FORM 2 Rev 08/16

# State of Colorado
# Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
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Document Number: 401806591

Date Received: 10/31/2018

## APPLICATION FOR PERMIT TO:

☒ **Drill** ☐ Deepen ☐ Re-enter ☐ Recomplete and Operate

TYPE OF WELL OIL ☒ GAS ☐ COALBED ☐ OTHER ____ Refiling ☐

ZONE TYPE SINGLE ZONE ☒ MULTIPLE ZONES ☐ COMMINGLE ZONES ☐ Sidetrack ☐

Well Name: Thunder Well Number: 4N

Name of Operator: PDC ENERGY INC COGCC Operator Number: 69175

Address: 1775 SHERMAN STREET - STE 3000

City: DENVER State: CO Zip: 80203

Contact Name: Ally Ota Phone: (303)860-5800 Fax: ( )

Email: alexandria.ota@pdce.com

## RECLAMATION FINANCIAL ASSURANCE

Plugging and Abandonment Bond Surety ID: 20160047

## WELL LOCATION INFORMATION

QtrQtr: SENW Sec: 3 Twp: 5N Rng: 64W Meridian: 6

Latitude: 40.430820 Longitude: -104.540050

Footage at Surface: 1712 Feet FNL/FSL FNL 1591 Feet FEL/FWL FWL

Field Name: WATTENBERG Field Number: 90750

Ground Elevation: 4621 County: WELD

GPS Data:

Date of Measurement: 06/15/2018 PDOP Reading: 1.8 Instrument Operator's Name: Scott Sherard

If well is ☐ Directional ☒ Horizontal (highly deviated) **submit deviated drilling plan.**

| Footage at Top of Prod Zone: | FNL/FSL | | FEL/FWL | | Bottom Hole: | FNL/FSL | | FEL/FWL | |
|---|---|---|---|---|---|---|---|---|---|
| | 970 | FNL | 250 | FWL | | 970 | FNL | 150 | FEL |
| | Sec: 3 | Twp: 5N | Rng: 64W | | | Sec: 3 | Twp: 5N | Rng: 64W | |

## LOCATION SURFACE & MINERALS & RIGHT TO CONSTRUCT

Surface Ownership: ☒ Fee ☐ State ☐ Federal ☐ Indian

The Surface Owner is: (check all that apply)
- ☐ is the mineral owner beneath the location.
- ☐ is committed to an Oil and Gas Lease.
- ☐ has signed the Oil and Gas Lease.
- ☐ is the applicant.

The Mineral Owner beneath this Oil and Gas Location is: ☒ Fee ☐ State ☐ Federal ☐ Indian

The Minerals beneath this Oil and Gas Location will be developed by this Well: Yes

The right to construct the Oil and Gas Location is granted by: Surface Use Agreement

Surface damage assurance if no agreement is in place: ____ Surface Surety ID: ____

## LEASE INFORMATION

Using standard QtrQtr, Sec, Twp, Rng format, describe one entire mineral lease that will be produced by this well (Describe lease beneath surface location if produced. Attach separate description page or map if necessary.)

Township 5 North, Range 64 West, 6th P.M.
Section 3: W/2NW/4

Total Acres in Described Lease: 80 Described Mineral Lease is: ☒ Fee ☐ State ☐ Federal ☐ Indian

Federal or State Lease #

Distance from Completed Portion of Wellbore to Nearest Lease Line of described lease: 0 Feet

## CULTURAL DISTANCE INFORMATION

Distance to nearest:

| | | |
|---|---|---|
| Building: | 620 | Feet |
| Building Unit: | 818 | Feet |
| High Occupancy Building Unit: | 5280 | Feet |
| Designated Outside Activity Area: | 5280 | Feet |
| Public Road: | 293 | Feet |
| Above Ground Utility: | 953 | Feet |
| Railroad: | 5280 | Feet |
| Property Line: | 273 | Feet |

INSTRUCTIONS:
- All measurements shall be provided from center of the Proposed Well to nearest of each cultural feature as described in Rule 303.a.(5).
- Enter 5280 for distance greater than 1 mile.
- Building - nearest building of any type. If nearest Building is a Building Unit, enter same distance for both.
- Building Unit, High Occupancy Building Unit, and Designated Outside Activity Area - as defined in 100-Series Rules.

## DESIGNATED SETBACK LOCATION INFORMATION

Check all that apply. This location is within a:
☒ Buffer Zone
☐ Exception Zone
☐ Urban Mitigation Area

- Buffer Zone – as described in Rule 604.a.(2), within 1,000' of a Building Unit
- Exception Zone - as described in Rule 604.a.(1), within 500' of a Building Unit.
- Urban Mitigation Area - as defined in 100-Series Rules.

Pre-application Notifications (required if location is within 1,000 feet of a building unit):

Date of Rule 305.a.(1) Urban Mitigation Area Notification to Local Government:

Date of Rule 305.a.(2) Buffer Zone Notification to Building Unit Owners: 07/19/2018

## SPACING and UNIT INFORMATION

Distance from completed portion of proposed wellbore to nearest completed portion of offset wellbore permitted or completed in the same formation: 92 Feet

Distance from Completed Portion of Wellbore to Nearest Unit Boundary 460 Feet (Enter 5280 for distance greater than 1 mile.)

Federal or State Unit Name (if appl): Unit Number:

## SPACING & FORMATIONS COMMENTS

Proposed Spacing Unit: T5N-R64W Section 3: N2, Section 4: E2NE, PSU attached

## OBJECTIVE FORMATIONS

| Objective Formation(s) | Formation Code | Spacing Order Number(s) | Unit Acreage Assigned to Well | Unit Configuration (N/2, SE/4, etc.) |
|---|---|---|---|---|
| NIOBRARA | NBRR | | 400 | GWA |

## DRILLING PROGRAM

Proposed Total Measured Depth: 12508 Feet

Distance from the proposed wellbore to nearest existing or proposed wellbore belonging to another operator, including plugged wells:

Enter distance if less than or equal to 1,500 feet: 146 Feet ☐ No well belonging to another operator within 1,500 feet

Will a closed-loop drilling system be used? Yes

Is $H_2S$ gas reasonably expected to be encountered during drilling operations at concentrations greater than or equal to 100 ppm? No (If Yes, attach an H2S Drilling Operations Plan)

Will salt sections be encountered during drilling? No

Will salt based (>15,000 ppm Cl) drilling fluids be used? No

Will oil based drilling fluids be used? No

BOP Equipment Type: ☒ Annular Preventor ☒ Double Ram ☒ Rotating Head ☐ None

## GROUNDWATER BASELINE SAMPLING AND MONITORING AND WATER WELL SAMPLING

Water well sampling required per Rule 318A

## DRILLING WASTE MANAGEMENT PROGRAM

Drilling Fluids Disposal: OFFSITE Drilling Fluids Disposal Methods: Land application

Cuttings Disposal: OFFSITE Cuttings Disposal Method: Beneficial reuse

Other Disposal Description:

Drill cuttings will be land applied at PDC spread fields with COGCC Facility ID 449950 or 448329.

Beneficial reuse or land application plan submitted? Yes

Reuse Facility ID: 449950 or Document Number:

## CASING PROGRAM

| Casing Type | Size of Hole | Size of Casing | Wt/Ft | Csg/Liner Top | Setting Depth | Sacks Cmt | Cmt Btm | Cmt Top |
|---|---|---|---|---|---|---|---|---|
| SURF | 12+1/4 | 9+5/8 | 36 | 0 | 1600 | 920 | 1600 | 0 |
| 1ST | 8+1/2 | 5+1/2 | 20 | 0 | 12508 | 2035 | 12508 | |

☒ Conductor Casing is NOT planned

## DESIGNATED SETBACK LOCATION EXCEPTIONS

Check all that apply:

☐ Rule 604.a.(1)A. Exception Zone (within 500' of Building Unit)

☐ Rule 604.b.(1)A. Exception Location (existing or approved Oil & Gas Location now within a Designated Setback as a result of Rule 604.a.)

☐ Rule 604.b.(1)B. Exception Location (existing or approved Oil & Gas Location is within a Designated Setback due to Building Unit construction after Location approval)

☐ Rule 604.b.(2) Exception Location (SUA or site-specific development plan executed on or before August 1, 2013)

☐ Rule 604.b.(3) Exception Location (Building Units constructed after August 1, 2013 within setback per an SUA or site-specific development plan)

## GREATER WATTENBERG AREA LOCATION EXCEPTIONS

Check all that apply:

☒ Rule 318A.a. Exception Location (GWA Windows).

☒ Rule 318A.c. Exception Location (GWA Twinning).

## RULE 502.b VARIANCE REQUEST

☐

Rule 502.b. Variance Request from COGCC Rule or Spacing Order Number

## OTHER LOCATION EXCEPTIONS

Check all that apply:

- ☐ Rule 318.c. Exception Location from Rule or Spacing Order Number
- ☐ Rule 603.a.(2) Exception Location (Property Line Setback).

ALL exceptions and variances require attached Request Letter(s). Refer to applicable rule for additional required attachments (e.g. waivers, certifications, SUAs).

## OPERATOR COMMENTS AND SUBMITTAL

Comments

PDC requests an exception to rule 317.p.: PDC will run a cased hole log.

The distance to the completed portion of the nearest well on the "Spacing and Formations" tab was measured to the Snowmass 4N. The distance to the nearest wellbore belonging to another operator on the "Drilling & Waste Plans" tab was measured to the Granados 4-3. Both distances were measured via the anti-collision report attached in the deviated drilling plan.

The subject well will have a treated interval less than 150' from the treated interval of the Granados 4-3 (05-123-1647) owned by Noble. Please see the Rule 317.s Stimulation Setback Consent attached.

This well has a bottom-hole location beyond the unit boundary setback. The bottom of the completed interval will be within the unit boundary setback at 970' FNL & 460' FEL, Section 3. The wellbore beyond the unit boundary setback will be physically isolated and will not be completed.

This application is in a Comprehensive Drilling Plan: No CDP #:

Location ID:

Is this application being submitted with an Oil and Gas Location Assessment application? Yes

I hereby certify all statements made in this form are, to the best of my knowledge, true, correct, and complete.

Signed: Print Name: Ally Ota

Title: Regulatory Tech Date: 10/31/2018 Email: alexandria.ota@pdce.com

Operator must have a valid water right or permit allowing for industrial use or purchased water from a seller that has a valid water right or permit allowing for industrial use, otherwise an application for a change in type of use is required under Colorado law. Operator must also use the water in the location set forth in the water right decree or well permit, otherwise an application for a change in place of use is required under Colorado law. Section 37-92-103(5), C.R.S. (2011).

Based on the information provided herein, this Application for Permit-to-Drill complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved: **Director of COGCC** Date: 3/25/2019

Expiration Date: 03/24/2021

**API NUMBER**

05 123 49999 00

# Conditions Of Approval

**All representations, stipulations and conditions of approval stated in the Form 2A for this location shall constitute representations, stipulations and conditions of approval for this Form 2 Permit-to-Drill and are enforceable to the same extent as all other representations, stipulations and conditions of approval stated in this Permit-to-Drill.**

| COA Type | Description |
|---|---|
| | This Permit to Drill is approved subject to all the BMPs and COAs on the most recently approved Form 2A and any subsequently approved Form 4 for the Oil and Gas Location. The most recently approved Form 2A and any subsequent Form 4s containing applicable COAs for this location shall be posted onsite during construction, drilling, and completions operations. |
| | Operator will ensure the wellbore beyond the unit boundary setback is physically isolated and is not completed. In the Operator Comments on the Form 5A the operator will (1) report the footages from the section lines of the bottom of the completed interval, (2) describe how the wellbore beyond the unit boundary setback is physically isolated, and (3) certify that none of the wellbore beyond the setback was completed. |
| | Operator acknowledges the proximity of the non-operated listed wells. Operator agrees to: provide mitigation option 1 or 2 (per the DJ Basin Horizontal Offset Policy) to mitigate the situation, ensure all applicable documentation is submitted based on the selected mitigation option chosen, and submit a Form 42 (“OFFSET MITIGATION COMPLETED”) stating that appropriate mitigation occurred and that it has been completed, prior to the hydraulic stimulation of this well.<br>05-123-13026, CLEMONS 2-3<br>05-123-13188, STOUT 3-3<br>05-123-14176, ANNIE B 3-10<br>05-123-21647, GRANADOS 4-3<br>05-123-21915, STOUT 6-3<br><br>Operator acknowledges the proximity of the listed non-operated well. Operator assures that this offset list will be remediated per the DJ Basin Horizontal Offset Policy (option 3). Operator will submit a Form 42 (“OFFSET MITIGATION COMPLETED”) stating what appropriate mitigation occurred and that it has been completed, prior to the hydraulic stimulation of this well.<br>05-123-14530, CLEMONS 32-3 |
| | Bradenhead tests shall be performed according to the following schedule and the Form 17 submitted within 10 days of each test:<br>1) Within 60 days of rig release and prior to stimulation and<br>2) If a delayed completion, 6 months after rig release and prior to stimulation.<br>3) Within 30 days after first production, as reported on Form 5A.<br>If a bradenhead test reports a surface casing pressure greater than 200 psig stimulation is not allowed until the Engineering Supervisor has been consulted.<br><br>1) Submit Form 42 electronically to COGCC 48 hours prior to MIRU (spud notice) for the first well activity with a rig on the pad and provide 48 hour spud notice via Form 42 for all subsequent wells drilled on the pad.<br>2) Comply with Rule 317.j. and provide cement coverage from TD to a minimum of 200' above Niobrara. Verify coverage with cement bond log. |

## Best Management Practices

| No | BMP/COA Type | Description |
|---|---|---|
| 1 | Drilling/Completion Operations | Prior to drilling operations, Operator will perform an anti-collision scan of existing offset wells that have the potential of being within close proximity of the proposed well. This anti-collision scan will include definitive MWD or gyro surveys of the offset wells with included error of uncertainty per survey instrument, and compared against the proposed wellpath with its respective error of uncertainty. If current surveys do not exist for the offset wells, Operator may have gyro surveys conducted to verify bottomhole location. The proposed well will only be drilled if the anti-collision scan results indicate that there is not a risk for collision, or harm to people or the environment. For the proposed well, upon conclusion of drilling operations, an as-constructed gyro survey will be submitted to COGCC with the Form 5. |
| 2 | Drilling/Completion Operations | Operator will comply with COGCC Policy for Bradenhead Monitoring During Hydraulic Fracturing Treatments in the Greater Wattenberg Area dated May 29, 2012. The Colorado Oil and Gas Conservation Commission (COGCC) has established this Policy Regarding Bradenhead Monitoring During Hydraulic Fracturing Treatments ("Treatment") in the Greater Wattenberg Area ("GWA") pursuant to COGCC 207.a. ("Policy"). This Policy applies to oil and gas operations in the GWA as defined by the COGCC Rules of Practice and Procedure. |
| 3 | Drilling/Completion Operations | One of the first wells drilled on the pad will be logged with Cased hole Pulsed Neutron Log with Gamma Ray Log from kick-off point into the surface casing. All wells on the pad will have a cement bond log with gamma-ray run on production casing (or on intermediate casing if production liner is run) into the surface casing. The horizontal portion of every well will be logged with a measured while-drilling gamma-ray log. The Form 5, Completion Report, for each well on the pad will list all logs run in that well and have those logs attached. The Form 5 for each well shall clearly state "No open-hole logs were run" and shall reference the Rule 317.p Exception granted for the well. |

Total: 3 comment(s)

## Applicable Policies and Notices to Operators

| |
|---|
| Notice Concerning Operating Requirements for Wildlife Protection.<br>http://cogcc.state.co.us/documents/reg/Policies/Wildlife_Notice.pdf |
| Policy for Bradenhead Monitoring During Hydraulic Fracturing Treatments in the Greater Wattenberg Area.<br>http://cogcc.state.co.us/documents/reg/Policies/PolicyGwaBradenheadMonitoringFinal.pdf |

## Attachment Check List

| Att Doc Num | Name |
|---|---|
| 401806591 | FORM 2 SUBMITTED |
| 401808043 | OffsetWellEvaluations Data |
| 401808048 | SURFACE AGRMT/SURETY |
| 401808050 | OPEN HOLE LOGGING EXCEPTION |
| 401808051 | EXCEPTION LOC REQUEST |
| 401808053 | EXCEPTION LOC WAIVERS |
| 401808054 | STIMULATION SETBACK CONSENT |
| 401808055 | DEVIATED DRILLING PLAN |
| 401808056 | DIRECTIONAL DATA |
| 401808057 | PROPOSED SPACING UNIT |
| 401808270 | WELL LOCATION PLAT |
| 401984132 | OFFSET WELL EVALUATION |

Total Attach: 12 Files

## General Comments

| User Group | Comment | Comment Date |
|---|---|---|
| Permit | Final permitting review Complete. Send to Final Approval. | 01/31/2019 |
| Permit | Initial permitting review complete and task passed. | 01/25/2019 |
| Engineer | Operator has indicated oil based drilling fluids will not be used. | 12/21/2018 |
| Permit | Passed completeness. | 11/08/2018 |

Total: 4 comment(s)