

FORM

2

Rev
08/16

State of Colorado

Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109

Document Number:

401769383

APPLICATION FOR PERMIT TO:

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

Date Received:

09/21/2018

TYPE OF WELL OIL ☒ GAS ☐ COALBED ☐ OTHER _____Refiling ☒ZONE TYPE SINGLE ZONE ☒ MULTIPLE ZONES ☐ COMMINGLE ZONES ☐Sidetrack ☐

Well Name: Crawford

Well Number: 3N

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: SWSW Sec: 33 Twp: 4N Rng: 65W Meridian: 6

Latitude: 40.262510

Longitude: -104.676890

Footage at Surface: 314 Feet FNL/FSL FSL 230 Feet FEL/FWL FWL

Field Name: WATTENBERG

Field Number: 90750

Ground Elevation: 4864

County: WELD

GPS Data:

Date of Measurement: 08/21/2018 PDOP Reading: 3.4 Instrument Operator's Name: Robert Wall

If well is ☐ Directional ☒ Horizontal (highly deviated) submit deviated drilling plan.
 Footage at Top of Prod Zone: FNL/FSL FSL 737 FSL 790 FWL 200 FNL 790 FWL
 Sec: 33 Twp: 4N Rng: 65W Sec: 28 Twp: 4N Rng: 65W

LOCATION SURFACE & MINERALS & RIGHT TO CONSTRUCT

Surface Ownership: ☒ Fee ☐ State ☐ Federal ☐ Indian
 The Surface Owner is: ☐ is the mineral owner beneath the location.
 (check all that apply) ☐ 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.)

T4N-R65W Section 28: NW/4, W/2SW/4

Total Acres in Described Lease: 240 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: 1053 Feet

Building Unit: 1053 Feet

High Occupancy Building Unit: 5280 Feet

Designated Outside Activity Area: 5280 Feet

Public Road: 307 Feet

Above Ground Utility: 1094 Feet

Railroad: 5280 Feet

Property Line: 229 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:

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: 307 Feet

Distance from Completed Portion of Wellbore to Nearest Unit Boundary 200 Feet (Enter 5280 for distance greater than 1 mile.)

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

SPACING & FORMATIONS COMMENTS

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	407-2364	2560	S.28,29,32,33:All

DRILLING PROGRAM

Proposed Total Measured Depth: 17254 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: 82 Feet ☐ No well belonging to another operator within 1,500 feet

Will a closed-loop drilling system be used? Yes

Is H₂S 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	17254	2035	17254	

☒ 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

☐

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	<p>This form is being submitted to amend the surface location. All other information remains the same.</p> <p>PDC requests an exception to rule 317.p.: PDC will run a cased hole log.</p> <p>The distance to the completed portion of the nearest well on the "Spacing and Formations" tab was measured to the Crawford 4N.</p> <p>The distance to the nearest wellbore belonging to another operator on the "Drilling & Waste Plans" tab was measured to the Krause 2-28 via COGCC GIS mapping, 2D plain view.</p> <p>The subject well will have a treated interval less than 150' from the treated interval of the Krause 2-28, OGG 11-28, Bohlender 33-5, and HSR-Hart 12-33 owned by Noble. PDC will not stimulate within 150' of these wells, unless a stimulation consent has been obtained.</p>
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This application is in a Comprehensive Drilling Plan _____ No _____ CDP #: _____

Location ID: 456045

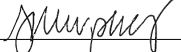
Is this application being submitted with an Oil and Gas Location Assessment application? _____ Yes _____

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

Signed: _____ Print Name: Ally OtaTitle: Regulatory Tech Date: 9/21/2018 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: 11/23/2018Expiration Date: 11/22/2020**API NUMBER**

05 123 47322 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.

<u>COA Type</u>	<u>Description</u>
	<p>1) Submit Form 42 electronically to COGCC 48 hours prior to MIRU (Spud Notice), for the first well/activity on the pad and provide 48 hour spud notice for all subsequent wells drilled on the pad.</p> <p>2) Comply with Rule 317.j and provide cement coverage from the end of production casing to a minimum of 200' above Niobrara and from 200' below Sussex to 200' above Sussex. Verify coverage with cement bond log.</p>
	<p>Operator acknowledges the proximity of the following 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") for the remediated wells, referencing the API number of the proposed horizontal well(s) stating what appropriate mitigation occurred and that it has been completed, prior to the hydraulic stimulation of this well.</p> <p>UPRC 21-14G (API 123-15058) Pearson 1 (API 123-12005) Krause 2-28 (API 123-13719) Hambert R G 32-1 (API 123-13441) Hambert R G 32-8 (API 123-13448) Bohlender 29-3 (API 123-14080) HSR-Frisbie 16-29A (API 123-15309) HSR-Wright 9-29A (API 123-15339) Bohlender 33-5 (API 123-14449) Bohlender 33-7 (API 123-14465) Bohlender 33-22 (API 123-15190)</p>
	<p>Operator will submit signed Rule 317.s Stimulation Setback Consents via Sundry Notice, Form 4 prior to stimulation of this well.</p> <p>In the Form 5A comments, operator will (1) certify that this well has no treated interval within 150' of the treated interval of another operator's well for which a signed Stimulation Setback Consent was not obtained, (2) provide the following information for all other operator's offset wells without consent that have a treated interval within 150' of this as-drilled wellbore: well name and API number, depth of the perforation in this well nearest to the treated interval of the offset well, and the distance between the wells at that depth, and (3) address the wells listed below as either (a) obtained consent or (b) treated interval more than 150' away from this as-drilled wellbore.</p> <p>OGG 11-28 (API 123-17849) Krause 2-28 (API 123-13719) Bohlender 33-5 (API 123-14449) HSR-Hart 12-33 (API 123-16676)</p>
	<p>Bradenhead tests shall be performed and reported according to the following schedule and Form 17 submitted within 10 days of each test:</p> <p>1) Within 60 days of rig release and prior to stimulation or 2) If a delayed completion, 6 months after rig release and prior to stimulation. 3) Within 30 days after first production, as reported on Form 5A.</p> <p>If a Bradenhead test reports a surface casing pressure greater than 200 psig, stimulation is not allowed until the Engineering Supervisor has been consulted.</p>

Best Management Practices

<u>No</u>	<u>BMP/COA Type</u>	<u>Description</u>
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.
http://cogcc.state.co.us/documents/reg/Policies/Wildlife_Notice.pdf

Policy for Bradenhead Monitoring During Hydraulic Fracturing Treatments in the Greater Wattenberg Area.
<http://cogcc.state.co.us/documents/reg/Policies/PolicyGwaBradenheadMonitoringFinal.pdf>

Attachment Check List

<u>Att Doc Num</u>	<u>Name</u>
401769383	FORM 2 SUBMITTED
401769758	OffsetWellEvaluations Data
401769769	OPEN HOLE LOGGING EXCEPTION
401769771	EXCEPTION LOC REQUEST
401769772	EXCEPTION LOC WAIVERS
401769773	SURFACE AGRMT/SURETY
401769774	WELL LOCATION PLAT
401769775	DEVIATED DRILLING PLAN
401769776	DIRECTIONAL DATA
401848677	OFFSET WELL EVALUATION

Total Attach: 10 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Permit	Final permitting review Complete. Send to Final Approval.	11/21/2018
Permit	Initial permitting review complete and task passed.	11/16/2018
Engineer	Operator has indicated oil-based drilling fluids will not be used.	10/22/2018
Permit	Added unit acreage as per other permits per location Passed Completeness	10/09/2018

Total: 4 comment(s)