

**BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS**

In the matter of the Application of Murfin) Docket No.: 24-CONS-3210-CEXC
Drilling Company for an exception to the 10-)
year time limitation of K.A.R. 82-3-111 for) CONSERVATION DIVISION
its Downing B 1-1 located in the W2 NE)
SW/4 of Section 1, Township 1 South, Range) License No.: 30606
36 West, Rawlins County, Kansas.

SUPPLEMENT TO APPLICATION

PLEASE SEE the attached Supplement to the Application pursuant to the April 11,
2024, request of the Kansas Corporation Commission.

Respectfully Submitted,

Richard E Pancake
Murfin Drilling Company
250 N. Water St., Ste 300
Wichita, Kansas 67202
(316) 858-8699

By 
Richard E Pancake



MURFIN
DRILLING
CO., INC.


CONTRACTORS AND PRODUCERS

*U.S. Mailed original &
emailed copy 4/26/24*

April 26, 2024

COPY

Mr. Kelcey Marsh, Litigation Counsel
Kansas Corporation Commission
Oil & Gas Conservation Division
266 N. Main St, Ste 220
Wichita, Kansas 67202-1513

**RE: Response to KCC Letter Dated April 11, 2024
Docket 24-CONS-3210-CEXC**

Dear Kelcey,

I am in receipt of your letter dated April 11, 2024, requesting more information regarding Docket 24-CONS-3210-CEXC – an Application to Extend Temporary-Abandonment Status of Murfin's Downing B 1-1. Below, in bullet form, please find my attempt to answer each information request.

- Request – A breakdown of how many and what types of wells are on the lease.

The Downing B 1-1 is a single-well lease consisting of one TA'd wellbore.
The lease consists of the SW/4 of 1-T1S-R36W, Rawlins County.

- Request – An estimated cost to plug this well and the remaining wells on the lease.

The estimated cost to plug the Downing B 1-1 is \$30,000 to \$35,000. If the Downing B 1-1 is plugged, no wells will remain on the lease.

- Request – A current production rate for the lease.

There is no current production at the lease. The lease has never produced. The well has been preserved the last 10 years, the intent being to use the wellbore in a future, unitized waterflood. In January 2023, Murfin negotiated a 3-year lease renewal with the mineral owner. The Downing B lease is valid through 1/16/26.

- Request – A basic estimation of remaining reserves and an explanation of the basis for the estimation.

This request will be answered as it relates to a reasonable estimate of the Downing B lease oil that can be recovered by a larger, unitized waterflood. This estimate consists of two calculations – 1) a calculation of the Original

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Oil In Place (OOIP) of that portion of the Downing B lease that can be waterflooded, and 2) a waterflood recovery estimate of that OOIP.

- 1) As per the attached worksheet, the estimated remaining Downing B oil reserves (i.e., OOIP) that can be targeted by waterflood are 75,117 bo.
 - 2) It is estimated 25% of those oil reserves will be recovered by a larger, unitized waterflood. This 25% recovery estimate is conservative considering the Downing B lease has not produced under primary. As per the attached worksheet, 25% of 75,117 bo is 18,779 bo. Those 18,779 bbls of oil reserves will likely be lost if the Downing B 1-1 is plugged.
- Request – An explanation of what has already been done and what will need to be done to use the well as stated in paragraph 8.

As mentioned in the original extension application, the plan is to incorporate the Downing B 1-1 wellbore into a larger, unitized waterflood. This unitized waterflood will incorporate the E2, S2-T1S-R36W; S1-T1S-R36W; & W2, S6-T1S-R35W of Rawlins County, Kansas, and the SW4, S32-T1N-R35W & S31-T1N-R35W of Hitchcock County, Nebraska. Murfin operates the Kansas portion of this acreage. To date, in pursuit of a unitized waterflood, Murfin has:

- a) Generated phi-h (porosity-thickness) maps of the entire field.
- b) Compiled per well per zone cumulative production data for all Kansas wells in the field.
- c) Prepared a preliminary facility design of the equipment needed to waterflood the Kansas side of a unitized waterflood.

As to what still needs to be done:

- a) A lengthy unitization process needs to occur, one in which all parties agree on the waterflood design and unit formula, then the mineral-interest owners need to sign off.
 - b) A significant capital investment will need to occur to convert the field from primary production to waterflood.
- Request – An estimation of the cost to perform whatever actions are necessary using current prices.

The cost to perform “whatever actions necessary” varies depending on what is done at the Downing B 1-1, and throughout the field.

- a) The cost to equip Downing B 1-1 for production is approximately \$103,000.
- b) The cost to equip Downing B 1-1 for injection is approximately \$90,000.

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- c) The cost to unitize and equip the Murfin portion of a unitized waterflood could exceed \$750,000.

I trust my responses are satisfactory. Enough so that the KCC will grant an extension to the 10-year TA status of the Downing B 1-1. Please contact me if additional information is desired.

Best Regards,



Richard Pancake
Production Engineer
Murfin Drilling Company, Inc.

Enclosures: Downing B Lease OOIP Calculation & Waterflood Recovery Worksheet
Downing B 1-1 LKC D Phi-ht (porosity x thickness) Map

Cc (via e-mail): Case Morris, Richard Williams, District #4

Downing B Lease OOIP Calculation & Waterflood Recovery Estimate

Sw by Archie Eq. - used to calculate reservoir water saturations, from which oil saturation is determined.

| $LKC Sw = [Rw / (\Phi)^m \times Rt]^{1/n}$ | Parameters | |
|--|------------|----------|
| | a | 1 |
| | m | variable |
| | n | 2 |
| | Rw (LKC) | 0.050 |

* From OH logs

** From literature

| Downing B 1-1 (NE, SW, 1-1-36) | | | | | |
|------------------------------------|-------------|-------|------|------|------|
| Zone | Depth * | Phi * | Rt * | m ** | Sw |
| LKC D | 4230 - 4232 | 0.04 | 12 | 2.0 | 1.61 |
| | 4232 - 4234 | 0.04 | 20 | 2.0 | 1.25 |
| perfs = | 4234 - 4236 | 0.06 | 25 | 2.0 | 0.75 |
| perfs = | 4236 - 4238 | 0.09 | 28 | 2.0 | 0.47 |
| perfs = | 4238 - 4240 | 0.07 | 25 | 2.0 | 0.64 |
| Avg (4234-4240) = | 6 | 0.07 | | | 0.62 |
| Walter A 1-1 OWWO (NW, SE, 1-1-36) | | | | | |
| Zone | Depth * | Phi * | Rt * | m ** | Sw |
| LKC D | 4248 - 4250 | 0.07 | 13 | 2.0 | 0.89 |
| perfs = | 4250 - 4252 | 0.12 | 30 | 2.0 | 0.34 |
| perfs = | 4252 - 4254 | 0.12 | 27 | 2.0 | 0.36 |
| | 4254 - 4256 | 0.04 | 25 | 2.0 | 1.12 |
| | 4256 - 4258 | 0.03 | 20 | 2.0 | 1.67 |
| Avg (4250-4254) = | 4 | 0.12 | | | 0.35 |

The Walter A 1-1 is an adjacent well to the Downing B 1-1.
The Walter A 1-1 has reservoir characteristics that likely exist in the NE corner of the Downing B lease.

OOIP (Original Oil in Place) by Volumetrics

| |
|---|
| $OOIP = [7758 \times \text{Area (A)} \times \text{Net Height (H)} \times \text{Porosity (Phi)} \times (1 - Sw)] / \text{Formation Volume Factor (Boi)}$ |
|---|

A = Downing B lease waterfloodable acres as per enclosed LKC D phi-H map

H = average net formation height between Downing B 1-1 and Walter A 1-1 OWWO

Phi = average porosity of perfed interval between Downing B 1-1 and Walter A 1-1 OWWO

Sw = average water saturation of perfed interval between Downing B 1-1 and Walter A 1-1 OWWO

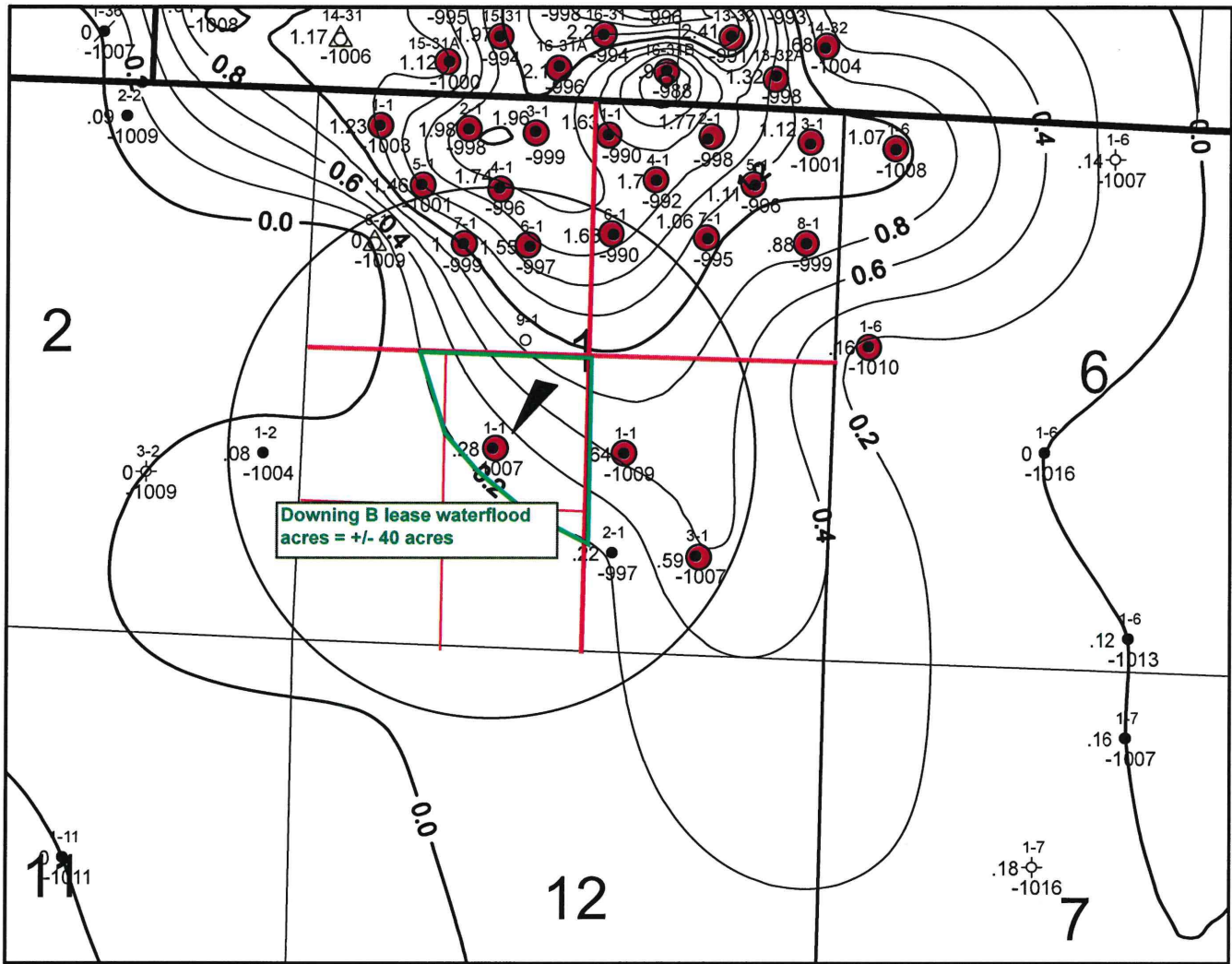
| Zone | Waterflood Area (acre) | Avg Height (ft) | Avg Phi | Avg Sw | (from CORE Lab Hall Gurney - Letsch #7) (1-Sw) | Boi | OOIP (STB) |
|---|------------------------|-----------------|---------|--------|--|-------|------------|
| LKC D | 40 | 5 | 0.10 | 0.48 | 0.52 | 1.031 | 75,116 |
| Downing B Lease OOIP of Waterfloodable Acres (bo) = 75,116 | | | | | | | |

Downing B Lease Waterflood Recovery Estimate *

* Will assume a larger, unitized waterflood incorporating the Downing B lease will recover 25% of the Downing B waterfloodable OOIP. A 25% waterflood-recovery estimate is conservative considering the Downing B lease has not produced under primary.

$$\begin{aligned} \text{Downing B Lease Waterflood Oil Recovery Estimate} &= 25\% \times \text{OOIP} \quad \text{bo} \\ &= 0.25 \times 75,116 \quad \text{bo} \end{aligned}$$

| |
|---|
| Downing B Lease Waterflood Oil Recovery Estimate = 18,779 bo |
|---|





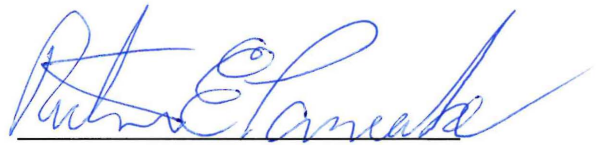
Downing #1-1 TA Limit Application
Sec. 1-1S-36W
Rawlins Co., KS

LKC D Phit (porosity x thickness)
LKC D Structural Datum
LKC D zone Producers

Author: K Dean Horizontal Scale: 1"=1693'
 Date: 30 January, 2024 Contour Interval: .2 porosity feet

CERTIFICATE OF SERVICE

I hereby certify on this 28th day of June, 2024, true and correct copies of the above and foregoing Supplement to Application to be filed electronically with the Kansas Corporation Commission and a copy e-mailed to Kelcey Marsh, Litigation Counsel, Kansas Corporation Commission.

A handwritten signature in blue ink, appearing to read "Peter Elanaka", is written over a horizontal line.