

STATE OF SOUTH DAKOTA  
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
BOARD OF MINERALS AND ENVIRONMENT

<p>IN THE MATTER OF THE PETITION OF LUFF EXPLORATION COMPANY, DENVER, CO, FOR AN ORDER APPROVING THE OPERATION OF A PORTION OF THE EAST HARDING SPRINGS FIELD CONSISTING OF THE S/2 OF SECTION 27 AND ALL OF SECTION 34, TOWNSHIP 23 NORTH, RANGE 5 EAST, HARDING COUNTY, SD, AS THE EAGLE’S NEST RED RIVER UNIT; PROVIDING FOR THE RECOVERY OF RISK COMPENSATION FROM OWNERS WHO ELECT TO HAVE THEIR SHARE OF UNIT EXPENSES CARRIED; APPROVING THE UNIT AGREEMENT AND UNIT OPERATING AGREEMENT FOR THE UNIT; DESIGNATING LUFF EXPLORATION COMPANY AS UNIT OPERATOR; AND GRANTING SUCH OTHER RELIEF AS THE BOARD DEEMS APPROPRIATE.</p>	<p>OIL AND GAS CASE NO. 1-2018</p>  <p>ORDER</p>
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**SECRETARY’S ORDER UNDER SDCL 45-9-74**

A Petition (“Petition”) of Luff Exploration Company (“Luff”) was submitted to the South Dakota Board of Minerals and Environment (“Board”) on January 29, 2018. The Board prepared and published a Notice of Opportunity for Hearing (“Notice”) and Luff caused a copy of the Petition and the Notice to be served by mail or personally on each party affected by the petition. No petitions to intervene were filed in accordance with the Notice. Therefore, pursuant to South Dakota Codified Laws (SDCL) 45-9-74, and based upon Luff’s Petition and the supporting documents filed by Luff, the Secretary makes and enters the following order:

Luff represents the owners of interests in the oil and gas leasehold estate underlying all or portions of the South Half of Section 27 and all of Section 34, Township 23 North, Range 5 East of the Black Hills Meridian, Harding County, SD.

By Petition dated January 26, 2018, Luff petitioned the Board for an order approving the operation of a portion of the East Harding Springs Field, consisting of the lands described in paragraph 1 (the “Unit Area”), above as the “Eagle’s Nest Red River Unit,” approving the Unit Agreement and Unit Operating Agreement for the unit, and designating Luff as operator.

After submitting its Petition, Luff informed the Department that its preferred name for the unit is “Eagles Nest Red River Unit.” The Department has no objection to this change to the unit name.

Two producing wells have been drilled in the Unit Area, both operated by Luff. The Foust 1-34 well was drilled as a vertical well in 1977 and was plugged in 1986. The Foust 1-34 wellbore was then reentered in 1995 and a vertical completion was attempted, but no production was established. The Foust J-34H well was drilled as a horizontal Red River “B” well in 2010, and continues to produce. The Unit Area consists of the lands within the current spacing unit for the Foust J-34H well.

The existing spacing unit for the Foust J-34H well, authorized under South Dakota Oil and Gas Case No. 4-2010, has a five hundred (500) foot setback requirement from the boundaries of the spacing unit, and Luff has no objection to the same requirement applying to the Unit Area.

As described in the proposed Unit Agreement, the formation Luff is seeking to unitize within the Unit Area is defined as the stratigraphic interval from the top of the Gunton member of the Stony Mountain Formation, found at a depth of 8,722 feet below the Kelly Bushing as identified by the Schlumberger Compensated Neutron log run in cased hole in the vertical Foust 1-34 (P&A) well located in the SE¼ NW¼ of Section 34, Township 23 North, Range 5 East, Harding County, SD, and to include all principal zones down to the Red River “C” zone marker, found at a depth of 8,931 feet below the Kelly Bushing as identified by the same log.

Luff seeks to unitize the Unit Area in order to conduct a secondary recovery project consisting of a waterflood. Luff anticipates drilling two additional horizontal wells, parallel to and on either side of the Foust J-34H well, converting the Foust J-34H to water injection service,

and producing from the two new horizontal wells. Luff estimates the total cost of the project to be approximately \$5,080,000.

Luff intends to obtain approval from the Secretary under Chapter 74:12:07 of the Administrative Rules of South Dakota (“ARSD”) prior to commencing injection in the Unit Area.

Because the Unit Area consists of the lands within the current spacing unit for the Foust J-34H well, Luff proposes to treat the Unit as a single tract and to allocate expenses and production based on a single phase formula based 100% on Surface Acres. Under such a formula, each party’s ownership percentage in the Unit will be identical to its ownership percentage in the Foust J-34H well.

Luff conducted subsurface mapping and reservoir modeling studies relying on data from other waterflood projects previously conducted by Luff. Based on that data, Luff estimates that the waterflood proposed for the Unit Area will recover approximately 300,000 barrels of oil that otherwise would likely not be recovered. The present value of this oil is greater than the estimated cost of implementing the waterflood.

All wells located within the Unit Area or within one half mile of the boundaries of the Unit Area are operated by Luff, so Luff is the only operator affected by this project.

The Unit Agreement and Unit Operating Agreement are fair, reasonable, just and equitable, address the matters set forth in SDCL 45-9-39, and contain all the terms, provisions, conditions and requirements reasonably necessary and proper to protect and safeguard the respective rights and obligations of the several persons affected and will effectuate and accomplish the purposes of SDCL Chapter 45-9. The Unit Agreement and Unit Operating Agreement provide for the efficient unitized management and control of the further development and operation of the Unit for the recovery of oil and gas from the unitized formation defined in said Agreements.

The Unit Operating Agreement provides for the application of a risk penalty in the event any working interest owner elects not to participate in a future unit operation. Currently, there are no nonconsenting interests in the existing Foust J-34H well.

The area included within the Unit is less than the entire pool or common source of supply, but the area is of such size and shape as is reasonably required for the unit operations and the conduct of such operations will have no adverse effect upon other portions of the pool.

The unitized management, operation and further development of the Red River "B" formation in the Unit is reasonably necessary to increase substantially the ultimate recovery of oil and gas.

Unitization of the proposed Unit Area and the unitized management, operation and further development thereof as a Unit, all as set forth in the application and the Unit Agreement and Unit Operating Agreement and other exhibits presented by Luff will prevent waste, will equitably distribute the oil and gas among the various owners of the enlarged Unit Area, will result in the recovery of substantially more oil and gas than otherwise will be recovered, and will protect the correlative rights of the several owners.

The plan for unit operations consisting of the Unit Agreement and the Unit Operating Agreement has been approved in writing by those persons who will, under this order, be required to pay at least sixty percent of the cost of the unit operation and by the owners of at least sixty percent of the production or proceeds thereof that will be credited to interests which are free of cost. Original or copies of ratifications evidencing the same have been submitted to the Board by Luff.

The Board has authority to hear and decide this matter pursuant to SDCL Chapter 45-9 and ARSD Chapter 74:12:06, and the Secretary has authority to issue this order pursuant to SDCL 45-9-74.

All notices of the Petition and Notice of Opportunity for Hearing were properly and timely given.

The Petition is complete in all respects and contains all required and requested

information.

Luff is an “interested person” within the meaning of SDCL 45-9-37.

The Board has jurisdiction pursuant to SDCL 45-9-37 et seq. to issue orders approving the operation of a pool, or part therefor, as a unit.

The operation of the Unit in accordance with the Unit Agreement and the Unit Operating Agreement is reasonably necessary in order to increase substantially the ultimate recovery of oil or gas and the value of the estimated additional recovery of oil or gas exceeds the estimated additional cost incident to conduct such operations.

The Unit Agreement and the Unit Operating Agreement contain terms and conditions that are just and reasonable, and prescribe a plan for unit operations including those matters set forth in SDCL 45-9-39.

The Unit Agreement and the Unit Operating Agreement have been ratified or approved in writing by those persons who will be required to pay at least sixty percent of the cost of the unit operations under the plan of unit operations and by the owners of at least sixty percent of the production or proceeds thereof that will be credited to interests which are free of cost, such as royalties and production payments.

The allocation formula set forth in the Unit Agreement is just and reasonable.

The Unit Area included in the Unit Agreement is of such size and shape as may be reasonably required for the conduct of the contemplated unit operations and the conduct thereof will have no adverse effect upon any other portions of the pool.

**IT IS THEREFORE ORDERED**

A. That the Petition of Luff to approve the operation of the lands described above as a Unit is granted and approved, and that the Unit is designated the “Eagles Nest Red River Unit.”

B. The Unit Agreement and Unit Operating Agreement submitted by Luff are hereby approved and adopted as the plan for unit operations of the Unit.

C. The Unit is hereby created, authorized, and approved effective May 1, 2018.

D. Luff Exploration Company is designated as the initial operator of the Unit.

E. Prior spacing orders of the Board for the East Harding Springs Field, including without limitation Order Nos. 1-1977, 3-1977a, 16-1997, and 4-2010, are hereby amended to authorize operation of the Unit in accordance with this order, the Unit Agreement, and the Unit Operating Agreement. Luff is hereby authorized as Unit Operator to drill horizontal or vertical wells at any location within the Unit subject only to a setback requirement that any vertical well or the horizontal component of any horizontal well open to the unitized formation be no closer than five hundred (500) feet to the boundary line of the Unit.

F. Before the commencement of any water injection into the Unitized Formation, Luff as Unit Operator shall make application for underground injection in accordance with the statutes and regulations of the State of South Dakota, including but not limited to ARSD Chapter 74:12:07, and obtain all necessary approvals.

G. The Unit Agreement and the Unit Operating Agreement as approved hereby shall govern operations for the Unit in all respects. If, pursuant to the terms of the Unit Operating Agreement, a working interest owner elects not to participate in a future Unit operation, Luff must obtain approval from the Board and comply with the “good faith attempt” and notice requirements of ARSD 74:12:10:04 before applying any risk penalty.

Dated and signed this 6th day of April 2018.



Steven M. Pirner  
Secretary  
Department of Environment and Natural Resources