

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

Case No. 4-2012

IN THE MATTER OF THE PETITION OF)
LUFF EXPLORATION COMPANY FOR AN)
ORDER APPROVING THE OPERATION OF)
A PORTION OF THE TRAVERS RANCH)
FIELD, THE STATE LINE FIELD, AND THE)
YELLOW HAIR FIELD, CONSISTING OF)
THE SE/4 OF SECTION 28, THE E/2 OF)
SECTION 32 AND ALL OF SECTION 33,)
TOWNSHIP 23 NORTH, RANGE 5 EAST,)
AND THE N/2 OF SECTION 4, ALL OF)
SECTION 5, THE E/2 AND SW/4 OF)
SECTION 6, THE N/2 OF SECTION 7 AND)
THE NW/4 OF SECTION 8, TOWNSHIP 22)
NORTH, RANGE 5 EAST, HARDING)
COUNTY, SOUTH DAKOTA, AS THE)
TRAVERS RANCH RED RIVER UNIT;)
PROVIDING FOR THE RECOVERY OF RISK)
COMPENSATION FROM OWNERS WHO)
ELECT TO HAVE THEIR SHARE OF UNIT)
EXPENSES CARRIED; AMENDING)
EXISTING ORDERS TO INCLUDE ALL OF)
SAID LANDS IN THE TRAVERS RANCH)
FIELD; 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.)

**FINDINGS OF FACT, CONCLUSIONS
OF LAW AND ORDER**

The South Dakota Board of Minerals and Environment (“Board”) held a hearing in Pierre, South Dakota pursuant to notice on June 14, 2012, upon the Petition of Luff Exploration Company (“Luff”) in the captioned matter. A quorum of the Board was present at the hearing. The Board, having considered the testimony, other evidence and arguments offered by Luff, and having afforded other interested parties the opportunity to present evidence and arguments, now makes and enters the following:

FINDINGS OF FACT

1. By Amended Petition dated April 13, 2012, Luff petitioned the Board for an order approving the operation of a portion of the Travers Ranch, State Line and Yellow Hair Fields as the Travers Ranch Red River Unit (the "Unit"), approving the Unit Agreement and Unit Operating Agreement for the unit, and designating Luff as unit operator.

2. On April 20, 2012, the Board issued its Notice of Hearing setting the matter for hearing on June 14, 2012, and requiring any person wishing to intervene to file a petition for intervention. No person or entity has sought leave to intervene in this matter.

3. The Department caused proper notice of the time, date and location of the re-scheduled hearing to be timely published pursuant to SDCL 45-9-58. Luff gave proper and timely notice of the time, date and location of the hearing to all persons and entities who own interests in the mineral estate within the Unit as well as within one-half mile around the boundary of the Unit.

4. Luff proposes that the Unit consist of the following described lands (the "Unit Area") in Harding County, South Dakota:

Township 23 North, Range 5 East

Section 28: SE/4

Section 32: E/2

Section 33: All

Township 22 North, Range 5 East

Section 4: N/2

Section 5: All

Section 6: E/2, SW/4

Section 7: N/2

Section 8: NW/4

5. Said lands are included within either the Travers Ranch field, the State Line field, or the Yellow Hair field. Luff has drilled one vertical and five horizontal oil and gas wells in the Red River "B" formation on these lands. Luff has also drilled two wells which were completed

in and produced from the Red River “D” formation on these lands.

6. Geologic mapping as well as the production history from the six wells drilled in the Red River “B” pool within the proposed Unit Area indicates that the Red River “B” formation underlying the Unit area is part of a single common source of supply. The stratigraphic interval which Luff proposes to include in the Unit is the interval from the top of the Gunton member of the Stony Mountain Formation, found at a depth of 8,730 feet below the Kelly Bushing as identified by the Schlumberger Platform Express Compensated Neutron – 3 Detector Litho - Density log run in the vertical portion of the Janvrin I-32H well located in the NE/4SE/4 of Section 32, Township 23 North, Range 5 East, Harding County, South Dakota and to include all principal zones down to the Red River “C” zone marker, found at a depth of 8,938 feet below the Kelly Bushing as identified by the same log.

7. Through April 30, 2012, the six wells described above have produced approximately 619,427 barrels of oil from the Red River “B” formation. Luff estimates that these wells will recover approximately 333,200 additional barrels of oil from the Red River “B” formation under primary recovery operations.

8. Luff proposes to implement a water flood in the Red River “B” formation underlying the Unit. Luff’s present plans are to drill two additional horizontal wells, each with multiple laterals, and utilize those new wells, together with one of the existing horizontal wells, as water injection wells. The other five existing wells would be used as producing wells.

9. Luff conducted reservoir modeling studies which indicate that such a waterflood would likely recover approximately 511,000 barrels of oil that otherwise would likely not be recovered.

10. Luff estimates that the additional capital costs to implement such a waterflood would be approximately \$9,300,000. The present value of the anticipated additional 511,000 barrels of oil is greater than the estimated costs of implementing the waterflood.

11. Luff proposes to divide the Unit into six separate tracts, with two subtracts in one of the tracts. Within those tracts Luff proposes to allocate expenses and production based on a two-phase formula, with Phase I being based 48% on Current Oil Production Rate, defined as a six-month average ending April 30, 2012 except that a three-month average ending the same date is recommended for the Janvrin 0-33H well, 48% on Remaining Primary Oil Reserves – Primary Recovery (effective May 1, 2012), and 4% on Surface Acres, and Phase II being based 68% on Estimated Ultimate Recovery – Primary, 28% on Movable Red River “B” Zone Oil in Place, and 4% on Surface Acres. Conversion to Phase II would occur when 333,200 additional barrels of oil are recovered from and after May 1, 2012.

12. 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 and testimony 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.

13. 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.

14. Amending the existing orders for the Travers Ranch field (including without limitation Order Nos. 3-73b, 4-99, 4-2000, and 2-2005), the State Line field (including without

limitation Order Nos. 1-73, 5-2004, and 3-2011), and the Yellow Hair field (including without limitation Order Nos. 2-73A, 19-97, and 2-2007) so as to include all of the Unit Area within the Travers Ranch field will facilitate the reporting of production and unit operations and result in more efficient operation of the Unit and easier monitoring of the results of unitization.

15. 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.

16. 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 Chapter 45-9 of the South Dakota Compiled Laws. 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 Red River formation.

17. The allocation of production and expenses in accordance with the allocation formula set forth in the Unit Agreement is fair and equitable and is such as will reasonably permit persons otherwise entitled to share in or benefit by the production from the separately-owned tracts to receive, in lieu thereof, their fair, equitable and reasonable share of Unit production or other benefits thereof.

18. Applicant as Unit Operator and others who elect to participate in the risk and cost of conducting unit operations are entitled to compensation for the risk and expense of conducting unit operations from any working interest owners or unleased owners who elect to have their

share of unit expenses carried or otherwise financed. The risk compensation provided by the Unit Operating Agreement is in accord with ARSD 74:12:10:04 through 74:12:10:06.

19. 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 were presented to the Board at the hearing.

CONCLUSIONS OF LAW

1. The Board has authority to hear and decide this matter pursuant to SDCL Chapter 45-9 and ARSD Chapter 74:12:06.

2. All notices of the petition and the hearing thereon were properly and timely given.

3. The petition is complete in all respects and contains all required and requested information.

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

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

6. 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.

7. 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.

8. 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.

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

10. 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.

ORDER

Based upon the foregoing Findings of Fact and Conclusions of Law, the Board does hereby order:

1. That the Petition of Luff to approve the operation of the lands described above as a unit is granted and approved.

2. The Unit Agreement and the Unit Operating Agreement as presented to the Board at the hearing on June 14, 2012 are hereby approved and adopted as the plan for unit operations for the Unit.

3. The Unit is hereby created, authorized and approved effective as of 7:00 a.m. on July 1, 2012.

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

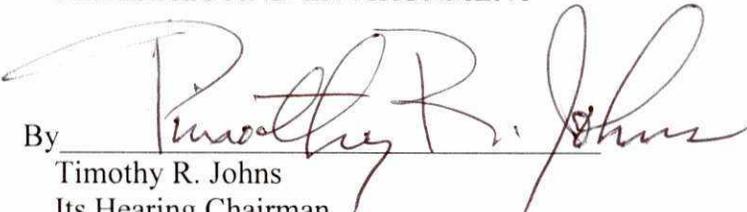
5. Prior spacing orders of the Board for the Travers Ranch field (including without limitation Order Nos. 3-73b, 4-99, 4-2000, and 2-2005), the State Line field (including without limitation Order Nos. 1-73, 5-2004, and 3-2011), and the Yellow Hair field (including without limitation Order Nos. 2-73A, 19-97, and 2-2007) are hereby amended to include the Unit Areas within the Travers Ranch field and 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.

6. 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.

7. The Unit Agreement and the Unit Operating Agreement as approved hereby shall govern operations for the Unit in all respects.

Dated at Pierre, South Dakota this 14th day of June, 2012.

SOUTH DAKOTA BOARD OF
MINERALS AND ENVIRONMENT

By 
Timothy R. Johns
Its Hearing Chairman