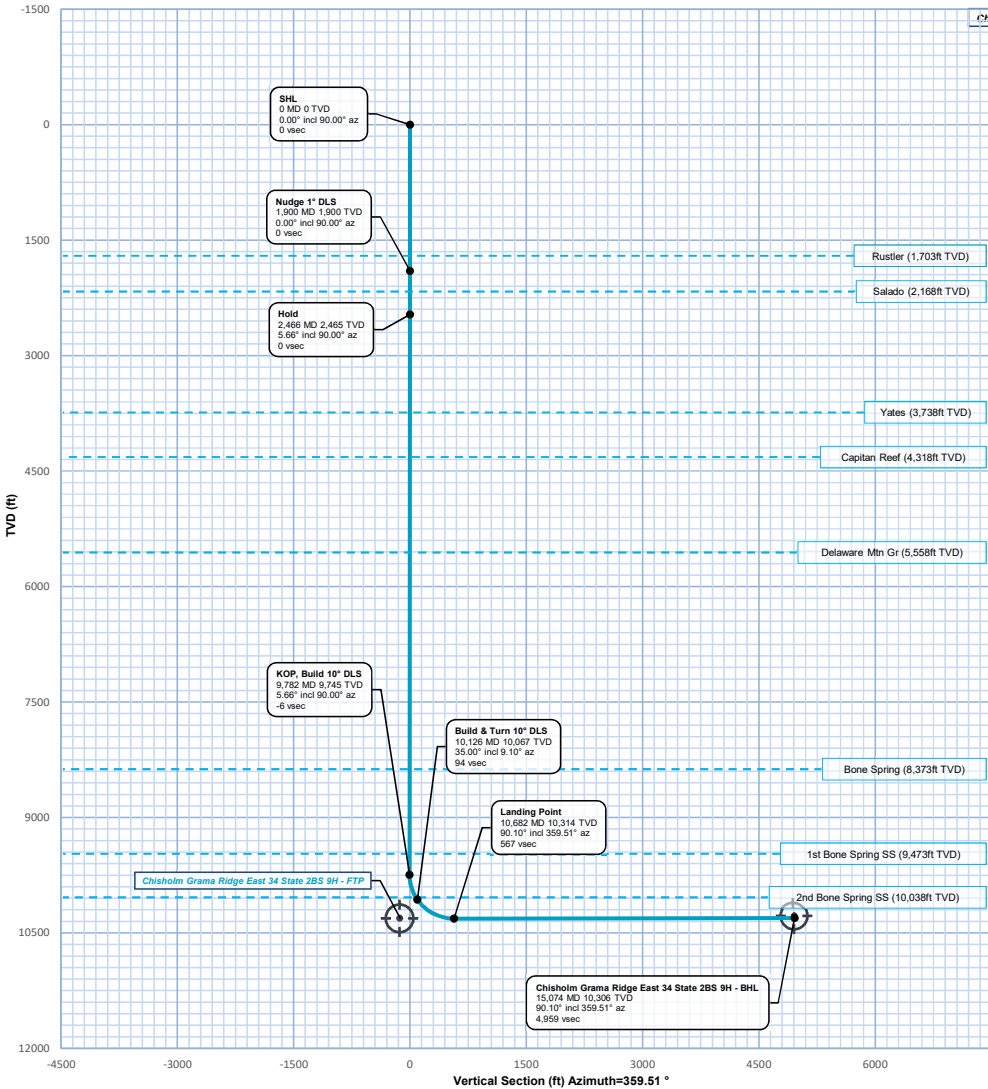
JDC 7

Chisholm

Rev0



| BOREHOLE                         |                                                         |          |          | WELL                             |           |         |         | FIELD                  |                                |                |     | STRUCTURE                                 |                  |                            |                                                     |                |                       |                |            |            |
|----------------------------------|---------------------------------------------------------|----------|----------|----------------------------------|-----------|---------|---------|------------------------|--------------------------------|----------------|-----|-------------------------------------------|------------------|----------------------------|-----------------------------------------------------|----------------|-----------------------|----------------|------------|------------|
| Grama Ridge East 34 State 2BS 9H |                                                         |          |          | Grama Ridge East 34 State 2BS 9H |           |         |         | NM Lea County (NAD 83) |                                |                |     | Chisholm Grama Ridge East 34 State 2BS 9H |                  |                            |                                                     |                |                       |                |            |            |
| Critical Point                   | MD (ft)                                                 | Incl (°) | Azim (°) | TVD (ft)                         | VSEC (ft) | NS (ft) | EW (ft) | DLS (deg/100ft)        | GRAVITY & MAGNETICS PARAMETERS |                |     |                                           | SURFACE LOCATION |                            | NAD83 New Mexico State Plane, Eastern Zone, US Feet |                |                       |                |            |            |
| SHL                              | 0.00                                                    | 0.00     | 90.00    | 0.00                             | 0.00      | 0.00    | 0.00    |                        | Model                          | HDGM 2019 GARM | Dip | 60.238°                                   | Date             | 15-Oct-19                  | Lat                                                 | 32°25'43.60"N  | Northing              | 520,838.50 RUS | Grid Conv  | 0.472"     |
| Nudge 1" DLS                     | 1,900.00                                                | 0.00     | 90.00    | 1,900.00                         | 0.00      | 0.00    | 0.00    | 0.00                   |                                |                |     |                                           |                  |                            |                                                     |                |                       |                |            |            |
| 13.375 in Casing                 | 2,315.00                                                | 4.15     | 90.00    | 2,314.64                         | -0.13     | 0.00    | 15.02   | 1.00                   |                                |                |     |                                           |                  |                            |                                                     |                |                       |                |            |            |
| Hold                             | 2,466.42                                                | 5.66     | 90.00    | 2,465.50                         | -0.24     | 0.00    | 27.97   | 1.00                   | MagDec                         | 6.594°         | FS  | 47,993.116nT                              | Gravity FS       | 998.479mgm (9.80665 Based) | Lon                                                 | 103°27'11.92"W | Easting               | 812,861.10 RUS | Scale Fact | 0.99998353 |
| MISCELLANEOUS                    |                                                         |          |          |                                  |           |         |         |                        |                                |                |     |                                           |                  |                            |                                                     |                |                       |                |            |            |
| Slot                             | TVD Reference RKB (3647,000 ft above MSL)               |          |          |                                  |           |         |         |                        |                                |                |     |                                           |                  |                            |                                                     |                |                       |                |            |            |
| Plan                             | Chisholm Grama Ridge East 34 State 2BS 9H R0 IC 01Nov19 |          |          |                                  |           |         |         |                        |                                |                |     |                                           |                  |                            | Seabed / Ground Elevation                           |                | 3616.000 ft above MSL |                |            |            |





## Geodetic Report

|                                |                              |
|--------------------------------|------------------------------|
| Survey / DLS Computation:      | Minimum Curvature / Lubinski |
| Vertical Section Azimuth:      | 359.510 (GURD North)         |
| Vertical Section Origin:       | 0.000 N, 0.000 E             |
| TYD Reference Datum:           | RKB                          |
| 2017 Reference Elevation:      | 3647.000 ft above MSL        |
| Seabed / Ground Elevation:     | 3616.000 ft above MSL        |
| Magnetic Declination:          | 6.594°                       |
| Total Gravity Field Strength:  | 986.4792gen (3.80655 Based)  |
| Gravity Model:                 | G45M                         |
| Total Magnetic Field Strength: | 47992.116 nT                 |
| Magnetic Dip Angle:            | 82.220°                      |
| Declination Date:              | October 15, 2019             |
| Magnetic Declination Model:    | HGCM 2019                    |
| North Reference:               | Grid North                   |
| Grid Convergence Used:         | 0.4723°                      |
| Total Corr Mag North->Grid     | 6.1217°                      |
| Local Coord Reference To:      | Well Head                    |

| Survey Type:                      |  | DRI Format:                                 |              |            |               |                |                  |                          |                  |                               |
|-----------------------------------|--|---------------------------------------------|--------------|------------|---------------|----------------|------------------|--------------------------|------------------|-------------------------------|
| Survey Date/Model: Survey Program |  | ISO/IEC 3.1 - D 95 % Confidence 2.955 miles |              |            |               |                |                  |                          |                  |                               |
| Description                       |  | Part                                        | MO From (in) | MO To (in) | EQD Freq (in) | Site Size (in) | Counting Chamber | Expected Max. Error (in) | Survey Tool Type | Borehole / Survey             |
|                                   |  | 1                                           | 0.000        | 1,900.000  | 1/100.000     | 17.500         |                  | NAL MWD, 1.0 DEG         |                  | Graeme Ridge Well 34 Side 2B5 |
|                                   |  |                                             | 1,900.000    | 9,781.900  | 1/100.000     | 12.250         |                  | NAL MWD, 1.0 DEG         |                  | Graeme Ridge Well 34 Side 2B5 |
|                                   |  |                                             | 9,781.900    | 10,682.400 | 1/100.000     | 8.750          |                  | NAL MWD, 1.0 DEG         |                  | Graeme Ridge Well 34 Side 2B5 |
|                                   |  | 1                                           | 10,682.400   | 13,074.410 | 1/100.000     | 8.500          |                  | NAL MWD, 1.0 DEG         |                  | Graeme Ridge Well 34 Side 2B5 |

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