



DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES  
 Minerals & Mining Program - Oil & Gas Section  
 2050 West Main, Suite #1, Rapid City, SD 57702-2493  
 Telephone: 605-394-2229, FAX: 605-394-5317

RECEIVED FORM 2

JUL 12 2012

DEPT OF ENVIRONMENT & NATURAL RESOURCES - RAPID CITY

State of South Dakota  
 Department of Environment  
 and Natural Resources

**APPLICATION FOR PERMIT TO DRILL**

Type of Work:  Drill New Well  Reenter Well  Drill Directional Well  Other

Type of Well:  Oil Well  Gas Well  Injection  Other

Name and Address of Operator: LUFF EXPLORATION COMPANY, 1580 LINCOLN STREET, SUITE 850, DENVER, CO 80203  
 Telephone: (303) 861-2468

Name and Address of Surface Owner: Terry B. and Marilyn A. McKittrick PO Box 884 Bowman, ND 58623

Name and Address of Drilling Contractor and Rig Number: Cyclone Rig # 11  
 5800 Mohan Rd, Gillette, WY 82718

Surface Location of Well: Qtr-Qtr, Sec, Twp, Rge, County, Feet from Nearest Lines of section, and latitude and longitude (if available):  
 NESE Sec 28-T23N-R4E, Harding Co., 1780' FSL x 660' FEL, Lat: 45° 55' 34.296" N, Long: 103° 37' 36.905" W

If Directional, top of pay and bottom hole location from nearest lines of section:  
 Southeast Lateral: Top of pay est @ 9357' MD = 9084' TVD (1335' FSL & 486' FEL Sec 28-T23N-R4E) BHL = 760' FSL & 1790' FWL Sec 34-T23N-R4E

Acres in Spacing (Drilling) Unit: 960  
 Description of Spacing Unit: SE/4 Sec 28, SW/4 Sec 27, E/2 Sec 33, W/2 Sec 34 of T23N-R4E

Well Name and Number	Elevation	Field and Pool, or Wildcat	Proposed Depth and Formation		
McKittrick 1-28H	3143' Gr 3156' KB	Medicine Pole Hills South	Lat: 15619' MD, 9084' TVD Red River B		
Size of Hole	Size of Casing	Weight per Foot	Depth	Cementing Program (amount, type, additives)	Depth
1) 13-1/2"	9-5/8"	36#	2000'	565 sks Lite Tailed w/ 200 sks Premium	Surface
2) 8-3/4"	7"	23, 26, 29#	9357'	145 sks Lite Tailed w/ 500 sks Premium	4600'
3) 6-1/8"	None		15619'		
4)					

Describe Proposed Operations (Clearly State all Pertinent Details, and Give Pertinent Dates, Including Estimated Date of Starting any Proposed Work). Use Additional Page(s) if appropriate.

Drill a medium radius horizontal well that has one lateral in the Red River "B" formation. Drill 13-1/2" surface hole to 2000' with fresh water. Run 9-5/8" casing and cement to surface. Drill 8-3/4" vertical hole to KOP at approximately 8606'. Drill build section with an azimuth of approximately 159 degrees and land in the Red River "B" zone at 9357' MD = 9084' TVD with a BHL approximately 445' south and 174' east of surface location. Vertical and build sections to be drilled with invert oil mud. Run 7" casing and cement to 4600'. Drill one 6-1/8" horizontal lateral in the Red River "B" zone to approximately 15619' MD = 9084' TVD at BHL approximately 760' FSL and 1790' FWL Sec 34-T23N-R4E. Fresh water/polymer will be used for the horizontal section. All drilling fluids and cuttings will be contained in a pit lined with a 12 mil plastic liner. All liquids will be disposed of in an approved method, the liner and cuttings will be buried in place. The estimated start date for location construction is 8/15/12. Estimated start date for drilling is 9/1/12.

I hereby certify that the foregoing as to any work or operation performed is a true and correct report of such work or operation.

Signature: Name (Print): Richard D. George Manager of Engineering Title: 7/11/2012 Date

**FOR OFFICE USE ONLY**

Approved by: Title: Minerals Mining Prog. Admin.  
 Permit No. 2014 API No. 40 063 20735 Date Issued: 7/25/2012  
 Conditions, if any, on attached page.





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**PERMIT CONDITIONS**

Luff: I-28H McKittrick  
23N-4E-28 NESE, Harding County

Permit: #2014  
API: 40 063 20735

Approval has been granted to drill this location as detailed on the attached Application for Permit to Drill (Form #2) with the following additional conditions:

1. This permit is conditioned on compliance with all applicable requirements of South Dakota Codified Laws 45-9 and Administrative Rules of South Dakota 74-12.
2. A 12-mil woven, reinforced high-density polyethylene liner must be used on all pits.
3. Surface runoff must be diverted around the drill site.
4. The surface hole must be drilled with fresh water.
5. Cement must be circulated to the ground surface on the surface casing.
6. If horizontally drilled:
  - A. The coordinates of the production casing shoe and the well terminus must be filed with the department.
  - B. The azimuth of the horizontal segment of the well must be filed with the department along with the results of periodic down hole surveys.
7. If production casing (long string) is set:
  - A. Sufficient cement must be circulated on the long string to cover any fresh water aquifer not covered by the surface casing. Freshwater resources at this site include: Madison, Minnelusa, Minnekahta, Canyon Springs, and Inyan Kara.
  - B. A cement bond log must be run and filed with the department.
8. If abandoned:
  - A. With long string, sufficient cement must be circulated to install:
    1. A 100-foot cement plug immediately above the KOP, if horizontally drilled.
    2. A 100-foot cement plug, half in and half out of the top of the casing stub after the retrievable part of the production casing has been removed.
    3. A 100-foot cement plug, half in and half out of the top of any fresh water aquifer between the top of the casing stub and the base of the surface casing. Freshwater resources at this site include: Madison, Minnelusa, Minnekahta, Canyon Springs, and Inyan Kara.
    4. A 100-foot plug, half in and half out of the base of the surface casing.
    5. A 25-foot cement plug at the top of the surface casing.
  - B. Without long string, sufficient cement must be circulated to set:
    1. A 100-foot cement plug immediately above the KOP, if horizontally drilled.
    2. 100-foot cement plugs, half in and half out of the top of the following formations:  
Red River, Interlake, Madison, Minnelusa, Minnekahta, Canyon Springs, and Inyan Kara.
    3. A 100-foot cement plug, half in and half out of the base of the surface casing.
    4. A 25-foot cement plug at the top of the surface casing.
  - C. Heavy, mud-laden fluid must be used between all plugs.
  - D. The casing string must be cut off at least three feet below the final ground surface contour. A plate with the name of the operator, well name and number, and legal location by quarter-quarter section, township and range must be welded to the casing stub. The location of the abandoned well must be surveyed with high resolution global positioning system equipment or other appropriate survey methods sufficient to accurately locate the well. Survey coordinates must be included in the final abandonment report.

9. Surface reclamation of the site must be completed within one year of plugging and abandoning the well.
10. A washed set of sample cuttings (or cores, if cut) must be shipped, free of charge, to:

Derric Iles  
Geological Survey Program  
Akeley-Lawrence Science Center  
University of South Dakota  
414 E. Clark Street  
Vermillion, SD 57069-2390

11. Please notify this office prior to plugging so a witness can be on location. If plugging will occur after regular business hours, call Lucy Dahl at 605-773-6257.