

## Operator Copy

Form 3160-3  
(August 2007)UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED  
OMB No. 1004-0137  
Expires July 31, 20105 Lease Serial No.  
NMNM95630

6. If Indian, Allottee or Tribe Name

7 If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.  
CROW FLATS 14-16-28 USA 5H

38874

9 API Well No.

30-015-39509

10 Field and Pool, or Exploratory  
CROW FLATS; WOLFCAMP11 Sec., T. R. M. or Blk. and Survey or Area  
14-16S-28E12 County or Parish  
EDDY13 State  
NM15 Distance from proposed\*  
location to nearest  
property or lease line, ft  
(Also to nearest drig, unit line, if any)

660'

16. No. of acres in lease

160 ACRES

1760

17 Spacing Unit dedicated to this well

640 ACRES

160

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

860'

19 Proposed Depth  
11,039' MD / 6584' TVD  
6900' PH

20 BLM/BIA Bond No. on file

ESB000159

21 Elevations (Show whether DF, KDB, RT, GL, etc.)  
3569' GL22. Approximate date work will start\*  
10/15/201123. Estimated duration  
45 DAYS

RECEIVED

OCT 05 2011

## 24. Attachments

NMOCD ARTESIA

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No 1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office)

4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM

25 Signature

Linda Good

Name (Printed/Typed)

Linda Good

Date

9/1/2011

Title

Sr. Regulatory Compliance Specialist

Approved by (Signature)

[Signature]

Name (Printed/Typed)

/s/ Don Peterson

Date

10/5/11

Title

FIELD MANAGER

Office

CARLSBAD FIELD OFFICE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

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

(Continued on page 2)

\*(Instructions on page 2)

ROSWELL CONTROLLED WATER BASIN

SEE ATTACHED FOR  
CONDITIONS OF APPROVALAPPROVAL SUBJECT TO  
GENERAL REQUIREMENTS  
AND SPECIAL STIPULATIONS  
ATTACHED

**Additional Operator Remarks:**

- Chesapeake Operating, Inc. respectfully requests permission to drill a well to 11,039? to test the Bone Spring formation. If productive, casing will be run and the well completed. If dry, the well will be plugged and abandoned as per BLM and New Mexico Oil Conservation Division requirements.

Please find the Surface Use Plan and Drilling Plan as required by Onshore Order No. 1.

Attached are the Exhibit A-1 to A-4 Survey plats, Exhibit B 1 mile radius plat, Exhibit C Production facility, Exhibit D Latshaw Rig #6 layout, Exhibit F-1 to F-2 BOP & Choke Manifold and Exhibit G Directional Drill Plan.

Also attached is additional drilling information.

The Archeological Survey will be delivered to the BLM when completed.

Chesapeake Operating, Inc. has an agreement with the grazing lessee.

PLEASE BE ADVISED THAT CHESAPEAKE OPERATING, INC. IS CONSIDERED TO BE THE OPERATOR OF THE ABOVE MENTIONED WELL. CHESAPEAKE OPERATING, INC. AGREES TO BE RESPONSIBLE UNDER THE TERMS AND CONDITIONS OF THE LEASE FOR THE OPERATIONS CONDUCTED UPON THE LEASE LANDS.

(CHK PN 639443)

APD Processing fee paid by check sent VIA UPS overnight mail.

ONSHORE ORDER NO. 1

Chesapeake Operating, Inc. Agent for BOPCO

Crow Flats 14-16-28 USA 5H

SHL: 660' FNL 200' FWL, Section 14, Township 16S, Range 28 E

BHL: 660' FNL 350' FWL, Section 14, Township 16S, Range 28 E

Eddy, NM

CONFIDENTIAL -- TIGHT HOLE

Lease Contract No. NM95630

REVISED DRILLING PLAN 9/1/2011

PAGE: 1

**OHSORE OIL & GAS ODER NO. 1**  
Approval of Operations on Onshore  
Federal and Indian Oil and Gas Leases

All lease and/or unit operations are to be conducted in such a manner that full compliance is made with the applicable laws, regulations (CFR 43, Part 3160) and the approved Application for Permit to Drill. The operator is considered fully responsible for the actions of his subcontractors. A copy of the approved APD must be on location during construction, drilling and completion operations.

Approval of this application does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease, which would entitle the applicant to conduct operations thereon.

**1. FORMATION TOPS**

The estimated tops of important geologic markers are as follows:

| FORMATION  | SUB-SEA | KBTVD | MD    |
|------------|---------|-------|-------|
| Yates      | 3177    | 413   | 413   |
| Queen      | 2463    | 1127  | 1127  |
| Grayburg   | 2058    | 1532  | 1532  |
| San Andres | 1708    | 1882  | 1882  |
| Glorieta   | 224     | 3366  | 3366  |
| Tubb       | -1026   | 4616  | 4616  |
| Abo Shale  | -1765   | 5355  | 5355  |
| Wolfcamp   | -2930   | 6520  | 6520  |
| Pilot TD   | -3310   | 6900  | 6900  |
| Lateral TD | -2994   | 6584  | 11039 |
|            |         |       |       |

**2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

| Substance | Formation  | Depth |
|-----------|------------|-------|
| Water     | Water Sand | 150   |
| Oil/Gas   | San Andres | 1882  |
| Oil/Gas   | Glorieta   | 3366  |
| Oil/Gas   | Wolfcamp   | 6520  |

All shows of fresh water and minerals will be reported and protected.

### 3. BOP EQUIPMENT

Will have a 5000 psi rig stack (see proposed schematic) for drill out below surface casing, but this system will be tested to 3000 psi working pressure and 3000 psi working pressure for the annular preventer; therefore, no shoe tests will be conducted.

Chesapeake Operating Inc.'s minimum specifications for pressure control equipment are as follows:

#### I. BOP, Annular, Choke Manifold Pressure Test - See Exhibit F-1 and F-2

##### A. Equipment

1. The equipment to be tested includes all of the following that is installed on the well:

- (a) Ram-type and annular preventers
- (b) Choke manifolds and valves
- (c) Kill lines and valves
- (d) Upper and lower kelly cock valves, inside BOP's and safety valves

##### B. Frequency

- 1. All tests shall be performed with clear water
  - (a) when installed
  - (b) before drilling out each casing string
  - (c) at any time that there is a repair requiring a pressure seal to be broken in the assembly
  - (d) at least once every 30 days while drilling

##### C. Frequency

- 1. In some drilling operations, the pressures to be used for low and high pressure testing of preventers and casing may be different from those given below due to governmental regulations or approved local practices.
- 2. If an individual component does not test at the low pressure, do not test to the high pressure and then drop back down to the low pressure.
- 3. All valves located downstream of a valve being tested must be placed in the open position.
- 4. All equipment will be tested with an initial "low pressure" test at 250 psi.
- 5. The subsequent "high pressure" test will be conducted at the rated working pressure of the equipment for all equipment except the annular preventer unless otherwise stated (see above).
- 6. The "high pressure" test for the annular preventer will be conducted at 70% of the rated working pressure unless otherwise stated (see above).
- 7. A record of all pressures will be made on a pressure-recording chart.

#### II. Accumulator Performance Test

##### A. Scope

- 1. The purpose of this test is to check the capabilities of the Bop control systems and to detect deficiencies in the hydraulic oil volume and recharge time.

##### B. Test Frequency

- 1. The accumulator is to be tested each time the BOP's are tested, or any time a major repair is performed.

**C. Minimum Requirements**

1. The accumulator should be of sufficient volume to supply 1.5 times the volume to close and hold all BOP equipment in sequence, without recharging and the pump turned off, and have remaining pressures of 200 psi above the precharge pressure.
2. Minimum precharge pressures for the various accumulator systems per manufacturers recommended specifications are as follows:

| System Operating Pressure | Precharge Pressure |
|---------------------------|--------------------|
| 1500 psi                  | 750 psi            |
| 2000 psi                  | 1000 psi           |
| 3000 psi                  | 1000 psi           |

3. Closing times for the annular preventer should be less than 20 seconds and for the ram-type preventers less than 10 seconds.
4. System recharge time should not exceed 10 minutes.

**D. Test Procedure**

1. Shut accumulator pumps off and record accumulator pressure.
2. In sequence, close the annular and one set of properly sized pipe rams, and open the HCR valve.
3. Record time to close or open each element and the remaining accumulator pressure after each operation.
4. Record the remaining accumulator pressure at the end of the test sequence. Per the previous requirement, this pressure should not be less than the following pressures:

| System Operating Pressure | Remaining Pressure After Test |
|---------------------------|-------------------------------|
| 1500 psi                  | 950 psi                       |
| 2000 psi                  | 1200 psi                      |
| 3000 psi                  | 1200 psi                      |

5. Turn the accumulator pumps on and record the recharge time. This time should not exceed 10 minutes.
6. Open annular and ram-type preventers. Close HCR valve.
7. Place all 4-way control valves in full open or full closed position. Do not leave in neutral position.

**3. CASING PROGRAM**

- a. The proposed casing program will be as follows:

| Purpose              | From   | To      | Hole Size | Csg Size | Weight | Grade | Thread | Condition |
|----------------------|--------|---------|-----------|----------|--------|-------|--------|-----------|
| See C/A Surface      | 0'     | 3,500'  | 17-1/2"   | 13-3/8"  | 48 #   | H-40  | STC    | New       |
| Shallow Intermediate | 0'     | 2,000'  | 12-1/4"   | 9-5/8"   | 40 #   | J-55  | LTC    | New       |
| Deep Intermediate    | 0'     | 6,857'  | 8-3/4"    | 7"       | 29 #   | P-110 | LTC    | New       |
| Production Liner     | 5,900' | 11,039' | 6-1/8"    | 4-1/2"   | 13.5 # | P-110 | LTC    | New       |

- b. Casing design subject to revision based on geologic conditions encountered.

## c. Casing Safety Factors

| Casing String        | Min SF Burst | Min SF Collapse | Min SF Tension |
|----------------------|--------------|-----------------|----------------|
| Surface              | 1.44         | 5.68            | 1.65           |
| Shallow Intermediate | 1.63         | 2.97            | 2.33           |
| Deep Intermediate    | 1.2          | 2.9             | 2.87           |
| Production Liner     | 1.57         | 3.29            | 2.12           |

Min SF is the smallest of a group of safety factors that include the following considerations:

|                                                                                                                        | Surf | Shallow Int | Deep Int | Prod |
|------------------------------------------------------------------------------------------------------------------------|------|-------------|----------|------|
| <b>Burst Design</b>                                                                                                    |      |             |          |      |
| Pressure Test- Surface, Int, Prod Csg<br>P external: Water<br>P internal: Test psi + next section heaviest mud in csg  | X    | X           | X        | X    |
| Displace to Gas- Surf Csg<br>P external: Water<br>P internal: Dry Gas from Next Csg Point                              | X    | X           | X        |      |
| Frac at Shoe, Gas to Surf- Int Csg<br>P external: Water<br>P internal: Dry Gas, 15 ppg Frac Gradient                   |      |             |          |      |
| Stimulation (Frac) Pressures- Prod Csg<br>P external: Water<br>P internal: Max inj pressure w/ heaviest injected fluid |      |             | X        | X    |
| Tubing leak- Prod Csg<br>P external: Water<br>P internal: Leak just below surf, 8.7 ppg packer fluid                   |      |             | X        | X    |
| <b>Collapse Design</b>                                                                                                 |      |             |          |      |
| Full Evacuation<br>P external: Water gradient in cement, mud above TOC<br>P internal: none                             | X    | X           | X        | X    |
| Cementing- Surf, Int, Prod Csg<br>P external: Wet cement<br>P internal: water                                          | X    | X           | X        |      |
| <b>Tension Design</b>                                                                                                  |      |             |          |      |
| 100k lb overpull                                                                                                       | X    | X           | X        | X    |

**5. CEMENTING PROGRAM**

| Slurry        | Type                                                                           | Top    | Btm    | Wt    | Yld        | %Exc      | Sx  |
|---------------|--------------------------------------------------------------------------------|--------|--------|-------|------------|-----------|-----|
| Surface       |                                                                                |        |        | (ppg) | (sx/cu ft) | Open Hole |     |
| Single Slurry | C + 4% Gel                                                                     | 0'     | 300'   | 13.5  | 1.73       | 150       | 288 |
| Shallow Int   |                                                                                |        |        |       |            |           |     |
| Lead          | TXI + 5% Salt                                                                  | 0'     | 1,500' | 12    | 1.8        | 150       | 580 |
| Tail          | 50C/50Poz +5% Salt                                                             | 1,500' | 2,000' | 14.2  | 1.37       | 150       | 300 |
| Deep int      |                                                                                |        |        |       |            |           |     |
| Lead          | 35/65Poz H +8% Gel                                                             | 1,500' | 5,400' | 11.9  | 2.52       | 150       | 539 |
| Tail          | 50H/50Poz                                                                      | 5,400' | 6,857' | 14.8  | 1.33       | 150       | 426 |
| Production    | Liner Hanger, Liner Top Packers, and Completion Packers and Sleeves- No Cement |        |        |       |            |           |     |
|               | Info Attached                                                                  |        |        |       |            |           |     |

1. Final cement volumes will be determined by caliper.
2. Surface casing shall have at least one centralizer installed on each of the bottom three joints starting with the shoe joint.
3. Production casing will have one centralizer on every other joint from TD to KOP (horizontal type) and from KOP to intermediate casing (bowspring type).

**Pilot Hole Plugging Plan:**

Pilot hole will be plugged back from TD of 6900' to KOP of 6100' with a single balanced plug using tubing that will be cemented in place on the bottom of the Smith Trackmaster OH-Openhole whipstock cementing system (info attached). This will be accomplished using 385 sx (40% excess) of 17.0 ppg 0.99 cuft/sk yield Class H cement.

**6. MUD PROGRAM**

| From   | To      | Type      | Weight     | F. Vis  | Filtrate |
|--------|---------|-----------|------------|---------|----------|
| 0'     | 50,300' | Spud Mud  | 8.4 - 8.7  | 32 - 34 | NC - NC  |
| 300'   | 2,000'  | Brine     | 9.8 - 10.1 | 28 - 29 | NC - NC  |
| 2,000' | 6,857'  | Cut Brine | 8.4 - 9.5  | 28 - 30 | NC - NC  |
| 6,857' | 6,900'  | Cut Brine | 8.4 - 9.5  | 28 - 30 | NC - NC  |
| 6,107' | 6,857'  | Cut Brine | 8.4 - 9.5  | 28 - 30 | NC - NC  |
| 6,857' | 11,039' | Cut Brine | 8.4 - 9.5  | 28 - 30 | NC - NC  |

A closed system will be utilized consisting of above ground steel tanks. All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and deposited

All fluids and cuttings will be disposed of in accordance with New Mexico Oil Conservation Division rules and regulations.

A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

**7. TESTING, LOGGING, AND CORING** *See COA*

The anticipated type and amount of testing, logging, and coring are as follows:

- a. Drill stem tests are not planned.
- b. The logging program will be as follows:

| TYPE   | Logs                      | Interval            | Timing         | Vendor |
|--------|---------------------------|---------------------|----------------|--------|
| Mudlog | Mudlog                    | 1000' to TD         | 1000'          | TBD    |
| OH     | Triple Combo, Spectral GR | Pilot TD to Int Csg | After Pilot TD | TBD    |
|        |                           |                     |                |        |
|        |                           |                     |                |        |
| LWD    | MWD/Gamma                 | Curve/Lateral       | While Drilling | TBD    |

- c. Core samples are not planned.
- d. A Directional Survey will be run.

**8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE**

- a. No abnormal pressures or temperatures are expected. Estimated BHP is: 3252 psi
- b. Hydrogen sulfide gas is not anticipated.



## Permian District

NM - Eddy - Wolfcamp (north Eddy)

Crow Flats 14-16-28 USA 5H

Well #1

Wellbore #1

Plan: Plat

## Standard Planning Report

19 July, 2011

# Chesapeake Operating Planning Report

|           |                                   |                             |                                     |
|-----------|-----------------------------------|-----------------------------|-------------------------------------|
| Database: | Drilling Database                 | Local Coordinate Reference: | Site Crow Flats 14-16-28 USA 5H     |
| Company:  | Permian District                  | TVD Reference:              | WELL @ 0.0usft (Original Well Elev) |
| Project:  | NM - Eddy - Wolfcamp (north Eddy) | MD Reference:               | WELL @ 0.0usft (Original Well Elev) |
| Site:     | Crow Flats 14-16-28 USA 5H        | North Reference:            | Grid                                |
| Well:     | Well #1                           | Survey Calculation Method:  | Minimum Curvature                   |
| Wellbore: | Wellbore #1                       |                             |                                     |
| Design:   | Plan                              |                             |                                     |

|             |                                      |               |                |
|-------------|--------------------------------------|---------------|----------------|
| Project:    | NM - Eddy - Wolfcamp (north Eddy)    |               |                |
| Map System: | US State Plane 1927 (Exact solution) | System Datum: | Mean Sea Level |
| Geo Datum:  | NAD 1927 (NADCON CONUS)              |               |                |
| Map Zone:   | New Mexico East 3001                 |               |                |

|                       |                            |                   |                         |
|-----------------------|----------------------------|-------------------|-------------------------|
| Site:                 | Crow Flats 14-16-28 USA 5H |                   |                         |
| Site Position:        | Northings:                 | 701,716.00 usft   | Latitude: 32.9289647432 |
| From:                 | Map                        | Eastings:         | 554,983.00 usft         |
| Position Uncertainty: | 0.0 usft                   | Slot Radius:      | 13.200 in               |
|                       |                            | Grid Convergence: | 0.0974193 °             |

|                       |          |                     |                            |
|-----------------------|----------|---------------------|----------------------------|
| Well:                 | Well #1  |                     |                            |
| Well Position:        | +N-S     | 0.0 usft            | Northings: 701,716.00 usft |
|                       | +E-W     | 0.0 usft            | Eastings: 554,983.00 usft  |
| Position Uncertainty: | 0.0 usft | Wellhead Elevation: | Ground Level: 0.0 usft     |

|            |             |             |                |
|------------|-------------|-------------|----------------|
| Wellbore:  | Wellbore #1 |             |                |
| Magnetics: | Model Name  | Sample Date | Declination    |
|            | IGRF200510  | 6/8/2011    | 7.9005281      |
|            |             |             | Dip Angle      |
|            |             |             | 60.7601940     |
|            |             |             | Field Strength |
|            |             |             | 49,039         |

|                   |                  |           |                   |
|-------------------|------------------|-----------|-------------------|
| Design:           | Plan             |           |                   |
| Audit Notes:      |                  |           |                   |
| Version:          | Phase:           | PROTOTYPE | Tie On Depth: 0.0 |
| Vertical Section: | Depth From (TVD) | N/S       | E/W               |
|                   | (usft)           | (usft)    | (usft)            |
|                   | 0.0              | 0.0       | 0.0               |
|                   |                  |           | 89.99             |

|               |             |         |         |        |         |             |             |             |            |                    |
|---------------|-------------|---------|---------|--------|---------|-------------|-------------|-------------|------------|--------------------|
| Plan Sections |             |         |         |        |         |             |             |             |            |                    |
| Measured      | Vertical    | Dogleg  | Build   | Turn   |         |             |             |             |            |                    |
| Depth         | Inclination | Azimuth | Depth   | N/S    | E/W     | Rate        | Rate        | Rate        | TFO        | Target             |
| (usft)        | (°)         | (°)     | (usft)  | (usft) | (usft)  | (%/100usft) | (%/100usft) | (%/100usft) | (°)        |                    |
| 0.0           | 0.00        | 0.00    | 0.0     | 0.0    | 0.0     | 0.00        | 0.00        | 0.00        | 0.0000000  |                    |
| 6,106.5       | 0.00        | 0.00    | 6,106.5 | 0.0    | 0.0     | 0.00        | 0.00        | 0.00        | 0.0000000  |                    |
| 6,856.5       | 90.00       | 89.99   | 6,564.0 | 0.1    | 477.5   | 12.00       | 12.00       | 0.00        | 89.9877048 |                    |
| 11,039.1      | 90.00       | 89.99   | 6,584.0 | 1.0    | 4,660.0 | 0.00        | 0.00        | 0.00        | 0.0000000  | CF 14-16-28 USA 5H |

# Chesapeake Operating Planning Report

|           |                                 |                              |                                     |
|-----------|---------------------------------|------------------------------|-------------------------------------|
| Database: | Drilling Database               | Local Co-ordinate Reference: | Site Crow Flats 14-16-28 USA 5H     |
| Company:  | Permian District                | TVD Reference:               | WELL @ 0.0usft (Original Well Elev) |
| Project:  | NM-2 Eddy Wolfcamp (north Eddy) | MD Reference:                | WELL @ 0.0usft (Original Well Elev) |
| Site:     | Crow Flats 14-16-28 USA 5H      | North Reference:             | Grid                                |
| Well:     | Well #1                         | Survey Calculation Method:   | Minimum Curvature                   |
| Wellbore: | Wellbore #1                     |                              |                                     |
| Design:   | Plan                            |                              |                                     |

| Planned Survey        |                 |             |                       |            |            |                         |                         |                        |                       |
|-----------------------|-----------------|-------------|-----------------------|------------|------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | N/S (usft) | E/W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 0.0                   | 0.00            | 0.00        | 0.0                   | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 100.0                 | 0.00            | 0.00        | 100.0                 | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 200.0                 | 0.00            | 0.00        | 200.0                 | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 300.0                 | 0.00            | 0.00        | 300.0                 | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 400.0                 | 0.00            | 0.00        | 400.0                 | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 500.0                 | 0.00            | 0.00        | 500.0                 | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 600.0                 | 0.00            | 0.00        | 600.0                 | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 700.0                 | 0.00            | 0.00        | 700.0                 | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 800.0                 | 0.00            | 0.00        | 800.0                 | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 900.0                 | 0.00            | 0.00        | 900.0                 | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,000.0               | 0.00            | 0.00        | 1,000.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,100.0               | 0.00            | 0.00        | 1,100.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,200.0               | 0.00            | 0.00        | 1,200.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,300.0               | 0.00            | 0.00        | 1,300.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,400.0               | 0.00            | 0.00        | 1,400.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,500.0               | 0.00            | 0.00        | 1,500.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,600.0               | 0.00            | 0.00        | 1,600.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,700.0               | 0.00            | 0.00        | 1,700.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,800.0               | 0.00            | 0.00        | 1,800.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,900.0               | 0.00            | 0.00        | 1,900.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,000.0               | 0.00            | 0.00        | 2,000.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,100.0               | 0.00            | 0.00        | 2,100.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,200.0               | 0.00            | 0.00        | 2,200.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,300.0               | 0.00            | 0.00        | 2,300.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,400.0               | 0.00            | 0.00        | 2,400.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,500.0               | 0.00            | 0.00        | 2,500.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,600.0               | 0.00            | 0.00        | 2,600.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,700.0               | 0.00            | 0.00        | 2,700.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,800.0               | 0.00            | 0.00        | 2,800.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,900.0               | 0.00            | 0.00        | 2,900.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,000.0               | 0.00            | 0.00        | 3,000.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,100.0               | 0.00            | 0.00        | 3,100.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,200.0               | 0.00            | 0.00        | 3,200.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,300.0               | 0.00            | 0.00        | 3,300.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,400.0               | 0.00            | 0.00        | 3,400.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,500.0               | 0.00            | 0.00        | 3,500.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,600.0               | 0.00            | 0.00        | 3,600.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,700.0               | 0.00            | 0.00        | 3,700.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,800.0               | 0.00            | 0.00        | 3,800.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,900.0               | 0.00            | 0.00        | 3,900.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,000.0               | 0.00            | 0.00        | 4,000.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,100.0               | 0.00            | 0.00        | 4,100.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,200.0               | 0.00            | 0.00        | 4,200.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,300.0               | 0.00            | 0.00        | 4,300.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,400.0               | 0.00            | 0.00        | 4,400.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,500.0               | 0.00            | 0.00        | 4,500.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,600.0               | 0.00            | 0.00        | 4,600.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,700.0               | 0.00            | 0.00        | 4,700.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,800.0               | 0.00            | 0.00        | 4,800.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,900.0               | 0.00            | 0.00        | 4,900.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 5,000.0               | 0.00            | 0.00        | 5,000.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 5,100.0               | 0.00            | 0.00        | 5,100.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 5,200.0               | 0.00            | 0.00        | 5,200.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 5,300.0               | 0.00            | 0.00        | 5,300.0               | 0.0        | 0.0        | 0.0                     | 0.00                    | 0.00                   | 0.00                  |

## Chesapeake Operating

## Planning Report

|           |                                 |                              |                                      |
|-----------|---------------------------------|------------------------------|--------------------------------------|
| Database: | Drilling Database               | Local Co-ordinate Reference: | Site Crow Flats 14-16-28 USA 5H      |
| Company:  | Permian District                | IVD Reference:               | WELL @ 0.00usft (Original Well Elev) |
| Project:  | NM Eddy - Wolfcamp (north Eddy) | MD Reference:                | WELL @ 0.00usft (Original Well Elev) |
| Site:     | Crow Flats 14-16-28 USA 5H      | North Reference:             | Grid                                 |
| Well:     | Well #1                         | Survey Calculation Method:   | Minimum Curvature                    |
| Wellbore: | Wellbore #1                     |                              |                                      |
| Design:   | Plan                            |                              |                                      |

| Planned Survey           |                    |                |                          |               |               |                            |                               |                              |                             |
|--------------------------|--------------------|----------------|--------------------------|---------------|---------------|----------------------------|-------------------------------|------------------------------|-----------------------------|
| Measured Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical Depth<br>(usft) | N/S<br>(usft) | E/W<br>(usft) | Vertical Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) |
| 5,400.0                  | 0.00               | 0.00           | 5,400.0                  | 0.0           | 0.0           | 0.0                        | 0.00                          | 0.00                         | 0.00                        |
| 5,500.0                  | 0.00               | 0.00           | 5,500.0                  | 0.0           | 0.0           | 0.0                        | 0.00                          | 0.00                         | 0.00                        |
| 5,600.0                  | 0.00               | 0.00           | 5,600.0                  | 0.0           | 0.0           | 0.0                        | 0.00                          | 0.00                         | 0.00                        |
| 5,700.0                  | 0.00               | 0.00           | 5,700.0                  | 0.0           | 0.0           | 0.0                        | 0.00                          | 0.00                         | 0.00                        |
| 5,800.0                  | 0.00               | 0.00           | 5,800.0                  | 0.0           | 0.0           | 0.0                        | 0.00                          | 0.00                         | 0.00                        |
| 5,900.0                  | 0.00               | 0.00           | 5,900.0                  | 0.0           | 0.0           | 0.0                        | 0.00                          | 0.00                         | 0.00                        |
| 6,000.0                  | 0.00               | 0.00           | 6,000.0                  | 0.0           | 0.0           | 0.0                        | 0.00                          | 0.00                         | 0.00                        |
| 6,100.0                  | 0.00               | 0.00           | 6,100.0                  | 0.0           | 0.0           | 0.0                        | 0.00                          | 0.00                         | 0.00                        |
| 6,106.5                  | 0.00               | 0.00           | 6,106.5                  | 0.0           | 0.0           | 0.0                        | 0.00                          | 0.00                         | 0.00                        |
| 6,200.0                  | 11.22              | 89.99          | 6,199.4                  | 0.0           | 9.1           | 9.1                        | 12.00                         | 12.00                        | 0.00                        |
| 6,300.0                  | 23.22              | 89.99          | 6,294.7                  | 0.0           | 38.7          | 38.7                       | 12.00                         | 12.00                        | 0.00                        |
| 6,400.0                  | 35.22              | 89.99          | 6,381.9                  | 0.0           | 87.4          | 87.4                       | 12.00                         | 12.00                        | 0.00                        |
| 6,500.0                  | 47.22              | 89.99          | 6,457.0                  | 0.0           | 153.2         | 153.2                      | 12.00                         | 12.00                        | 0.00                        |
| 6,600.0                  | 59.22              | 89.99          | 6,516.7                  | 0.1           | 233.1         | 233.1                      | 12.00                         | 12.00                        | 0.00                        |
| 6,700.0                  | 71.22              | 89.99          | 6,558.6                  | 0.1           | 323.7         | 323.7                      | 12.00                         | 12.00                        | 0.00                        |
| 6,800.0                  | 83.22              | 89.99          | 6,580.7                  | 0.1           | 421.1         | 421.1                      | 12.00                         | 12.00                        | 0.00                        |
| 6,856.5                  | 90.00              | 89.99          | 6,584.0                  | 0.1           | 477.5         | 477.5                      | 12.00                         | 12.00                        | 0.00                        |
| 6,900.0                  | 90.00              | 89.99          | 6,584.0                  | 0.1           | 520.9         | 520.9                      | 0.00                          | 0.00                         | 0.00                        |
| 7,000.0                  | 90.00              | 89.99          | 6,584.0                  | 0.1           | 620.9         | 620.9                      | 0.00                          | 0.00                         | 0.00                        |
| 7,100.0                  | 90.00              | 89.99          | 6,584.0                  | 0.2           | 720.9         | 720.9                      | 0.00                          | 0.00                         | 0.00                        |
| 7,200.0                  | 90.00              | 89.99          | 6,584.0                  | 0.2           | 820.9         | 820.9                      | 0.00                          | 0.00                         | 0.00                        |
| 7,300.0                  | 90.00              | 89.99          | 6,584.0                  | 0.2           | 920.9         | 920.9                      | 0.00                          | 0.00                         | 0.00                        |
| 7,400.0                  | 90.00              | 89.99          | 6,584.0                  | 0.2           | 1,020.9       | 1,020.9                    | 0.00                          | 0.00                         | 0.00                        |
| 7,500.0                  | 90.00              | 89.99          | 6,584.0                  | 0.2           | 1,120.9       | 1,120.9                    | 0.00                          | 0.00                         | 0.00                        |
| 7,600.0                  | 90.00              | 89.99          | 6,584.0                  | 0.3           | 1,220.9       | 1,220.9                    | 0.00                          | 0.00                         | 0.00                        |
| 7,700.0                  | 90.00              | 89.99          | 6,584.0                  | 0.3           | 1,320.9       | 1,320.9                    | 0.00                          | 0.00                         | 0.00                        |
| 7,800.0                  | 90.00              | 89.99          | 6,584.0                  | 0.3           | 1,420.9       | 1,420.9                    | 0.00                          | 0.00                         | 0.00                        |
| 7,900.0                  | 90.00              | 89.99          | 6,584.0                  | 0.3           | 1,520.9       | 1,520.9                    | 0.00                          | 0.00                         | 0.00                        |
| 8,000.0                  | 90.00              | 89.99          | 6,584.0                  | 0.3           | 1,620.9       | 1,620.9                    | 0.00                          | 0.00                         | 0.00                        |
| 8,100.0                  | 90.00              | 89.99          | 6,584.0                  | 0.4           | 1,720.9       | 1,720.9                    | 0.00                          | 0.00                         | 0.00                        |
| 8,200.0                  | 90.00              | 89.99          | 6,584.0                  | 0.4           | 1,820.9       | 1,820.9                    | 0.00                          | 0.00                         | 0.00                        |
| 8,300.0                  | 90.00              | 89.99          | 6,584.0                  | 0.4           | 1,920.9       | 1,920.9                    | 0.00                          | 0.00                         | 0.00                        |
| 8,400.0                  | 90.00              | 89.99          | 6,584.0                  | 0.4           | 2,020.9       | 2,020.9                    | 0.00                          | 0.00                         | 0.00                        |
| 8,500.0                  | 90.00              | 89.99          | 6,584.0                  | 0.5           | 2,120.9       | 2,120.9                    | 0.00                          | 0.00                         | 0.00                        |
| 8,600.0                  | 90.00              | 89.99          | 6,584.0                  | 0.5           | 2,220.9       | 2,220.9                    | 0.00                          | 0.00                         | 0.00                        |
| 8,700.0                  | 90.00              | 89.99          | 6,584.0                  | 0.5           | 2,320.9       | 2,320.9                    | 0.00                          | 0.00                         | 0.00                        |
| 8,800.0                  | 90.00              | 89.99          | 6,584.0                  | 0.5           | 2,420.9       | 2,420.9                    | 0.00                          | 0.00                         | 0.00                        |
| 8,900.0                  | 90.00              | 89.99          | 6,584.0                  | 0.5           | 2,520.9       | 2,520.9                    | 0.00                          | 0.00                         | 0.00                        |
| 9,000.0                  | 90.00              | 89.99          | 6,584.0                  | 0.6           | 2,620.9       | 2,620.9                    | 0.00                          | 0.00                         | 0.00                        |
| 9,100.0                  | 90.00              | 89.99          | 6,584.0                  | 0.6           | 2,720.9       | 2,720.9                    | 0.00                          | 0.00                         | 0.00                        |
| 9,200.0                  | 90.00              | 89.99          | 6,584.0                  | 0.6           | 2,820.9       | 2,820.9                    | 0.00                          | 0.00                         | 0.00                        |
| 9,300.0                  | 90.00              | 89.99          | 6,584.0                  | 0.6           | 2,920.9       | 2,920.9                    | 0.00                          | 0.00                         | 0.00                        |
| 9,400.0                  | 90.00              | 89.99          | 6,584.0                  | 0.6           | 3,020.9       | 3,020.9                    | 0.00                          | 0.00                         | 0.00                        |
| 9,500.0                  | 90.00              | 89.99          | 6,584.0                  | 0.7           | 3,120.9       | 3,120.9                    | 0.00                          | 0.00                         | 0.00                        |
| 9,600.0                  | 90.00              | 89.99          | 6,584.0                  | 0.7           | 3,220.9       | 3,220.9                    | 0.00                          | 0.00                         | 0.00                        |
| 9,700.0                  | 90.00              | 89.99          | 6,584.0                  | 0.7           | 3,320.9       | 3,320.9                    | 0.00                          | 0.00                         | 0.00                        |
| 9,800.0                  | 90.00              | 89.99          | 6,584.0                  | 0.7           | 3,420.9       | 3,420.9                    | 0.00                          | 0.00                         | 0.00                        |
| 9,900.0                  | 90.00              | 89.99          | 6,584.0                  | 0.8           | 3,520.9       | 3,520.9                    | 0.00                          | 0.00                         | 0.00                        |
| 10,000.0                 | 90.00              | 89.99          | 6,584.0                  | 0.8           | 3,620.9       | 3,620.9                    | 0.00                          | 0.00                         | 0.00                        |
| 10,100.0                 | 90.00              | 89.99          | 6,584.0                  | 0.8           | 3,720.9       | 3,720.9                    | 0.00                          | 0.00                         | 0.00                        |
| 10,200.0                 | 90.00              | 89.99          | 6,584.0                  | 0.8           | 3,820.9       | 3,820.9                    | 0.00                          | 0.00                         | 0.00                        |
| 10,300.0                 | 90.00              | 89.99          | 6,584.0                  | 0.8           | 3,920.9       | 3,920.9                    | 0.00                          | 0.00                         | 0.00                        |
| 10,400.0                 | 90.00              | 89.99          | 6,584.0                  | 0.9           | 4,020.9       | 4,020.9                    | 0.00                          | 0.00                         | 0.00                        |
| 10,500.0                 | 90.00              | 89.99          | 6,584.0                  | 0.9           | 4,120.9       | 4,120.9                    | 0.00                          | 0.00                         | 0.00                        |

# Chesapeake Operating

## Planning Report

|           |                                   |                              |                                     |
|-----------|-----------------------------------|------------------------------|-------------------------------------|
| Database: | Drilling Database                 | Local Co-ordinate Reference: | Site Crow Flats 14-16-28 USA 5H     |
| Company:  | Permian District                  | TVD Reference:               | WELL @ 0.0usft (Original Well Elev) |
| Project:  | NM - Eddy - Wolfcamp (north Eddy) | MD Reference:                | WELL @ 0.0usft (Original Well Elev) |
| Site:     | Crow Flats 14-16-28 USA 5H        | North Reference:             | Gnd                                 |
| Well:     | Well #1                           | Survey Calculation Method:   | Minimum Curvature                   |
| Wellbore: | Wellbore #1                       |                              |                                     |
| Design:   | Plan                              |                              |                                     |

| Planned Survey           |                    |                |                          |                |                |                            |                            |                           |                          |  |
|--------------------------|--------------------|----------------|--------------------------|----------------|----------------|----------------------------|----------------------------|---------------------------|--------------------------|--|
| Measured Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical Depth<br>(usft) | +N/S<br>(usft) | +E/W<br>(usft) | Vertical Section<br>(usft) | Dogleg Rate<br>(°/100usft) | Build Rate<br>(°/100usft) | Turn Rate<br>(°/100usft) |  |
| 10,600.0                 | 90.00              | 89.99          | 6,584.0                  | 0.9            | 4,220.9        | 4,220.9                    | 0.00                       | 0.00                      | 0.00                     |  |
| 10,700.0                 | 90.00              | 89.99          | 6,584.0                  | 0.9            | 4,320.9        | 4,320.9                    | 0.00                       | 0.00                      | 0.00                     |  |
| 10,800.0                 | 90.00              | 89.99          | 6,584.0                  | 0.9            | 4,420.9        | 4,420.9                    | 0.00                       | 0.00                      | 0.00                     |  |
| 10,900.0                 | 90.00              | 89.99          | 6,584.0                  | 1.0            | 4,520.9        | 4,520.9                    | 0.00                       | 0.00                      | 0.00                     |  |
| 11,000.0                 | 90.00              | 89.99          | 6,584.0                  | 1.0            | 4,620.9        | 4,620.9                    | 0.00                       | 0.00                      | 0.00                     |  |
| 11,039.1                 | 90.00              | 89.99          | 6,584.0                  | 1.0            | 4,660.0        | 4,660.0                    | 0.00                       | 0.00                      | 0.00                     |  |

| Design Targets                                                                         |                 |                  |                 |               |                |                |                    |                   |               |                 |
|----------------------------------------------------------------------------------------|-----------------|------------------|-----------------|---------------|----------------|----------------|--------------------|-------------------|---------------|-----------------|
| Target Name                                                                            | Hit/Miss Target | Dip Angle<br>(°) | Dip Dir.<br>(°) | TVD<br>(usft) | +N/S<br>(usft) | +E/W<br>(usft) | Northing<br>(usft) | Easting<br>(usft) | Latitude      | Longitude       |
| CF 14-16-28 USA 5H - E                                                                 |                 | 0.00             | 0.00            | 6,584.0       | 0.0            | 0.0            | 701,716.00         | 554,983.00        | 32.9289647432 | -104.1541357430 |
| - plan misses target center by 198.4usft at 6494.6usft MD (6453.3 TVD; 0.0 N, 149.2 E) |                 |                  |                 |               |                |                |                    |                   |               |                 |
| - Point                                                                                |                 |                  |                 |               |                |                |                    |                   |               |                 |
| CF 14-16-28 USA 5H - E                                                                 |                 | 0.00             | 0.00            | 6,584.0       | 1.0            | 4,660.0        | 701,717.00         | 559,643.00        | 32.9289447920 | -104.1389481922 |
| - plan hits target center                                                              |                 |                  |                 |               |                |                |                    |                   |               |                 |
| - Point                                                                                |                 |                  |                 |               |                |                |                    |                   |               |                 |

Project: NM - Eddy - Wolfcamp (north Eddy)

Site: Crow Flats 14-16-28 USA 5H

Well: Well #1

Wellbore: Wellbore #1

Design: Plat

PROJECT DETAILS: NM - Eddy - Wolfcamp (north Eddy)

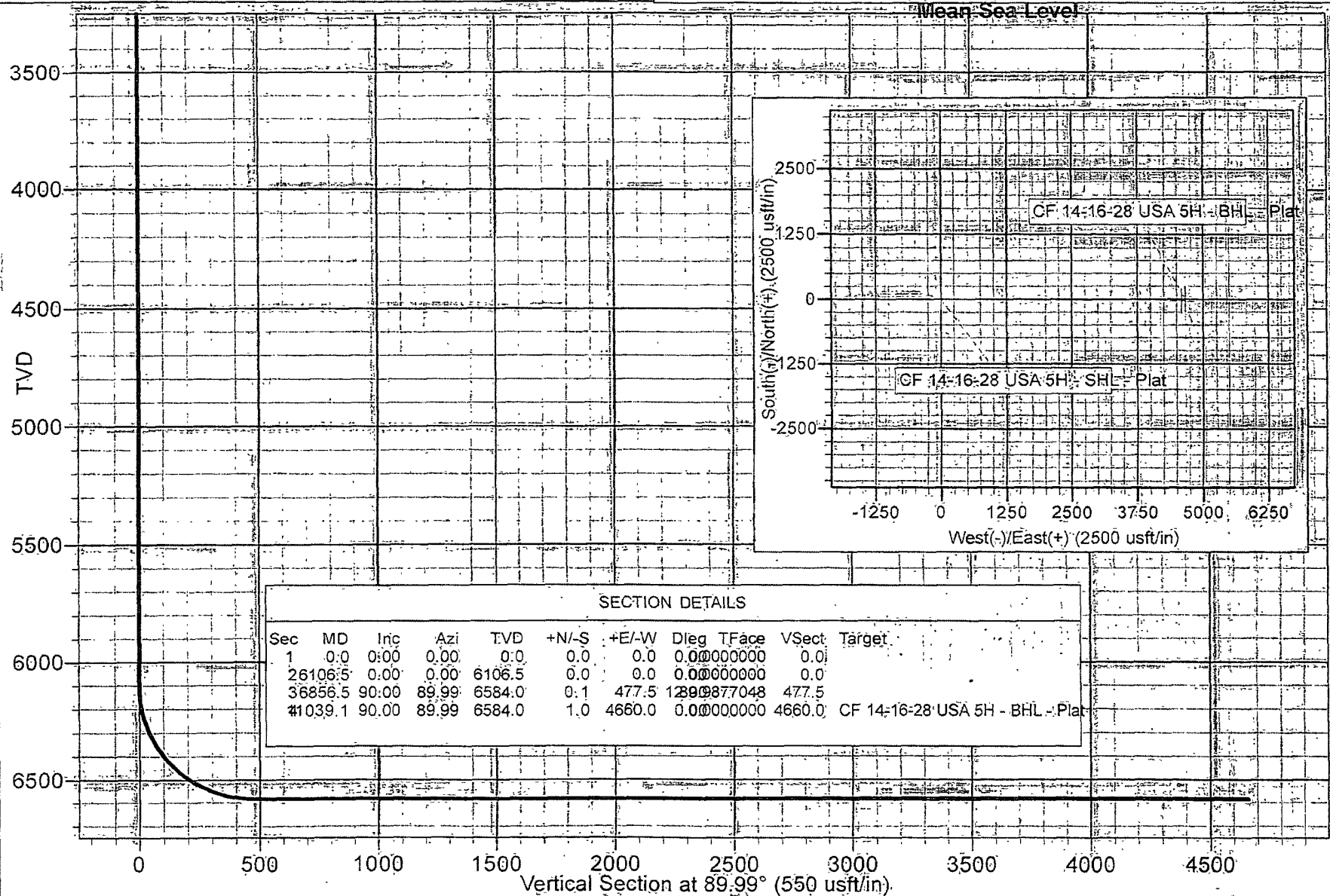
Geodetic System: US State Plane 1927 (Exact solution)

Datum: NAD 1927 (NADCON CONUS)

Ellipsoid: Clarke 1866

Zone: New Mexico East 3001

Mean Sea Level





Drilling Engineer: Chris Gray  
Superintendent: Rolando Davila  
Geologist: Robert Martin

Well Name: Crow Flats 14-16-28 USA 5H  
Target: Wolfcamp  
County, State: Eddy, NM

Surface Location: 660' FNL 200' FWL, Section 14, Township 16S, Range 28E  
BH Location: 660' FNL 350' FWL, Section 14, Township 16S, Range 28E

SHL Latitude: 32.928964 SHL North: 554983  
SHL Longitude: -104.154136 SHL East: 701716  
BHL Latitude: 32.928945 BHL North: 559643  
BHL Longitude: -104.138947 BHL East: 701717  
Coordinates: NAD 27 Coordinates: NME

Drilling Rig: Lalshaw 6  
Directional Surface: Ryan  
Directional Curve: TBD

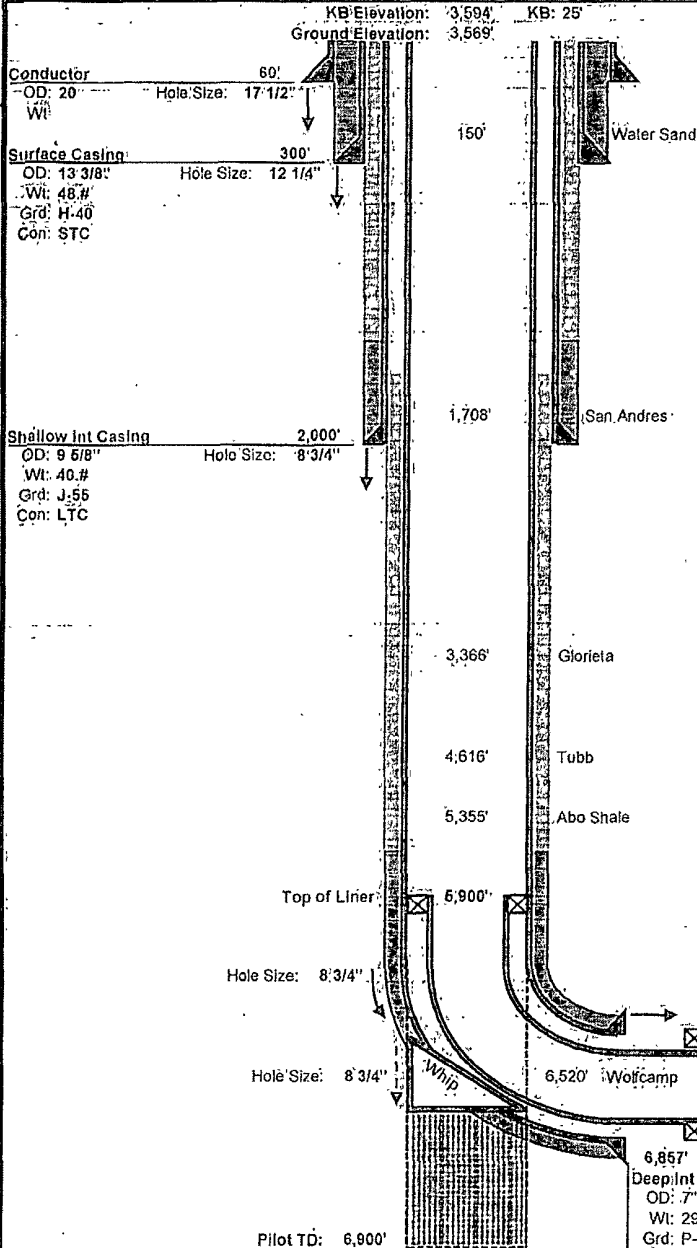
Drilling Mud: TBD

Cement: TBD

Wellhead: TBD

Property Number: 639443

AFE Number: 157004



| Wellhead Equipment |                                                 |
|--------------------|-------------------------------------------------|
| A Section          | 13-3/8" x 13-5/8" 5K SOW w/5K gate valve        |
| B Section          | 13-5/8" 5K X 11" 5K w/5K gate valve             |
| C Section          | 11" 5K X 7-1/16" 10K w/10K gate valve           |
| D Section          | N/A                                             |
| Required BOP Stack | 13-5/8"-10K Triple Annular Rot Head w/rot valve |

| Mud              |           |            |         |         |  |
|------------------|-----------|------------|---------|---------|--|
| Depth            | Type      | Weight     | F:Vis   | FL      |  |
| 60' - 300'       | Spud Mud  | 8.4 - 8.7  | 32 - 34 | NC - NC |  |
| 300' - 2,000'    | Brine     | 9.8 - 10.1 | 28 - 29 | NC - NC |  |
| 2,000' - 6,857'  | Cut Brine | 8.4 - 9.5  | 28 - 30 | NC - NC |  |
| 6,857' - 6,900'  | Cut Brine | 8.4 - 9.5  | 28 - 30 | NC - NC |  |
| 6,107' - 6,857'  | Cut Brine | 8.4 - 9.5  | 28 - 30 | NC - NC |  |
| 6,857' - 11,039' | Cut Brine | 8.4 - 9.5  | 28 - 30 | NC - NC |  |

| Cement        |        |        |      |      |      |     |     |
|---------------|--------|--------|------|------|------|-----|-----|
| Slurry        | Top    | Blm    | Wt   | Yld  | %Exc | Bbl | Sx  |
| Surface       |        |        |      |      |      |     |     |
| Single Slurry | 17'    | 300'   | 13.5 | 1.73 | 150  | 89  | 288 |
| Shallow Int   |        |        |      |      |      |     |     |
| Lead          | 25'    | 1,500' | 12.0 | 1.8  | 150  | 186 | 580 |
| Tail          | 1,500' | 2,000' | 14.2 | 1.37 | 150  | 73  | 300 |
| Deep Int      |        |        |      |      |      |     |     |
| Lead          | 1,600' | 5,400' | 11.9 | 2.52 | 150  | 242 | 539 |
| Tail          | 5,400' | 6,857' | 14.8 | 1.33 | 150  | 101 | 426 |

| Type   | Logs                      | Interval            | Vendor |
|--------|---------------------------|---------------------|--------|
| Mudlog | Mudlog                    | 1000' to TD         | TBD    |
| OH     | Triple Combo, Spectral GR | Pilot TD to Int Csg | TBD    |
| LWD    | MWD/Gamma                 | Curve/Lateral       | TBD    |

| Directional Plan |                                                                    |       |       |        |        |       |
|------------------|--------------------------------------------------------------------|-------|-------|--------|--------|-------|
| Target Line:     | 6484' TVD w/0.0 dog up dip                                         |       |       |        |        |       |
| Target Window:   | 10' above and 10' below                                            |       |       |        |        |       |
|                  | MD                                                                 | INC   | AZM   | TVD    | VS     | DLS   |
| KOP:             | 6,107'                                                             | 0.00  | 0.00  | 6,107' | 0'     | 0.00  |
| EOB:             | 6,857'                                                             | 90.00 | 89.99 | 6,584' | -478'  | 12.00 |
| TD               | 11,039'                                                            | 90.00 | 89.99 | 6,584' | 4,660' | 0.00  |
| Hardlines:       | Lateral: 330' from all lease lines<br>Vertical: Actual Lease Lines |       |       |        |        |       |
| Notes:           | Please note SHL and BHL distance from lease lines                  |       |       |        |        |       |

# Chesapeake Minimum BOPE Requirements

Wellname: Crow Flats 14-16-28 USA 5H

Operation: Intermediate and Production Hole Sections

## BLOWOUT PREVENTER SCHEMATIC CHESAPEAKE OPERATING INC

WELL : Permian District

FIELD : Avalon

RIG :

COUNTY :

OPERATION : Intermediate and Production Hole Sections

STATE :

REVISION : : / /

### Component Descriptions

|            | Size                                      | Pressure  | Description                  |
|------------|-------------------------------------------|-----------|------------------------------|
| A          | 13 1/4"                                   | LP        | Rotating Head w/ Orbit Valve |
| B          | 13 1/4"                                   | 5,000 psi | Annular                      |
| C          | 13 1/4"                                   | 5,000 psi | Pipe Ram                     |
| D          | 13 1/4"                                   | 5,000 psi | Blind Ram                    |
| E          | 13 1/4"                                   | 5,000 psi | Mud-Cross                    |
| F          | 13 1/4"                                   | 5,000 psi | Drilling Spool (as req'd)    |
| G          |                                           |           |                              |
| DSA (Int)  | 13 1/4" 3M x 13 1/4" 5M                   |           |                              |
| DSA (Prod) | 11" 5M x 13 1/4" 5M                       |           |                              |
| B Sec      | 13 1/4" 3M x 11" 5M with 5M Gate Valves   |           |                              |
| A Sec      | 13 1/4" 5OW x 13 1/4" 2M w/ 2M Gate Valve |           |                              |

| Tripperson | Signature |
|------------|-----------|
|            |           |
|            |           |

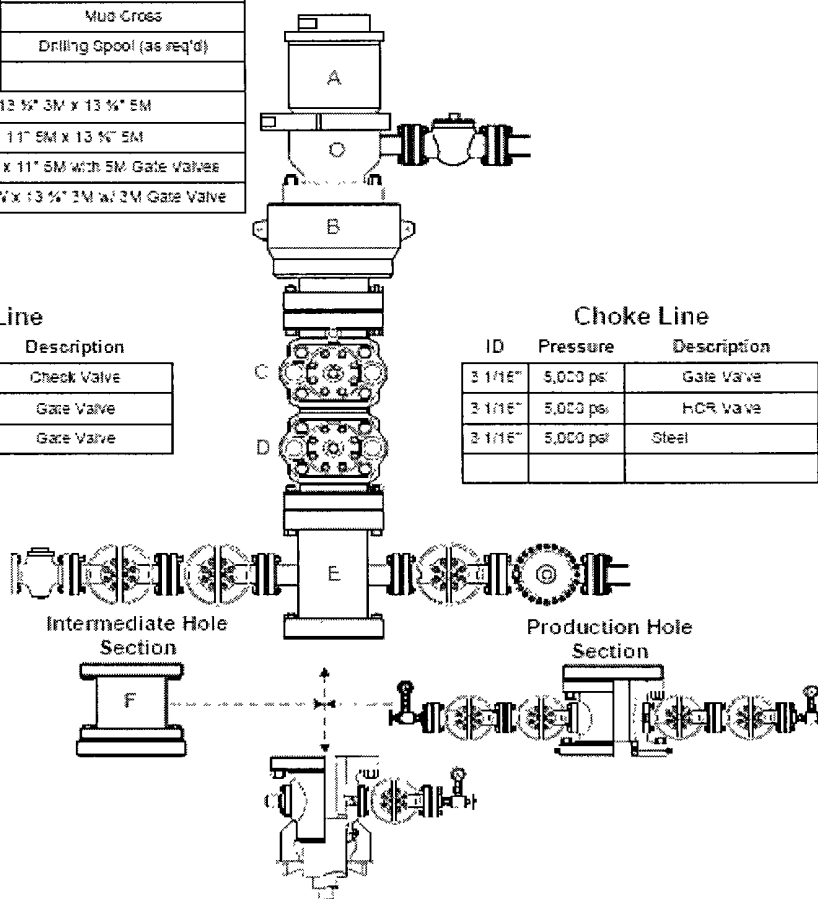
Trp Tank Required: Yes ☒ No ☐

### Kill Line

| ID      | Pressure  | Description |
|---------|-----------|-------------|
| 2 1/16" | 5,000 psi | Check Valve |
| 2 1/16" | 5,000 psi | Gate Valve  |
| 2 1/16" | 5,000 psi | Gate Valve  |

### Choke Line

| ID      | Pressure  | Description |
|---------|-----------|-------------|
| 3 1/16" | 5,000 psi | Gate Valve  |
| 3 1/16" | 5,000 psi | HCR Valve   |
| 3 1/16" | 5,000 psi | Steel       |



### Testing Requirements

| Item                                                                                                                   | Pressure        | Frequency             |
|------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------|
| Rotating Head                                                                                                          | 250 psi         | Once prior to DO shoe |
| Annular                                                                                                                | 250 / 3,500 psi | Every 21 Days         |
| Rams                                                                                                                   | 250 / 5,000 psi | Every 21 Days         |
| Choke Manifold                                                                                                         | 250 / 5,000 psi | Every 21 Days         |
| <ul style="list-style-type: none"> <li>Function test on trips</li> <li>H<sub>2</sub>S service trim required</li> </ul> |                 |                       |

Approved by

Date

|     |  |
|-----|--|
| SEM |  |
| OP  |  |
| REL |  |

Revised EXHIBIT F-1



Chesapeake Minimum BOPE Requirements

Wellname: Crow Flats 14-16-28 USA 5H

Operation: Intermediate and Production Hole Sections

CHOKE MANIFOLD SCHEMATIC  
CHESAPEAKE OPERATING INC

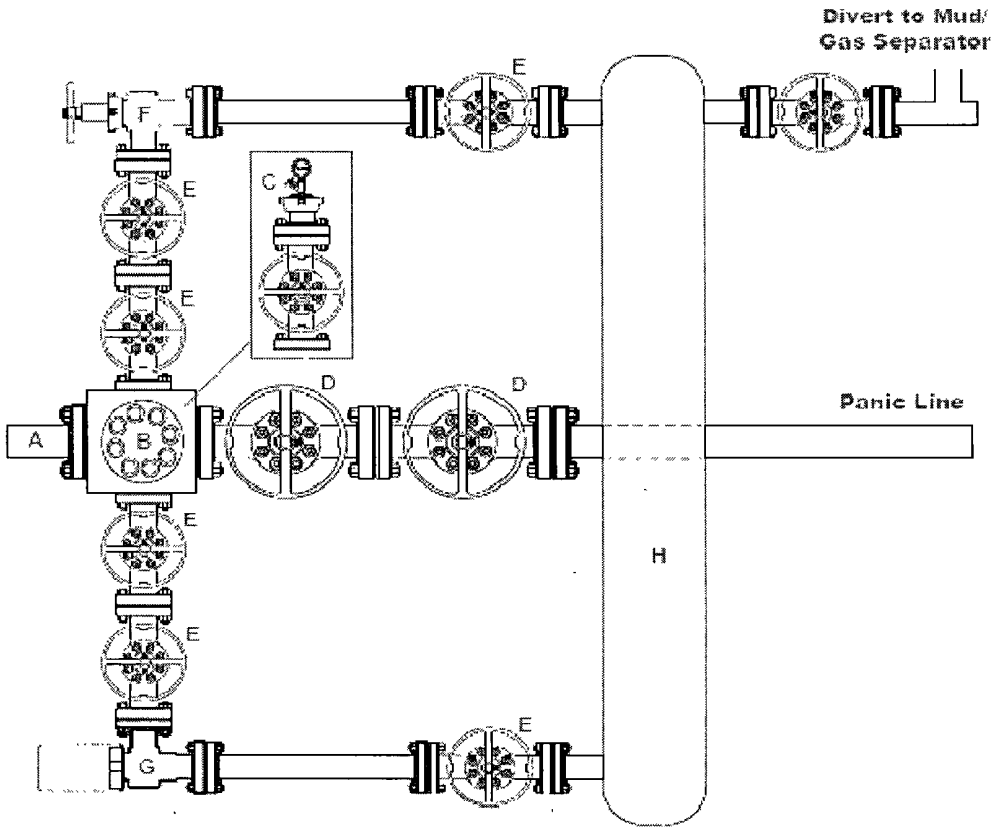
WELL : Permian District  
FIELD : Avalon  
RIG :  
COUNTY :  
OPERATION :

STATE :  
REVISION : : / /

Component Descriptions

|   | Size             | Pressure  | Description     |
|---|------------------|-----------|-----------------|
| A | 3 1/16"          | 5,000 psi | Steel           |
| B | 3 1/16"x 3 1/16" | 5,000 psi | Block T         |
| C | 2 1/16"          | 5,000 psi | Top Valve       |
| D | 3 1/16"          | 5,000 psi | Gate Valve      |
| E | 2 1/16"          | 5,000 psi | Gate Valve      |
| F | 2 1/16"          | 5,000 psi | Manual Choke    |
| G | 2 1/16"          | 5,000 psi | Hydraulic Choke |
| H | 6" minimum       |           | Buffer Chamber  |

| Traps | Distances |
|-------|-----------|
|       |           |
|       |           |



Approved by Date

|     |  |
|-----|--|
| CEO |  |
| VP  |  |
| NSC |  |

Revised EXHIBIT F-2

Operator CHESAPEAKE OPR. OGRID # 147129  
Well Name & # CROW FLATS 14-16-28 USA 5H Surface Type ☒ (F) ☐ (S) ☐ (P)  
Location: UL A, Sect 14, Twnship 16 s, RNG 28 e, Sub-surface Type ☒ (F) ☐ (S) ☐ (P)

B. 1. Check mark, Information is OK on Forms:

2. Inactive Well list as of: 10/5/2011 # wells 757, # Inactive wells 13

a. District Grant APD but see number of inactive wells:

No letter required\_\_\_; Sent Letter to Operator\_\_\_, to Santa Fe ✓

3. Additional Bonding as of: 10/5/2018

a. District Denial because operator needs addition bonding:

No Letter required ✓; Sent Letter to Operator \_\_\_\_\_, To Santa Fe \_\_\_\_\_

b. District Denial because of Inactive well list and Financial Assurance:

No Letter required \_\_\_\_\_; Sent Letter to Operator \_\_\_\_\_, To Santa Fe \_\_\_\_\_

C. C102 YES ☒, NO ☐, Signature ☒

1. Pool CROW FLATS WC, Code 97102

a. Dedicated acreage,           , What Units           

b. SUR. Location Standard \_\_\_\_\_: Non-Standard Location ✓

c. Well shares acres: Yes       , No ✓, # of wells        plus this well #       

2. 2<sup>nd</sup>. Operator in same acreage, Yes ☒, No ☐

Agreement Letter \_\_\_\_\_, Disagreement letter \_\_\_\_\_

3. Intent to Directional Drill Yes ☒, No ☐

a. Dedicated acreage 160, What Units O-C-B-A

b. Bottomhole Location Standard \_\_\_\_\_, Non-Standard Bottomhole \_\_\_\_\_

4. Downhole Commingle: Yes\_\_\_\_\_, No\_\_\_\_\_

a. Pool #2 \_\_\_\_\_, Code \_\_\_\_\_, Acres \_\_\_\_\_

Pool #3 \_\_\_\_\_, Code \_\_\_\_\_, Acres \_\_\_\_\_

Pool #4 \_\_\_\_\_, Code \_\_\_\_\_, Acres \_\_\_\_\_

5. POTASH Area Yes       , No       

D. Blowout Preventer Yes ☒, No ☐

E. H<sub>2</sub>S Yes ☒, No ☐

F. C144 Pit Registration Yes \_\_\_\_\_, No \_\_\_\_\_

G. Does APD require Santa Fe Approval:

1. Non-Standard Location: Yes       , No   /  , NSL #       

2. Non-Standard Proration: Yes       , No   X  , NSP #       

3. Simultaneous Dedication: Yes       , No   /  , SD #       

Number of wells \_\_\_\_\_ Plus # \_\_\_\_\_

4. Injection order Yes ☐, No ☒; PMX # \_\_\_\_\_ or WFX # \_\_\_\_\_

5. SWD order Yes           , NO ✓; SWD #           

6. DHC from SF \_\_\_\_\_; DHC-HOB \_\_\_\_\_; Holding \_\_\_\_\_

7. OCD Approval Date       /      /      

API #30-0

## 8. Reviewers