STATE OF SOUTH DAKOTA
William J. Janklow, Governor

DEPARTMENT OF WATER AND NATURAL RESOURCES
Warren R. Neufeld, Secretary

GEOLOGICAL SURVEY
Duncan J. McGregor, State Geologist

Open-File Report No. 2-BAS

LIST OF NATURAL GAS OCCURRENCES IN SOUTH DAKOTA BY COUNTY

Compiled by

Richard Bretz

Compiled from published and unpublished sources of the South Dakota Geological Survey, Western Field Office, Rapid City, South Dakota, and Science Center, University, Vermillion, South Dakota. Published sources include Bulletins, Reports of Investigation, Circulars, Biennial Reports, and Oil and Gas Maps. Unpublished sources include letter files, historical data on oil and gas, oil and gas test hole files, and water well log files.

Science Center
University of South Dakota
Vermillion, South Dakota
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THIS IS THE FORMAT EMPLOYED IN THIS COMPILATION OF DATA

COUNTY NAME

a. Well name, if any; water well (ww), petroleum test (pt), test hole (th), or fuel use (fu).

b. Legal location; section, township, range

c. Elevation in feet; ground level unless otherwise indicated

d. Total depth, in feet

e. Gas shows and/or kicks: depth; description of show or kick (from core, borehole, DST); stratigraphic interval

f. Gas analysis, if any

g. Miscellaneous: e.g., GOR; dry or wet gas; gas use; measured and/or calculated production figures

NOTE: The accuracy and/or reliability of some of the gas shows in early day petroleum tests must be viewed with reservation. They are listed here as reported in the literature, but some of the early day tests were promotional schemes and data were sometimes exaggerated.

NOTE: Only those fluids containing gas are reported on DST's; other fluids recovered are not reported.

KEY TO ABBREVIATIONS

bbl(s) - barrel(s)
bkg - background
bkg G - background gas
BTU - British thermal units

C - cut
cc - cubic centimeters
CH4 - methane
chromat - chromatograph(ic)
C2H4 - ethylene
C2H6 - ethane
CO - carbon monoxide
CO2 - carbon dioxide
Conn gas - connection gas

D - drilling
DST - drill stem test

fm - formation
FSI - final shut in

G - gas
GOR - gas/oil ratio
GPM - gallons liquid standard conditions per 1 Mcf moisture free gas at standard conditions
gpm - gallons per minute
GTS - gas to surface

H - heavily or highly
H2 - hydrogen
H2S - hydrogen sulfide

ISI - initial shut in

KB - kelly bushing

M - mud or muddy
Mcf - thousand cubic feet
MMcf - million cubic feet

N2 - nitrogen

O - oil
O2 - oxygen

ppm - parts per million
Psia - pounds per square inch air

rec - recovered

S - salt

SI - shut in
sli - slightly

TG - trip gas
tr - trace
TSTM - too small to measure

W - water
WLC - wire line core
WLT - wire line test

AURORA COUNTY

1. a. John Houtkooper (ww)
   b. Center sec. 6, T. 101 N., R. 64 W.
   c. Elevation - unknown
   d. TD - 280 feet
   e. Niobrara Chalk gas well
   f. Gas analysis - none
   g. Struck in 1931. Eleven feet in the chalk when hit water. Gas used in farm house.

2. a. M and M No. 1 Hoefert (pt)
   b. NW NW sec. 28, T. 104 N., R. 63 W.
   c. Elevation - 1350-1400 feet
   d. TD - 1082 feet
   e. Gas show interval unknown
   f. Gas analysis - none
   g. Drilled with cable tools.

BEADLE COUNTY

1. a. Kenneth Langbehn (ww)
   b. NW sec. 33, T. 111 N., R. 63 W.
   c. Elevation - 1304 feet
   d. TD - approximately 700 feet
   e. Dakota Sandstone
   f. Gas analysis - none
   g. Some gas in the water

BENNETT COUNTY

1. a. Gulf No. 1 Jacquot (pt)
   b. NE SE sec. 10, T. 39 N., R. 37 W.
   c. Elevation: 2883 feet
   d. TD - 4551 feet
   e. 1860 feet, shale, 48 units G, Sharon Springs Member of Pierre Shale
      1890 feet, shale, 75 units G, Sharon Springs Member of Pierre Shale
      2040 feet, shale, 40 units G, Niobrara Chalk
      2070 feet, shale, 30 units G, Niobrara Chalk
      2076 feet, shale, 133 units G, Niobrara Chalk
      2112 feet, shale, 80 units G, Niobrara Chalk
      2156 feet, trip, 65 units TG, 40 units G, Niobrara Chalk
      3360 feet, 55 units TG, Fuson Shale Member of Lakota Formation
      4140 feet, 185 units TG, undifferentiated Devonian
   f. Gas analysis - none

BON HOMME COUNTY

1. a. Unnamed well (ww)
   b. Four miles north of Avon, T. 95 N., R. 61 W.
   c. Elevation - unknown
   d. TD - unknown
   e. Niobrara Chalk gas show
   f. Gas analysis - none
   g. Drilled by and reported by Mr. Aspin, a well driller from Avon.

BROOKINGS COUNTY

1. a. Unnamed well (ww)
   b. Center sec. 7, T. 109 N., R. 47 W.
   c. Elevation - unknown
   d. TD - 124 feet
   e. Pleistocene drift gas
   f. Gas analysis - none
   g. "There is a difficulty in the construction of a well as (1) it blows the auger into the air, (2) lining also goes into the air."

BROWN COUNTY

1. a. Unnamed well (ww)
   b. NE sec. 32, T. 122 N., R. 65 W.
   c. Elevation - unknown
   d. TD - unknown
   e. Pierre Shale - Carlile Shale interval gas show; depth uncertain but gas was not observed until the drill was at 540 feet and pulled back to approximately 280 feet.
   f. Gas analysis - none

2. The depth at which gas is reported in some wells in the area about Aberdeen suggests that the gas came from the Niobrara Chalk.

BRULE COUNTY

1. a. Kucera No. 1 Biskeborn (pt)
   b. NW NW sec. 14, T. 103 N., R. 71 W.
   c. Elevation - 1682 feet
   d. TD - 1365 feet
   e. 278-280 feet, gas show in the Sharon Springs Member of the Pierre Shale.
      1080 feet, gas show in the Dakota Sandstone.

f. Gas analysis - none.

2. a. Unnamed well (ww)
   b. S 1/2 NW sec. 2, T. 102 N., R. 72 W.
   c. Elevation - unknown
   d. TD - unknown
   e. Codell Sandstone Member of Carlile Shale
   f. Gas analysis - none
   g. Very little artesian pressure which indicated that it might come from the Codell. 200 feet to the flow. It was reported that this well contained some gas.

BUFFALO COUNTY

1. a. Louis Truman well (ww)
   b. NE NE NE sec. 18, T. 107 N., R. 72 W.
   c. Elevation - unknown
   d. TD - 685 feet
   e. Codell Sandstone Member of Carlile Shale
   f. Gas analysis - none
   g. Chief aquifer is Codell. Driller reports gas in the well when it was drilled.

BUTTE COUNTY

1. a. Newell Experimental Farm well (ww)
   b. NE SW NE sec. 24, T. 9 N., R. 5 E.
   c. Elevation - unknown
   d. TD - 4400 feet
   e. 1650 feet, trace of gas, Graneros Shale
      3660 feet, gas encountered, Spearfish Formation
   f. Gas analysis - none

2. a. Newell well (ww)
   b. Same as above?
   c. Elevation - unknown
   d. TD - unknown
   e. Stratigraphic interval unknown
   f. Gas analysis - none
   g. Gas coming up through about 400 feet of thick mud. When lit, gas flames up 6 to 8 feet high above the casing.

3. a. Unnamed well (ww)
   b. 35 miles east of Belle Fourche
   c. Elevation - unknown
   d. TD - unknown
   e. Pierre Shale
   f. Gas analysis - none
   g. Information was provided by Mr. Durst. Gas was struck

at a depth of 440 feet which burned with a flame 3 feet high.

4. a. Bernard No. 1 Hafner (pt)
   b. SE NE sec. 30, T. 9 N., R. 7 E.
   c. Elevation - 2279 feet KB
   d. TD - 1155 feet
   e. 600 feet, gas show, Pierre Shale
      1155 feet, small amount of gas, probably comes from the Sharon Springs Member of the Pierre Shale or top of the Niobrara Formation.
   f. Gas analysis - none
   g. Drilled with cable tools. Forty pounds of pressure indicated on wellhead gauge. A water well at this location had given spurts of gas, apparently coming from the base of the Pierre Shale. Gas piped to the ranch house and used there.

5. a. Teepee Buttes No. 2 Hafner (pt)
   b. SW SW NE sec. 33, T. 9 N., R. 7 E.
   c. Elevation - 2900? feet
   d. TD - 2752 feet
   e. Base of Pierre Shale, a little gas struck
   f. Gas analysis - none

6. a. Teepee Buttes No. 1 Hafner (pt)
   b. NW NE sec. 33, T. 9 N., R. 7 E.
   c. Elevation - approximately 2900 feet
   d. TD - 1421 feet
   e. Approximately 1200 feet, a little gas, either Sharon Springs Member of Pierre Shale or Niobrara Formation
   f. Gas analysis - none
   g. Gas was escaping from the casing, prior to plugging

7. a. Wy-Tex No. 1A Hamilton (pt)
   b. SE NE sec. 32, T. 8 N., R. 1 E.
   c. Elevation - 3500-3520 feet
   d. TD - 1703 feet
   e. 1255-1260 feet; sand, soft, coarse, showing gas; Minnelusa Formation
      1527-1529 feet; sand, soft, gray, show of oil and gas; Minnelusa Formation
   f. Gas analysis - none
   g. Drilled with cable tools

8. a. Blakeman No. 1 Kayras (pt)
   b. SE NE sec. 30, T. 10 N., R. 6 E.
   c. Elevation - approximately 2925 feet
   d. TD - approximately 2860 feet
   e. 2550-2575 feet; gas and oil shows rumored; Newcastle Sandtone
   f. Gas analysis - none
   g. Unconfirmed gas shows

9. a. Amerada No. 1 Williamson (Strat. No. 5) (pt)
   b. NW SW sec. 29, T. 8 N., R. 7 E.
   c. Elevation - 2732 feet KB
   d. TD - 2316 feet
   e. Gas show stratigraphic interval unknown
   f. Gas analysis - none
   g. Gas pressure disturbed the drilling mud

10. a. Seyler No. 1 Anderson (pt)
    b. NW SE sec. 12, T. 8 N., R. 5 E.
    c. Elevation - 2887 feet
    d. TD - 5759 feet
    e. Oil and gas show in the Sundance Formation
    f. Gas analysis - none

11. a. Clark No. 1 Hartwell (pt)
    b. NW NE sec. 30, T. 8 N., R. 1 E.
    c. Elevation - 3610 feet
    d. TD - 1211 feet
    e. 1082 feet, gas show; Converse sand of Minnelusa Formation
    f. Gas analysis - none

12. a. Amerada No. 1 State (pt)
    b. NW NW sec. 4, T. 14 N., R. 4 E.
    c. Elevation - 3029 feet KB
    d. TD - 7772 feet
    e. 4500-4570 feet, oil and gas show; Spearfish Formation
    f. Gas analysis - none

13. a. Amundson No. 1 Kayras (pt)
    b. SE NE sec. 30, T. 10 N., R. 6 E.
    c. Elevation - 2900-2950 feet
    d. TD - 1100 feet
    e. 1100 feet, gas show; Niobrara Formation
    f. Gas analysis - none

14. a. Energy Reserves Group No. 1 State (pt)
    b. SE SE sec. 36, T. 9 N., R. 6 E.
    c. Elevation - 2803 feet
    d. TD - 5575 feet
    e. 1000 feet gas show; bkg - 180 units; during - 400 units (all methane); after - 190 units; gas show encountered while drilling with water; Niobrara Formation
       1340-1593 feet, gas show; bkg - 100 units; during - 180 units; after - 180 units; gas show encountered while drilling with water; Turner Sandy Member of Carlile Shale
       DST No. 2 1350-1593 feet; Turner Sandy Member; gas surfaced in 8 minutes; flammable
    f. Gas analysis - none
    g. On the DST No. 2, gas was gauged at a maximum of 6.39 Mcf, decreasing to 5.64 Mcf in 5 minute, then decreasing to less than an estimated 1 Mcf. No gas

odor was detectable.

15. a. Unnamed well (ww)
    b. SW sec. 36, T. 10 N., R. 9 E.
    c. Elevation - unknown
    d. TD - 24 feet
    e. Pierre Shale gas show
    f. Gas analysis - none
    g. "The water is rather strong mineral content, also strong gas." (This is probably a H2S show.)

16. a. Harrison No. 1-17 Federal-Wheatley (pt)
    b. SE SE sec. 17, T. 13 N., R. 5 E.
    c. Elevation - 2899 feet
    d. TD - 3350 feet
    e. DST 2942-2992 feet; Muddy Sandstone; Rec 90 feet sli GCM, 240 feet sli GC and MCW, 1813 feet sli GCfm W
    f. Gas analysis - none

17. a. Unnamed well (ww)
    b. East of Newell about 10 miles
    c. Elevation - unknown
    d. TD - unknown
    e. Stratigraphic interval unknown
    f. Gas analysis - none
    g. Gas that burned a 5-foot jet from a 5-inch pipe was brought in east of Newell away back in 1894 from a hole that was a mile off structure.

18. a. Johnson No. 1 Fishel (pt)
    b. SE SW sec. 19, T. 8 N., R. 1 E.
    c. Elevation - 3391 feet
    d. TD - 1214 feet
    e. 1265 feet, gas and oil; Third Converse of Minnelusa Formation
       1530 feet, gas and oil; Third Leo of Minnelusa Formation
    f. Gas analysis - none

19. a. Batts No. 1 Gottfredson (pt)
    b. Center NW sec. 32, T. 9 N., R. 8 E.
    c. Elevation - 2880 feet
    d. TD - 2479 feet
    e. Niobrara Formation had exceptionally high gas readings, as high as 340 units; gas appears to be trapped in the impervious shale and is apparently not commercial
    f. Gas analysis - none

20. a. Energy Reserves Group No. 1 Oliver (pt)
    b. SE SE sec. 33, T. 9 N., R. 8 E.
    c. Elevation - 2851 feet
    d. TD - 5731 feet
    e. 3045 feet, circulated samples to check a Sundance

Formation gas kick
f. Gas analysis - none

21. a. Lee Banks No. 1-23 Federal-Richards (pt)
b. SW SW sec. 23, T. 10 N., R. 7 E.
c. Elevation: 2964 feet
d. TD - 2729 feet
e. 2646-2665 feet DST, Muddy zone; Rec. 1368 feet of gassy sli salty W
f. Gas analysis - none

22. a. Mallonee No. 1 Warwick (pt)
b. SE SE sec. 30, T. 10 N., R. 8 E.
c. Elevation - approximately 2960 feet
d. TD - 2975 feet
e. DST in Muddy has gas show
f. Gas analysis - none

23. a. Harrison No. 1-7 Federal-Wheatley (pt)
b. NE NE sec. 7, T. 14 N., R. 5 E.
c. Elevation - 3000 feet
d. TD - 3651 feet
e. 3302-3320 feet DST; Muddy; Rec 248 feet MCW and 2170 feet GCW
f. Gas analysis - none
g. DST gas was flammable and burned with a yellow flame about 2 feet long. Quantity of gas was sufficient to burn continuously after stand of pipe was broken off.

24. a. Lario-Amber No. 1-13 Federal (pt)
b. NW SE sec. 13, T. 10 N., R. 5 E.
c. Elevation: 2980 feet
d. TD - 1800 feet
e. 1264 feet, 44 units of TG; Pierre Shale
1800 feet, 39 units of TG; Niobrara Formation
bkg G remained at 3 to 5 units
f. Gas analysis - none

25. a. Davis No. 1 Tom (pt)
b. NW NW sec. 5, T. 13 N., R. 6 E.
c. Elevation: 2900 feet
d. TD - 1247 feet
e. 839-847 feet, 2 to 4 units of TG; Pierre Shale
879-967 feet, 0 to 2 units of bkg G; Pierre Shale
887 feet, 32 units of conn G; Pierre Shale
907 feet, 15 units of conn G; Pierre Shale
927 feet, 14 units of conn G; Pierre Shale
947 feet, 6 units of conn G; Pierre Shlae
967 feet, 100 units of TB; Pierre Shale
967-971 feet, 4 to 5 units of bkg G; Pierre Shale
968 feet, 5 units of TG?; Pierre Shale
969-970 feet, 4 to 20 units of liberated G?; Pierre Shale
970-996 feet, 2 units of bkg G; Pierre Shale

996 feet, 36 units of TB; Pierre Shale
f. Gas analysis - none
g. A 16 hour test on 6/28/80 measured 3.3 Mcg G; well SI

26. a. Lario-Amber No. 1-7 Federal (pt)
b. NW SE sec. 7, T. 13 N., R. 6 E.
c. Elevation: 2876 feet
d. TD - 2350 feet
e. 1635 feet, 67 units (1420 ppm methane) TG; Pierre Shale
2064 feet, 92 units (1530 ppm methane) TG; Niobrara Formation
bkg G remained at 3 to 5 units
f. Gas analysis - none

27. a. Lario-Amber No. 1-9 Federal (pt)
b. SW NE sec. 9, T. 14 N., R. 3 E.
c. Elevation: 3051 feet
d. TD - 1250 feet
e. A 20 unit increase in hotwire G from a 3 unit bkg was seen in the Shannon sand zone of the Pierre Shale
f. Gas analysis - none

28. a. Lario No. 1-21 Federal (pt)
b. NE SW sec. 21, T. 14 N., R. 4 E.
c. Elevation - 2972 feet
d. TD - 1150 feet
e. 805 feet, large amounts of G were detected while drilling was suspended; 75 units of hotwire G, 8000 ppm methane and 700 ppm ethane were recorded while working loose a mud ring at this depth; bkg G before was 3 units but after this show, 40 units bkg was maintained for the remainder of the hole; Pierre Shale
f. Gas analysis - none

29. a. McCutchin No. 1-7 Burke (pt)
b. Center NW sec. 7, T. 14 N., R. 5 E.
c. Elevation - 3009 feet
d. TD - 1500 feet
e. Gas show; Pierre Shale
f. Gas analysis - none
g. On 6/2/80, sli amount G; all runs had sli G flare
On 6/3/80 had sli G flare on first run
On 6/4/80 sli blow and flared; first run had a very sli burn

30. a. Davis No. 1 Burke (pt)
b. SE SE sec. 13, T. 14 N., R. 5 E.
c. Elevation - 2950 feet
d. TD - 2368 feet
e. 1110-1131 feet, 2 to 3 units liberated G; Pierre Shale
1131 feet, 12 units TG; Pierre Shale

1170 feet, 6 units conn G; Pierre Shale
1210 feet, 2 units conn G; Pierre Shale
1735 feet, 8 units liberated G(?); Pierre Shale
1760 feet, 2 units liberated G(?); Pierre Shale
1800 feet, 5 units liberated G(?); Pierre Shale
1860 feet, 3 units liberated G(?); Pierre Shale
1950-2040 feet, 8 units bkg G; Pierre Shale
2040 feet, 14 units liberated G(?); Pierre Shale
2050-2150 feet, 4 to 10 units bkg G; Niobrara Formation
2185 feet; 15 units conn G, stuck drill stem coming out of hole; 10 to 30 units TG and conn G while washing to bottom; Niobrara Formation
2202-2242 feet; 4 to 6 units bkg G; Niobrara Formation
2202 feet; 7 units conn G; Niobrara Formation

f. Gas analysis - none

31. a. Davis No. 1 Orwick (pt)
b. NW SE sec. 13, T. 14 N., R. 7 E.
c. Elevation: 3000 feet
d. TD - 1598 feet
e. While drilling the plug out from under surface, 30 to 40 units built up rapidly on the chart and persisted for about 1 hour and then reduced to 4 to 6 units of bkg G
324 feet, 5 units bkg G; Pierre Shale
344 feet, 4 to 5 units bkg G; Pierre Shale
364 feet, 26 units conn G; Pierre Shale
375 feet, 38 units liberated G; Pierre Shale
386-526 feet, 4 to 6 units bkg G; Pierre Shale
526-666 feet, 2 to 3 units bkg G; Pierre Shale
686 feet, after shut down, 4 to 6 units conn G; Pierre Shale
686-866 feet, 2 units bkg G; Pierre Shale
906 feet, 2 to 5 units conn G (after shut down); Pierre Shale
906-1266 feet, 2 to 4 units bkg G (suction line partially plugged); Pierre Shale
1266-1366 feet, 5 to 8 units bkg G; Pierre Shale
1366-1546 feet, 8 to 14 units bkg G; may be 2 units of this is liberated gas periodically through this section; Pierre Shale
1546-1586 feet, bkg G bled down to 0 while circulation samples; Pierre Shale
1586 feet, 90 units went off scale TG (8 1/2 hours of tripping); Pierre Shale
f. Gas analysis - none
g. A 16 hour test on 6/28/80 gave 4 Mcf G; 24 hour calculated rate is 4 Mcf G; GOR 4

32.a. Doerr No. 1 Breidenbach (ww)
b. SE SE sec. 31, T. 9 N., R. 7 E.
c. Elevation - 2725 feet

d. TD - 2216 feet
e. 480 feet, sand with hard cap, gas show; Pierre Shale
645 feet, sand with hard cap, gas show; Pierre Shale
1085 feet, possibly some gas; Carlile Shale
1624 feet, sand with hard cap; gas show; Graneros Shale
f. Gas analysis - none

33. a. Shell No. 23-23 Johnson (pt)
b. NE SW sec. 23, T. 10 N., R. 1 E.
c. Elevation - 3280 feet
d. TD - 4535 feet
e. 3147 feet, slight gas kick on recorder; Minnelusa Formation
f. Gas analysis - none

34. a. Mobil No. 1 Sipila (pt)
b. NW NW sec. 14, T. 9 N., R. 8 E.
c. Elevation - 2862 feet
d. TD - 6335 feet
e. 4013-4025 feet; gas show, 32 units over base on Baroid; Minnelusa Formation
f. Gas analysis - none

CAMPBELL COUNTY

1. a. John Fenelon well (ww)
b. Four miles south of Pollock
c. Elevation - 1700 feet
d. TD - 2042 feet
e. Dakota Sandstone gas show
f. Gas analysis - none
g. Gave off considerable gas, enough to run three large burners constantly. At one time, they had a stove in the house and did all the cooking with the gas from the well.

2. a. H. C. Smith well (ww)
b. Eight miles west from Pollock
c. Elevation - 1700 feet
d. TD - 2042 feet
e. Dakota Sandstone gas show
f. Gas analysis - none

3. a. Himler? well (ww)
b. Twenty miles north of Mobridge
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone gas show
f. Gas analysis - none

4. a. Pollock well (ww)

b. Unknown
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone gas show
f. Gas analysis - none

5. a. Skinner Ranch well (ww)
b. SE sec. 32, T. 126 N., R. 78 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone gas show
f. Gas analysis - none
g. Artesian well; enough gas was present to heat and light a large ranch house

6. a. Unnamed well (ww)
b. SE NE sec. 22, T. 126 N., R. 78 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone gas show
f. Gas analysis - none
g. Gas was bubbling through the water and wasting into the air

7. a. Unnamed well (ww)
b. S 1/2 SE sec. 8, T. 126 N., R. 78 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone gas show
f. Gas analysis - none
g. Gas of some general character and amount as in other wells

8. a. Harry Hunter or Horse Shoe Ranch wells (ww)
b. Twenty miles north of Mobridge
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone gas show
f. Gas analysis - none
g. Three artesian wells gave off gas, quite a strong flow

CHARLES MIX COUNTY

1. a. Palensky No. 1A Wagner (pt)
b. SE NW SW sec. 15, T. 95 N., R. 64 W.
c. Elevation - 1700-1750 feet
d. TD - 2835 feet
e. 200 feet, gas struck; Niobrara Chalk and/or Codell Sandstone Member of Carlile Shale
Twelve horizons with gas and/or oil shows, supposely in the Sioux Quartzite
f. Gas analysis - CO2 - 0.6%; O2 - 2.0%; CO - none;

unsaturates - none; water - none; CH4 - 30.0%; N2 - 67.9%. No test on BTU but estimated by the laboratory at 300 to 500. This is from the Kn and/or Kcc interval.

g. Kn and/or Kcc interval had a sufficient flow to furnish fuel and light for approximately 20 years. Some of the quartzite gas shows proved to be acetylene upon analysis, evidently generated from carbon in the bits. Shows were not verified by the State Geological Survey.

2. a. Palensky No. 1B Wagner (pt)
   b. SE SE SW sec. 15, T. 95 N., R. 64 W.
   c. Elevation: 1728 feet
   d. TD - 5185? feet
   e. 1500 feet, gas show; Sioux Quartzite
      3925 feet, gas show; Sioux Quartzite
   f. Gas analysis - none
   g. See g. in 1. above

3. a. Guckheiser well (ww)
   b. Southeast of the Bijou Hills
   c. Elevation - unknown
   d. TD - 60 feet
   e. Pleistocene drift gas show
   f. Gas analysis - none

4. a. T. A. Cahill well (ww)
   b. Platte area
   c. Elevation - unknown
   d. TD - unknown
   e. Unknown stratigraphic interval
   f. Gas analysis - none
   g. "I have burned gas from the ground here. . ."

5. a. Unnamed well (ww)
   b. Four miles east of Greenwood, T. 94 N., R. 63 W.
   c. Elevation - unknown
   d. TD - unkown
   e. Stratigraphic interval unknown
   f. Gas analysis - none
   g. 217 feet of river sand, 2 feet of chalk, artesian sand; flowed; when pipe set, would only pump 3.5 gpm; must be gas above giving drive

6. a. Indian's farm well (ww)
   b. Center sec. 27, T. 95 N., R. 64 W.
   c. Elevation - unknown
   d. TD - unknown
   e. Niobrara Chalk gas show
   f. Gas analysis - none
   g. 0-280 feet, through the shales to the top of chalk; good show of gas at this horizon

CLARK COUNTY

1. a. Unnamed wells (ww)
   b. SW sec. 7, T. 117 N., R. 58 W.
   c. Elevation - unknown
   d. TD - 90 feet
   e. Pleistocene drift gas shows
   f. Gas analysis - none
   g. "Two wells bored to a depth of 90 feet before we had the present one dug at 90 feet. Both were given up on account of rocks and gas."

CLAY COUNTY

1. a. Huetson farm well (ww)
   b. .5 mile east of Vermillion, T. 92 N., R. 51 W.
   c. Elevation - unknown
   d. TD - unknown
   e. Pleistocene gas show
   f. Gas analysis - CO2 - 3.292% and 3.316%, mean - 3.3%; O2 - 0.5144% and 0.5346%, mean - 0.5245%; illuminants - 0.6237% and 0.6412%, mean - 0.6324% CO - 0.5144% and 0.5346%, mean - 0.5245%. Therefore, approximately 95 percent of this gaseous material is an inert gas, probably N2.

CODINGTON COUNTY

1. a. Match No. 1 Drake (pt)
   b. NE SW sec. 10, T. 119 N., R. 51 W.
   c. Elevation - 1899 feet
   d. TD - 1275 feet
   e. 144-152 feet, heavy flow of gas; Pleistocene
      325-335 feet, trace of gas; Pleistocene
   f. Gas analysis - none
   g. Gas shows were considered controversial

2. a. South Shore drill hole No. 9 (th)
   b. NW NE sec. 25, T. 119 N., R. 51 W.
   c. Elevation - unknown
   d. TD - 49 feet
   e. Pleistocene drift gas show
   f. Gas analysis - none
   g. Water at 14 feet; water bubbles as gas comes up through it

CORSON COUNTY

1. a. Wilhite et al. No. 1 State (pt)

b. SE SW sec. 36, T. 22 N., R. 21 E.
c. Elevation - 2215 feet
d. TD - 6682 feet
e. DST No. 1 6464 - 6994 feet, Red River Formation; Rec 3510 feet sli gassy SW, 180 feet sli GC sli SW
f. Gas analysis - none

2. a. Koch No. 1 Green (pt)
b. SE SE sec. 31, T. 22 N., R. 24 E.
c. Elevation - 2065 feet
d. TD - 3078 feet
e. DST No. 1 2746-2803 feet, Muddy; Rec. 2560 feet GCW, gas was flammable
f. Gas analysis - none

3. a. Koch No. 1 Richter (pt)
b. SE SE sec. 4, T. 19 N., R. 25 E.
c. Elevation - 2041 feet
d. TD - 2902 feet
e. DST No. 1 2541-2612 feet, Muddy; Rec. 2260 feet sli GCSW
f. Gas analysis - none

4. a. Youngblood No. 1 Draskovich (pt)
b. SE SE sec. 20, T. 23 N., R. 22 E.
c. Elevation - 2380 feet
d. TD - 7465 feet
e. DST 5118-5145 feet, Mission Canyon Formation; Rec. 95 feet sli GCSW with black O specks, 180 feet sli GCSW
f. Gas analysis - none

5. a. Youngblood No. 1 Winter (pt)
b. SW SW sec. 23, T. 22 N., R. 19 E.
c. Elevation - 2401 feet
d. TD - 5820 feet
e. DST No. 2 5455-5479 feet, Mission Canyon; Rec. 90 feet very sli GCW
f. Gas analysis - none

6. a. Bartlett No. 1 Guyer (pt)
b. SW SW sec. 20, T. 23 N., R. 23 E.
c. Elevation - 2320 feet
d. TD - 7646 feet
e. Hydrocarbon shows from gas logger:
2890-3910 feet, 100 units; Graneros to below Piper interval
4425-4450 feet, 30 units; Minnelusa Formation
4835-4875 feet, 60 to 120 units; Charles Formation
4830-4845 feet, off the scale gas kick; Charles Formation
4890-4920 feet, 90 to 130 units; Charles Formation
4930-5220 feet, 60 to 110 units; Charles/Mission Canyon/Lodgepole interval
5330-5420 feet, black shale, string G?; Lodgepole
5390-5450 feet, 100 to 130 units; Lodgepole Formation

5490-5550 feet, 8 to 110 units; Lodgepole Formation
6190-6300 feet, 60 to 70 units; Silurian/Upper Ordovician interval
6850-6900 feet, 60 to 130 units; Red River Formation
6900-6980 feet, 30 to 70 units; Red River Formation
DST No. 3 4924-5030 feet, Mission Canyon; Rec. 540 feet G
DST No. 4 4824-4892 feet, Charles; Rec. 500 feet G

f. Gas analysis - none

7. a. Kilroy No. 1 Scholl (pt)
b. NE NW sec. 26, T. 18 N., R. 21 E.
c. Elevation - 2311 feet
d. TD - 6128 feet
e. 2490-2520 feet; 60% shale, bleeding G; Greenhorn Limestone

f. Gas analysis - none

8. a. Chevron No. 13-5 Bailey (pt)
b. NW NE sec. 5, T. 21 N., R. 21 E.
c. Elevation - 2162 feet
d. TD - 7400 feet
e. 1860 feet; thin gas show; mud gas increase from 35 to approximately 1950 units, apparently from coarsely sucuosic limestone; Niobrara Formation
Approximately 2460 feet; bkg G increase to 20 units; Graneros Shale
DST No. 1 4867-4885 feet; sli mud gas show in Mission Canyon porosity
DST No. 2 6325-6362 feet; Red River Formation; Rec. 450 feet sli G and sli WCM, 1050 feet sli GCMW, 1400 feet sli GCSW

f. Gas analysis - none

9. a. Murphy No. 1 Cayman-Murphy State "B" (pt)
b. SE SE sec. 12, T. 21 N., R. 24 E.
c. Elevation - 1972 feet
d. TD - 4039 feet
e. 1535-1551 feet, Core No. 1, 6 feet argillaceous limestone, highly fractured, tight, trace bleeding G; Niobrara Formation
DST No. 1 1531-1551 feet; Niobrara Formation; third run, G reading in mud logger unit

f. Gas analysis - none

CUSTER COUNTY

1. a. Black Hills Petroleum Co. No. 1 Barker (pt)
b. SW NW NE NW sec. 34, T. 6 S., R. 2 E.
c. Elevation - 4182 feet
d. TD - 1510 feet
e. 985-990 feet, limestone, gray, oil and gas show; Minne-

lusa Formation
f. Gas analysis - G collected on January 5, 1930 yielded combustibles of 16.96% and noncombustibles (principally N2) of 81.32%
g. Drilled with cable tools

2. a. Barker Structure No. 1 Adams (pt)
b. NE NE SW sec. 34, T. 6 S., R. 2 E.
c. Elevation - 4235 feet
d. TD - 1617 feet
e. 1070-1075 feet, gas show; Minnelusa Formation
1390 feet, sulfur gas show; Minnelusa Formation
f. Gas analysis - none

3. a. Helms No. 1 Coffing (pt)
b. SW NE NW sec. 34, T. 6 S., R. 2 E.
c. Elevation - 4248 feet
d. TD - 1421 feet
e. Minnelusa Formation gas show
f. Gas analysis - none
g. Was very little G at first, but the amount increased to about 100,000 cu. ft/day after 3 months and then started to decline. Well making G; (1) some leaking between casings; (2) some used to run engines on pump; (3) some burned to heat emulsion to facilitate separation of water and oil. Drilled with cable tools.

4. a. Shallow Rock No. 1 Coffing (pt)
b. Center NW SE NW sec. 34, T. 6 S., R. 2 E.
c. Elevation - 4217 feet
d. TD - 1443 feet
e. 1358-1364 feet, produced G through pipe; First Leo sand of Minnelusa
1365-1375 feet, noncommercial G, well below out when G was encountered, mist of black oil accompanied the G; First Leo sand of Minnelusa
f. Gas analysis - Yapunich, Sanderson and Brown analysis: O2 - 0.60 mole%; H2S - 0.000%; CO2 - 0.60%; N2 - 79.70%; CH4 - 13.02%; ethane - 2.05%; propane - 2.28%; iso-butane - 0.38%; N-butane- 0.69%

5. a. Palensky No. 2 Smith (pt)
b. SE SE sec. 25, T. 4 S., R. 7 E.
c. Elevation - 3392 feet
d. TD - 2824 feet
e. 800 feet?, gas show; bubbles of gas and distillate noted in mud pit; Lakota Formation
1300-1400 feet, show of oil and gas; Sundance Formation
f. Gas analysis - none

6. a. Wagner No. 1 Kline (pt)
b. NE SE NE sec. 33, T. 6 S., R. 2 E.
c. Elevation - 4203 feet

d. TD - 1454 feet
e. 1347-1349 feet, gas show; Minnelusa Formation
f. Gas analysis - none

7. a. Millburn No. 2 Robinson (pt)
b. Center NE SW sec. 34, T. 6 S., R. 2 E.
c. Elevation - 4199 feet
d. TD - 1455 feet
e. 1000-1015 feet, oil show with a little gas; Converse sands of Minnelusa Formation
f. Gas analysis - none
g. Drilled with cable tools

8. a. Gokel No. 1 Government-Halterman (pt)
b. SW NW sec. 1, T. 6 S., R. 1 E.
c. Elevation - 4030-4040 feet
d. TD - 1047 feet
e. 805-807 feet; lime, dark gray, showing of flammable G; Minnelusa Formation
828-834 feet; sand, gray, black specks of gas show; Minnelusa Formation
908-912 feet; sand, gray, showing G; Minnelusa Formation
f. Gas analysis - none
g. Drilled with cable tools

9. a. Kucera No. 3 Coffing (pt)
b. NE NW sec. 34, T. 6 S., R. 2 E.
c. Elevation - 4177 feet
d. TD - 1513 feet
e. Approximately 630 feet, gas show; Minnekahta Limestone
905 feet, small gas show; Converse sand of Minnelusa Formation
961 feet, big gas show; Converse sand of Minnelusa Formation
1315-1317.5 feet, dolomite and buff limestone, gas show; Minnelusa Formation
1332.5 -1344.5 feet, sandstone, enough heavy sulfurous gas to burn continuously; Minnelusa Formation
1400-1405 feet, gas show; Minnelusa Formation
f. Gas analysis - none

10. a. Palensky No. 1 Streeter (pt)
b. SE NW NE sec. 15, T. 6 S., R. 6 E.
c. Elevation - 3508 feet
d. TD - 939 feet
e. 494 feet, a little G with O rainbows; Minnelusa Formation
500-504 feet, sandstone, gas show; Minnelusa Formation
f. Gas analysis - none

11. a. Pure No. 1 Bergmeyer (pt)
b. SW NE sec. 26, T. 3 S., R. 9 E.
c. Elevation - 3033 feet

d. TD - 2148 feet
e. 1014-1114 feet, gas show, not commercial; Niobrara Formation
f. Gas analysis - none

12. a. Pure No. 1 Stabelfeldt (pt)
b. SE NE sec. 26, T. 2 S., R. 8 E.
c. Elevation - 3408 feet
d. TD - 1425 feet
e. 1365 feet, gas show; Mowry/Newcastle contact
f. Gas analysis - none

13. a. Wagner No. 1 Government (pt)
b. Center SW SE sec. 26, T. 5 S., R. 1 E.
c. Elevation - 4019 feet KB
d. TD - 891 feet
e. 871-875 feet, dolomite with strong sulfur gas odor; Minnelusa Formation
875-880.5 feet; sand, dense, quartzitic, live gas bubbles throughout, strong gaseous odor; Minnelusa Formation
f. Gas analysis - none

14. a. Millburn No. 1 Robinson (pt)
b. NE SW sec. 34, T. 6 S., R. 2 E.
c. Elevation - 4199 feet
d. TD - 745 feet
e. 730-745 feet, gas show, smells of gas; Minnekahta Limestone
f. Gas analysis - none
g. Drilled with cable tools

15. a. Wirkkala No. 1 Robinson (pt)
b. NW SW sec. 34, T. 6 W., R. 2 E.
c. Elevation - 4205 feet
d. TD - 1454 feet
e. 730-745 feet, gas odor; between Minnekahta top and Minnelusa top
1005-1009 feet, gas odor; Minnelusa Formation
1397-1406 feet, gas odor; Minnelusa Formation
f. Gas analysis - none

16. a. South Dakota Development No. 1 Hey (pt)
b. SW SE sec. 35, T. 6 S., R. 2 E.
c. Elevation: 4056 feet KB
d. TD - 1340 feet
e. DST 1193-1219 feet; Minnelusa Formation; Rec. 180 feet black gassy sulfur water
f. Gas analysis - none

17. a. Barker Valley Oil No. 1 Hey (redrill) (pt)
b. SW SE sec. 35, T. 6 S., R. 2 E.
c. Elevation - 4060 feet KB
d. TD - 1930 feet
e. 1842-1857 feet, gas show (log analysis); Bell sand of

Minnelusa Formation
f. Gas analysis - none

18. a. Ozark No. 1 Coffing (pt)
b. NE SE NW sec. 34, T. 6 S., R. 2 E.
c. Elevation - 4230 feet
d. TD - 1425 feet
e. DST No. 1 1365-1414 feet; Minnelusa Formation; Rec. 60 feet O and GCM, 300 feet O and GCW
Core 1381.5-1383 feet; sandstone, bubbling G; First Leo of Minnelusa Formatoin
f. Gas analysis - none

19. a. Kucera No. 1 Coffing (pt)
b. NW NE NW sec. 34, T. 6 S., R. 2 E.
c. Elevation - 4125 feet
d. TD - 1506 feet
e. Minnelusa gas show
f. Gas analysis - none
g. Drilled with cable tools

20. a. Kucera No. 2, 2A Coffing (pt)
b. NE NW sec. 34, T. 6 S., R. 2 E.
c. Elevation - 4101 feet
d. TD - 1940 feet
e. 1415-1420 feet, oil stained dolomitic limestone with strong odors and rainbows; First Leo of Minnelusa Formation
1452-1473 feet, oil stained dolomitic limestone with strong odors and rainbows; Second Leo of Minnelusa Formation
f. Gas analysis - none

21. a. Graves No. 1 Bergmeyer (pt)
b. NE NW sec. 26, T. 3 S., R. 9 E.
c. Elevation - 3070 feet
d. TD - 1545 feet
e. 750.1 feet, 6 unit gas kick; probably from black shale at 743 feet, Pierre Shale
1077 feet, 6 unit gas kick; probably from dark shale at 1072 feet; basal Niobrara Formation
1084 feet, 12 unit gas kick; probably from dark shale at 1078 feet; upper Carlile Shale
1122 feet, 6 unit gas kick; probably from Carlile Shale at 1115 feet
1180-1190 feet, 6 unit gas kick; probably from Carlile Shale at 1173-1181 feet
1340 feet, 6 unit gas kick; probably from gray shale at 1331 feet, Carlile Shale
1430 feet, 30 unit gas kick; probably from limy shale at 1422 feet; Carlile Shale
1457 feet, 32 unit gas kick; probably from limestone at 1448 feet, Greenhorn Limestone
1487 feet, 30 unit gas kick; probably from Greenhorn Lime-

stone at 1479 feet
1496 feet, 27 unit gas kick; probably from Greenhorn Limestone at 1489 feet
1545 feet, 18 unit gas kick; probably from shale beds at 1541 feet; Belle Fourche Shale

f. Gas analysis - none

22. a. Benedum No. 1 USA (pt)
b. NE NE sec. 20, T. 3 S., R. 10 E.
c. Elevation - 3046 feet
d. TD - 2625 feet
e. 2500-2530 feet, black shale, trace gas bubble with rainbow show in the sample; Fall River Sandstone
f. Gas analysis - none

23. a. Benedum No. 1 Kaiser Ranch (pt)
b. SE SE sec. 3, T. 4 S., R. 10 E.
c. Elevation - 2801 feet
d. TD - 4125 feet
e. 748-760 feet, MG increase, 8 units; Niobrara Formation
760-860 feet, MG increase, 12 units; Niobrara Formation
950-1050 feet, MG increase, 27 units; Niobrara Formation
1050-1150 feet, MG increase, 31 units; Niobrara Formation
1150-1184 feet, MG decrease to 22 units; Carlile Shale
1184-1305 feet, MG gradually decrease to 14 units; Carlile Shale
1305-1475 feet, MG gradually decrease to 10 units; Carlile Shale
1475-1520 feet, MG increased to 30 units; Carlile Shale
1520-1584 feet, MG increased to 34 units; Carlile Shale
1584-1620 feet, MG decreased to 23 units; Greenhorn Limestone
1620-1650 feet, MG constant; Belle Fourche Shale
1650-1800 feet, MG increased to 31 units; Belle Fourche Shale
1800-1835 feet, MG decreased to 11 units; Belle Fourche Shale
1835-1880 feet, MG 13 units; Belle Fourche Shale
1880-1910 feet, MG decreased to 5 units; Belle Fourche Shale
1919-1930 feet, MG decreased to 2 units; Belle Fourche Shale
f. Gas analysis - none

24. a. Dodgin No. 1 Cornelison (pt)
b. SW NW sec. 26, T. 5 S., R. 1 E.
c. Elevation - 4116 feet
d. TD - 760 feet
e. 732-734 feet, gas encountered; Minnelusa Formation
f. Gas analysis - none

25. a. Sparks No. 1 Cornelison (pt)
b. SW SW sec. 26, T. 5 S., R. 1 E.

c. Elevation - 4077 feet
d. TD - 950 feet
e. 704-706 feet, 2 feet sandy lime, gas odor; Minnelusa Formation
f. Gas analysis - none

26. a. Smith No. 1 Cornelison (pt)
b. SE SE sec. 27, T. 5 S., R. 1 E.
c. Elevation - 4104 feet
d. TD - 838 feet
e. Minnelusa Formation gas show
f. Gas analysis - none
g. Gas pressure at well head

27. a. Harris No. 1 Rothleutner (pt)
b. SE NE SW sec. 7, T. 6 S., R. 2 E.
c. Elevation - 4040 feet
d. TD - 1201 feet
e. 1120-1122 feet, gas odor; Leo zone of Minnelusa Formation
Core from 1122-1123 feet; shale, a few gas bubbles for 4 minutes, strong smell of H_2S; Leo zone of Minnelusa Formation
Core from 1123-1126.5 feet; sandstone, strong smell of H_2S; Leo zone of Minnelusa Formation
Core from 1128-1130.5 feet; sandstone, strong H_2S odor; Leo zone of Minnelusa Formation
Core from 1130.5-1131 feet; dolomite, strong H_2S odor; Leo zone of Minnelusa Formation
f. Gas analysis - none

28. a. Aquarius No. 43-7 Hawthorne (pt)
b. NE SE sec. 7, T. 6 S., R. 1 E.
c. Elevation - 3741 feet
d. TD - 2329 feet
e. DST No. 1 2166-2240 feet; surface bubbles; Second Leo zone of Minnelusa Formation
f. Gas analysis - none

29. a. Great Western No. 1 Coffing (pt)
b. SW SW sec. 27, T. 6 S., R. 2 E.
c. Elevation - 4123 feet
d. TD - 1478 feet
e. Minnelusa Formation gas show
f. Gas analysis - none
g. Some gas escaping around the plug

30. a. Seppala No. 1 Hey-Government (pt)
b. NW SW NE sec. 34, T. 6 S., R. 2 E.
c. Elevation - 4217 feet
d. TD - 1407 feet
e. 1355-1361 feet; dolomite, tight, fractured, gassy odor; Minnelusa Formation
1361-1373 feet; core - shale, anhydrite and tight

sandstone, gas at 1370 feet; Minnelusa Formation
1367-1370 feet; dolomite, tight, gassy odor; Minnelusa Formation
1370-1371 feet; shale, gassy, odor; Minnelusa Formation
f. Gas analysis - none

31. a. Dodgin No. 1 Coffing (pt)
b. SE NE NW sec. 34, T. 6 S., R. 2 E.
c. Elevation - 4211 feet
d. TD - 1367 feet
e. Minnelusa Formation gas show
f. Gas analysis - none
g. Gas TSTM

32. a. Wirkkala No. 1 Johnson (pt)
b. SW NW NW sec. 35, T. 6 S., R. 2 E.
c. Elevation: 4090 feet
d. TD - 1450 feet
e. 1305-1310 feet, sand with gas odor; Minnelusa Formation
f. Gas analysis - none

DAY COUNTY

1. a. Lynn Lake area well (ww)
b. Near Lynn Lake
c. Elevation - unknown
d. TD - 250 feet
e. Pleistocene drift gas
f. Gas analysis - none
g. "Hit a gas layer which ignited and nearly ruined the well digging outfit."

2. a. Andrew Dalager well (ww)
b. Near Webster, SD
c. Elevation - unknown
d. TD - unknown
e. Pleistocene drift gas
f. Gas analysis - none
g. "A considerable amount of natural gas in our livestock well."

3. a. Otto well (ww)
b. Center sec. 12, T. 124 N., R. 59 W.
c. Elevation - unknown
d. TD - 50 feet
e. Pleistocene gas show
f. Gas analysis - none
g. Gas was reported at 50 feet but was tested with a match with no results

4. Buried swamps are found at depths as great as 400 feet (marsh gas)

DEWEY COUNTY

1. a. Cheyenne Agency well (ww)
   b. NE SE sec. 2, T. 12 N., R. 31 E.
   c. Elevation - 1537 feet
   d. TD - 1337 feet
   e. 575-700 feet; dark gray shale, gas at 650 feet; Niobrara Formation
      1200-1311 feet; dark gray shale, gas at 1240-1250 feet; Graneros Shale
   f. Gas analysis - none
   g. Gas estimated at 2,400 cu. ft/day

2. a. Cheyenne River Indian Reservation well (ww)
   b. SE sec. 12, T. 15 N., R. 26 E.
   c. Elevation - 1721 feet
   d. TD - 2021 feet
   e. Dakota Sandstone gas show
   f. Gas analysis - none
   g. Artesian well with gas

3. a. Unnamed well (ww)
   b. NW sec. 23, T. 17 N., R. 30 E.
   c. Elevation - unknown
   d. TD - unknown
   e. Dakota Sandstone gas show
   f. Gas analysis - none
   g. Sufficient gas to use in the farm house

4. a. V. E. Ranch well (ww)
   b. Center sec. 26, T. 15 N., R. 30 E.
   c. Elevation - unknown
   d. TD - 2215 feet
   e. Dakota Sandstone gas show
   f. Gas analysis - none
   g. Artesian well with gas

5. a. Kerr-McGee No. 1 Government-Cook (pt)
   b. NW SW sec. 32, T. 13 N., R. 22 E.
   c. Elevation - 2358 feet KB
   d. TD - 5993 feet
   e. DST 5035-5080 feet, Red River Formation; Rec. 100 feet O and GCM
   f. Gas analysis - none

6. a. Investors No. 1 Holloway (pt)
   b. NE NW sec. 4, T. 12 N., R. 22 E.
   c. Elevation - 2341 feet KB
   d. TD - 5066 feet

e. DST No. 1 4996-5038 feet, "Red River" sand; trace of gas
f. Gas analysis - none

7. a. Investors No. 7 Holloway (pt)
b. NW SW sec. 4, T. 12 N., R. 22 E.
c. Elevation - 2333 feet KB
d. TD - 5076 feet
e. 4110 feet, show of gas; Mission Canyon Formation
f. Gas analysis - none

8. a. Gulf No. 1 Jewett (pt)
b. NW NW sec. 13, T. 13 N., R. 27 E.
c. Elevation - 2309 feet
d. TD - 5343 feet
e. 1250-1260 feet; shale, with limestone and sandstone, 170 units G; Niobrara Formation
3240-3280 feet; gas show; Skull Creek Shale
f. Gas analysis - none

EDMUNDS COUNTY

1. a. Steen Hagen well (ww)
b. Center sec. 29, T. 121 N., R. 66 W.
c. Elevation - unknown
d. TD - 320 feet
e. 100 feet, gas flow; Pleistocene/Pierre Shale contact
f. Gas analysis - none
g. Gas flow was piped into barn and it filled a burner about the size of an ordinary gasoline stove; it was used for cookings.

2. a. Ipswich area wells (ww)
b. T. 123 N., R. 68 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone gas shows
f. Gas analysis - none
g. It was common to strike small flows of gas, large bubbles coming up with the water. One well in a north suburb of Ipswich made quite a commotion. It threw mud, etc., and them for some days had a flow of gas through a 3/4-inch pipe that blazed up 3 or 4 feet. In a few days, it quit.

3. a. Unnamed well (ww)
b. Center sec. 20, T. 122 N., R. 69 W.
c. Elevation - unknown
d. TD - unknown
e. 1080 feet, considerable gas coming up with small flow of water; Dakota Sandstone
f. Gas analysis - none

4. a. Unnamed well (ww)
   b. SE sec. 33, T. 122 N., R. 67 W.
   c. Elevation - unknown
   d. TD - unknown
   e. Dakota Sandstone gas show
   f. Gas analysis - none

5. a. Unnamed well (ww)
   b. SW sec. 25, T. 122 N., R. 68 W.
   c. Elevation - unknown
   d. TD - unknown
   e. Dakota Sandstone gas show
   f. Gas analysis - none

6. a. Unnamed well (ww)
   b. NE NE NE NE sec. 3, T. 121 N., R. 66 W.
   c. Elevation - 1385 feet
   d. TD - 100 feet
   e. 80-92 feet; clay, etc., saturated, with methane gas, till; Pleistocene/Pierre Shale contact
   f. Gas analysis - none

FALL RIVER COUNTY

1. a. P and M Petroleum Management No. 1-9 Stagecoach-Federal (pt)
   b. SW SW sec. 9, T. 12 S., R. 1 E.
   c. Elevation - 3861 feet
   d. TD - 3730 feet
   e. DST No. 1 3637-3665 feet, Second Leo zone of Minnelusa Formation; GTS in 4 minutes of first flow period
   f. Gas analysis - O2 - 0%; N2 - 56.18%; CO2 - 0%; CH4 - 30.67%; ethane - 7.04%; propane - 3.48%, gallons per MCF - 0.955; iso-butane - 0.57%, 0.186 gallons per Mcf; N-butane - 1.33%, 0.418 gallons per Mcf; iso-pentane - 0.30%, 0.109 gallons per Mcf; N-pentane - 0.37%, 0.134 gallons per Mcf; hexanes and higher - 0.06%, 0.028 gallons per Mcf; GPM of pentanes and higher fraction - 0.271; gross BTU/cu ft at 60 degrees F and 14.7 psia (dry basis) - 615; specific gravity (calculated from analysis) - 0.896; specific gravity (measured) - 0.901
   g. Maximum flow rate of 4146 Mcf/day (stabilized). Flare burned with a reddish-orange color. Indian Creek oil field discovery well; Minnelusa Formation (Second Leo) producing formation; perforations at 3637-3665 feet

2. a. P and M No. 14-9 Stagecoach Federal (pt)
   b. SE SW sec. 9, T. 12 S., R. 1 E.
   c. Elevation - 3876 feet

d. TD - 3853 feet
e. Minnelusa Formation (Second Leo) gas show
f. Gas analysis - none
g. GTS in 2 minutes of final flow period; maximum G flow rate 6160 Mcf/day. On 9/1/79 a 24-hour test yielded 73.7 Mcg G; calculated 24-hour rate 244 Mcf; GOR 2142; gas vented; Indian Creek oil field development well

3. a. P and M No. 4-16 State (pt)
b. NW NW sec. 16, T. 12 S., R. 1 E.
c. Elevation - 3831 feet
d. TD - 3802 feet
e. DST No. 1 3632-3652 feet, GTS in 7 minutes; Minnelusa Formation (Second Leo)
f. Gas analysis - none
g. GOR on DST No. 1 was 200; on 8/4/79 a 24-hour test yielded 127 Mcf/day, GOR 543, gas flared; Indian Creek oil field development well

4. a. P and M No. 3-16 State (pt)
b. NE NW sec. 16, T. 12 S., R. 1 E.
c. Elevation - unknown
d. TD - 3722 feet
e. DST No. 1 3655-3675 feet, Second Leo of Minnelusa Formation; GTS in 21 minutes; Rec 2386 GCO; GTS 6 minutes into intial shut in; GTS on opening tool for final flow period
f. Gas analysis - none
g. Maximum flow rate in DST No. 1 was 20.3 Mcf/day. On 8/24/79 an 11-hour test yielded G TSTM; calculated 24-hour rate TSTM; GOR 50; Indian Creek Oil field development well

5. a. Woodward No. 1 Schmidt (pt)
b. Center SW SW sec. 4, T. 12 N., R. 4 E.
c. Elevation - 3550 feet
d. TD - 1315 feet
e. 260-270 feet, gas; Turner Sandy Member of Carlile Shale
495-535 feet; gas; Greenhorn Limestone
970-975 feet; gas; Graneros Shale Sandstone body
1005 feet, gas; Graneros Shale
1051-1055 feet, gas; Newcastle Sandstone
1051-1055 feet, gas; Newcastle Sandstone
1060-1074 feet, gas; Newcastle Sandstone
1074-1076 feet; gas; Newcastle Sandstone
1076-1100 feet; largest flow of gas; Newcastle Sandstone
1120-1125 feet, gas; Newcastle Sandstone
f. Gas analyses - O2 - 0.37%; N2 - 17.97%; CO2 - 0%; CH4 - 80.73%; ethane - 0.60%; propane - 0.33%; average "n" by Pod - 1.015; gross BTU by Pod - 837; specific gravity by Pod - 0.637; specific gravity by weight - 0.641.

Another analysis gave O2 - 0.24%; N2 - 3.62%; CO2 - 0.00%; CH4 - 95.46%; ethane - 0.25%; propane - 0.43%; iso and N-butanes - trace; average "n" by Pod - 1.012; gross BTU by Pod - 982; specific gravity by Pod - 0.576; specific gravity by weight - 0.587

g. On 4/11/44, G volume estimated at 500,000 cu. ft/day; USGS gauge of well (poor gauge) yielded between .5 and 1 million cu. ft.; another estimate yielded 0.25 to 0.50 million cu. ft. Partly shut in pressure was 17 psi in the early days; pressure measurement on 9/10/79 yielded 30 psi; this well occurs on the crest of the Chilson anticline

6. a. Pacific Western No. 1 Christiana-Government (pt)
   b. NW SW sec. 10, T. 11 S., R. 1 E.
   c. Elevation - 4115 derric floor
   d. TD - 4080 feet
   e. DST 3535-3540 feet; Leo zone of Minnelusa Formation; gas
      DST 3650-3660 feet; Leo zone of Minnelusa Formation; gas
   f. Gas analysis - none

7. a. Wulf No. 1 Federal (pt)
   b. SE NW sec. 15, T. 9 S., R. 2 E.
   c. Elevation - 3638 feet
   d. TD - 2800 feet
   e. DST No. 1 2699-2717 feet; Second Leo of Minnelusa Formation; Rec 90 feet HO and GCM; 1112 feet sulfur water, HGC
      2713-2717 feet, core, bleeding G bubbles; Second Leo of Minnelusa Formation
      2744-2745 feet, core, strong gassy odor; Second Leo of Minnelusa Formation
      2745-2745.5 feet, core, bleeding gas bubbles; Second Leo of Minnelusa Formation
      2754-2766 feet, core, prominent near vertical fracture with live oil bleeding gas on face; Second Leo of Minnelusa Formation
      2740-2745 feet, gas; Second Leo of Minnelusa Formation
   f. Gas analyses - Second Leo, 2740-2745 feet: O2 - 0%; N2 - 23.77%; CO2 - 3.65%; H2S - 1.37%; CH4 - 55.10%; ethane - 6.90%; propane - 6.58%, 1.805 gallons per Mcf; iso-butane - 0.77%, 0.251 gallons per Mcf; N-butane - 1.68%, 0.528 gallons per Mcf; iso-pentane - 0.10%, 0.036 gallons per Mcf; N-pentane - 0.06%, 0.022 gallons per Mcf; hexanes and higher - 0.02%, 0.009 gallons per Mcf; GPM of pentanes and higher fraction - 0.067; gross BTU cu. ft.
      at 60 degrees F and 14.7 psia (dry basis) - 941; specific gravity (calculated from analysis) -

0.832; specific gravity (measured) 0.830. Another analysis yielded N2 - 21.72%; CO2 - 5.2%; H2S - 0.01%; gross BTU cu. ft at 60 degrees F and 14.7 psia (dry basis) - 1113; specific gravity (calculated from analysis) - 0.934. G checks out at 1800 ppm H2S.

g. On 3/5/80 a 24-hour test yielded a trace of gas; GOR not available; gas vented; discovery well of Edgemont field; 2740-2745 feet Second Leo producing interval

8. a. Woodward No. 2 Schmidt (pt)
   b. Center SW NW sec. 4, T. 12 S., R. 4 E.
   c. Elevation - 3536 feet
   d. TD - 1315 feet
   e. 190 feet, small flow of gas; Niobrara Formation
      245 feet, gas show; Niobrara Formation
      1020-1030 feet, gas show; Newcastle Sandstone
   f. Gas analysis - none
   g. Estimated yield is at least 500,000 cu. ft/day

9. a. Provo wells (ww)
   b. SW sec. 12, T. 10 S., R. 2 E.
   c. Elevation - unknown
   d. TD - unknown
   e. Niobrara Formation gas shows
   f. Gas analysis - none
   g. A number of shallow water wells produced gas. The gas was never used according to records. It was usually burned in a flambeau and according to reports made an interesting spectacle for local inhabitants and for travelers on Burlington trains passing through Provo.

10. a. Rumford wells (ww)
    b. NE NE sec. 1, T. 11 S., R. 3 E.
    c. Elevation - unknown
    d. TD - unknown
    e. Niobrara Formation gas shows
    f. Gas analysis - none
    g. Small amounts of gas have been struck at the base of the Niobrara Formation in all wells drilled in Rumford.

11. a. Conroth well (pt)
    b. NE NE sec. 3, T. 11 S., R. 1 E.
    c. Elevation - unknown
    d. TD - unknown
    e. Niobrara Formation
    f. Gas analysis - none
    g. Well was making a little gas, which was assumed to come from the Niobrara Formation

12. a. Woodward No. 5 Schmidt (pt)
    b. NW SE NW sec. 4, T. 12 S., R. 4 E.

c. Elevation - 3568 feet
d. TD - 1860 feet
e. 1040-1120 feet, gas producing; Newcastle Sandstone
f. Gas analysis - none
g. Estimated 300,000 cu. ft/day

13. a. Piney Hills No. 1 Government well (ww)
b. NE SW sec. 4, T. 10 S., R. 4 E.
c. Elevation - unknown
d. TD - unknown
e. Stratigraphic interval unknown
f. Gas analysis - none
g. Water well with a show of gas

14. a. Woodward No. 1 Eckard (pt)
b. SW NE sec. 21, T. 11 S., R. 4 E.
c. Elevation - 3493 feet
d. TD - 835 feet
e. Newcastle Sandstone gas show
f. Gas analysis - none

15. a. Woodward No. 2 Eckard (pt)
b. SE SW sec. 21, T. 11 S., R. 4 E.
c. Elevation - 3491 feet
d. TD - 895 feet
e. 886-894 feet, gas, Newcastle Sandstone
f. Gas analysis - none

16. a. Woodward No. 1 Hill (pt)
b. SE NW sec. 28, T. 11 S., R. 4 E.
c. Elevation - 3528 feet
d. TD - 930 feet
e. 912-915 feet, gas; Newcastle Sandstone
f. Gas analysis - none

17. a. Hunter No. 1 well (pt)
b. SE SW sec. 28, T. 11 S., R. 4 E.
c. Elevation - unknown
d. TD - unknown
e. Stratigraphic interval unknown, but probably Newcastle Sandstone
f. Gas analysis - none

18. a. Woodward No. 3 Schmidt (pt)
b. Center NW NW sec. 9, T. 12 S., R. 4 E.
c. Elevation - 3350 feet
d. TD - 1145 feet
e. 1126-1134 feet, gas sand; Newcastle Sandstone
1137-1141 feet, gas sand; Newcastle Sandstone
f. Gas analysis - none
g. Estimated 0.25-0.50 million cu. ft.

19 a. Woodward No. 4 Schmidt (pt)
b. NW NE NW sec. 4, T. 12 S., R. 4 E.

c. Elevation - 3525 feet
d. TD - 3175 feet
e. Newcastle Sandstone gas show
f. Gas analysis - none

20. a. Hollingsworth No. 1 Childers (pt)
b. SE NW sec. 23, T. 8 S., R. 2 E.
c. Elevation - 3570 feet
d. TD - 2487 feet
e. 2300-2360 feet, G and O show; Second Leo of Minnelusa Formation
First Leo sand of Minnelusa Formation - swabbing test gave O rainbows and G show
Second Leo Sand of Minnelusa Formation - sufficient G
Third Leo sand of Minnelusa Formation - much G and show of O in top of it
f. Gas analysis - none

21. a. C. V. Gull artesian well (ww)
b. SW SW sec. 25, T. 8 S., R. 3 E.
c. Elevation - 4000 feet
d. TD - 235 feet
e. Vented gas; Unkpapa Sandstone
f. Gas analysis - none

22. a. A. M. Henderson artesian well (ww)
b. NE NW sec. 15, T. 10 S., R. 3 E.
c. Elevation - 3560 feet
d. TD - 1250 feet
e. 300 feet, gas from water level here; Fall River Sandstone
f. Gas analysis - none

23. a. Hollingsworth No. 1 Cleveland Stone (pt)
b. W 1/2 SE sec. 17, T. 8 S., R. 3 E.
c. Elevation - 3590-3610 feet
d. TD - 2230 feet
e. 1983-2001 feet, black lime, gas and some colors (gas sand at base); First Leo Sand of Minnelusa Formation
2815-2820 feet, sand and gas; Minnelusa Formation
f. Gas analysis - none
g. Estimated about 2 million cu. ft gas at 2000 feet. Drilled with cable tools

24. a. Amerada No. 85 Strat (pt)
b. NE SE sec. 13, T. 10 S., R. 6 E.
c. Elevation - 3383 feet KB
d. TD - 2114 feet
e. 1640-1660 feet, gas show; Mowry Shale
DST 1656-1661 feet, "D" sand tongues 1 and 2 of Mowry Shale; Rec. 287 feet GCW
f. Gas analysis - none

25. a. B and W No. 1 Gull (pt)

b. SW NE sec. 26, T. 8 S., R. 3 E.
c. Elevation - 3810-3850 feet
d. TD - 2100 feet
e. 2038-2044 feet, gas show/odor; Minnelusa Formation (sand)
f. Gas analysis - none
g. Drilled with cable tools

26. a. Big Three No. 1 Government (pt)
b. NW NW sec. 19, T. 7 S., R. 1 E.
c. Elevation - 3550-3590 feet
d. TD - 910 feet
e. 910 feet, gas show; Lakota Formation/Morrison Formation interval
f. Gas analysis - none

27. a. Hughes No. 1 Anderson (pt)
b. SE SW sec. 33, T. 11 S., R. 4 E.
c. Elevation - 3533 feet KB
d. TD - 1805 feet
e. 1050-1130 feet, gas show; Newcastle/Muddy interval
f. Gas analysis - none

28. a. Woodward No. 1 McDonald (pt)
b. SE NW NE sec. 8, T. 12 S., R. 4 E.
c. Elevation - 3529 feet
d. TD - 1203 feet
e. Newcastle Sandstone gas show
f. Gas analysis - none

29. a. Conroy No. 1 Ideen-Federal (pt)
b. SW SW sec. 15, T. 9 S., R. 2 E.
c. Elevation - 3574 feet KB
d. TD - 3067 feet
e. 955-957.5 feet, Rec. 0.3 cu. ft G on WLT; Lakota Formation
2230-2232.5 feet, Rec. 0.2 cu. ft G on WLT; Second Converse of Minnelusa Formation
DST No. 1 2692-2707 feet, Second Leo of Minnelusa Formation; Rec. 120 feet O and GCW, 1292 feet GC sulfur W
f. Gas analysis - none

30. a. Sun No. 1 Lance-Nelson (pt)
b. NE SE sec. 21, T. 7 S., R. 1 E.
c. Elevation - 3526 feet
d. TD - 3057 feet
e. DST No. 2 2390-2400 feet, Second Leo of Minnelusa Formation; Rec. 2036 feet sli GC black sulfur W
2400 feet, sulfur odor in sample; Second Leo of Minnelusa Formation
2500-2515 feet, sulfur odor; Second Leo of Minnelusa Formation
f. Gas analysis - none

31. a. Woodward-Morton No. 1 Government-Macon (pt)
    b. NE SW sec. 4, T. 10 S., R. 4 E.
    c. Elevation - 3484 feet
    d. TD - 3005 feet
    e. Small show of O and G from Leo sands of Minnelusa Formation
    f. Gas analysis - none

32. a. Pure No. 1 Government C (pt)
    b. SE SE sec. 3, T. 7 S., R. 9 E.
    c. Elevation - 3150 feet
    d. TD - 2357 feet
    e. Gas show in sandy zone in Carlile Shale (Turner Sandy Member) not enough to test
       2233 feet; dry gas show; Newcastle Sandstone
    f. Gas analysis - none

33. a. Burrows No. 1 Government (pt)
    b. NE SW sec. 1, T. 10 S., R. 2 E.
    c. Elevation - 3759 feet
    d. TD - 1314 feet
    e. 140-147 feet, gas show; Turner Sandy Member of Carlile Shale
       962-1000 feet, gas and oil show; Newcastle Sandstone
    f. Gas analysis - none
    g. The Turner show was a "small blow of gas that would burn" and it lasted "only a few days." A strong sulfur stink accompanied it.

34. a. Shell No. 1 Sides (pt)
    b. SE NW sec. 32, T. 8 S., R. 9 E.
    c. Elevation - 3241 feet KB
    d. TD - 2735 feet
    e. Niobrara Formation gas show
    f. Gas analysis - none
    g. A little gas in the Niobrara; might be enough to heat a house

35. a. Bell No. 1 Bell (pt)
    b. NW SE sec. 8, T. 8 S., R. 3 E.
    c. Elevation - 3561 feet
    d. TD - 2214 feet
    e. Gas show; Madison Limestone
    f. Gas analysis - none

36. a. Pan American No. 1 Socony Mobil (pt)
    b. NW NW sec. 29, T. 11 S., R. 1 E.
    c. Elevation - 4171 feet KB
    d. TD - 4136 feet
    e. DST No. 1 3585-3613 feet, Missourian-Minnelusa Formation; Rec. 1260 feet G in drill stem, 110 feet highly GCM with trace O
       DST No. 2 3687-3710 feet, Minnelusa Formation; Rec. 540 feet G in drill stem

f. Gas analysis - none

37. a. Provo Oil No. 1 Soske (pt)
b. NE SW sec. 2, T. 10 S., R. 2 E.
c. Elevation - 3647 feet
d. TD - 3072 feet
e. Gas; Minnelusa Formation
f. Gas analysis - none
g. Making considerable gas

38. a. Edgemont No. 2 well (ww)
b. Center sec. 1?, T. 9 S., R. 2 E.
c. Elevation - unknown
d. TD - 2983 feet
e. Gas show, stratigraphic interval unkown
f. Gas analysis - none
g. Drilled in 1910; gas show is personal communication, 1980, from Steven Swanson, Superior Oil

39. a. Gary No. 17-11 Cleveland Quarries (pt)
b. W 1/2 SE sec. 17, T. 8 S., R. 3 E.
c. Elevation - 3589 feet
d. TD - 2277 feet
e. 2030-2200 feet, several thin zones of black shale with a strong, rancid swamp gas odor; Minnelusa Formation
2050-2055 feet, shale with a strong and foul swamp gas odor; Minnelusa Formation
2055-2065 feet, some foul gas odor as above; Minnelusa Formation
2080-2085 feet, some foul swamp gas odor; Minnelusa Formation
2095-2105 feet, foul marsh gas odor; Minnelusa Formation
2120-2125 feet, foul swamp gas odor; Minnelusa Formation
f. Gas analysis - none

40. a. Ackman-Sch and A No. 9-13 Federal-Martin (pt)
b. NE SW SW sec. 9, T. 12 S., R. 1 E.
c. Elevation - 3861 feet
d. TD - 3874 feet
e. Minnelusa Formation gas show
f. Gas analysis - none

41. a. Webb No. 5-11 Federal (pt)
b. NE SW sec. 5, T. 12 S., R. 5 E.
c. Elevation - 3779 feet
d. TD - 2368 feet
e. DST No. 1 2300-2312 feet; "G" sand of Mowry Shale; Rec. 220 feet sli GCMW, 774 feet sli GCW
Sli gas show in "G" sand of Mowry Shale
f. Gas analysis - none

42. a. Integrity No. 1 Hunter (pt)
    b. Center NE NW sec. 4, T. 12 S., R. 4 E.
    c. Elevation - 3537 feet
    d. TD - 3818 feet
    e. 1088-1092 feet, 15 unit G kick over 15 unit bkg; Muddy sand
    f. Gas analysis - none

43. a. CB and Q RR well (ww)
    b. Center sec. 9, T. 12 S., R. 4 E.
    c. Elevation - unknown
    d. TD - unknown
    e. Newcastle Sandstone show
    f. Gas analysis - none
    g. Struck gas but no water, according to Woodward

44. a. Petro-Lewis No. 5-22 Peterson (pt)
    b. SW NW sec. 22, T. 7 S., R. 1 E.
    c. Elevation - 3534 feet
    d. TD - 2545 feet
    e. DST No. 1 2381-2395 feet, lower Second Leo of Minnelusa Formation; Rec. 60 feet, GCM with sulfur smell; 80 feet W with scum O and sulfur smelling G, no GTS
    f. Gas analysis - none

45. a. Marietta No. 1 Miller (pt)
    b. SE SE sec. 4, T. 8 S., R. 2 E.
    c. Elevation - 3559 feet
    d. TD - 1030 feet
    e. Sundance Formation petroleum gas show
    f. Gas analysis - none
    g. Small flow in top of Sundance with some gas

46. a. Webb Resources No. 24-10 Hudson (pt)
    b. NW SE sec. 24, T. 9 S., R. 2 E.
    c. Elevation - 3706 feet
    d. TD - 984 feet
    e. DST No. 2 876-904 feet; Newcastle Sandstone; trace of gas
    f. Gas analysis - none

47. a. Lakota No. 1 Houghton (pt)
    b. SW NE sec. 34, T. 9 S., R. 5 E.
    c. Elevation - 3625 feet
    d. TD - 2528 feet
    e. 3210-2315 and 2320-2325 feet, strong gas odor; 2390-2395 and 2405-2410 feet, gas odor; all Minnelusa Formation shows
    f. Gas analysis - none

48. a. Ohio No. 1 Hedrick (pt)
    b. SE NE sec. 25, T. 9 S., R. 7 E.
    c. Elevation - 3413 feet

d. TD - 4617 feet
e. 4027-4035 feet, got gas kick on mud logger, gas kick in excess of 200 units; Minnelusa Formation
f. Gas analysis - none

49 a. Lakota No. 1 Kunde-Shiloh (pt)
b. NE SE sec. 20, T. 10 S., R. 4 E.
c. Elevation - 3550-3650 feet
d. TD - 3250 feet
e. 2815-2820 feet, sand and gas; Mission Canyon Formation
f. Gas analysis - none

50. a. Echo and Rainbow No. 1-14 Federal-Indian Creek (pt)
b. NW NE sec. 14, T. 11 S., R. 1 E.
c. Elevation - 4120 feet
d. TD - 2150 feet
e. Some bkg G recorded in the shales below the Greenhorn Limestone and again near the top of the Newcastle Sandstone
f. Gas analysis - none

51. a. Echo and Rainbow No. 1-31 Indian Creek (pt)
b. SW SW sec. 31, T. 11 S., R. 2 E.
c. Elevation - 3873 feet
d. TD - 2250 feet
e. Some bkg G encountered in the shales below the Greenhorn Limestone
f. Gas analysis - none

52. a. Echo and Rainbow No. 1-32 Holmes (pt)
b. SE SE sec. 32, T. 11 S., R. 4 E.
c. Elevation - 3518 feet
d. TD - 2250 feet
e. A small gas reading in the shale interval below the Greenhorn Limestone
f. Gas analysis - none

53. a. Echo and Rainbow No. 1-34 State (pt)
b. SW SW sec. 34, T. 11 S., R. 4 E.
c. Elevation - 3559 feet
d. TD - 1809 feet
e. Some gas in the shale section below the Greenhorn Limestone
f. Gas analysis - none

54. a. Echo and Rainbow No. 1-3 Federal-Indian Creek (pt)
b. NE NW sec. 3, T. 12 S., R. 4 E.
c. Elevation - 3613 feet
d. TD - 1960 feet
e. Some gas encountered in the shale section below the Greenhorn Limestone
f. Gas analysis - none

55. a. Osage Trust No. 1 Moody (pt)

b. NE SW sec. 6, T. 12 S., R. 6 E.
c. Elevation - 3650-3750 feet
d. TD - 3029? feet
e. 1365-1420 feet; shale, a little gas; Carlile Shale
f. Gas analysis - none

56. a. Wulf No. 2 Peterson (pt)
b. SW SW sec. 15, T. 7 S., R. 1 E.
c. Elevation - 3572 feet
d. TD - 2462 feet
e. DST No. 1 2348-2378 feet; Minnelusa Formation; Rec. 600 feet GCMW, 1650 feet GC sulfur W
f. Gas analysis - none
g. Fractures occur throughout the Second Leo of the Minnelusa Formation

57. a. Wulf No. 1-A Peterson (pt)
b. NE NE sec. 21, T. 7 S., R. 1 E.
c. Elevation - 3537 feet
d. TD - 2500 feet
e. DST No. 1 2390-2410 feet; Second Leo of Minnelusa Formation; Rec. 200 feet sli GCMCW, 1200 feet GC sulfur smelling W, gas would burn in tool joint
DST No. 2 2395-2404 feet, Leo Sand of Minnelusa Formation; Rec. 1366 GC sulfur W
f. Gas analysis - none

58. a. Bass No. 35-1 B and H Ranch (pt)
b. SE NW sec. 35, T. 8 S., R. 2 E.
c. Elevation - 3469 feet
d. TD - 2631 feet
e. DST No. 1 2240-2270 feet; Meng Sand zone of Minnelusa Formation; Rec. 27 feet sli GCDM
2244-2249 feet, small gas kick, 22 units on hotwire from a finely crystalline dolomite and black organic calcareous shale; Meng sand zone of Minnelusa Formation
2337-2345 and 2366-2370 feet; gas shows of 200 units and 112 units, respectively, on hotwire from light gray dolomite, finely crystalline interbedded with thin stringers of black organic rich calcareous shales; Second Leo of Minnelusa Formation
f. Gas analysis - none

59. a. Wulf No. 2 Wulf Federal (pt)
b. SW NE sec. 15, T. 9 S., R. 2 E.
c. Elevation - unknown
d. TD - unknown
e. DST No. 1 2648-2684 feet; Leo Sand of Minnelusa Formation; Rec. 2461 feet HGOCW, 93 feet sli GCW
2649-2649.5 feet, core, bleeding gassy oil; Leo zone of Minnelusa Formation
2649.5-2650.75 feet, core, bleeding gassy oil; Leo zone

of Minnelusa Formation
2650.75-2651.50 feet, core, bleeding gassy oil; Leo zone of Minnelusa Formation
2651.50-2657 feet, core, bleeding gassy oil; Leo zone of Minnelusa Formation

f. Gas analysis - none

60. a. P and M No. 15-9 State-Stagecoach (pt)
b. SW SE sec. 9, T. 12 S., R. 1 E.
c. Elevation - 3870 feet
d. TD - 4308 feet
e. DST No. 1 3640-3750 feet; Second Leo of Minnelusa Formation; Rec. sli GCM with trace O, 110 feet GC, sli OCM, 20 feet GCM
f. Gas analysis - none

61. a. P and M No. 5-16 State-Stagecoach (pt)
b. SW NW sec. 16, T. 12 S., R. 1 E.
c. Elevation - 3863 feet KB
d. TD - 3866 feet
e. DST No. 2 3680-3715 feet, Second Leo of Minnelusa Formation; GTS in 19 minutes, Rec. 200 feet HGCO, 120 feet HGOCM, GTS in 4 minutes in initial shut in
f. Gas analysis - none
g. Maximum flow rate gauged at 27 Mcf/day

62. a. P and M No. 6-16 State (pt)
b. SE NW sec. 16, T. 12 S., R. 1 E.
c. Elevation - 3824 feet
d. TD - 3717 feet
e. DST No. 2 3639-3731 feet; Second Leo of Minnelusa Formation; Rec. 15 feet sli O and sli GCM; 105 feet sli O, sli G and WCM
f. Gas analysis - none

63. a. Sun No. 1 Wallway-Government (pt)
b. SE NE sec. 12, T. 9 S., R. 1 E.
c. Elevation - 3831 feet
d. TD - 3251 feet
e. 3090-3100 feet, sli gassy odor in sample; Leo zone of Minnelusa Formation
f. Gas analysis - none

64. a. P and M No. 2-17 Stagecoach-Federal (pt)
b. NW NE sec. 17, T. 12 S., R. 1 E.
c. Elevation - 3888 feet
d. TD - 3856 feet
e. DST No. 1 3440-3470 feet, Third Converse of Minnelusa Formation; Rec. 245 feet GCM, gas nonflammable
f. Gas analysis - none

65. a. Roosevelt No. 1 American Growers (pt)
b. NW SE sec. 17, T. 8 S., R. 3 E.

c. Elevation - 3625 feet
d. TD - 2300 feet
e. 1505-1515 feet, sporadic gas kicks, 2 to 3 units, very thin; Opeche Shale
1515-1527 feet, 2 units thin quickly dissipating gas kicks; Opeche Shale
1985-1995 feet, 29 unit gas kick; First Leo of Minnelusa Formation
1995 feet, in hard drilling a gas kick peaked at 29 units of total gas; First Leo of Minnelusa Formation
1995-2001 feet, strong gas shows in tight dolomite and anhydrite interval; First Leo of Minnelusa Formation
2077-2087 feet; 1 to 2 units gas from 2077-2078 feet and 2081-2082 feet; Second Leo of Minneulsa Formation
2087-2093 feet, 1 to 2 units gas increase from 2088-2091 feet; Second Leo of Minnelusa Formation
2096-2108 feet, gas kick of 12 units from 2100-2106 feet increased to 1000 units from 2106-2108 feet; Has odor and sour oil odor in samples from drilling break at 2104-2107 feet, probably from fractured black shale; Second Leo of Minnelusa Formation
2138-2146 feet, gas?; Second Leo of Minnelusa Formation
2149-2151 feet, got 450 unit gas kick on detector; Second Leo of Minnelusa Formation
2160-2166 feet, 6 unit gas kick; Second Leo of Minnelusa Formation
2166-2173 feet, 300 unit gas kick; 2171 lag depth 100-200 unit gas kick; Second Leo of Minnelusa Formation
2173-2184 feet, 300-900 unit gas kick; Second Leo of Minnelusa Formation
2184-2186 feet, gas kicks continuing but may be recycling; Second Leo of Minnelusa Formation
2186-2191 feet, gas as just above
2257-2264 feet, 5-6 units gas readings; Third Leo of Minnelusa Formation
2264-2268 feet, 5-6 units gas kick; Third Leo of Minnelusa Formation
f. Gas analysis - none
g. Well site geologist felt that most of the gas kicks were coming from thin fractured black shale units

EAULK COUNTY

1. a. Hunt No. 1 Gutenkauf (pt)
b. NE NE sec. 20, T. 118 N., R. 72 W.
c. Elevation - 1940 feet
d. TD - 2751 feet
e. Fall River/Lakota interval gas show (small)
f. Gas analysis - none

2. a. Unnamed well (ww)
   b. NE sec. 8, T. 119 N., R. 69 W.
   c. Elevation - unknown
   d. TD - 1300 feet
   e. Dakota Sandstone show
   f. Gas analysis - none
   g. "When we use of lot of water in the summer time the water is good to drink, but ordinarily it is salty and gassy."

GREGORY COUNTY

1. a. Unnamed well (ww)
   b. Near Fairfax
   c. Elevation - unknown
   d. TD - 1150 feet
   e. Carlile Shale gas show
   f. Gas analysis - none

HAAKON COUNTY

1. a. South Dakota Company No. 1 (Well No. 1 Towne) (pt)
   b. NE NE sec. 20, T. 7 N., R. 22 E.
   c. Elevation - 1850 feet KB
   d. TD - 890 feet
   e. 640-650 feet, gas, Pierre Shale
   f. Gas analysis - none
   g. There is disagreement on the information on this well. Information contrary to that above gives the following: 1212 feet, 7 foot drilled through to 1223 feet, water and gas; gas burned over top of casing. Turner Sandy Member of Carlile Shale, probably. Thin sand encountered 10-60 feet below the bottom of the Niobrara and a thicker one (20 feet) was struck 165 feet below the bottom of the Niobrara, both contained gas--Codell/Turner Sandy Member of Carlile Shale shows.

2. a. South Dakota Company No. 2 (Well No. 2 Mattice) (pt)
   b. NW NE SE sec. 21, T. 7 N., R. 22 E.
   c. Elevation - 1881 feet KB
   d. TD - 805 feet
   e. 640 feet, gas and black scum; Peterson thinks stray sand at 640 feet; drill shows sand cut; thinks gas and scum from this sand; Pierre Shale
   f. Gas analysis - none
   g. There is disagreement on the information on this well. Information contrary to that above gives the following: Considerable gas to 1054 feet, put valve on and

gas would burn up some 6 to 8 feet with the valve slightly turned on, valve on top of 2-inch casing--Carlile Shale

3. a. South Dakota Company No. 4 (Well No. 4 Pole) (pt)
   b. NW SW sec. 23, T. 7 N., R. 22 E.
   c. Elevation - 1855 feet KB
   d. TD - 895 feet
   e. 720 feet, very small hard shell and immediately after black scum and gas showed up; Pierre Shale
   f. Gas analysis - none

4. a. South Dakota Company No. 5 (Well No. 5 Delizie) (pt)
   b. SW SE SW sec. 22, T. 7 N., R. 22 E.
   c. Elevation - 2009 feet KB
   d. TD - 1085 feet
   e. 650 feet, gas showed up; Pierre Shale
      870 feet, enough gas to run slush over the top of the well; Pierre Shale
      970 feet, quite a bit of gas and black scum; Pierre Shale
   f. Gas analysis - none

5. a. Berry farm well (ww)
   b. Center SW sec. 1, T. 6 N., R. 21 E.
   c. Elevation - unknown
   d. TD - unknown
   e. Stratigraphic interval of gas unknown
   f. Gas analysis - none
   g. In 1959 and 1960 winter, there was enough gas to heat the furnace and cook stove. Gas pressure was 3.5 lbs/sq. in.

6. a. Midland well (ww)
   b. Center S 1/2 sec. 6, T. 1 N., R. 25 E.
   c. Elevation - 1850 feet
   d. TD - unknown
   e. Dakota Sandtone show
   f. Gas analysis - none

7. a. Nowlin well (C and NW RR well) (ww)
   b. SE NW sec. 13, T. 1 N., R. 23 E.
   c. Elevation - 1965 feet
   d. TD - 1842 feet
   e. 1770 feet, some gas; Dakota Sandstone
   f. Gas analysis - none

8. a. Bierwagen-Norbeck-Pohle No. 3 (pt)
   b. NE NW sec. 11, T. 6 N., R. 21 E.
   c. Elevation - 2079 feet
   d. TD - 2080 feet
   e. 1111.5-1112.25 feet; sand, contains some gas; Niobrara Formation
      2070-2080 feet; sand, gas with water; Dakota Sand-

stone
f. Gas analysis - none

9. a. J. T. Singleton well (ww)
b. SW sec. 30, T. 6 N., R. 23 E.
c. Elevation - unknown
d. TD - 1948 feet
e. Dakota Sandstone gas show
f. Gas analysis - none
g. Artesian well with gas

10. a. Wm. B. Alleman well (ww)
b. SE sec. 32, T. 9 N., R. 24 E.
c. Elevation - 1664 feet
d. TD - 1662 feet
e. Dakota Sandstone gas show
f. Gas analysis - none
g. Artesian well with gas

11. a. Parson well (ww)
b. Center sec. 20, T. 7 N., R. 22 E.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone gas show
f. Gas analysis - none

12. a. Pohle et al. No. 1 Government (pt)
b. SW NE sec. 21, T. 7 N., R. 22 E.
c. Elevation - 1850 feet KB
d. TD - 1910 feet
e. Dakota Sandstone gas show
f. Gas analysis - none

13. a. Philip well (ww)
b. Common corner secs. 13, 14, 23, and 24, T. 1 N., R. 20 E.
c. Elevation - 2158 feet
d. TD - unknown
e. Dakota Sandstone gas show
f. Gas analysis - none

14. a. Pohle No. 1 May (pt)
b. NE SE sec. 21, T. 4 N., R. 18 E.
c. Elevation - 2568 feet KB
d. TD - 5556 feet
e. DST 4039-4069 feet; Minnelusa Formation; Rec. 180 feet G and OCM, 8 feet SGCM
4395-4400 feet; gas show; Mission Canyon Formation
5355-5370 feet, O and G show; Red River Dolomite
f. Gas analysis - none

15. a. Carter No. 1 Danielson (pt)
b. SE NW sec. 5, T. 3 N., R. 22 E.
c. Elevation - 2456 feet
d. TD - 4504 feet

e. DST 1598-1634 feet; Niobrara Formation; Rec. 300 feet sli GCM
f. Gas analysis - none

16. a. Gulf No. 1 Fenwick (pt)
b. NE NE sec. 31, T. 4 N., R. 24 E.
c. Elevation - 2200 feet
d. TD - 3894 feet
e. Niobrara Formation gas show
f. Gas analysis - none

17. a. Texaco No. 1 State "B" (pt)
b. NW SE sec. 36, T. 6 N., R. 21 E.
c. Elevation - 2147 feet
d. TD - 4827 feet
e. DST No. 1 2100-2125 feet; Newcastle Sandstone; Rec. 1670 feet sli GCfm W
DST No. 4 4620-4650 feet; Red River Dolomite; Rec. 2014 feet very sli GCfm W
f. Gas analysis - none

18. a. Adobe No. 13-1 State (pt)
b. SW NW sec. 13, T. 6 N., R. 22 E.
c. Elevation - 1942 feet
d. TD - 1375 feet
e. 1127 feet, when circulation of air-mist was started in preparation for coring, gas came to the surface and produced a flare 20-30 feet long for about 10 seconds; Niobrara Formation
A variable flare a few inches to 1 foot long was observed while coring down to 1157 feet. Flares 10-20 feet long were produced for a few seconds following subsequent trips, but continuous flares while drilling or coring were either non-existent or insignificant. It was concluded that a gas-bearing zone exists in part or possibly all of the 1103-1127 feet interval and could extend above and below this interval (evidence of gas was noted in Core No. 1 at 1170-1170.2), that the rate of gas entry into the well was TSTM, and that rate may have declined slightly while drilling below 1157 feet. Niobrara Formation
From 1190-1260 feet, gas bubbles escaping from shale, subordinate siltstone and minor amounts of sandstone were observed in drill cuttings immersed in water. In some samples bleeding of gas was profuse. No gas bubbles were observed in the 1240-1250 feet sample, possibly because approximately 30 minutes elasped between the time the sample was collected and the time it was examined; Niobrara Formation-Carlile Shale interval
1210-1215 feet, gas bubbling from shale; Niobrara Formation
1219-1230 feet, bleeding gas; Carlile Shale

1230-1240 feet, bleeding gas; Carlile Shale
1250-1260 feet, a few gas bubbles; Carlile Shale

f. Gas analysis - none

19. 1. Adobe No. 16-1 State (pt)
b. SW NE sec. 16, T. 5 N., R. 22 E
c. Elevation - 2437 feet
d. TD - 2093 feet
e. From 1700 feet to the base of the Greenhorn, gas was bubbling profusely from shale cuttings. At no time was there sufficient gas released from the formations to cause a flare at the end of the blooie line; Carlile Shale through Greenhorn Limestone interval
1701-1730 and 1730-1770 feet, gas bubbling profusely from shale cuttings, but no flare at the blooie line; Carlile Shale
f. Gas analysis - none

20. a. MDU No. 32X-10 Ferguson (pt)
b. SW NE sec. 10, T. 5 N., R. 21 E.
c. Elevation - 2232 feet
d. TD - 1590 feet
e. Gas shows: 30 unit bkg
1402-1406 feet, 20 units over bkg; Niobrara Formation
1420-1428 feet, 30 units over bkg; Niobrara Formation
1428-1476 feet, 20 units over bkg; Niobrara Formation
f. Gas analysis - none

21. a. Unnamed well (ww)
b. NW NE sec. 17, T. 1 N., R. 24 E.
c. Elevation - 1923 feet
d. TD - 1992 feet
e. Dakota Sandstone gas show
f. Gas analysis - none
g. Hot water and gas

22. a. Bierwagen-Norbeck-Pohle No. 1 (pt)
b. SW SE sec. 11, T. 6 N., R. 21 E.
c. Elevation - 2079 feet KB
d. TD - 1700 feet
e. Pierre Shale-Niobrara Formation Interval gas show
f. Gas analysis - none

23. a. Unnamed well (ww)
b. Near Milesville T. 6 N., R. 20 E.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone gas show
f. Gas analysis - none
g. Drilled to the Dakota Sandstone. There was plenty

of gas but not in commercial quantities.

24. a. Gulf No. 1 Harry (pt)
    b. SW SW sec. 4, T. 3 N., R. 23 E.
    c. Elevation - 2228 feet
    d. TD - 4625 feet
    e. 2080-2110 feet, 15 units total gas; Dakota Sandstone
    f. Gas analysis - none

25. a. Investors No. 1 Lee (pt)
    b. NE SE sec. 18, T. 3 N., R. 24 E.
    c. Elevation - 2170 feet
    d. TD - 2530 feet
    e. DST No. 2 2275-2330 feet, Dakota Sandstone-Newcastle Sandstone; Rec. 1490 feet GCW, gas was flammable
    f. Gas analysis - none
    g. Wm. Lee artesian well offsetting almost below out with gas in the Greenhorn Limestone in 1971; this test recovered gas saturated samples and GCM in the Greenhorn Limestone

26. a. Exeter No. 11-2 State-Neville (pt)
    b. NW NE sec. 11, T. 5 N., R. 19 E.
    c. Elevation - 2472 feet
    d. TD - 2714 feet
    e. Slight CH4 kick on gasometer; Turner Sandy Member of Carlile Shale
    f. Gas analysis - none

27. a. Exeter No. 16-1 State-Ferguson (pt)
    b. NE NE sec. 16, T. 5 N., R. 22 E.
    c. Elevation - 2432 feet
    d. TD - 2685 feet
    e. Slight gas show on mud logger; Niobrara Formation-Turner Sandy Member of Carlile Shale interval
    f. Gas analysis - none

28. a. Exeter No. 16-9 State-Lobbey (pt)
    b. NE SE sec. 16, T. 6 N., R. 19 E.
    c. Elevation - 2365 feet
    d. TD - 2714 feet
    e. Slight gas show; Turner Sandy Member of Carlile Shale
    f. Gas analysis - none

29. a. Exeter No. 12-5 Federal-Norman (pt)
    b. SW NW sec. 12, T. 8 N., R. 24 E.
    c. Elevation - 1854 feet
    d. TD - 2083 feet
    e. Slight gas kick; Turner Sandy Member of Carlile Shale
    f. Gas analysis - none

HAND COUNTY

1. a. Unnamed well (ww)
   b. On Ree Heights, south of Miller, South Dakota
   c. Elevation - unknown
   d. TD - unknown
   e. Stratigraphic interval unknown
   f. Gas analysis - none
   g. When it was drilled it blew gas and pebbles out of the well with considerable force for a day or two and continued to make gas for about a week.

2. a. William Froning well (ww)
   b. NE sec. 27, T. 115 N., R. 69 W.
   c. Elevation - 1582 feet
   d. TD - 1326 feet
   e. Dakota Sandtone gas show
   f. Gas analysis - none
   g. Artesian well, very little gas is present

3. a. Hill Brothers well (ww)
   b. SE sec. 18, T. 113 N., R. 70 W.
   c. Elevation - unknown
   d. TD - 1400 feet
   e. Dakota Sandstone gas show
   f. Gas analysis - none
   g. Has some gas

4. a. Puffer well (ww)
   b. SW sec. 1, T. 109 N., R. 70 W.
   c. Elevation - 1800-1900 feet
   d. TD - 1422 feet
   e. 1320 feet; black sand, G and O; Dakota Sandstone
      1300 feet; gas of such quantity it would burn from a jet; Dakota Sandstone
   f. Gas analysis - none

HANSON COUNTY

1. a. Alexandria furniture store well (ww)
   b. On outskirts of Alexandria
   c. Elevation - unknown
   d. TD - unknown
   e. Gas show; Pleistocene/Upper Cretaceous contact
   f. Gas analysis - none
   g. Struck gas instead of water and the well was cased and finished off as a gas well. The gas occurs in connection with a bed of low grade coal of unknown extent. The coal bed is approximately 30 feet thick and is encountered at a depth of 50 feet. At this shallow depth, the gas pressure is approximately 17 lbs/sq. in.

2. a. Jasper Alderson well (ww)
   b. NW sec. 10, T. 102 N., R. 58 W.
   c. Elevation - 1352+ feet
   d. TD - 102 feet
   e. 102 feet, water sand with gas; Pleistocene/Upper Cretaceous contact
   f. Gas analysis - none
   g. "Funny" fine light colored materal became white on exposure on the ground around the well. Lignitic coal was blown out of the hole, according to the owner.

3. a. George Lumer well (ww)
   b. 0.25 miles north of Alexandria
   c. Elevation - unknown
   d. TD - unknown
   e. 83 feet, struck gas; Pleistocene/Upper Cretaceous contact
   f. Gas analysis - none
   g. 25-30 lbs. of gas pressure; collected 4-5 jugs of gas, which burned with a blue flame

4. a. Unnamed well (ww)
   b. 5 miles south of Alexandria
   c. Elevation - unknown
   d. TD - 110 feet
* e. Above 90 feet; vein of gas above a sand and gravel, but it would not burn; Pleistocene
   f. Gas analysis - none

HARDING COUNTY

1. a. McCutchin No. 1-16 State Placid (redrill) (pt)
   b. NW NW sec. 16, T. 15 N., R. 3 E.
   c. Elevation - 3130 feet
   d. TD - 1327 feet
   e. 1075-1112 feet; gas producing zone; Shannon sand of Pierre Shale
   f. Gas analysis - none
   g. Cady Creek field discovery well; initial potential of 900 Mcf/day on a 4 hour test on 10/26/79; another gauge, date unknown, yielded 130 Mcf/day

2. a. McCutchin No. 1-14 Fox (pt)
   b. Center SW sec. 14, T. 15 N., R. 3 E.
   c. Elevation - 3085 feet
   d. TD - 2800 feet
   e. 1126-1177 feet; gas producing zone; Shannon sand of Pierre Shale
      Slight show of gas in the Upper Graneros Shale
   f. Gas analysis - none
   g. Cady Creek field development well; 1 hour test

on 10/28/79 failed to stabilize

3. a. McCutchin No. 1-18 Truman (pt)
   b. NE NE sec. 18, T. 15 N., R. 3 E.
   c. Elevation - 3133 feet
   d. TD - 2800 feet
   e. 1148-1172 feet; gas producing zone; Shannon sand of Pierre Shale
   f. Gas analysis - none
   g. Cady Creek development well

4. a. McCutchin No. 2-16 Harrison-State (pt)
   b. Center SE sec. 16, T. 15 N., R. 3 E.
   c. Elevation - 3150 feet
   d. TD - 2800 feet
   e. 2119-2138 feet; gas producing zone; Niobrara Formation
   f. Gas analysis - none

5. a. McCutchin No. 1-17 Truman (pt)
   b. N 1/2 SE sec. 17, T. 15 N., R. 3 E.
   c. Elevation - 3099 feet
   d. TD - 2620 feet
   e. 2128-2155 feet; gas producing zone; Niobrara Formation
   f. Gas analysis - none

6. a. McCutchin No. 1-31 Harrison-State (pt)
   b. NE SE sec. 31, T. 17 N., R. 2 E.
   c. Elevation - 3861 feet
   d. TD - 2000 feet
   e. 1794-1832 feet, gas producing zone; Shannon sand of Pierre Shale
   f. Gas analysis - none
   g. West Short Pine Hills development well; 4 hour test on 9/18/79 on 0.25 inch choke yielded 327 Mcf/day G

7. a. McCutchin No. 1-19 State-Harrison (pt)
   b. SE NW sec. 9, T. 16 N., R. 2 E.
   c. Elevation - 4003 feet
   d. TD - unknown
   e. 1974-1986 feet; gas producing zone; Shannon sand of Pierre Shale
   f. Gas analysis - none
   g. West Short Pine Hills development well; 4 hour test on 9/20/79 yielded 150 Mcf; calculated 24 hour rate 150 Mcf

8. a. McCutchin No. 1A-15 State (pt)
   b. SW NW sec. 15, T. 16 N., R. 2 E.
   c. Elevation - 3991 feet
   d. TD - 2175 feet
   e. 2016-2036 feet; gas producing zone; Shannon sand of

Pierre Shale
f. Gas analysis - none
g. West Short Pine Hills development well

9. a. Crazy Horse No. 24-1 Oleson, et al. (pt)
b. NE SE sec. 24, T. 16 N., R. 1 E.
c. Elevation - 3407 feet
d. TD - unknown
e. Niobrara Formation gas producer
f. Gas analysis - chromatograph analysis--N2 - 46.01%; CO2 - 0.04%; CH4 - 53.68%; ethane - 0.21%; propane - 0.06%, GPM - 0.017; calculated gross BTU per cu. ft standard conditions - 550; calculated specific gravity (air = 1.000) - 0.746; pseudocritical temperature - 290 degrees absolute; pseudocritical pressure - 588 psia
g. West Short Pine Hills development well

10. a. Harrison No. 1-22 Federal (pt)
b. SE NW sec. 22, T. 15 N., R. 3 E.
c. Elevation - 3092 feet
d. TD - 1232 feet
e. 1060-1085 feet; gas producing zone; Shannon sand of Pierre Shale
f. Gas analysis - none
g. Cady Creek development well; yielded 64 Mcf/day before fracturing

11. a. Inland No. 1-32 State (pt)
b. NW NW sec. 32, T. 17 N., R. 2 E.
c. Elevation - 3910 feet
d. TD - 1947 feet
e. 1880-1977 feet; gas producing zone; Shannon sand of Pierre Shale
f. Gas analysis - none
g. West Short Pine Hills development well; estimated annual production is 20 MMcf; on 11/23/79, the well flowed dry gas and died immediately; Rec. W and a trace of G on the first 3 swab runs

12. a. Inland No. 1-30 State-Holcomb (pt)
b. SE NW sec. 30, T. 17 N., R. 2 E.
c. Elevation - 3885 feet
d. TD - 2043 feet
e. 1855-1890 feet; gas producing zone; Shannon sand of Pierre Shale
f. Gas analysis - none
g. West Short Pine Hills development well; on 11/15/79 the test well burned with a 15-20 foot flare; on 11/17/79 a 1 hour test on a 0.75 inch choke yielded 1000 Mcf/day; on 11/19/79, perforated from 1855-1890 feet; field test on same day with open flow at 65 psi calculated about 1 MMcf/day through a 0.75 inch choke; should make approximately 400-500 Mcf/day

when on line

13. a. State Royalty Petroleum Co. No. 1 (pt)
    b. SW NE sec. 35, T. 18 N., R. 1 E.
    c. Elevation - 3268 feet
    d. TD - 7908 feet
    e. 3425-3550 feet; sandstone and siltstone, gas bearing; Newcastle Sandstone
       Questionable gas show in Lakota Sandstone
       4760-4770 feet, gas in oolitic limestone; basal Sundance Formation
       5590 feet; gas; Minnelusa Formation
       5945-5953 feet, gas and oil show; Minnelusa Formation-Snowy Group interval
       6108-6116 feet, gas and oil show; Big Snowy Group interval
       6464-6466 feet, gas; Madison Limestone
       6477-6478 feet; gas and oil; Madison Limestone
       6483 feet, gas; Madison Limestone
       6493-6495 feet, gas; Madison Limestone
       6500-6501 feet; asphalt, oil and gas show; Madison Limestone
       6522-6523 feet; asphalt, oil and gas show; Madison Limestone
       6628-6635 feet; asphalt, oil and gas show; Madison Limestone
       6760 feet, gas; Madison Limestone
    f. Gas analysis - none

14. a. McCutchin No. 1-5 Harrison-State (pt)
    b. SE NW sec. 5, T. 16 N., R. 2 E.
    c. Elevation - 3936 feet
    d. TD - 2020 feet
    e. 1867-1918 feet, gas producing zone; Shannon sand of Pierre Shale
    f. Gas analysis - none
    g. West Short Pine Hills field; estimated 198,000 Mcf reserves; on 6/28/79 a 4 hour test yielded 2000 Mcf; estimated annual production of 150 MMcf at 14.73 psia; well was completed for 36 Mcf/day

15. a. McCutchin No. 1-8 State (pt)
    b. NW NW sec. 8, T. 16 N., R. 2 E.
    c. Elevation - 3824 feet
    d. TD - 1961 feet
    e. 1730-1736 feet, gas producing zone; Shannon sand of Pierre Shale
    f. Gas analysis - none
    g. West Short Pine Hills field; on 6/20/79 a 4 hour test yielded 150 Mcf/day; calculated 24 hour rate of 50 Mcf; 60 MMcf estimated annual production; reserve estimates vary from 129,000 Mcf to 1,327,300 Mcf; well completed for 25 Mcf/day

16. a. McCutchin No. 1-28 Heikkila (pt)
    b. NE NW sec. 28, T. 16 N., R. 2 E.
    c. Elevation - 3409 feet
    d. TD - 1597 feet
    e. 1307-1349 feet, gas producing zone; Shannon sand of Pierre Shale
    f. Gas analysis - none
    g. West Short Pine Hills field; on 6/20/79 a 4 hour test yielded 80 Mcf; calculated 24 hour rate is 25 Mcf/day; reserves estimated at 51,700 Mcf

17. a. McCutchin No. 1-7 Heikkila (pt)
    b. NW SE sec. 7, T. 16 N., R. 2 E.
    c. Elevation - 3495 feet
    d. TD - 1624 feet
    e. 1373-1440 feet, gas producing zone; Shannon sand of Pierre Shale
    f. Gas analysis - none
    g. West Short Pine Hills field; on 8/9/78 a 1 hour test yielded 329 Mcf; estimated total annual production ranges from 80 million to 146 million cu. ft; reserves estimated at 794,300 Mcf

18. a. McCutchin No. 1-16 Forest-State
    b. SW NW sec. 16, T. 16 N., R. 2 E.
    c. Elevation - 3646 feet
    d. TD - 1682 feet
    e. 1590-1610 feet, gas producing zone; Shannon sand of Pierre Shale
    f. Gas analysis - none
    g. West Short Pine Hills field; on 9/12/78 a 1 hour test yielded 164 Mcf; fracture job increased the potential production from 100 Mcf to 500 Mcf; annual production estimates range from 18 million to 80 million cu. ft; estimated reserves 774,300 Mcf; well completed for 295 Mcf/day

19. a. McCutchin No. 1-17 Heikkila (pt)
    b. Center NW sec. 17, T. 16 N., R. 2 E.
    c. Elevation - 3514 feet
    d. TD - 1601 feet
    e. 1405-1411 feet, gas producing zone; Shannon sand of Pierre Shale
       DST No. 1 1405-1416 feet, Shannon Sand of Pierre Shale; GTS in 2 minutes
    f. Gas analysis - 958 BTU
    g. West Short Pine Hills discovery well; on DST 850,000 Mcf/day after 15 minutes, after 30 minutes, and after 45 minutes; on DST 880 MMcf/day after 60 minutes; on 11/22/77, a 4 hour test yielded 600 Mcf; calculated 24 hour rate was 980 Mcf/day; estimated annual production of 182.555 MMcf; 814,000 Mcf estimated reserves

20. a. McCutchin No. 1-19 Olsen (pt)
    b. NW SW SE sec. 19, T. 16 N., R. 2 E.
    c. Elevation - 3350 feet
    d. TD - 1540 feet
    e. 1204-1254 feet; gas producing zone, Shannon sand of Pierre Shale
    f. Gas analysis - none
    g. West Short Pine Hills field; on 3/15/79, a 4 hour test yielded 450 Mcf; calculated 24 hour rate of 200 Mcf; estimated reserves of 221,800 Mcf

21. a. McCutchin No. 1-20 Heikkila (pt)
    b. Center NW sec. 20, T. 16 N., R. 2 E.
    c. Elevation - 3465 feet
    d. TD - 1600 feet
    e. 1368-1373 feet; gas producing zone; Shannon sand of Pierre Shale
    f. Gas analysis - none
    g. West Short Pine Hills field; on 4/27/78 a 4 hour test yielded 640 Mcf; estimated reserves of 310,700 Mcf

22. a. McCutchin No. 1-21 Heikkila (pt)
    b. NW NW sec. 21, T. 16 N., R. 2 E.
    c. Elevation - 3508 feet
    d. TD - 1620 feet
    e. 1440-1445 feet; gas producing zone; Shannon sand of Pierre Shale
    f. Gas analysis - none
    g. West Short Pine Hills field; on 8/10/78 a 1 hour test yielded 553.8 Mcf; estimated reserves 1,100,000 Mcf

23. a. Houston Oil and Minerals No. 13-23 Harding (pt)
    b. NW SW sec. 23, T. 23 N., R. 2 E.
    c. Elevation - 3021 feet
    d. TD - 8684 feet
    e. 6835-6860 feet; gas show; Charles Formation
       8610-8685 feet; gas show; Red River "D"
       DST No. 1 8463-8485 feet, Red River "B"; Rec. 627 feet sli G and OCM
    f. Gas analysis - liberated drilling fluid gas from Charles Formation:
       Total G--maximum - 2; bkg - 2; net - 0
       C1--maximum - .017; bkg - .014
       Drill cutting gas from Charles Formation:

	Total	C1	C2	C3	C4
maximum	4	.006	.0013	.0015	.0027
bkg	1	.0015			
net	3		.0013	.0015	.0027

* * * *

Liberated drilling fluid gas from Red River "D"

	Total	C1	C2	C3	C4
maximum	4+	.012	.004	.004	.0027

bkg	2	.017	tr-.002	tr-.002	tr-.0008
net	2+				

* * * *

Drill cuttings gas from Red River "D"

	Total	C1	C2	C3	C4
maximum	14	.0137	.008	.008	.0069
bkg	3	.009	tr	tr	tr
net	11				

* * * *

g. On 11/11/77 a 24 hour test yielded an estimated 6.0 Mcf G; GOR-400; gas used for fuel to run oil pump

24. a. Mid-America No. 1-17 State (pt)
b. NE SE sec. 17, T. 21 N., R. 4 E.
c. Elevation - 3062 feet
d. TD - 8657 feet
e. DST 8545-8580 feet; Red River Dolomite; Rec. 180 feet of 90% O and 10% GCM, 98% O and 2% M that was 90% GC; 1120 feet highly GC sli MCO; 180 feet GCWCMO
DST No. 3 8608-8630 feet; Red River Dolomite; Rec. 90 feet GCM with a trace O
DST No. 4 8604-8652 feet; Red River Dolomite; Rec. 190 feet sli W and GCM, trace O
f. Gas analysis - Gas Chromatograph technique

Date	June 28, 1979		June 28, 1979	
Sample point	Casing annulus		Casing	
Pressure psi	15		15	
Gas component	MOL %	GPM	MOL %	GPM
Carbon dioxide	2.6		2.5	
Nitrogen	6.5		6.1	
Methane	17.9		16.7	
Propane	25.3	6.93	26.2	7.18
iso-Butane	2.0	0.65	2.2	0.72
n-Butane	7.8	2.46	8.8	2.77
iso-Pentane	1.0	0.37	1.1	0.40
n-Pentane	3.4	1.23	3.7	1.34
Hexanes calculated as hydrocarbon	2.1	0.86	2.3	0.94
BTU calculated to wet basis*	1887		1935	
Ideal gas specific gravity	1.2640		1.2920	
TOTAL: GPM		18.38		20.98

*Pressure base 14.73 psia

* * * *

Date	August 30, 1979	September 5, 1979
Sample point	Annulus	Treater

Gas component	MOL %	GPM	MOL %	GPM
Carbon dioxide	2.8		2.5	
Nitrogen	6.7		4.8	
Methane	18.0		12.2	
Ethane	35.0	8.77	28.5	7.15
Propane	20.0	5.49	33.7	9.26
iso-Butane	1.2	0.41	2.8	0.90
n-Butane	6.5	2.04	10.4	3.28
iso-Pentane	2.2	0.82	1.1	0.39
n-Pentane	6.8	2.44	3.2	1.17
Hexanes + unknown calculated as HC	0.8	0.49	0.8	0.60
BTU calculated to wet basis*	1946		2117	
Ideal gas specific gravity	1.2907		1.3776	
TOTAL: GPM		20.46		22.75

*Pressure base 14.73 psia

* * * *

Date	September 28, 1979		September 28, 1979	
Sample point	Annulus		Treater	
Gas component	MOL %	GPM	MOL %	GPM
Carbon dioxide	2.4		2.2	
Nitrogen	7.2		4.8	
Methane	17.6		9.8	
Ethane	34.2	8.60	28.0	7.03
Propane	27.3	7.51	35.0	9.55
iso-Butane	1.8	0.60	3.0	0.98
n-Butane	6.1	1.92	11.0	3.45
iso-Pentane	0.5	0.20	1.1	0.41
n-Pentane	1.6	0.58	3.5	1.26
Hexanes + unknown calculated as HC	1.3	0.54	1.6	0.66
BTU calculated to wet basis*	1846		2156	
Ideal gas specific gravity	1.2229		1.3990	
TOTAL: GPM		19.95		23.34

*Pressure base 14.73 psia

* * * *

Date	October 16, 1979		October 16, 1979	
Sample point	Annulus		Treater	
Gas component	MOL %	GPM	MOL %	GPM
Carbon dioxide	2.5		2.4	
Nitrogen	8.8			
Methane	20.3		13.1	
Ethane	32.5	8.15	28.9	7.26
Propane	24.0	6.58	30.9	8.48
iso-Butane	1.7	0.55	2.6	0.84
n-Butane	5.8	1.82	9.6	3.02
iso-Pentane	0.6	0.21	1.0	0.37
n-Pentane	1.9	0.70	3.2	1.14
Hexane + unknown calculated as HC	1.9	0.79	1.9	0.77
BTU calculated to wet basis*	1771		2033	
Ideal gas specific gravity	1.1958		1.3395	
TOTAL: GPM		18.80		21.88

*Pressure base 14.73 psia

* * * *

25. a. Miller-Holman No. 1 (pt)
    b. NE SE sec. 3, T. 18 N., R. 1 E.
    c. Elevation - 3125-3225 feet
    d. TD - 1395 feet
    e. Gas show: Judith River sand of Pierre Shale
       1380-1395, gas show; Niobrara Formation
    f. Gas analysis - He content - 17 7/8%
    g. Drilled on Camp Crook anticline

26. a. Kennedy-Miller No. 1,2 (pt)
    b. NW NW sec. 34, T. 20 N., R. 1 E.
    c. Elevation - 3097 feet KB
    d. TD - 2200 feet
    e. 600 feet; gas show; Pierre Shale
       985 feet; gas show; Judith River sand of Pierre Shale
       1058-1145 feet; sandy shale (more sand than shale) which showed gas; Judith River sand of Pierre Shale
    f. Gas analysis - none

27. a. Camp Crook well (pt)
    b. NE SE sec. 3, T. 18 N., R. 1 E.
    c. Elevation - unknown
    d. TD - unknown
    e. 1400 feet; small amount of gas; Eagle sand

of Pierre Shale
f. Gas analysis - none

28. a. Depco No. 42-27 Federal (pt)
b. SE NE sec. 27, T. 22 N., R. 5 E.
c. Elevation - 3190 feet
d. TD - 9130 feet
e. DST No. 2 8886-8922 feet; Red River "A"; Rec. 1470 feet G in collars and pipe, 110 feet G and MCO, 180 feet highly G and sli MCO
DST NO. 4 9018-9082 feet; Red River "C"; Rec. 900 feet G in pipe; 2520 feet gassy black O, 630 feet highly O and GCM, 180 feet G and sli WCM, 270 feet G and MCW
9034-9037 feet; core - bleeding O and G throughout; Red River "C"
9037.5-9042 feet; core - heavy bleeding of O and G; Red River "C"
9042-9044 feet; fractures bleeding O and G; Red River "C"
9045-9046 feet; spotty bleeding O and G; Red River "C"
9046-9050 feet; heavy bleeding of O and G in thin streaks from 9048.5-9048.75 feet and 9049.5-9050 feet; Red River "C"
9055-9057 feet; core - 3 minutes bleeding O and G at 9055.2-9055.5 feet; Red River "C"
9057-9058 feet; core - 6 minutes heavy bleeding O and G; Red River "C"
9063.5-9066 feet; core- spotty bleeding O and G; Red River "C"
9066-9073 feet; core - heavy bleeding O and G; Red River "C"
f. Gas analysis - none
g. On 3/12/71, a 14 hour test gave a GOR of 58; gas was vented
On 7/15/79 a 24 hour test gave 8750 cu. ft G with a GOR of 154
Red River production interval

29. a. Gas Development No. 1 Government-Lelivelt (pt)
b. SW SE sec. 7, T. 22 N., R. 3 E.
c. Elevation - 2900-3000 feet
d. TD - 1210 feet
e. 1200 feet, gas show, lots of gas was encountered; Pierre Shale
f. Gas analysis - none

30. a. Northern Ordinance No. 1 Government (pt)
b. SE SE sec. 32, T. 15 N., R. 2 E.
c. Elevation - 3328 feet KB
d. TD - 7038 feet
e. 4500-4570 feet; gas and oil show, gas bubbling at 4570 feet; Spearfish Formation

f. Gas analysis - none

31. a. Phillips No. 1 Thune (pt)
b. SW SE sec. 5, T. 21 N., R. 4 E.
c. Elevation - 3027 feet
d. TD - 8742 feet
e. DST No. 1 8593-8614 feet; Red River Dolomite; Rec. 540 feet gassy O, 30 feet GCM; GTS in 27 minutes
f. Gas analysis - none
g. On DST gas had initial rate of 25.1 Mcf/day to 17.2 Mcf/day after 20 minutes; oil production is from 8597-8598 feet, Red River Dolomite; G TSTM, vented

32. a. Phillips No. 1 Njos or No. 1A Njos (pt)
b. SW NW sec. 34, T. 23 N., R. 3 E.
c. Elevation - 3188 feet
d. TD - 9079 feet
e. DST No. 1 8843-8883 feet; Red River "B"; Rec. 330 feet sli GC and sli SW with sli O scum in drill pipe, 150 feet sli GC and sli SW with sli O scum in drill collars
DST No. 3 8858-8883 feet; Red River "B"; Rec. 550 feet sli salty, sli GCMW with O scum, 980 feet sli salty, sli GCW with O scum
8920-8947 feet, core, gas show; Red River "C"
f. Gas analysis - none

33. a. Shell-Carter No. 1 Clarkson and Hanson (pt)
b. NE NE sec. 28, T. 21 N., R. 3 E.
c. Elevation - 3221 feet KB
d. TD - 9050 feet
e. DST 8260-8341 feet; Red River Dolomite; Rec. 92 feet gassy, muddy O, 273 feet gassy, oily M
f. Gas analysis - none

34. a. Clarkson-Schlaikjer No. 1 Government (pt)
b. SE NW sec. 23, T. 21 N., R. 3 E.
c. Elevation - 3173 feet
d. TD - 8645 feet
e. DST 8460-8511 feet; Red River Dolomite; Rec. 1890 feet HGCO, 180 feet HO and GCM, 1020 feet O and GCW cushion
f. Gas analysis - none

35. a. Sun-Gregg No. 1 Government (pt)
b. NW SE sec. 21, T. 22 N., R. 5 E.
c. Elevation - 3396 feet
d. TD - 9361 feet
e. DST No. 1 7380-7430 feet; Charles Formation; Rec. 900 feet very sli GCSW with scattered specks of black O residue
DST No. 2 7430-7498 feet; Charles-Mission Canyon Formations; Rec. 225 feet sli GCM

DST No. 3 9220-9260 feet; Red River Dolomite; Rec. 2430 feet G
DST No. 4 9261-9308 feet; Red River Dolomite; 1820 feet G, 180 feet HO and GCM, 270 feet O and GCM, 270 feet O and GCMW
DST No. 6 9345-9361 feet; Red River Dolomite; Rec. 345 feet very sli GCMW
DST No. 7 9200-9218 feet; Red River Dolomite; Rec. 2160 feet HGCM with trace O, 1170 feet HGCMW

f. Gas analysis - none

36. a. Pennzoil No. 32-4 State-Clarkson (pt)
b. SW NE sec. 4, T. 21 N., R. 4 E.
c. Elevation - 3015 feet KB
d. TD - 8695 feet
e. DST 8665-8680 feet; Red River Dolomite; Rec. 215 feet O and GCDM
f. Gas analysis - none

37. a. Harrison No. 1-16 State-Placid (pt)
b. NW NW sec. 16, T. 15 N., R. 3 E.
c. Elevation - 3130 feet
d. TD - 3502 feet
e. 1103.5 feet, SWC, Rec. 1.25 inches. Scattered gas bubbles at 10 minute vacuum. Abundant bubbles from spots at 20 minute vacuum; Shannon sand of Pierre Shale
2469 feet, SWC, Rec. 1 inch, faint odor; Greenhorn Formation
3149.5 feet, SWC, Rec. 1 inch, faint odor. Immediate scattered bubbles on vacuum. Even bubble distribution at 10 minute vacuum indicating poor to fair porosity. Gas probably associated with water as it is not sufficient for 100 percent gas saturation; Newcastle Sandstone
3158.5 feet, SWC, Rec. 1.5 inches. Gas bubbles at 10-15 minute vacuum more abundant from pure gilsonite inclusions. Gas bubbles indicate less gas in the sample or poor porosity; Newcastle Sandstone
3160.5 feet, SWC, Rec. 1.5 inches. Scattered gas bubbles at 5 minute vacuum, higher incidence of gas bubbles in the immediate vicinity of gilsonite inclusions; Newcastle Sandstone
3170 feet, circulated for 30 minutes, a few gas bubbles on 10 minute vacuum; Newcastle Sandstone
DST No. 1 3148-3161 feet; Newcastle Sandstone; Rec. 1840 feet GCW, gas less than 0.1 cu. ft.

f. Gas analysis - none

38. a. Harrison No. 21-1 State-Truman (pt)
b. NE NW sec. 21, T. 15 N., R. 3 E.
c. Elevation - 3055 feet
d. TD - 7337 feet
e. 1670-1700 feet, bubbles come out of shale; Pierre

Shale
1760-1880 feet, abundant bubbles on fresh sample; Niobrara Formation
2270-2300 feet, abundant gas bubbles; Greenhorn Formation
2870-2880 feet, scattered gas bubbles; Graneros Shale
2890-2900 feet, scattered gas bubbles; Graneros Shale
3050-3060 feet, very scattered bubbles on 20 minute vacuum; Muddy sand

f. Gas analysis - none

39. a. Harrison No. 2 Truman (pt)
b. NE NW sec. 21, T. 15 N., R. 3 E.
c. Elevation - 3078 feet KB
d. TD - 2521 feet
e. 1640-1670 feet, Trace G bubbles at 15 minute vacuum from pieces of earthy lime; Niobrara Formation
1730-1760 feet, abundant bubbles at 10 minute vacuum; Niobrara Formation
1810-1820 feet, bubbles at 10 minute vacuum; Niobrara Formation
2310-2317 feet, circulated 15 minutes--emitting small G bubbles at atmospheric pressure, abundant bubbles under vacuum; circulated 30 minutes--abundant bubbles on vacuum; Niobrara Formation
2340-2345 feet, gas bubbles from both lines and shale--2 second gas flare after connection at 2348 feet; Niobrara Formation
2363-2377 feet, lime bleeding gas with no vacuum; 8 second gas flare on start up; Niobrara Formation
2377-2390 feet, bleeding gas; Niobrara Formation
2395-2404 feet, 4 second gas flare after connection at 2404 feet; Niobrara Formation
2404-2410 feet, bleeding gas; Niobrara Formation
2410-2430 feet, shale bleeding as; Niobrara Formation
2465-2475 feet, shale bleeding gas; Niobrara Formation
2475-2480 feet, shale bleeding gas; no apparent porosity in any of the above lime but sample bleeds gas in shaley-chalky part; Niobrara Formation
2480-2485 feet, shale as above with abundant gas bubbles bleeding from bedding planes; Niobrara Formation
2490-2495 feet, shales continue bleeding gas; Niobrara Formation
2495-2500 feet, abundant gas bubbles on all shale; Niobrara Formation
2500-2505 feet, abundant gas bubbles; Niobrara Formation
2320-2521 feet, gas producing zone; Niobrara Formation

f. Gas analysis - none

40. a. Gulf No. 1 Clarkson (pt)
    b. SW NE sec. 12, T. 21 N., R. 4 E.
    c. Elevation - 2929 feet
    d. TD - 8800 feet
    e. DST No. 2 8551-8577 feet; Red River "A"; Rec. 196 feet HGCO, 1116 feet GCW with sli film O
       DST No. 3 8685-8711 feet; Red River "C"; Rec. 197 feet GCM with droplets O
       8587 feet; bkg G 6 units, 38 units G; Red River Dolomite
    f. Gas analysis - none

41. a. Webb No. 20-10 Cenex-Hafner (pt)
    b. NW SE sec. 20, T. 21 N., R. 6 E.
    c. Elevation - 2978 feet
    d. TD - 8910 feet
    e. DST No. 1 8674-8683 feet; Red River "A"; Rec. 188 feet oily M and gassy W emulsion, 0.3 cu. ft G in sampler
    f. Gas analysis - none

42. a. McCutchin No. 1-18 Harrison-State (pt)
    b. SW SW sec. 18, T. 17 N., R. 2 E.
    c. Elevation - 3834 feet
    d. TD - 1970 feet
    e. 1843-1872 feet, gas producing zone; Shannon sand of Pierre Shale
    f. Gas analysis - none

43. a. Koch No. 1 Cundy (pt)
    b. Center SW sec. 14, T. 19 N., R. 1 E.
    c. Elevation - 3116 feet
    d. TD - 1603 feet
    e. 1252-1290 feet, trace G; Eagle sand of Pierre Shale
       1426-1452 feet; trace G; Shannon sand of Pierre Shale
    f. Gas analysis - none

44. a. Luff No. 1-29 Nygaard (pt)
    b. SW SW sec. 29, T. 23 N., R. 7 E.
    c. Elevation - 2886 feet KB
    d. TD - 9367 feet
    e. DST No. 1 9094-9155 feet; Red River "A"; Rec. 2277 feet G in pipe, 93 feet sli O and GCM, 279 feet HG and OCM, 93 feet sli M and HGCO, 93 feet GCO
    f. Gas analysis - none

45. a. McCutchin No. 1-18 Heikkila (pt)
    b. NW SE sec. 18, T. 16 N., R. 2 E.
    c. Elevation - 3404 feet
    d. TD - 1937 feet
    e. 1254-1304 feet, gas producing zone; Shannon sand of Pierre Shale

f. Gas analysis - none
g. On 8/8/78 a 4 hour test yielded 782.35 Mcf; 180-182 million cu. ft total annual production

46. a. McCutchin No. 5-1 Turbiville (pt)
b. Center S 1/2 sec. 5, T. 15 N., R. 3 E.
c. Elevation - 3283 feet
d. TD - 1432 feet
e. 1319-1363 feet, gas producing zone; Shannon sand of Pierre Shale
f. Gas analysis - none

47. a. Harrison No. 1 Homer Truman (redrill) (pt)
b. NE NW sec. 21, T. 15 N., R. 3 E.
c. Elevation - 3055 feet
d. TD - 1071 feet
e. 1001-1026 feet, gas producing zone; Shannon sand of Pierre Shale
f. Gas analysis - none
g. Calculated 24 hour rate 600 Mcf/day

48. a. Cardinal No. 1 Travers (pt)
b. SE SE sec. 17, T. 22 N., R. 5 E.
c. Elevation - 3081 feet
d. TD - 9005 feet
e. DST No. 1 8924-8965 feet; Red River "A"; Rec. 2970 feet G, 15 feet O and GCM, 90 feet HG and MC black O (50% O)
f. Gas analysis - none

49. a. Cardinal-Sun-Clarkson No. 1 State (pt)
b. SW NW sec. 6, T. 21 N., R. 4 E.
c. Elevation - 3109 feet
d. TD - 8667 feet
e. DST No. 1 8659-8667 feet; Red River Dolomite; Rec. 8650 feet G in drill pipe, 500 feet gassy O
f. Gas analysis - none

50. a. Carter No. 1 Hendriks (pt)
b. SW NW sec. 2, T. 20 N., R. 3 E.
c. Elevation - 3249 feet KB
d. TD - 8393 feet
e. Gas shows: 1682 feet; 18 units TG, 170 CH4, shale gas; Pierre Shale
2260 feet; 28 units TG, 24 CH4, shale gas; Pierre Shale
3050 feet; 40 units TG, 38 CH4, shale gas, Carlile Shale
3448 feet; 140 units TG, 130 CH4; Graneros Shale
4090 feet; 120 units TG, 100 CH4; Muddy sand
5286 feet; 18 units TG, 9 CH4; Sundance Formation
5304 feet; 25 units TG, 12 CH4; Piper Limestone contact
6244 feet; 120 units TG, 80 CH4, Minnelusa Formation

f. Gas analysis - none

51. a. Carter No. 1A Hendriks (pt)
b. SW NW sec. 2, T. 20 N., R. 3 E.
c. Elevation - 3249 feet KB
d. TD - 9052 feet
e. DST 8361-8399 feet; Red River "A"; Rec. 360 feet sli GCM fresh W
f. Gas analysis - none

52. a. Clarkson-Schlaikjer No. 1 Graves (pt)
b. SW NE sec. 23, T. 21 N., R. 3 E.
c. Elevation - 3168 feet
d. TD - 8515 feet
e. DST 8470-8512 feet; Red River Dolomite; Rec. 90 feet O and GCM
8479-8485 feet, core; dolomite, strong gaseous odor; Red River Dolomite
8496-8510 feet, core; dolomite, slightly gaseous; Red River Dolomite
8490-8492.5 feet, core; dolomite, slightly different odor from that above; Red River Dolomite
f. Gas analysis - none

53. a. Harrison No. 1 Junek (pt)
b. SE SE sec. 29, T. 15 N., R. 5 E.
c. Elevation - 3082 feet
d. TD - 3781 feet
e. DST No. 1 3412-3425 feet, Muddy sand; Rec. 2400 feet sli GCW
f. Gas analysis - none

54. a. Harrison No. 1-36 State 15-4 (pt)
b. NE SE sec. 36, T. 15 N., R. 4 E.
c. Elevation - 3096 feet
d. TD - 3761 feet
e. DST 3393-3444 feet; Muddy sand; Rec. 120 feet sli M and GCW, 1960 feet sli GCW
f. Gas analysis - none

55. a. Mule Creek No. 1 State 1116 (pt)
b. NW NW sec. 16, T. 22 N., R. 3 E.
c. Elevation - 3160 feet
d. TD - 8870 feet
e. Gas shows in the Niobrara, Newcastle, and Morrison Formations
DST 8672-8715 feet; Red River Dolomite; Rec. 2070 feet G, 370 feet HGC black O, 270 feet HG and OCW, 180 feet HG and sli OCW, 90 feet sli O and GCW, 90 feet sli GCMW, 360 feet sli GC watery M, 180 feet moderately G and OCM
f. Gas analysis - none

56. a. Pennzoil No. 12-8 Graves (pt)

b. SW NW sec. 8, T. 21 N., R. 4 E.
c. Elevation - 3016 feet
d. TD - 8590 feet
e. DST No. 1 8530-8560 feet; Red River Dolomite; Rec. 2500 feet G, 180 feet sli M and GCO, 180 feet M and GCO, 162 feet sli M and GCW
f. Gas analysis - none
g. On 11/21/65 a 24 hour test yielded 4.8 Mcf gas which was used as fuel
A GOR test in November 1975 yielded no gas

57. a. Pennzoil No. 32-4 State-Clarkson (pt)
b. SW NE sec. 4, T. 21 N., R. 4 E.
c. Elevation - 3015 feet KB
d. TD - 8695 feet
e. DST 8665-8680 feet; Red River Dolomite; Rec. 215 feet O and GCM
f. Gas analysis - none

58. a. Pennzoil No. 12-17 Little-Graves (pt)
b. SW NW sec. 17, T. 21 N., R. 4 E.
c. Elevation - 3095 feet
d. TD - 8610 feet
e. DST No. 1 8575-8585 feet; Red River Dolomite; Rec. 813 feet G in drill pipe, 563 feet HG and MCO, 32 feet HG and OCM
f. Gas analysis - none
g. On 9/10/65 a 24 hour test yielded 96.3 Mcf gas with a GOR of 80, gas used as fuel
GOR test in November 1975 yielded GOR of 85

59. a. Pennzoil No. 14-11 A Tilus (pt)
b. SW SW sec. 11, T. 20 N., R. 4 E.
c. Elevation - 3005 feet
d. TD - 8440 feet
e. DST 8372-8384 feet, Red River Dolomite; Rec. 100 feet HG and MCO
f. Gas analysis - none
g. Gas used for fuel; GOR test November 1975 yielded GOR of 85

60. a. Phillips No. 2 Thune (pt)
b. SW SW sec. 5, T. 21 N., R. 4 E.
c. Elevation - 3036 feet
d. TD - 8759 feet
e. DST No. 2 8572-8600 feet; Red River "B"; Rec. 250 feet O and GCM
f. Gas analysis - none
g. Gas TSTM and is vented

61. a. Shell No. 14-4 Johnson (pt)
b. SW SW sec. 4, T. 21 N., R. 8 E.
c. Elevation - 2804 feet KB
d. TD - 8926 feet

e. DST 8786-8817 feet; Red River Dolomite; Rec. 205 feet sli GC and MCW
f. Gas analysis - none

62. a. Shell No. 12-35 F State (pt)
b. SW NW sec. 35, T. 22 N., R. 4 E.
c. Elevation - 3199 feet KB
d. TD - 8910 feet
e. DST No. 1 8887-8910 feet; Red River Dolomite; Rec. 60 feet sli gassy O and WCM (40% O), 188 feet sli GCW with trace O
f. Gas analysis - none

63. a. Shell No. 14-4 State (pt)
b. SW SW sec. 4, T. 21 N., R. 4 E.
c. Elevation - 3012 feet KB
d. TD - 8730 feet
e. DST 8570-8592 feet; Red River Dolomite; Rec. 1875 feet HGCO(90-100%) with trace (10%) of M, 420 feet GCMW
f. Gas analysis - none

64. a. Shell No. 32-16 State (pt)
b. SW NE sec. 16, T. 21 N., R. 4 E.
c. Elevation - 3047 feet KB
d. TD - 8720 feet
e. DST No. 4 8622-8646 feet; Red River Dolomite; Rec. 240 feet gassy, sli watery, sli oily M; 450 feet gassy, sli muddy, oily W
DST No. 6 8672-8689 feet; Red River Dolomite; Rec. 115 feet gassy, oily M; 420 feet gassy, oily watery M; 35 feet gassy oily muddy W
DST No. 7 8691-8719 feet; Red River Dolomite; Rec. 395 feet watery gassy sli oily M, 1860 feet gassy sli oily muddy W
On DST No. 4:
630 feet above the tester DM (10 Baroid units CH4); G, W, SOM - 100 Baroid units CH4
270 feet above the tester G, W, SOM - 100 Baroid units CH4
90 feet above the tester G, M, SOW - 100 Baroid units CH4
Tool G, SOMW - 100 Baroid units CH4
On DST No. 5 8647-8668 feet; Red River Dolomite
90 feet above the tester MW - 20 Baroid units CH4
Tool MW - 20 Baroid units CH4
On DST No. 6:
550 feet above the tester GOM - 30 Baroid units CH4
455 feet above the tester GOM - 60 Baroid units CH4
365 feet above the tester GOWM - 100 Baroid units CH4

275 feet above the tester GOWM - 100 Baroid units CH4
185 feet above the tester GO sli WM - 100 Baroid units CH4
95 feet above the tester GO sli WM - 100 Baroid units CH4
35 feet above the tester GOMW - 100 Baroid units CH4
Tool GOMW - 100 Baroid units CH4

On DST No. 7:
2330 feet above the tester WG sli OM - 10 Baroid units CH4
1955 feet above the tester WG sli OM - 15 Baroid units CH4
1580 feet above the tester GOMW - 100 Baroid units CH4
1205 feet above the tester GOMW - 30 Baroid units CH4
830 feet above the tester GOMW - 100 Baroid units CH4
455 feet above the tester GOMW - 50 Baroid units CH4
95 feet above the tester W - trace Baroid units CH4
Tool W - trace Baroid units CH4

f. Gas analysis - none
g. GOR test - November 1975, GOR of 87

65. a. Shell No. 32-17 Graves (pt)
b. SW NE sec. 17, T. 21 N., R. 4 E.
c. Elevation - 3108 feet
d. TD - 8824 feet
e. Gas readings: example: total gas/methane-- 4/3

INTERVAL	MUD	CUTTINGS
7075-7240 feet Mission Canyon	4/3 maximum 2/1 minimum 2/1 average	2/1 maximum 2/1 minimum 2/1 average
7240-7330 feet Mission Canyon	6/5 maximum 2/1 minimum 4/3 average	2/1 maximum 2/1 minimum 2/1 average
7330-7370 feet Mission Canyon	2/1 maximum 2/1 minimum 2/1 average	2/1 maximum 2/1 minimum 2/1 average
7370-7720 feet Mission Canyon/ Lodgepole	2/1 maximum 2/1 maximum 2/1 average	2/1 maximum 2/1 minimum 2/1 average
7720-7915 feet Lodgepole	2/1 maximum 2/1 minimum	2/1 maximum 2/1 minimum

	2/1 average	2/1 average
8025-8400 feet	2/1 maximum	2/1 maximum
Devonian/	2/1 minimum	2/1 minimum
Silurian	2/1 average	2/1 average
8410-8520 feet	2/1 maximum	2/1 maximum
Devonian/	2/1 minimum	2/1 minimum
Silurian	2/1 average	2/1 average
8520-8610 feet	2/1 maximum	2/1 maximum
Silurian/	2/1 minimum	2/1 minimum
Red River	2/1 average	2/1 average
8610-8628 feet	7/6 maximum	11/5 maximum
Red River	5/4 minimum	5/2 minimum
	7/6 average	7/2 average
8628-8669 feet	7/6 maximum	8/5 maximum
Red River	2/1 minimum	3/1 minimum
	3/2 average	5/3 average
8669-8720 feet	12/11 maximum	10/3 maximum
Red River	5/4 minimum	7/2 minimum
	7/6 average	9/3 average
8720-8773 feet	14/13 maximum	10/3 maximum
Red River	2/1 minimum	3/1 minimum
	5/3 average	5/3 average
8773-8824 feet	8/7 maximum	20/8 maximum
Red River	3/2 minimum	6/2 minimum
	4/3 average	10/7 average

DST No. 2 8669-8720 feet; Red River Dolomite; Rec. 210 feet sli GCM with trace O
DST No. 3 8723-8773 feet; Red River Dolomite; Rec. 2910 feet sli M and GCW

f. Gas analysis - none
g. On 7/13/57 a 24 hour test yielded a GOR of 71

66. a. Signal No. 1 State (pt)
b. SE SE sec. 36, T. 23 N., R. 2 E.
c. Elevation - 3021 feet
d. TD - 8633 feet
e. DST No. 4 8528-8550 feet; Red River Dolomite; Rec. 180 feet HO and GCMW, 90 feet sli OC and HGCMW, 180 feet sli GCMW
f. Gas analysis - none

67. a. Signal-Gulf No. 1 Olson (pt)
b. SW NE sec. 23, T. 20 N., R. 7 E.
c. Elevation - 2814 feet KB
d. TD - 8473 feet

e. DST 8337-8388 feet; Red River Dolomite; Rec. 130 feet very sli O and GC cushion 320 feet sli O and GCW
f. Gas analysis - none

68. a. Texaco No. 1 State "A" (pt)
b. NE NW sec. 35, T. 18 N., R. 4 E.
c. Elevation - 3038 feet KB
d. TD - 8819 feet
e. DST No. 3 7519-7579 feet; Red River Dolomite; Rec. 300 feet sli G and WCM
1466-1520 feet, sli gas show; Eagle sand of Pierre Shale
1650 feet, sli gas show; Eagle sand of Pierre Shale
2616-2660 feet, sli gas show, Turner Sandy Member of Carlile Shale
7130-7138 feet, faint odor; Duperow Formation
7163-7166 feet, fair odor; Duperow Formation
7248-7250 feet, sli odor; Duperow Formation
7528-7529 feet, sli odor; Red River Dolomite
7531-7536 feet, sli odor; Red River Dolomite
7600-7610 feet, poor gas show; Red River Dolomite
7595-7650 feet, gas detected in this interval; Red River Dolomite
f. Gas analysis - none

69. a. Mid-America No. 2-16 State (pt)
b. SW NW sec. 16, T. 21 N., R. 4 E.
c. Elevation - 3081 feet KB
d. TD - 8589 feet
e. There was gas with the oil. This was a Red River producer in the Buffalo Field.
f. Gas analysis - none
g. This is now an air injection well

70. a. Mid-America No. 3-16 State (pt)
b. SW SE sec. 16, T. 21 N., R. 4 E.
c. Elevation - 3083 feet KB
d. TD - 8585 feet
e. There is gas with the oi; Red River producer in the Buffalo Field.
f. Gas analysis - none

71. a. Shell No. 1 State A No. 34-9 (pt)
b. SW SE sec. 9, T. 21 N., R. 4 E.
c. Elevation - 3065 feet KB
d. TD - 9329 feet
e. Red River Formation
f. Gas analysis - none
g. On 4/6/56, a 24 hour test yielded 5.53 Mcf with a GOR of 70.
A GOR test in November 1975 gave a GOR of 87.

72. a. Shell No. 32-17R Graves (pt)

b. SW NE sec. 17, T. 21 N., R. 4 E.
c. Elevation - 3135 feet KB
d. TD - 8636 feet
e. Red River Formation
f. Gas analysis - none
g. On 7/27/59, a 24 hour test yielded a GOR of 93. A November 1975 GOR test yielded a GOR of 85.

73. a. Shell No. 14-16 State (pt)
b. SW SW sec. 16, T. 21 N., R. 4 E.
c. Elevation - 3070 feet
d. TD - 8588 feet
e. Red River Dolomite
f. Gas analysis - none
g. On 7/27/59 there was a GOR of 110. A GOR test in November 1975 yielded a GOR of 87.

74. a. Shell No. 14-28 State-Haivala (pt)
b. SW SW sec. 28, T. 21 N., R. 4 E.
c. Elevation - 3157 feet KB
d. TD - 8613 feet
e. Red River Dolomite
f. Gas analysis - none
g. On 6/14/59 the GOR was 37.
In November 1975 the GOR was 85.

75. a. Shell No. 12-11A Tilus (pt)
b. SW NW sec. 11, T. 20 N., R. 4 E.
c. Elevation - 3000 feet KB
d. TD - 8380 feet
e. Red River Dolomite
f. Gas analysis - none
g. First determined GOR was 47.
In November 1975 the GOR was 85.

76. a. Shell No. 14-9 State (pt)
b. SW SW sec. 9, T. 21 N., R. 4 E.
c. Elevation - 3070 feet KB
d. TD - 8604 feet
e. Red River Dolomite
f. Gas analysis - none

77. a. Gulf No. 1 Custer Federal (pt)
b. SW SW sec. 17, T. 15 N., R. 1 E.
c. Elevation - 3336 feet KB
d. TD - 3961 feet
e. 2147 feet; trip for bit, 35 units TG, fat show, coming from all depths; Carlile Shale
Approximately 2305 feet; 12 unit gas kick; Carlile Shale
2705-2720 feet, 50 units gas; Greenhorn Limestone
2730 feet; gel cut gas to 8 units over zeroed base (= 10); Greenhorn Limestone
2830-2860 feet; switched to 1.3 V scale, instru-

ment zeroed on 10 units indicating total 60 units above base, gas is all methane; Belle Fourche Shale

f. Gas analysis - none

78. a. Harrison No. 1-3 State 15-3 (pt)
b. SW NE sec. 3, T. 15 N., R. 3 E.
c. Elevation - 3143 feet
d. TD - 4295 feet
e. 1207 feet, SWC, Rec. 1.5 inches; releases trapped gas under water with no vacuum; Pierre Shale
1213 feet, SWC, Rec. 1.5 inches; gas bubbles under water with no vacuum (permeability-trapped gas); Pierre Shale
1225 feet, SWC, Rec. 1.5 inches; faint odor, very gassy under water; Pierre Shale
1233 feet; SWC, Rec. 1.25 inches; faint odor; Pierre Shale
2626 feet, SWC, Rec. 1.25 inches; faint odor; Greenhorn Limestone
2635 feet, SWC, Rec. 0.75 inch; slight odor; Greenhorn Limestone
2650 feet, SWC, Rec. 1.25 inches; slight odor; Greenhorn Limestone
DST No. 1 2575-2710 feet; Greenhorn Limestone; Rec. 2500 feet DM with bottom 1000 feet sli GC
f. Gas analysis - none

79. a. Murfin No. 2-11 State 15-3 (pt)
b. NE SW sec. 11, T. 15 N., R. 3 E.
c. Elevation - 2158 feet
d. TD - 1457 feet
e. 1248-1319 feet, gas and salt water; Shannon sand of Pierre Shale
f. Gas analysis - none
g. On 6/20/73 well produced 7000 cu. ft/day along with 1 bbl W/hr; not judged commercial

80. a. Harrison No. 1 Van Horn (pt)
b. SW SW sec. 12, T. 15 N., R. 4 E.
c. Elevation - 3057 feet KB
d. TD - 3843 feet
e. DST; Muddy sand; Rec. 2287 feet very sli GCMW
f. Gas analysis - none

81. a. Harrison No. 1-36 State 15-4 (pt)
b. NE SE sec. 36, T. 15 N., R. 4 E.
c. Elevation - 3087 feet
d. TD - 3761 feet
e. DST 3393-3444 feet; Muddy sand; Rec. 120 feet sli MCW (sli GC), 1960 feet W (sli GC)
Gas was flammable and burned a yellowish-orange flame approximately 2 feet high for several seconds.

f. Gas analysis - none

82. a. Harrison No. 1 Johnson (pt)
b. NW SW sec. 32, T. 15 N., R. 5 E.
c. Elevation - 3104 feet
d. TD - 3840 feet
e. DST No. 1 3463-3471 feet; Muddy sand; Rec. 455 feet sli MCW (sli GC), 1616 feet GCW
f. Gas analysis - none

83. a. Harrison No. 1 Leger (pt)
b. SE SW sec. 26, T. 16 N., R. 3 E.
c. Elevation - 3300 feet
d. TD - 3900 feet
e. 1455 feet, SWC, Rec. 1.5 inches; abundant gas bubbles on fresh core; Pierre Shale
1461 feet, SWC, Rec. 1.5 inches; abundant gas bubbles and faint odor on fresh core; Pierre Shale
1477 feet, SWC, Rec. 1.5 inches, abundant gas bubbles on fresh core; Pierre Shale
2574.5 feet, SWC, Rec. 1.5 inches; abundant gas bubbles and faint odor on fresh core; Niobrara Formation
2870-2880 feet; scattered gas bubbles under water at atmospheric pressure; Greenhorn Limestone
3512 feet, SWC, Rec. 1 inch; abundant gas bubbles and good odor on fresh core; Muddy sand
3517 feet, SWC, Rec. 1 inch; scattered gas bubbles and faint odor on fresh core; Muddy sand
3519 feet, SWC, Rec. 1.5 inches; abundant gas bubbles and faint odor on fresh core; Muddy sand
3538 feet, SWC, Rec. 0.5 inches; abundant gas bubbles on fresh core; Muddy sand
3540 feet, SWC, Rec. 1 inch; gas bubbles on fresh core; Muddy sand
3549 feet, SWC, Rec. 1 inch; faint odor on fresh core; Muddy sand
3589 feet, SWC, Rec. 0.75 inch; slight odor; Muddy sand
f. Gas analysis - none

84. a. Harrison No. 2 Leger (pt)
b. NE SW sec. 35, T. 16 N., R. 3 E.
c. Elevation - 3214 feet KB
d. TD - 3803 feet
e. 2710-2800 feet, very scattered gas bubbles; Greenhorn Limestone
f. Gas analysis - none

85. a. Harrison No. 1 Fox (pt)
b. NE NE sec. 21, T. 16 N., R. 4 E.
c. Elevation - 3260 feet
d. TD - 4300 feet
e. DST 3720-3733 feet; Muddy sand; Rec. 2050 feet GCW

f. Gas analysis - none

86. a. MDU No. 31X-1 State (pt)
b. NW NE sec. 1, T. 17 N., R. 1 E.
c. Elevation - 3548 feet
d. TD - 1480 feet
e. 1486-1504 feet; an air drilling 15 minute shutdown enabled a one second flare of gas to enter the air-stream; Shannon Sand of Pierre Shale
1504-1511 feet; an air drilling 20 minute shutdown enabled a 2 second flare of gas to enter the air-stream; Shannon sand of Pierre Shale
DST No. 1 1328-1455 feet; Eagle sand of Pierre Shale; GTS after 12 minutes of being closed in. Rec. 60 feet very sli GCM, 30 feet sli GCM
f. Gas analysis - none

87. a. Murfin No. 1-23 State (pt)
b. SW SE sec. 23, T. 18 N., R. 1 E.
c. Elevation - 3187 feet
d. TD - 3557 feet
e. 1280-1314 feet, gas and salt water; Shannon sand of Pierre Shale
f. Gas analyses:
(1) 93% CH4, 2.09% N2, remainder unknown, 942 BTU;
(2) Trace N2, 0.22% CO2, 96.61% CH4, 3.17% ethane, trace propane, 1033 BTU
g. Gas rate estimates varied from 28 Mcf and 50 Mcf up to 140 Mcf

88. a. Harrison No. 1 Neilo Oja (pt)
b. NW NW sec. 22, T. 19 N., R. 4 E.
c. Elevation - 2995 feet
d. TD - 4110 feet
e. DST No. 1 3805-3818 feet; Muddy sand; Rec. 330 feet sli GCMW, 735 feet GCW with 18-inch blue-orange flame at top of pipe
f. Gas analysis - none

89. a. Harrison No. 1-27 State 19-4 (pt)
b. SW NE sec. 27, T. 19 N., R. 4 E.
c. Elevation - 2912 feet
d. TD - 4080 feet
e. 3660-3670 feet, bleed gas bubbles from several large clusters with crystalline matrix. Occasional bubble at 5 minute vacuum increasing bubbles to 72 minute vacuum; Muddy sand
3704 feet, SWC, Rec. 0.5 inch; very faint odor; Muddy sand
3712 feet, SWC, Rec. 5/8 inch; faint odor; Muddy sand
f. Gas analysis - none

90. a. Koch No. 14-1 Haivala-Seppala (pt)

b. SW SW sec. 1, T. 20 N., R. 4 E.
c. Elevation - 3007 feet
d. TD - 8473 feet
e. 8462 feet, making considerable amount of gas; Red River Dolomite
8476 feet, very gassy; Red River Dolomite
f. Gas analysis - none

91. a. Koch No. 12-2 Haivala-Federal (pt)
b. SW NW sec. 2, T. 20 N., R. 4 E.
c. Elevation - 3030 feet
d. TD - 8483 feet
e. Red River "B"
f. Gas analysis - none
g. Gas TSTM

92. a. Shell No. 34-2A Haivala (pt)
b. SW SE sec. 2, T. 20 N., R. 4 E.
c. Elevation - 3025 feet KB
d. TD - 8439 feet
e. Red River Dolomite
f. Gas analysis - none
g. On 4/6/60 GOR was 37. In November 1975 GOR was 85

93. a. Koch No. 14-2A Tilus (pt)
b. SW SW sec. 2, T. 20 N., R. 4 E.
c. Elevation - 3060 feet
d. TD - 8650 feet
e. DST No. 1 8421-8487 feet; Red River Dolomite; Rec. 2364 feet G, 400 feet G and OCM, 700 feet G and OCW
8452-8453 feet, bleeding O and G from scattered pin-point porosity; Red River Dolomite
f. Gas analysis - none

94. a. Koch No. 32-3 State (pt)
b. SW NE sec. 3, T. 20 N., R. 4 E.
c. Elevation - 3128 feet
d. TD - 8575 feet
e. 8530-8544 feet, Red River "B" producing interval
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

95. a. Koch No. 12-3 State (pt)
b. SW NW sec. 3, T. 20 N., R. 4 E.
c. Elevation - 3108 feet
d. TD - 8535 feet
e. 8461-8480 feet, Red River "A" and 8496-8516 feet, Red River "B" producing intervals
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

96. a. Koch No. 34-3 Tilus (pt)
b. SW SE sec. 3, T. 20 N., R. 4 E.

c. Elevation - 3075 feet
d. TD - 8502 feet
e. 25-35 unit gas kick; Nisku Formation
8454-8467 feet; Red River producing interval
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

97. a. Pennzoil No. 32-10A Tilus (pt)
b. SW NE sec. 10, T. 20 N., R. 4 E.
c. Elevation - 3036 feet KB
d. TD - 6897 feet
e. DST; Red River Dolomite; Rec. 100 feet HG and MCO
8375-8376 feet, Red River producing interval
f. Gas analysis - none
g. In November 1975 GOR was 85; used for fuel at pump

98. a. Shell No. 32-11A Seppala (pt)
b. SW NE sec. 11, T. 20 N., R. 4 E.
c. Elevation - 2978 feet
d. TD - 8650 feet
e. Red River Dolomite
f. Gas analysis - none
g. First GOR was 25. In November 1975 GOR was 85.

99. a. Koch No. 34-11 Tilus-Seppala (pt)
b. SW SE sec. 11, T. 20 N., R. 4 E.
c. Elevation - 3020 feet KB
d. TD - 8420 feet
e. 4841 feet, approximately 130 units total gas; Sundance Formation
4857 feet, 100 units total gas; Sundance Formation
7673 feet, 14 units total gas; 0 units wet gas; Lodgepole Formation?
8205 feet, 14 units total gas; Silurian?
8365 feet, 112 units total gas, 42 units wet gas; Red River Dolomite
8497 feet, 210 units total gas, 110 units wet gas; Red River Dolomite
8334-8338 feet, Red River "A" and 8362-8374 feet, Red River "B" producing intervals
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

100. a. Koch No. 14-12 Seppala (pt)
b. SW SW sec. 12, T. 20 N., R. 4 E.
c. Elevation - 3000 feet
d. TD - 8420 feet
e. 5044 feet, traces of gas show in acid; Hulett Sandstone Member of Sundance Formation
5068 feet, traces of gas show in acid; Hulett Sandstone Member of Sundance Formation
5109 feet, traces of gas show in acid; Hulett Sandstone Member of Sundance Formation

8354-8370 feet, Red River "B" producing interval
f. Gas analysis - none
g. Gas TSTM - used for fuel at pump

101. a. Gulf No. 1 Johnson-Fee (pt)
b. NW SE sec. 14, T. 20 N., R. 5 E.
c. Elevation - 2920 feet
d. TD - 8664 feet
e. 3576 feet, bkg G 250 units, conn G 250 units; Belle Fourche Shale
4746 feet, bkg G 40 units, conn G 48 units; Sundance Formation
5146 feet, bkg G 60 units, conn G 80 units; Sundance Formation
5384 feet, bkg G 60 units, conn G 80 units; TG 150 units; Sundance Formation
5625 feet, bkg G 50 units, conn G 80 units, TG 250 units; Spearfish Formation
5956 feet, bkg G 85 units, conn G 150-175 units, TG 282 units; Minnelusa Formation
6115 feet, bkg G 85 units, conn G 140 units, TG 350 units; Minnelusa Formation
6423 feet, bkg G 20 units, conn G 22 units, Minnelusa Formation
6524 feet, bkg G 12 units, conn G 12 units; Charles Formation
6612 feet, bkg G 12 units, TG 24 units; Charles Formation
6787 feet, bkg G 12 units, conn G 12 units; Charles Formation
6953 feet, bkg G 14 units, conn G 14 units; Mission Canyon Formation
7241 feet, bkg G 12 units; Lodgepole Formation
7333 feet, bkg G 6 units, conn G 6 units; Lodgepole Formation
7446 feet, bkg G 12 units, conn G 12 units; Lodgepole Formation
7623 feet, bkg G 10 units, conn G 12 units; Lodgepole Formation
7738 feet, bkg G 10 units, conn G 12 units; Bakken Formation
7925 feet, bkg G 8 units, conn G 8 units; Duperow Formation
8090 feet, bkg G 7 units; Interlake Group
8228 feet, bkg G 8 units, conn G 8 units; Interlake Group
8338 feet, bkg G 8 units, conn G 8 units; Stoughton Member of Stony Mountain Formation
8400 feet, bkg G 10 units, conn G 10 units; Red River Dolomite
8428 feet, bkg G 10 units, conn G 10 units; Red River "A"
8548 feet, bkg G 10 units, conn G 10 units; TG 110 units; Red River "C"

8601 feet, bkg G 10 units, conn G 10 units; Red River Dolomite
8410-8417 feet, 18 units gas kick; Red River Dolomite
DST No. 1 8419-8437 feet; Red River "A"; Rec. 30 feet sli O and GCM

f. Gas analysis - none

102. a. Gulf No. 1 State-Cave Hills (pt)
b. SE NE sec. 16, T. 20 N., R. 5 E.
c. Elevation - 2923 feet
d. TD - 8653 feet
e. DST No. 1 8350-8400 feet; Red River "A"; Rec. 1350 feet HGCO
f. Gas analysis - none
g. On 3/19/75, flaring small amount of gas
On 3/20/75 flaring some gas
On 3/18/75 at 8653, making some gas
On 3/19/75 at 8653, venting a small amount of gas from the heater treater
On 3/20/75 at 8653, venting a small amount of gas

103. a. Webb No. 22-9 Cenex-Johnson (pt)
b. NW SE sec. 22, T. 20 N., R. 5 E.,
c. Elevation - 2896 feet
d. TD - 8580 feet
e. DST No. 1 8310-8360 feet; Red River "A"; Rec. 3000 feet G, 280 feet sli G and HOCM
8400-8404 feet, bleeding pinpoints G and O; Red River Dolomite
f. Gas analysis - none

104. a. Depco No. 23-22 Federal-Gruse (pt)
b. NE SW sec. 22, T. 20 N., R. 5 E.
c. Elevation - 2918 feet
d. TD - 8500 feet
e. 3984 feet, 5.7% gas volume; Newcastle Sandstone
3987 feet, 5.7% gas volume; Newcastle Sandstone
3996 feet, 2.1% gas volume; Newcastle Sandstone
3997 feet, 2.5% gas volume; Newcastle Sandstone
4018 feet, 5.2% gas volume; Newcastle Sandstone
4020 feet, 5.0% gas volume; Newcastle Sandstone
4032 feet, 3.8% gas volume; Newcastle Sandstone
4034 feet, 5.0% gas volume; Newcastle Sandstone
4039 feet, 4.6% gas volume; Newcastle Sandstone
4044 feet, 5.8% gas volume; Newcastle Sandstone
4060 feet, 7.7% gas volume; Newcastle Sandstone
4084 feet, 6.3% gas volume; Newcastle Sandstone
4102 feet, 3.6% gas volume; Newcastle Sandstone
4108 feet, 4.0% gas volume; Newcastle Sandstone
DST No. 1 8289-8306 feet; Red River "A"; Rec. 644 feet G in pipe, 92 feet HGC black O
DST No. 3 3948-3992 feet; Newcastle Sandtone; Rec. 3032 feet GCW with a few O flecks, gas TSTM--796 feet GCMW with O flakes on top, 2236 feet GCW

f. Gas analysis - none

105. a. Webb No. 26-5 Cenex-Wells (pt)
b. SW NW sec. 26, T. 20 N., R. 5 E.
c. Elevation - 2928 feet
d. TD - 8520 feet
e. DST No. 1 8302-8322 feet; Red River "A"; trace of G
f. Gas analysis - none

106. a. Harrison No. 1 Smith (pt)
b. NW NW sec. 35, T. 20 N., R. 5 E.
c. Elevation - 2959 feet
d. TD - 4450 feet
e. DST No. 1 4024-4108 feet; Muddy sand; Rec. 120 feet MCW, sli GC and 1890 feet HGCMW, gas burned with an orange flame
f. Gas analysis - none

107. a. Webb No. 20-6 Cenex-Federal-Harding (pt)
b. SE NW sec. 20, T. 20 N., R. 6 E.
c. Elevation - 2923 feet
d. TD - 8636 feet
e. DST No. 1 8401-8419 feet; Red River "A"; Rec. 2355 feet sulfurous W with a rainbow of very light O and very faint G odor
f. Gas analysis - none

108. a. Champlin No. 1 Clarkson Estate (pt)
b. Center SW NE sec. 22, T. 21 N., R. 3 E.
c. Elevation - 3280 feet KB
d. TD - 8805 feet
e. DST 8505-8555 feet; Red River Dolomite; Rec. 250 feet O and GCDM
8529-8541 feet, Red River "B" producing interval
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

109. a. Kirkwood No. 14-24 Federal (pt)
b. SW SW sec. 24, T. 21 N., R. 3 E.
c. Elevation - 3151 feet
d. TD - 8523 feet
e. DST No. 1 8475-8498 feet; Red River Dolomite; GTS 180 minutes after final open, burned with a 12 feet flare, sample chamber rec. 1.5 cu. ft gas
f. Gas analysis - none
g. On 10/20/77, swabbed 7 bbls O and a good show of gas in 3 hours

110. a. Kirkwood No. 11-25 Federal (pt)
b. NW NW sec. 25, T. 21 N., R. 3 E.
c. Elevation - 3204 feet
d. TD - 8575 feet
e. DST No. 1A 8520-8555 feet; Red River Dolomite; GTS

in 130 minutes, reversed out 14 bbs of clean gassy black O, Rec. 2357 feet black gassy O, gas 0.1 cu. ft in sample chamber
f. Gas analysis - none
g. Gas TSTM, used as fuel at pump

111. a. Amax No. 2-28 Hansen (pt)
b. NE NE sec. 28, T. 21 N., R. 3 E.
c. Elevation - 3209 feet
d. TD - 8615 feet
e. DST No. 3 8296-8370 feet; Red River Dolomite; Rec. 30 feet sli GCO, 110 feet GOCM filtrate, 90 feet GCO
DST No. 4 8370-8435 feet; Red River Dolomite; sampler had 2150 cc DM, sli GC
f. Gas analysis - none
g. Gas TSTM, used as fuel at pump

112. a. Zapata No. 32-4 State-Clarkson (pt)
b. SW NE sec. 4, T. 21 N., R. 4 E.
c. Elevation - unknown
d. TD - 8695 feet
e. DST No. 1 8665-8680 feet; Red River Dolomite; Rec. 3375 feet G, 215 feet OGCM, 90 feet GMCW
f. Gas analysis - none

113. a. Shell No. 14-4 State-Clarkson (pt)
b. SW SW sec. 4, T. 21 N., R. 4 E.
c. Elevation - 3012 feet KB
d. TD - 8730 feet
e. DST No. 1 8570-8592 feet; Red River Dolomite; Rec. 1875 feet HGCO, 420 feet GCMW
f. In November 1975 GOR was 85

114. a. Phillips No. 6-5 Thune-Federal (pt)
b. SE NW sec. 5, T. 21 N., R. 4 E.
c. Elevation - 2051 feet
d. TD - 8641 feet
e. Red River Dolomite
f. Gas analysis - none
g. Gas TSTM

115. a. Shell No. 32-8 State-Graves (pt)
b. SW NE sec. 8, T. 21 N., R. 4 E.
c. Elevation - 2993 feet KB
d. TD - 8537 feet
e. Red River Dolomite
f. Gas analysis - none
g. On 2/14/60 a 24 hour test yielded 1.722 Mcf gas with a GOR of 41
In November 1975 the GOR was 85

116. a. Alpar No. 1-12 Clarkson (pt)
b. SW SE sec. 12, T. 21 N., R. 4 E.
c. Elevation - 2984 feet

d. TD - 9769 feet
e. DST No. 2 8600-8625 feet; Red River "B"; Rec. 920 feet W and GCO, GOR 199, 0.9 cu. ft gas sample chamber recovery
DST No. 3 8668-8708 feet; Red River "C"; Rec. 120 feet GCM
DST No. 4 8720-8780 feet; Red River "D"; Rec. 4946 feet GCW, tr 0 - GOR 1060, 0.4 cu. ft gas sample recovery
f. Gas analysis - none
g. On 6/27/78, a 24 hour test yielded 1 Mcf gas, GOR 17

117. a. Shell No. 14-9 State (pt)
b. SW SW sec. 9, T. 21 N., R. 4 E.
c. Elevation - 3070 feet KB
d. TD - 8604 feet
e. 8585-8604 feet, Red River Dolomite
f. Gas analysis - none
g. On 10/30/59 a 24 hour test gave a GOR of 82
In November 1975 GOR was 87

118. a. Shell No. 14-15 State (pt)
b. SW SW sec. 15, T. 21 N., R. 4 E.
c. Elevation - 3061 feet KB
d. TD - 8609 feet
e. Red River Dolomite
f. Gas analysis - none
g. On 3/16/60, a 24 hour test yielded 3.526 Mcf gas with a GOR of 82
In November 1975 the GOR was no gas

119. a. Shell No. 14-17 State (pt)
b. SW SW sec. 17, T. 21 N., R. 4 E.
c. Elevation - 3125 feet KB
d. TD - 8581 feet
e. 8576-8581 feet; Red River Dolomite
f. Gas analysis - none
g. On 12/5/59 a 24 hour test gave a GOR of 0.97

120. a. Koch No. 34-28 State-Johnson (pt)
b. SW SE sec. 28, T. 21 N., R. 4 E.
c. Elevation - 3114 feet
d. TD - 8615 feet
e. DST No. 1 8557-8583 feet; Red River "B"; Rec. 93 feet GCO, sli MC
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

121. a. Shell No. 34-29 Johnson (pt)
b. Center SW SE sec. 29, T. 21 N., R. 4 E.
c. Elevation - 3178 feet KB
d. TD - 8607 feet
e. 8602-8607 feet, Red River producing interval

f. Gas analysis - none
g. On 12/29/59 a 24 hour test gave a GOR of 66
On 12/29/60 a 24 hour test yielded 3.168 Mcf with a GOR of 66

122. a. Carter No. 1 Travers (pt)
b. SW SE sec. 31, T. 21 N., R. 4 E.
c. Elevation - 3083 feet
d. TD - 8440 feet
e. Red River Dolomite
f. Gas analysis - none
g. Well produces only enough gas to run treater

123. a. Koch No. 34-33 Haivala (pt)
b. SW SE sec. 33, T. 21 N., R. 4 E.
c. Elevation - 3080 feet
d. TD - 8540 feet
e. Red River Dolomite
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

124. a. Koch No. 14-34 Haivala (pt)
b. SW SW sec. 34, T. 21 N., R. 4 E.
c. Elevation - 3046 feet
d. TD - 8528 feet
e. Red River Dolomite
f. Gas analysis - none
g. Gas TSTM, used as fuel at pump

125. a. Webb No. 36-10 Cenex-State (pt)
b. NW SE sec. 36, T. 21 N., R. 5 E.
c. Elevation - 2892 feet
d. TD - 8719 feet
e. Red River Dolomite
f. Gas analysis - none
g. Gas TSTM, used as fuel at pump

126. a. Anadarko No. 1 Kloyda "A" (pt)
b. SW SE sec. 23, T. 21 N., R. 7 E.
c. Elevation - 2877 feet
d. TD - 8804 feet
e. Gas shows:

	Total gas/methane
8574-8576 feet, Red River Dolomite	20/10
8624-8626 feet, Red River "A"	20/10
8638-8640 feet, Red River "A"	15/10
8658-8660 feet, Red River "B"	20/10
8668-8670 feet, Red River "B"	20/10
8680-8682 feet, Red River "B"	20/10
8710-8712 feet, Red River "C"	60/40
8718-8720 feet, Red River "C"	50/40
8730-8732 feet, Red River "C"	/20

f. Gas analysis - none

127. a. Houston Oil and Minerals No. 31-1 Johnson-Federal (pt)

b. NW NE sec. 1, T. 22 N., R. 2 E.
c. Elevation - 2993 feet
d. TD - 8630 feet
e. DST No. 2 8443-8463 feet; Red River "B"; Rec. 188 feet GOCM, 435 feet GOCM, 194 feet GOCMW
f. Gas analysis - none

128. a. Houston Oil and Minerals No. 11-20 Hoyman-Trust (pt)
b. NW NW sec. 20, T. 22 N., R. 3 E.
c. Elevation - 3119 feet
d. TD - 8571 feet
e. Red River Dolomite
f. Gas analysis - none
g. On 6/16/77, made 5 runs swabbing to pit recovering acid, W, G and O
On 9/11/77, a 24 hour test yielded 2 (est) Mcf with a GOR of 333, gas used as fuel at pump

129. a. Consolidated No. 1-21 Federal (pt)
b. SW NW sec. 21, T. 22 N., R. 3 E.
c. Elevation - 3237 feet
d. TD - 9057 feet
e. DST No. 3 8685-8729 feet; Red River "A" and "B"; Rec. 710 feet sli O and GCSW, 1100 feet G and M emulsion
DST No. 4 8767-8797 feet; Red River "C"; Rec. 80 feet OGWCM, 600 feet sli O and GCSW
f. Gas analysis - none

130. a. Amarex No. 1-8 Federal (pt)
b. SE SE sec. 8, T. 22 N., R. 4 E.
c. Elevation - 3098 feet KB
d. TD - 9053 feet
e. DST No. 2 9029-9050 feet; Red River Dolomite; Rec. 280 feet W and GCM
DST No. 3 9153-9213 feet; Red River "B" and "C"; Rec. 651 feet M and GCSW, 3439 feet sli GCSW
f. Gas analysis - none

131. a. Depco No. 22-24 Travers (pt)
b. SE NW sec. 24, T. 22 N., R. 4 E.
c. Elevation - 3204 feet
d. TD - 9220 feet
e. Red River Dolomite
f. Gas analysis - none
g. Pump is gas powered

132. a. Depco No. 34-24 Travers (pt)
b. SW SE sec. 24, T. 22 N., R. 4 E.
c. Elevation - 2440 feet
d. TD - 5292 feet
e. DST No. 1 8960-9010 feet; Red River "A"; Rec. 310 feet HGCW and sli OCMW
DST No. 3 9070-9102 feet; Red River "C"; Rec.

179 feet HO and GCM, 177 feet HG and sli MCO, 177 feet HG and MCO, 88 feet HG and OCM
DST No. 4 9082-9115 feet; Red River "C"; Rec. 109 feet sli O and HGCM; 94 feet HM and GCO emulsion, 897 feet fluid reversed circulated - 66% looked like clean gassy, black O

f. Gas analysis - none

133. a. Phillips No. 1 Thune "A" (pt)
b. SW NE sec. 31, T. 22 N., R. 4 E.
c. Elevation - 3021 feet
d. TD - 8800 feet
e. 8617-8622 feet, Red River producing interval
f. Gas analysis - none
g. Gas used as fuel at pump

134. a. Phillips No. 1 Thomas "B" (pt)
b. NW SW sec. 32, T. 22 N., R. 4 E.
c. Elevation - 3034 feet
d. TD - 8790 feet
e. Red River Dolomite
f. Gas analysis - none
g. Gas vented

135. a. Luff-Hanover No. 1-5 Janvrin (pt)
b. NE NW sec. 5, T. 22 N., R. 5 E.
c. Elevation - 2985 feet
d. TD - 9106 feet
e. DST No. 3 8968-9002 feet; Red River "C"; Rec. 2250 feet G in drill pipe, 45 feet sli M and GO, 340 feet GM and WCO, 85 feet sli OGCW
DST No. 5 8972-9020 feet; Red River "C"; Rec. 348 feet GOCW, 510 feet GCW
DST No. 6 8972-9028 feet; Red River "C"; Rec. 299 feet HGCO, 186 feet HGCO, 186 feet HGCWCO, 170 feet HGWCO, 255 feet sli OGCW, 340 feet GCW
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

136. a. Luff No. 1-6 Travers (pt)
b. SW SE sec. 6, T. 22 N., R. 5 E.
c. Elevation - 3020 feet
d. TD - 9022 feet
e. DST No. 1 8796-8852 feet; Red River Dolomite; Rec. 752 feet G, 234 feet G and sli OCDM
DST No. 3 8932-9016 feet; Red River "C"; Rec. 4378 feet G, 3638 feet GCO
8953.5-8955 feet, core; dolomite, oil saturated, bleeding O and G; Red River Dolomite
8968-8970 feet, core; bleeding O and G from scattered pinpoint vugs; Red River Dolomite
8997-8998 feet, core; bleeding O and G; Red River Dolomite

f. Gas analysis - none
g. On 11/5/73, a 24 hour test yielded 32 Mcf gas with a GOR of 121, used as fuel at pump

137. a. Luff No. 1-6 Gunderson (pt)
b. NW NW sec. 6, T. 22 N., R. 5 E.
c. Elevation - 3031 feet
d. TD - 9126 feet
e. DST No. 1 8870-8925 feet; Red River "A"; Rec. 643 feet HG and OCW
DST No. 2 9014-9116 feet; Red River "A"; Rec. 276 feet sli GCDM, 1928 feet sli GCSW
f. Gas analysis - none

138. a. Hanover-Luff No. 1-7A Travers (pt)
b. NW NE sec. 7, T. 22 N., R. 5 E.
c. Elevation - 3013 feet
d. TD- 9006 feet
e. Red River Dolomite
f. Gas analysis - none
g. Gas TSTM, used as fuel for treater

139. a. Occidental No. 1 Government-Norreg (pt)
b. NE NW sec. 27, T. 22 N., R. 5 E.
c. Elevation - 3378 feet
d. TD - 9355 feet
e. 5978-5982 feet, ethane kick; Sundance Formation
6077-6079 feet, methane kick; Sundance Formation
6081-6083 feet, methane kick; Sundance Formation
6088-6090 feet, methane kick; Sundance Formation
6095-6100 feet, methane kick; Spearfish Formation
6133-6135 feet, methane kick; TG; Spearfish Formation
6452-6454 feet, methane kick; TG; Opeche Shale
6474-6478 feet, ethane kick; Opeche Shale
6644-6647 feet, methane kick; TG; Minnelusa Formation
6745-6747 feet, methane kick; TG; Minnelusa Formation
6838-6844 feet, methane kick, TG; Minnelusa Formation
6849-6851 feet, ethane kick; Minnelusa Formation
7009-7012 feet, methane kick, TG; Minnelusa Formation
7409-7413 feet, methane kick, TG; Charles Formation
7626-TD bkg methane; Mission Canyon Formation
8317-8320 feet, ethane kick; Lodgepole Formation
8330-8332 feet, ethane kick; Lodgepole Formation
8354-8356 feet, ethane kick; Lodgepole Formation
8534-8540 feet, methane kick, TG; Duperow Formation
8794-8800 feet, methane kick, TG; Interlake Group
8848-8852 feet, ethane kick, TG; Interlake Group
8862-8865 feet; ethane kick; Interlake Group
9209-9213 feet; four minute blender 100 units hot-

wire - chromat C1 - 22%, C2 - 0%, C3 - 45%, C4 - 6.5%, C5 - 26.5%; Red River "A"
9258-9268 feet, methane kick, TG; Red River "B"
9282- feet, methane kick, tr C3, C4, and C5; Red River "B"

f. Gas analysis - none

140. a. Luff-Hanover No. 1-7 Nygaard (pt)
b. SE SE sec. 7, T. 22 N., R. 7 E.
c. Elevation - 3049 feet
d. TD - 9341 feet
e. DST No. 3 9166-9230 feet; Red River "B"; Rec. 540 feet sli O and GCW, fm W
f. Gas analysis - none

141. a. Helmerich and Payne No. 1-31 Miller-Federal (pt)
b. Center NE NE sec. 31, T. 23 N., R. 3 E.
c. Elevation - 3093 feet
d. TD - 8897 feet
e. 8480-8486 feet, gas Quicklook shows presence of dry gas; Gunton(?) Member of Stony Mountain Formation
8678-8681 feet, gas Quicklook shows presence of dry gas; Red River Dolomite
f. Gas analysis - none

142. a. Petroleum, Inc. No. 1 Arithson "F" (pt)
b. NW SE sec. 19, T. 23 N., R. 4 E.
c. Elevation - 3065 feet
d. TD - 9240 feet
e. DST No. 1 8950-8978 feet; Red River "A"; Rec. 558 feet black-brown gassy O, locally MC; 180 feet sli O and GCSW
f. Gas analysis - none
g. On 1/27/79, a 24 hour test yielded 41.6 Mcf with a GOR of 182, gas used as fuel at pump
On 5/18/79 a test yielded 10.0 Mcf/day with a GOR of 53

143. a. Cardinal No. 1 Arithson (pt)
b. NW SW sec. 21, T. 23 N., R. 4 E.
c. Elevation - 3121 feet
d. TD - 9400 feet
e. DST No. 1 9070-9117 feet; Red River "A"; Rec. 4490 feet G, 602 feet, GCO
f. Gas analysis - none

144. a. Quadrant No. 33-28 Buckley (pt)
b. NW SE sec. 28, T. 23 N., R. 4 E.
c. Elevation - 3160 feet
d. TD - 9342 feet
e. DST No. 2 9100-9150 feet; Red River "A"; gas immediately; Rec. 270 feet O and GCM, 360 feet O and GCMW

DST No. 4 9240-9305 feet; Red River "C"; Rec. 3135 feet sli GCSW

f. Gas analysis - none

g. Gas used as fuel at pump

145. a. Depco No. 33-20 Ferkingstad (pt)

b. NW SE sec. 20, T. 23 N., R. 5 E.

c. Elevation - 3021 feet

d. TD - 9233 feet

e. DST No. 1 8908-9040 feet; Red River "A" and "B"; Rec. 912 feet sli GCDM with flecks of O

DST No. 1A 8900-9040 feet; Red River "A" and "B"; Rec. 120 feet G and OCDM, 270 feet G and OCM, 180 feet sli MCGCO, 90 feet G and OCM, 180 feet G and OCMW

DST No. 2 9053-9141 feet; Red River "C"; Rec. 3470 feet black gassy O, 710 feet sli O and GCMW

9118-9132 feet, Red River "C" producing zone

f. Gas analysis - none

g. On 7/28/73, a test yielded 60 Mcf/day gas with a GOR of 227, gas used as fuel and flared

On 1/1-2/75, a 24 hour test yielded 78.1 Mcf with a GOR of 321

On 11/9/77 a 24 hour test yielded 66.148 Mcf with a GOR of 618

On 10/22/78 a 24 hour test yielded 27.99 Mcf with a GOR of 337

On 7/31/79 a 24 hour test yielded 29.4 Mcf with a GOR of 502

On 5/6/80 a 24 hour test yielded 48.22 Mcf with a GOR of 186

146. a. Depco (Hanover) No. 41-22 Otterness (pt)

b. SE NE sec. 22, T. 23 N., R. 5 E.

c. Elevation - 2942 feet

d. TD - 9230 feet

e. DST No. 1 8945-9075 feet; Red River "A" and "B"; Rec. 428 feet very HGCO, 171 feet O and GCM with a GOR of 227

DST No. 2 9080-9170 feet; Red River "C"; Rec. 425 HG and sli OCM

8970-8974 feet, 9038-9050 feet, and 9094-9150 feet, Red River "A", "B" and "C" producing zones, respectively

f. Gas analysis - none

g. Gas TSTM, GOR is 200 (est), used as fuel at pump

147. a. Webb No. 30-8 Njos-Jarvrin (pt)

b. SE NE sec. 30, T. 23 N., R. 5 E.

c. Elevation - 3088 feet

d. TD - 9200 feet

e. DST No. 1 8986-8998 feet; Red River "A"; Rec. 453 feet G, 200 feet sli GC, very sli OCM, 53 feet sli GCWCM

DST No. 2 9104-9158 feet; Red River "C"; Rec. 1670 feet sli G and MCSW

f. Gas analysis - none

g. "A" zone of Red River may have vertical permeability (vertical fractures)

148. a. Luff-Hanover No. 1-34 Foust (pt)
b. SE NW sec. 34, T. 23 N., R. 5 E.
c. Elevation - 2930 feet
d. TD - 9170 feet
e. DST No. 1 8865-8995 feet; Red River "A" and "B"; Rec. 11 feet sli O and GCM, 579 feet sli O and GCM, 100 feet W and GCM
DST No. 2 9000-9095 feet; Red River "C"; GTS in 80 minutes with a 7-foot flare, decreased to 3-foot flare in 95 minutes held constant at 3-foot flare until tool released; Rec. sample No. 3: O and HGCM, 22%G, 24% O, 54% M. Sample chamber had 1 cu. ft gas at 200 psi, fluid in chamber 2350 cc with 8% M, 12% W, 15% G and 65% O
f. Gas analysis - none
g. On 3/10/78 a 24 hour test gave a GOR of 280, gas used for fuel at pump with the excess vented

149. a. Luff No. 1-19 Dworshak (pt)
b. SE NW sec. 19, T. 23 N., R. 6 E.
c. Elevation - 2938 feet
d. TD - 9771 feet
e. DST No. 1 8930-9050 feet; Red River "A" and "B"; Rec. 210 feet very sli GCM, 105 feet very sli O and GCM, 180 feet O and GCM, 180 feet HO and GCM (30% M, 20% O, 50% G)
DST No. 2 9046-9146 feet; Red River "C"; Rec. 1644 feet G in pocket in pipe, 6610 feet HGCO, 255 feet HGCO, 450 feet HG and OCM with a GOR of 200 GTS in 15 minutes of ISI, burned with a 8-foot flare
f. Gas analysis - none
g. Gas vented

150. a. Luff-Hanover No. 1-27 Miller (pt)
b. NW SE sec. 27, T. 23 N., R. 6 E.
c. Elevation - 2895 feet
d. TD - 9270 feet
e. DST No. 1 8980-9050 feet; Red River Dolomite; Rec. 300 feet sli GCM with tr O, 750 feet HG and MC black O (est. 20% M, 40% O, 40% G), 55 feet G and MCSW with a GOR of 290
DST No. 2 9066-9120 feet; Red River Dolomite; GTS in 1 hour 25 minutes into FSI, Rec. 2350 feet G in drill pipe, 155 feet sli O and GCM, 210 feet HG and sli MCO

DST No. 5 9130-9175 feet; Red River "C" (upper part); Rec. 340 feet sli G and MCSW

f. Gas analysis - none

g. Gas TSTM, gas is vented

151. a. Luff No. 1-30 Dworshak (pt)

b. NE SE sec. 30, T. 23 N., R. 6 E.

c. Elevation - 2964 feet

d. TD - 9220 feet

e. DST No. 1 8915-9035 feet; Red River "A" and "B"; Rec. 420 feet sli gassy O flecked DM

DST No. 1A 8914-9035 feet; Red River "A" and "B"; GTS in 60 minutes of FSI, 3- to 5-foot flare for remainder of FSI;
Rec. 180 feet O and GCM (22% O, 54% M, 24% G),
270 feet HO and GCM (36% O, 40% M, 24% G),
180 feet O and GCM (32% O, 46% M, 22% G),
270 feet O-G-M emulsion (2% O, 58% M, 40% G)

DST No. 2 9050-9150 feet; Red River "C"; GTS in 56 minutes of final flow period with 8-foot flare, 10- to 15-foot flare at 61 minutes, 8- to 10-foot flare in 81 minutes and remained the same for duration of test; Rec. 1406 feet gassy O

f. Gas analysis - none

g. Gas used for fuel at pump

152. a. Luff-Hanover No. 1-32 Swanson (pt)

b. SW sec. 32, T. 23 N., R. 6 E.

c. Elevation - 2866 feet

d. TD - 9110 feet

e. DST No. 1 8790-8858 feet; Red River "A"; GTS in 19 minutes of FSI with a 10-foot flare, died in 1 hour 53 minutes of FSI
Rec. 90 feet O-G-M emulsion (50% O, 25% M, 20% G, 5% W), 651 feet GCO, 90 feet G and MCO, 287 feet sli O and GCM

DST No. 2 8876-8934 feet; Red River "B"; Rec. 90 feet O and sli GC M, 460 feet GCM

DST No. 3 8940-9042 feet; Red River "C"; Encountered G at 4185 feet in drill pipe, Rec. 465 feet O-G-M emulsion

f. Gas analysis - none

g. Gas used for fuel at pump

153. a. Smokey No. 24-19 Gruber (pt)

b. SE SW sec. 19, T. 23 N., R. 8 E.

c. Elevation - 2800 feet

d. TD - 9435 feet

e. DST No. 1 9124-9180 feet; Red River "A"; Rec. 1004 feet sli M and GCSW (sli G odor)

f. Gas analysis - none

154. a. Woods No. 1-20 State-Johnson (pt)

b. NE NW sec. 20, T. 21 N., R. 5 E.
c. Elevation - 2968 feet
d. TD - 8822 feet
e. DST No. 1 6790-6956 feet; Lower Charles Formation (Ratcliffe); Rec. 1383 feet very sli G and sli MCW with mild sufurous odor
DST No. 3 8548-8595 feet; Red River "A"; Rec. 2820 feet G, 31 feet HGCO and W emulsion, 470 feet GCO and W emulsion, 933 feet sli G and sli MCW with a scum of O
f. Gas analysis - none

155. a. Luff No. 1-25 Erickson (pt)
b. NE NW sec. 25, T. 23 N., R. 5 E.
c. Elevation - 2969 feet
d. TD - 9255 feet
e. DST No. 1 9006-9060 feet; Red River "A"; Rec. 1260 feet G in pipe; 62 feet HG sli OCM, 180 feet HG sli M and WCO, 90 feet GO and WMC (26% G), 90 feet sli GO and WCM
DST No. 2 9140-9235 feet; Red River "C"; Rec. 150 feet GO and WCM, 652 feet GM and WCO, 4524 feet sli G and OCSW
DST No. 3 9145-9181 feet; Red River "C"; Rec. 2604 feet G in pipe
9105-9110 feet, bleeding O and G; Red River Dolomite
f. Gas analysis - none

156. a. McCutchin No. 3-1 Harrison-State (pt)
b. Center SW sec. 3, T. 15 N., R. 3 E.
c. Elevation - 3159 feet
d. TD - 1300 feet
e. Shannon sand of Pierre Shale
f. Gas analysis - none

157. a. Burton Hawks No. 17-1 State (pt)
b. SE SE sec. 17, T. 15 N., R. 6 E.
c. Elevation - 3010 feet
d. TD - 1500 feet
e. 1440 feet; gas show; Shannon sand of Pierre Shale
f. Gas analysis - none
g. On 5/18/80 flashing G flare with compressor on starting at 1440 feet (est. 100 Mcf/day). Lasted several minutes. Had a 4-foot flare on connection (later gauged 8000 cu ft/day)
On 5/24/80 a 1 hour test yielded 0.900 Mcf, calculated 24 hour rate of 217 Mcf

158. a. Luff No. 1-34 Stearns (pt)
b. NE SW sec. 34, T. 23 N., R. 4 E.
c. Elevation - 3115 feet
d. TD - 9280 feet

e. DST No. 1 8998-9050 feet; Red River "A"; GTS, TSTM at SI, flared G with 10-foot flare--Rec. 90 feet HOC, very HGCM; 180 feet HOHGCM; 180 feet sli OC, sli GC and WCM, 1092 feet sli GCMW
DST No. 2 9100-9161 feet; Red River "B"; Rec. 2000 feet HGCO, 500 feet HGCCM
f. Gas analysis - none
g. On 11/2/79 a 24 hour test yielded 1 Mcf with a GOR of 50, gas used for fuel at pump

159. a. Luff No. 1-32 Janvrin (pt)
b. NE SE sec. 32, T. 23 N., R. 5 E.
c. Elevation - 2974 feet
d. TD - 9120 feet
e. DST No. 2 8852-8919 feet; Red River "A"; GTS in 50 minutes through open manifold with a 1/4 inch choke. Had 5-foot flare. In FSI, opened completely to flare with no chokes. Pressure decreased to 3 psi in 10 minutes and flare went out 160 minutes into FSI
8863-8869 feet, Red River producing zone
f. Gas analysis - none
g. Gas TSTM, used as fuel at pump, GOR was nil

160. a. Kirkwood No. 14-31 Travers (pt)
b. SW SW sec. 31, T. 21 N., R. 4 E.
c. Elevation - 3087 feet
d. TD - 8560 feet
e. DST No. 1 8360-8404 feet; Red River "B"; Rec. 1314 feet GCO, GTS 90 minutes into FSI period
8380-8385 feet, core, bleeding O and G; Red River Dolomite
8385-8398 feet, core, scattered bleeding O and G, some vertical fractures from 8397 to 8398 feet; Red River Dolomite
f. Gas analysis - none

161. a. Webb No. 7-9 Cenex-Turbiville (pt)
b. NE SE sec. 7, T. 20 N., R. 6 E.
c. Elevation - 2869 feet
d. TD - 8560 feet
e. DST No. 1 8335-8355 feet; Red River "A"; Rec. 260 feet gassy O-W emulsion
f. Gas analysis - none
g. Gas TSTM

162. a. Webb No. 11-13 State-Jasper (pt)
b. SW SW sec. 11, T. 19 N., R. 7 E.
c. Elevation - 2851 feet
d. TD - 8410 feet
e. Minor increases in the presence of methane was observed in the DM by the gas detector in the following zones: Fall River, Lakota, Minnelusa,

Upper Charles and basal Lodgepole. The increase over bkg was very slight in every case and averaged less than 30 units on the catalytic detector

f. Gas analysis - none

163. a. Koch No. 32-2E Haivala (pt)
b. SW NE sec. 2, T. 20 N., R. 4 E.
c. Elevation - 2995 feet
d. TD - 8471 feet
e. 8421-8439 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

164. a. Koch No. 14-3E Niemi (pt)
b. Center SW sec. 3, T. 20 N., R. 4 E.
c. Elevation - 3057 feet
d. TD - 8480 feet
e. 8406-8414 and 8436-8448 feet, Red River "A" and "B" producing zones, respectively
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

165. a. Koch No. 11-4 State-Federal (pt)
b. NW NW sec. 4, T. 20 N., R. 4 E.
c. Elevation - 3131 feet
d. TD - 8544 feet
e. 8493-8504 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

166. a. Koch No. 24-4 Federal (pt)
b. SE SW sec. 4, T. 20 N., R. 4 E.
c. Elevation - 3057 feet
d. TD - 8435 feet
e. 8394-8406 feet, Red River "B" producing zone
f. Gas analysis - none
g. On 8/5/78, a 24 hour test yielded 5 Mcf with a GOR of 75, used as fuel at pump

167. a. Koch No. 44-5 Federal (pt)
b. SE SE sec. 5, T. 20 N., R. 4 E.
c. Elevation - 3055 feet
d. TD - 8415 feet
e. DST No. 1 8365-8395 feet; Red River "B"; Rec. 279 feet GCO
2958 feet, 20-40 unit bkg G kick, 60 units above bkg G (20 units); Carlile Shale
8370-8384 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

168. a. Koch No. 11-8 Gardner-Niemi (pt)
b. NW NW sec. 8, T. 20 N., R. 4 E.

c. Elevation - 3052 feet
d. TD - 8383 feet
e. 8338-8354 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

169. a. Koch No. 12-12 Seppala (pt)
b. SW NW sec. 12, T. 20 N., R. 4 E.
c. Elevation - 2971 feet
d. TD - 8422 feet
e. 8328-8346 and 8360-8378 feet, Red River "A" and "B" producing zones, respectively
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

170. a. Koch No. 32-12 Seppala (pt)
b. SW NE sec. 12, T. 20 N., R. 4 E.
c. Elevation - 2965 feet
d. TD - 8456 feet
e. 8409-8420 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

171. a. Koch No. 34-12 Seppala (pt)
b. SW SE sec. 12, T. 20 N., R. 4 E.
c. Elevation - 2990 feet
d. TD - 8462 feet
e. 8411-8429 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

172. a. Koch No. 12-13 Seppala (pt)
b. SW NW sec. 13, T. 20 N., R. 4 E.
c. Elevation - 3153 feet
d. TD - 8619 feet
e. 8513-8532 feet; Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

173. a. Koch No. 32-13 Seppala (pt)
b. SW NE sec. 13, T. 20 N., R. 4 E.
c. Elevation - 3092 feet
d. TD - 8533 feet
e. Red River Dolomite
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

174. a. Koch No. 32-14 E Tilus-Seppala (pt)
b. SW NE sec. 14, T. 20 N., R. 4 E.
c. Elevation - 3131 feet
d. TD - 8614 feet
e. 8472-8490 and 8540-8560 feet, Red River "B" and "C" producing zones, respectively
f. Gas analysis - none

g. Gas TSTM, used for fuel at pump

175. a. Koch No. 32-20 State-Federal-Rockroth (pt)
b. SW NE sec. 20, T. 20 N., R. 4 E.
c. Elevation - 3109 feet
d. TD - 8480 feet
e. 3430-3921 feet, several small gas shows up to 200 units; Greenhorn Limestone
8308-8324 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

176. a. Koch No. 14-7 Seppala (pt)
b. SW SW sec. 7, T. 20 N., R. 5 E.
c. Elevation - 2948 feet
d. TD - 8456 feet
e. 5113 feet, sli G show in acid; Sundance Formation
8365-8375 feet, 70 unit gas buildup; Stony Mountain Formation
80 unit gas show; Stony Mountain Formation
DST No. 1 8394-8456 feet; Red River "B"; Rec. 120 feet HO and sli GCM
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

177. a. Gulf No. 1-16 Johnson -State (pt)
b. SE SW sec. 16, T. 20 N., R. 5 E.
c. Elevation - 2923 feet
d. TD - 8662 feet
e. Red River Dolomite
f. Gas analysis - none

178. a. Koch No. 12-18 Seppala (pt)
b. SW NW sec. 18, T. 20 N., R. 5 E.
c. Elevation - 3032 feet
d. TD - 8520 feet
e. 8481-8497 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

179. a. Webb No. 27-9 Niemi (pt)
b. NE SE sec. 27, T. 20 N., R. 5 E.
c. Elevation - 3002 feet KB
d. TD - 8567 feet
e. 8358 feet; circulating, after 75 minutes and 90 minutes samples bleeding pinpoints of O and G; Red River "A"
f. Gas analysis - none

180. a. Webb No. 6-6 Cenex-Brown (pt)
b. SE NW sec. 6, T. 20 N., R. 6 E.
c. Elevation - 2928 feet KB
d. TD - 8760 feet
e. Red River dolomite

f. Gas analysis - none
g. Used for fuel at pump

181. a. Houston O and M No. 12-12 State (pt)
b. SW NW sec. 12, T. 21 N., R. 3 E.
c. Elevation 3115 feet KB
d. TD - 8805 feet
e. DST No. 1 8583-8630 feet; Red River "B"; Rec. 120 feet HGCMCO, 186 feet HGCOCM, 372 feet GC sli O and MCW with a GOR of 102
DST No. 4 8588-8610 feet; Red River Dolomite; Rec. 360 feet very sli GCSW
8580-8592 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

182. a. Koch No. 12-13 Graves (pt)
b. SW NW sec. 13, T. 21 N., R. 3 E.
c. Elevation - 3103 feet
d. TD - 8576 feet
e. DST No. 1 8516-8558 feet; Red River Dolomite; Rec. 675 feet G above fluid
8536-8552 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

183. a. Kirkwood No. 21-23 Federal (pt)
b. NE NW sec. 23, T. 21 N., R. 3 E.
c. Elevation - 3158 feet
d. TD - 8665 feet
e. DST No. 2 8480-8503 feet; Red River Dolomite; Rec. 428 feet sli GCO
f. Gas analysis - none

184. a. Kirkwood No. 43-23 Clarkson (pt)
b. NE SE sec. 23, T. 21 N., R. 3 E.
c. Elevation - 3154 feet
d. TD - 8518 feet
e. DST No. 1 8471-8498 feet; Red River Dolomite; GTS in 90 minutes after FSI buring with a 1-inch flare, reversed out 410 feet gassy OCDM
f. Gas analysis - none
g. On 11/22/77, bled off G, rec. 1200 feet gassy O and 800 feet W on swab
On 6/22/78, a 24 hour test yielded a GOR of 33

185. a. Kirkwood No. 34-25 Federal (pt)
b. SW SE sec. 25, T. 21 N., R. 3 E.
c. Elevation - 3158 feet KB
d. TD - 8510 feet
e. 8475-8495 feet; under high scope power, chips bleeding drops of O and G; Red River "B"
DST No. 1 8474-8495 feet; Red River "B"; Rec. 180 feet sli O and HGCM, 1240 feet HGC foamy

jelled black O, 625 feet sli G and OCMW, 768 feet HO and GCW cushion

f. Gas analysis - none

186. a. Mosbacher No. 26-1 Clarkson (pt)
b. NW SW sec. 26, T. 21 N., R. 3 E.
c. Elevation - unknown
d. TD - unknown
e. DST No. 1 8410-8427 feet; Red River "B"; Rec. 85 feet GCM and O
f. Gas analysis - none

187. a. Koch No. 34-36 State (pt)
b. SE SW sec. 36, T. 21 N., R. 3 E.
c. Elevation - 3091 feet
d. TD - 8368 feet
e. 8344-8358 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

188. a. Koch No. 32-36 State (pt)
b. SW NE sec. 36, T. 21 N., R. 3 E.
c. Elevation - unknown
d. TD - unknown
e. DST No. 2 8395-8444 feet; Red River Dolomite; Rec. 2265 feet G above fluid, 404 feet O and G
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

189. a. Koch No. 12-36 State (pt)
b. SW NW sec. 36, T.21 N., R. 3 E.
c. Elevation - 3114 feet
d. TD - 8406 feet
e. 8368-8378 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

190. a. Koch No. 14-8 Graves-Federal (pt)
b. SW SW sec. 8, T. 21 N., R. 4 E.
c. Elevation - 3070 feet
d. TD - 8645 feet
e. 8612-8622 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

191. a. Koch No. 34-8 Buffalo Red River Unit (pt)
b. SW SE sec. 8, T. 21 N., R. 4 E.
c. Elevation - 3077 feet
d. TD - 8639 feet
e. 8598-8608 feet, Red River "B" producing zone
f. Gas analysis - none

192. a. Koch No. 14-17 Buffalo Red River Unit (pt)
b. SW SW sec. 17, T. 21 N., R. 4 E.

c. Elevation - 3121 feet
d. TD - 8619 feet
e. 8579-8589 feet, Red River "B" producing zone
f. Gas analysis - none

193. a. Koch No. 32-17 Buffalo Red River Unit (pt)
b. SW NE sec. 17, t. 21 N., R. 4 E.
c. Elevation - 3105 feet
d. TD - 8647 feet
e. 8616-8625 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

194. a. Koch No. 12-18 Graves (pt)
b. SW NW sec. 18, T. 21 N., R. 4 E.
c. Elevation - 3124 feet
d. TD - 8610 feet
e. 8564-8576 feet, Red River "B" producing zone
f. Gas analysis - none
g. Gas TSTM

195. a. Kirkwood No. 12-31 Federal (pt)
b. SW NW sec. 31, T. 21 N., R. 4 E.
c. Elevation - 3130 feet
d. TD - 8500 feet
e. DST No. 1 8443-8468 feet; Red River "A"; GTS during FSI,GTS in 90 minutes, no flare
f. Gas analysis - none

196. a. Koch No. 21-33E Haivala-Travers (pt)
b. NE NW sec. 33, T. 21 N., R. 4 E.
c. Elevation - 3095 feet
d. TD - 8590 feet
e. 8536-8552 feet, Red River "B" producing zone
f. Gas analysis - none

197. a. Koch No. 32-33(a) Haivala (pt)
b. SW NE sec. 33, T. 21 N., R. 4 E.
c. Elevation - 3089 feet
d. TD - 8590 feet
e. DST No. 2 8525-8550 feet; Red River Dolomite; Rec. 700 feet G, 900 feet GMWCO
8528-8544 feet, Red River producing zone
f. Gas analysis - none
g. Gas TSTM, used for fuel at pump

198. a. Luff No. 1-24 Knaus (pt)
b. SW SW sec. 24, T. 21 N., R. 5 E.
c. Elevation - 3853 feet
d. TD - 8706 feet
e. DST No. 1 8400-8476 feet; Red River "A"; Rec. 5115 feet G, 1832 feet very sli MC and HGCO
8455-8464 and 8614-8621 feet, Red River "A" and "C" producing zones, respectively

f. Gas analysis - none
g. On 2/4/79, a 24 hour test yielded 4.8 Mcf with a GOR of 60, used for fuel at pump

199. a. Webb No. 8-2 Anderson (pt)
b. NW NE sec. 8, T. 21 N., R. 6 E.
c. Elevation - 2981 feet
d. TD - 9098 feet
e. 8846-8856, 8919-8949, and 8976-9000 feet; Red River "A", "B", and "C" producing intervals, respectively
f. Gas analysis - none
g. Gas TSTM, GOR 24.4, used for fuel at pump

200. a. Marmik No. 1 Stearns (pt)
b. NE NE sec. 5, T. 22 N., R. 4 E.
c. Elevation - 3371 feet KB
d. TD - 9508 feet
e. DST No. 1 9223-9260 feet; Red River "A"; Rec. 382 feet gassy sli OCM, 558 feet gassy sli OCMW
f. Gas analysis - none

201. a. Luff No. 1-2 M. Feist (pt)
b. SW NE sec. 2, T. 22 N., R. 5 E.
c. Elevation - 2992 feet
d. TD - 9185 feet
e. DST No. 1 8920-8980 feet; Red River "A"; Rec. 270 feet G in pipe, 279 feet very sli G and OCM, 186 feet O-G-M emulsion and WCM
DST No. 2 9006-9070 feet; Red River "B"; Rec. 180 feet G in pipe, 312 feet sli GCDM, 93 feet G and WCM, 93 feet G and MCW, 1205 GCW
f. Gas analysis - none

202. a. Luff-Hanover No. 1-11 Feist (pt)
b. NE NE sec. 11, T. 22 N., R. 5 E.
c. Elevation - 2959 feet
d. TD - 9126 feet
e. DST No. 1 8854-8919 feet; Red River "A"; GTS in 35 minutes into FSI, 7-foot flare remained to end of SI period, Rec. 447 feet G and MCO, 707 feet O and GCM (36% G)
DST No. 2 9014-9101 feet; Red River "C"; Rec. 1860 feet gassy and sli OCMW (36% G), 5174 feet gassy W with trace O, 677 feet gassy W
8890-8900 feet, Red River "A" producing zone
f. Gas analysis - none
g. Gas used as fuel at pump

203. a. Petroleum, Inc. No. 1-23 Feist (pt)
b. SW NE sec. 23, T. 22 N., R. 5 E.
c. Elevation - 3068 feet
d. TD - 9214 feet

e. DST No. 1 8926-8966 feet; Red River "A"; Trace G in drill pipe 1000 feet above fluid, Rec. 279 feet HO and GCM, 372 feet HO and GCW
f. Gas analysis - none

204. a. Petroluem, Inc. et al. No. 1 Toft (pt)
b. SE NE sec. 32, T. 22 N., R. 6 E.
c. Elevation - 3819 feet
d. TD - 9200 feet
e. DST No. 2 9096-9128 feet; Red River "C"; Rec. 744 feet sli GCMW, 4529 feet sli GCSW with sli scum O
f. Gas analysis - none

205. a. Houston O and M No. 13-25 State (pt)
b. NW SW sec. 25, T. 23 N., R. 2 E.
c. Elevation - 3023 feet
d. TD - 8725 feet
e. DST No. 1 8484-8514 feet; Red River "B"; Rec. 93 feet sli GCW
f. Gas analysis - none

206. a. Petroleum, Inc. No. 1 State (pt)
b. Center NE SE sec. 24, T. 23 N., R. 3 E.
c. Elevation - 3057 feet
d. TD - 9180 feet
e. DST No. 3 9074-9130 feet; Red River "C"; Rec. 548 feet sli GO and WCM
DST No. 5 9066-9110 feet; Red River "C"; 600 feet G in drill pipe above fluid, Rec. 720 feet sli O and GCM, 2380 feet sli O and GCSW
f. Gas analysis - none

207. a. Luff No. 1-19 Njos (pt)
b. NW SE sec. 19, T. 23 N., R. 5 E.
c. Elevation - 3031 feet
d. TD - 9170 feet
e. DST No. 1 8972-8981 feet; Red River "A"; GTS 60 minutes into SI period with a 10- to 15-foot flare through a 1/8-inch choke--ISI period final flow: flare continued to burn at 3-5 feet through 1/4-inch choke throughout the flow period. FSI: flare contined to burn but decreased gradually to 1-2 feet throughout FSI period; Rec. 180 feet HGCDM
DST No. 3 9030-9084 feet; Red River "B"; Rec. 90 feet sli GOCM, 270 feet HGMCO, 90 feet HGOMCW, 180 feet sli GCMW
f. Gas analysis - none

208. a. Double Eagle No. 1-3 State (pt)
b. Center SW sec. 3, T. 17 N., R. 1 E.
c. Elevation - 3265 feet
d. TD - 2005 feet

e. Shannon sand of Pierre Shale
f. Gas analysis - none

209. a. Double Eagle No. 1-2 State (pt)
b. NE NW sec. 2, T. 17 N., R. 1 E.
c. Elevation - 3310 feet
d. TD - 1550 feet
e. Shannon sand of Pierre Shale
f. Gas analysis - none

210. a. Double Eagle No. 1-26 State (pt)
b. Center SE sec. 26, T. 18 N., R. 1 E.
c. Elevation - 3297 feet
d. TD - 1550 feet
e. Shannon sand of Pierre Shale
f. Gas analysis - none

HUGHES COUNTY

1. a. State House Well (ww)
b. NW NW NE NW sec. 4, T. 110 N., R. 79 W.
c. Elevation - 1474 feet
d. TD - 1350 feet
e. 533-650 feet, gas; Niobrara Formation/Carlile Shale interval
1130-1140 feet, gas; Dakota Sandstone
1150 feet, some gas; Dakota Sandstone
1175-1185, gas in water sand; Dakota Sandstone
1246 feet, gas; Dakota Sandstone
f. Gas analysis - methane, 94%; CO2, 0.06%; O2, 0.13%; illuminants (C2H4, etc) 0.0%; CO, 0.0%; H2, 0.00%; higher hydrocarbons (C2H6, etc), 0.0%; inert gas (N2, etc.) 5.7%; total, 99.89%; BTU, 907
g. Supply of gas 1/6th of total flow; gas supply in 1910 59 cu. ft/minute, 3540 cu. ft/hr., 84960 cu. ft/day, 31,010,400 cu. ft/year; in 1917 well flowing 16,000 cu. ft/day or approximately 11.1 cu. ft/minute

2. a. Old City Well Pierre No. 2 (ww)
b. Legal - unknown
c. Elevation - 1437 feet
d. TD - 1281 feet
e. 554-671 feet, blue shale with gas; Niobrara Formation/Carlile Shale interval
1125-1135 feet, yellow sand rock with water and gas; Dakota Sandstone
1170-1180 feet, sand rock with water and gas; Dakota Sandstone
f. Gas analysis - sampled 6/12/39 from a Pierre City well; low temperature fractional analysis: air, 10.62%; CO2, 0.74%; Fractional analysis

on air and CO2 free basis: methane, 74.8%; ethane, 13.2%; propane, 10.7%, GPM 2.62; iso-butane, 0.4%, GPM 0.13; N-butane, 0.9% GPM 0.25

3. a. Old City Well Pierre No. 1 (ww)
   b. SW NW sec. 4, T. 110 N., R. 79 W.
   c. Elevation - 1436 feet
   d. TD - approximately 1350 feet
   e. Dakota Sandstone
   f. Gas analysis - none

4. a. Pierre City Well No. 3 (ww)
   b. NW SE sec. 4, T. 110 N., R. 79 W.
   c. Elevation - 1439 feet
   d. TD - 1226? feet
   e. 1093-1220 feet, gas; Graneros Shale/Dakota Sandtone
   f. Gas analysis - none

5. a. Indian School Well (ww)
   b. Extreme NW NW sec. 11, T. 110 N., R. 79 W.
   c. Elevation - 1455 feet
   d. TD - 1192 feet
   e. 800 feet, strong flow of gas in dark gray shale; Graneros Shale
      875-1150 feet, blue shale with streaks of sand and rock below; Graneros Shale/Dakota Sandstone
   f. Gas analysis - none

6. a. City of Pierre No. 2 (ww)
   b. SW NW sec. 4, T. 110 N., R. 79 W.
   c. Elevation - 1436 feet
   d. TD - 1351 feet
   e. 1320-1326 feet, gas; Dakota Sandstone
   f. Gas analysis - none

7. a. Pierre Natural Gas and Power Company Well (ww and fu)
   b. SW SW SW SW SE sec. 32, T. 111 N., R. 79 W.
   c. Elevation - approximately 1440 feet
   d. TD - 1263 feet
   e. 0-10 feet, river sand, carries a little gas; Pleistocene/Recent
      533 feet, gas in shale; Pierre Shale
      600 feet, gas; Niobrara Formation
      1130 feet, gas and water; Dakota Sandstone
      1175 feet, gas and water; Dakota Sandtone
      1205 feet, gas; Dakota Sandstone
      1260 feet, main water and gas; Dakota Sandstone
   f. Gas analysis - none
   g. Once supplied about 40,000 cu. ft gas to the City daily

8. a. Blunt area wells (ww)

b. A few miles north of town
c. Elevation - unknown
d. TD - unknown
e. Pierre Shale
f. Gas analysis - none

9. a. Blunt City well (ww)
b. SE sec. 8, T. 112 N., R. 76 W.
c. Elevation - 1615 feet
d. TD - 1400 feet
e. 800-860 feet, gas; Newcastle Sandstone
f. Gas analysis - none

10. a. Locke Hotel well (ww)
b. Legal - unknown
c. Elevation - unknown
d. TD - 1300 feet
e. Dakota Sandstone
f. Gas analysis - none
g. There was an abundance of gas, which was utilized for heating, lighting, and cooking.

11. a. Unnamed well (ww and fu)
b. Center SW SW SE sec. 32, T. 111 N., R. 79 W.
c. Elevation - unknown
d. TD - unknown
e. Probably similar to (7) (e)
f. Gas analysis - none
g. Once supplied about 40,000 cu. ft gas to the City daily

12. a. Unnamed shallow wells (ww)
b. North of Pierre
c. Elevation - unknown
d. TD - unknown
e. Pierre Shale
f. Gas analysis - none

13. a. Capitol No. 2 Well (ww)
b. SE SW sec. 4, T. 110 N., R. 79 W.
c. Elevation - 1469 feet
d. TD - 1430 feet
e. 1288-1290 feet, gas; Dakota Sandstone
f. Gas analysis - none

14. a. Kerlyn-Dry Run No. 1, No. 1A (pt)
b. SW NE NE sec. 7, T. 110 N., R. 78 W.
c. Elevation - 1453 feet
d. TD - 1396 feet for No. 1; 1575 for No. 1A
e. 1540 feet, gas; Lakota Formation
Large flow dry gas; top of Dakota Formation
f. Gas analysis - none

15. a. State of South Dakota (ww)

b. SW sec. 22, T. 113 N., R. 81 W.
c. Elevation - 1576 feet
d. TD - unknown
e. Much gas; Dakota Formation
f. Gas analysis - none

16. a. George A. Schmitt No. 1 (ww)
b. SE sec. 3, T. 109 N., R. 76 W.
c. Elevation - 1432 feet
d. TD - 816 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

17. a. George A. Schmitt No. 2 (ww)
b. NE sec. 34, T. 110 N., R. 76 W.
c. Elevation - 1490 feet
d. TD - 910 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

18. a. J. A. Wies well (ww)
b. SW sec. 12, T. 112 N., R. 77 W.
c. Elevation - 1761 feet
d. TD - approximately 1400 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well, contains a lot of gas which ignites with a match

19. a. Karl L. Graf well (ww)
b. SE sec. 20, T. 111 N., R. 76 W.
c. Elevation - 1670 feet
d. TD - 1150 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well, gas is present in sufficient quantity to light with a match

20. a. Tony Etzkorn well (ww)
b. SW sec. 6, T. 109 N., R. 75 W.
c. Elevation - 1422 feet
d. TD - 836 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well, small amount of gas

21. a. Oliver Oleson well (ww)
b. NE sec. 14, T. 110 N., R. 75 W.
c. Elevation - 1731 feet
d. TD - 1330 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none

g. Artesian well, a very little gas

22. a. Miles Robbins well (ww)
b. SE sec. 24, T. 111 N., R. 75 W.
c. Elevation - 1743 feet
d. TD - 1400 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none

23. a. Art Garrity well (ww)
b. NW sec. 26, T. 112 N., R.75 W.
c. Elevation - 1763 feet
d. TD - 1452 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well, a little gas

24. a. Pierre City No. 4 (ww)
b. SW NW sec. 4, T. 110 N., R. 79 W.
c. Elevation - 1436 feet
d. TD - 1351 feet
e. 850 feet, dark shale with a little gas; Graneros Shale
1170-1175 feet, gas; Dakota Sandstone
1320-1326 feet, gas; Lakota Sandstone
f. Gas analysis - none

25. a. State Capitol No. 1 (ww)
b. SE SW sec. 4, T. 110 N., R. 79 W.
c. Elevation - 1469 feet
d. TD - 1450 feet
e. 1288-1290 feet, gas; Dakota Sandstone
f. Gas analysis - none

26. a. Pierre Indian School No. 2 Government (ww)
b. NW sec. 11, T. 110 N., R. 79 W.
c. Elevation - 1430-1440 feet
d. TD - 1540 feet (meaningless depth according to the Norbeck Company)
e. Gas; Dakota Sandstone
f. Gas analysis - none

27. a. Pierre City No. 3 (ww)
b. NW SE sec. 4, T. 110 N., R. 79 W.
c. Elevation - 1438 feet
d. TD - 1226? feet
e. 1093-1220 feet, gas; Dakota Sandstone
f. Gas analysis - none

28. a. Unnamed wells (ww)
b. SW NW sec. 4, T. 110 N., R. 79 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone

f. Gas analyis - none
g. Three wells--each two blocks apart

29. a. Unnamed well (ww)
b. Center N line NE NW NE sec. 5, T. 110 N., R. 79 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone
f. Gas analysis - none

30. a. Shogrin No. 1 B. F. Kleinschmidt (pt)
b. NW NW sec. 12, T. 111 N., R. 75 W.
c. Elevation - 1867 feet
d. TD - 2414 feet
e. 2280-2290 feet; 20 unit gas kick on hotwire; Lodgepole Formation
2290-2304 feet; methane/ethane, 15 units; butane/propane, trace; Lodgepole Formation
2340-2350 feet; methane/ethane, 20 units; butane/propane, 2 units; Lodgepole Formation
f. Gas analysis - none

31. a. Anschutz No. 1 State (pt)
b. NE SW sec. 16, T. 111 N., R. 79 W.
c. Elevation - 1819 feet
d. TD - 1651 feet
e. 1427 feet, burned 4- to 6-foot flare for 4 minutes; Dakota Sandstone
f. Gas analysis - none

32. a. Anschutz No. 1 Jones (pt)
b. NE SW sec. 1, T. 111 N., R. 79 W.
c. Elevation - 1803 feet
d. TD - 1655 feet
e. DST No. 1 1514-1528 feet; Dakota Sandstone; sli show of G recovered in fresh water, amount about that in a carbonate drink
f. Gas analysis - none

33. a. Tom Hanson well (ww)
b. SW sec. 8, T. 108 N., R. 75 W.
c. Elevation - 1538 feet
d. TD - approximately 1200 feet
e. Gas, Dakota Sandstone
f. Gas analysis - none

34. a. Bob Hood well (ww)
b. NW sec. 22, T. 112 N., R. 80 W.
c. Elevation - 1738 feet
d. TD - approximately 1400 feet
e. Some gas; Dakota Sandstone
f. Gas analysis - none

35. a. Irvin Korkow well (ww)

b. NW sec. 1, T. 110 N., R. 77 W.
c. Elevation - 1713 feet
d. TD - 2200 feet
e. May be a little gas; Dakota Sandstone
f. Gas analysis - none

36. a. Pierre Airport well (ww)
b. SE SE NE sec. 35, T. 111 N., R. 79 W.
c. Elevation - 1708 feet
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none

37. a. Blunt City well (ww)
b. Center sec. 9, T. 112 N., R. 76 W.
c. Elevation - 1621 feet
d. TD - 1440 feet
e. 800 feet, some gas; Carlile Shale
f. Gas analysis - none

HUTCHINSON COUNTY

1. a. Unnamed well (ww)
b. South of Freeman
c. Elevation - unknown
d. TD - unknown
e. Gas; Pleistocene
f. Gas analysis - none

HYDE COUNTY

1. a. H. E. Simonette well (ww)
b. NE sec. 19, T. 115 N., R. 72 W.
c. Elevation - 1885 feet
d. TD - 1556 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Could light the gas bubbles and watch them burn; artesian well

2. a. Unnamed well (ww)
b. NE sec. 2, T. 114 N., R. 72 W.
c. Elevation - 1714 feet
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

3. a. Elmer Larson well (ww)
b. NE sec. 8, T. 114 N., R. 72 W.

c. Elevation - 1722 feet
d. TD - 1400 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

4. a. L. J. Ankrum well (ww)
b. SW sec. 35, T. 114 N., R. 72 W.
c. Elevation - 1700 feet
d. TD - 1420 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well, did not have too much gas

5. a. Charles Clemmet well (ww)
b. SE sec. 28, T. 114 N., R. 71 W.
c. Elevation - 1674 feet
d. TD - 1407 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

6. a. Raymond Carlson well (ww)
b. SW sec. 4, T. 114 N., R. 71 W.
c. Elevation - 1682 feet
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Some gas is present

7. a. Fred Wemmering well (ww)
b. NW sec. 10, T. 112 N., R. 73 W.
c. Elevation - 1796 feet
d. TD - 1470 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Some gas

JACKSON COUNTY

1. a. Campbell No. 1 Dale (pt)
b. SW SW sec. 1, T. 1 S., R. 22 E.
c. Elevation - 3930 feet
d. TD - 3930 feet
e. DST 3350-3372 feet; Minnelusa Formation; Rec. 90 feet WCM with a very sli G odor
f. Gas analysis - none

2. a. Hanagan No. 1 Jackson-Federal (pt)
b. NW SW sec. 28, T. 1 S., R. 18 E.
c. Elevation - 2589 feet
d. TD - 4864 feet

e. 1600-1700 feet, gas shows on gas detector; Codell Sandtone Member of Carlile Shale
f. Gas analysis - none

3. a. Sorelle No. 1 State (pt)
b. NE NW sec. 16, T. 1 S., R. 22 E.
c. Elevation - 2416 feet KB
d. TD - 4780 feet
e. DST No. 1 3535-3557 feet; Minnelusa Formation; Rec. 20 feet very sli O and GCM
f. Gas analysis - none

4. a. Belvidere City well (ww)
b. SW NE sec. 32, T. 2 S., R. 24 E.
c. Elevation - 2300 feet
d. TD - 2910 feet
e. Gas; Sundance Formation
f. Gas analysis - none

JERAULD COUNTY

1. a. Otto Bathke well (ww)
b. SW sec. 21, T. 108 N., R. 64 W.
c. Elevation - 1452 feet
d. TD - 860 feet
e. Gas; interval unknown
f. Gas analysis - none

JONES COUNTY

1. a. Capa RR well (ww)
b. Center N line sec. 27, T. 2 N., R. 26 E.
c. Elevation - 1774 feet
d. TD - 1690 feet
e. 1560 feet, gas; Dakota Sandstone
f. Gas analysis - none
g. Gas rises in considerable amount; well had enough hot water and gas to supply RR station

2. a. Unnamed well (ww)
b. Center SW sec. 35, T. 2 N., R. 30 E.
c. Elevation - unknown
d. TD - 35 feet
e. 30 feet, gas; Pierre Shale
f. Gas analysis - none
g. "In one well went down 30 feet, struck rock and went down to remove rock but gas was so bad had to abandon well and cover it up."

3. a. Murdo well (ww)
b. Legal unknown

c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Odorless gas after they struck flow sand (Dakota), enough so that you could light it at the casing head and it would burn all the while they were running in the tools.

4. a. R. T. Wheeler well or Jones well (ww)
b. 14 miles NE of Murdo
c. Elevation - unknown
d. TD - between 1530 and 1580 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none

KINGSBURY COUNTY

1. a. Charles E. Johnson well (ww)
b. SE SE sec. 24, T. 110 N., R. 53 W.
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Gas discovered in well drilled here 20 to 25 years ago.

2. a. William Thaden well (ww)
b. SW sec. 17, T. 112 N., R. 57 W.
c. Elevation - 1634 feet
d. TD - 1300 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well, a slight amount of gas

LAWRENCE COUNTY

1. a. Preston No. 1 Thompson (pt)
b. SW NE sec. 21, T. 6 N., R. 4 E.
c. Elevation - 3550 or 3600 feet
d. TD - 927 or 957 feet
e. 898-903 feet, gas show; Minnelusa Formation
f. Gas analysis - none
g. Cable tools

2. a. Haas No. 1 (pt?)
b. NE NW sec. 24, T. 7 N., R. 4 E.
c. Elevation - 3235 feet
d. TD - 556 feet
e. Gas show; interval unknown

f. Gas analysis - none

3. a. Preston No. 2 Thompson (pt)
   b. NW SW sec. 22, T. 6 N., R. 4 E.
   c. Elevation - 3540-3580 feet
   d. TD - 999 or 1020 feet
   e. 973-979 feet, inflammable gas; Amsden Formation
   f. Gas analysis - none
   g. Porous sandstone so filled with inflammable gas as to keep entire water flow alive and raised it upwards to 1 foot over casing top

4. a. St. Onge area wells (pt)
   b. On anticline 4 miles east of St. Onge
   c. Elevation - unknown
   d. TD - unknown
   e. See below
   f. Gas analysis - see below
   g. Following data from letters to R. J. Hutchins, Secretary, Western Dakota Oil Company ("Norbeck Associates"), Redfield, SD (March, 1921)

Well No. 1 - Dry gas encountered at top of "Dakota" (Fall River) Sandstone--180 feet. Pressure not measured but probably greater than 100 psi; not enough to lift long column of heavy slush, but after bailing out about 100 feet, gas blew out everything; drove plugs in pipe but gas came up outside; pulled pipe, wrapped with ?, drove back with 1100 pound hammer to keep gas from coming up outside pipe. Invisible and at first little odor; reduced hole from 8 to 3 inches--gas had blue appearance and smelled strongly of petroleum. Would not burn. Smothered gas engine and lanterns when breeze blowing into shed.

Well No. 2 - Within 40 feet of first hole. Gas got away for a few days; pressure good, did not diminish. Cemented off gas, drilled hole into lower ? of Dakota and left it as a water supply for the ranch.

Well No. 3 - Hole drilled 80 rods west into gas sand. Kept hole filled with heavy slush--no gas.

Gas encountered by another company about "four" ("two or three") miles southeast of well No. 1. Comes up with water; sample from this hole.

Well No. 4 - Within a mile of No. 1. Gas from dry sand approximately 10 feet shallower than first sandstone ? of Dakota--sample.

Gas encountered on high arch of anticline about 1 mile west (does not say west of what) Newspaper clipping of November 24, 1931: Says St. Onge gas was not helium.

Paul E. Bellany, Rapid City . . . denied statements made in St. Onge yesterday that gas tests at that time revealed 1.9% helium.

"No helium was found after numerous tests, including an official government analysis, the product being mostly nitrogen."

St. Onge structure--seven or eight test holes were drilled for oil, but gas was found instead. Final test was made in the naval laboratories where it wad disclosed that the gas was nitrogen, . . .

LINCOLN COUNTY

1. a. Unnamed well (ww)
   b. Center sec. 31, T. 96 N., R. 51 W.
   c. Elevation - unknown
   d. TD - 92 feet
   e. Gas; Pleistocene
   f. Gas analysis - none
   g. One place struck gas, it just roared and had pressure that would blow a post up out of the hole we bored.

LYMAN COUNTY

1. a. J. W. Truman ranch well (ww)
   b. SW SW NW sec. 1, T. 102 N., R. 73 W.
   c. Elevation - unknown
   d. TD - 370 feet
   e. Gas; Codell Sandstone Member of Carlile Shale
   f. Gas analysis - none
   g. Artesian well, gas comes out with water

2. a. Unnamed well (ww)
   b. Center S line SW sec. 1, T. 102 N., R. 73 W.
   c. Elevation - unknown
   d. TD - approximately 350 feet
   e. Gas; Codell Sandstone Member of Carlile Shale
   f. Gas analysis - none

3. a. Hacker Brothers well (ww)
   b. Center N 1/2 NW NE sec. 23, T. 102 N., R. 73 W.
   c. Elevation - unknown
   d. TD - approximately 350 feet
   e. Gas; Codell Sandstone Member of Carlile Shale
   f. Gas analysis - none

4. a. Hoffman or McKallag well (ww)

b. N 1/2 SW sec. 7, T.107 N., R. 77 W.
c. Elevation - unknown
d. TD - approximately 1400 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

5. A number of artesian wells in the Bull Creek valley yield natural gas; both 400 feet deep wells and Dakota Sandstone wells approximately 900 feet deep yield gas.

6. a. City of Reliance (ww)
b. SW SW sec. 21, T. 105 N., R. 73 W.
c. Elevation - 1797 feet
d. TD - 1130 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well with a very small amount of gas

7. a. Anderos Kenobbie well (ww)
b. SE SE sec. 10, T. 106 N., R. 73 W.
c. Elevation - 1803 feet
d. TD - 1281 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well with some gas

8. a. Red Butte No. 1 Burkhardt (pt)
b. SE SE sec. 6, T. 104 N., R. 74 W.
c. Elevation - 1779 feet
d. TD - 2504 feet
e. 460-520 feet, gas; Sharon Springs Member of Pierre Shale
f. Gas analysis - none

9. a. Gulf No. 1 J. A. Hutchinson (pt)
b. NW NW sec. 24, T. 103 N., R. 77 W.
c. Elevation - 1783 feet
d. TD - 2411 feet
e. 600-610 feet; shale, speckled; 75-100 units gas; Niobrara Formation
630-660 feet; 50 units shale gas; Niobrara Formation
f. Gas analysis - none

10. a. McClure Post Office No. 1 well (ww)
b. N 1/2 SE NE SE sec. 24, T. 108 N., R. 78 W.
c. Elevation - 1865 feet (est.)
d. TD - 1653 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Big flow of gas with water; could light with a flame 20 feet high; never used

11. a. McClure Post Office No. 2 well (ww)
    b. NE? sec. 24, T. 108 N., R. 78 W.
    c. Elevation - unknown
    d. TD - 1500 feet
    e. Gas; Dakota Sandstone
    f. Gas analysis - none
    g. Gas never used; gas didn't amount to much

McCOOK COUNTY

1. a. Benedict Scheier well (ww)
   b. NE of Salem
   c. Elevation - unknown
   d. TD - 177 feet
   e. Gas; Pleistocene drift
   f. Gas analysis - none
   g. At the same site on 10/14/1889, Mathias Duclos discovered gas. For a year or so after its discovery the gas was used for heating the home and doing the cooking

2. a. Gratus Wubben well (ww)
   b. 4 miles W and 1 mile N of Salem
   c. Elevation - unknown
   d. TD - unknown
   e. 120 feet, gas; Pleistocene drift
   f. Gas analysis - none
   g. Flow of gas was sufficient for use on the farm

3. a. George Ellebrecht well (ww)
   b. The same neighorhood as (2)
   c. Elevation - unknown
   d. TD - unknown
   e. Gas; Pleistocene drift
   f. Gas analysis - none
   g. A 3/19/30 Argus Leader article said that the well furnished all the gas needed on the farm for the last 5 months.

4. a. Redetzke No. 1 Schroble (pt)
   b. Center N 1/2 sec. 5, T. 103 N., R. 54 W.
   c. Elevation - unknown
   d. TD - 206 feet
   e. 172-180 feet, gas bearing sands; Pleistocene drift
   f. Gas analysis - none
   g. This was drilled in 1930. A 10-12 pound pressure was reported when the well was finished and the pressure was 20.5 pounds 24 hours later. There was a gas well at this location 30 years before this one was drilled.

5. a. Redetzke No. 2 Schroble (pt)

b. Location probably the same as (4)
c. Elevation - unknown
d. TD - 206 feet
e. 172-184 feet, gas bearing sand; Pleistocene drift
f. Gas analysis - none
g. Heavier gas pressure than in (4); pressure conservatively measured at 50 or 60 pounds.

6. a. Unnamed well (ww)
b. A few miles N of Canistota
c. Elevation - unknown
d. TD - unknown
e. Gas; Pleistocene drift
f. Gas analysis - none

7. a. Unnamed well (ww)
b. SW sec. 3, T. 103 N., R. 56 W.
c. Elevation - unknown
d. TD - unknown
e. Gas; Pleistocene drift
f. Gas analysis - none

8. a. J. A. Callant well (ww)
b. NE sec. 2, T. 103 N., R. 56 W.
c. Elevation - unknown
d. TD - unknown
e. Gas; Pleistocene drift
f. Gas analysis - none

9. a. Unnamed well (ww)
b. NE sec. 15, T. 103 N., R. 56 W.
c. Elevation - unknown
d. TD - unknown
e. Gas; Pleistocene drift
f. Gas analysis - none

10. a. Unnamed well (ww)
b. SW sec. 24, T. 102 N., R. 56 W.
c. Elevation - unknown
d. TD - unknown
e. Gas; Pleistocene drift
f. Gas analysis - none

11. a. Unnamed well (ww)
b. SE sec. 17, T. 101 N., R. 53 W.
c. Elevation - unknown
d. TD - 100 feet
e. Gas; Pleistocene drift
f. Gas analysis - none
g. "One well dug here years ago; had a tremendous air pressure. It was closed after a certain length of time, as the man living here than could not sleep from the roar of air coming out of the well."

12. a. Hanson County Rural Water No. 4 (ww)
    b. NE SE sec. 29, T. 101 N., R. 55 W.
    c. Elevation - unknown
    d. TD - 160 feet
    e. Gas; Pleistocene gravel
    f. Gas analysis - U.S. Bureau of Mines, methane - 67%; N2 - 31.8%; O2 + Ar - 0.6%; CO2 - 0.6%; C2H6 - trace
    g. 32 psi final head

McPHERSON COUNTY

1. a. Unnamed well (ww)
    b. NE sec. 17, T. 125 N., R. 70 W.
    c. Elevation - unknown
    d. TD - 430 feet
    e. Gas; Pierre Shale
    f. Gas analysis - none
    g. "Has gas fumes, will burn. Water bearing material is slate above soapstone."

MEADE COUNTY

1. a. Kucera No. 1 Gingras Brothers (pt)
    b. SW NE sec. 19, T. 3 N., R. 7 E.
    c. Elevation - 3510-3550 feet
    d. TD - 1280 feet
    e. Upper gas show; unknown interval
    1180 feet, gas show with distillate; Minnelusa Formation
    f. Gas analysis - none
    g. Cable tools

2. a. Kucera No. 1 Gingras (pt)
    b. SE NW sec. 19, T. 3 N., R. 7 E.
    c. Elevation - 3530-3570 feet
    d. TD - 554 feet (first hole) 1370 feet (second hole)
    e. 277 feet, gas, first hole; Sundance Formation
    305 feet, gas, first hole; Spearfish Formation
    325 feet, gas, first hole; Spearfish Formation
    380 feet, gas, first hole; Spearfish Formation
    578 feet, gas, second hole; Spearfish Formation
    580-590 feet, possible gas horizon, second hole; Spearfish Formation
    1064-1089 feet, good O and G, second hole; Minnelusa Formation
    f. Gas analysis - none

3. a. Kucera No. 2 Gingras (pt)
    b. NW SW NE sec. 19, T. 3 N., R. 7 E.

c. Elevation - 3500-3540 feet
d. TD - 2153 feet
e. 140 feet, gas in sand; Sundance Formation
340 feet, gas; Spearfish Formation
402 feet, gas; Spearfish Formation
755 feet, gas; Spearfish Formation
798-862.5 feet, good gas show at base; Minnekahta Limestone
1072 feet, gas; Minnelusa Formation
1135 feet, gas; Minnelusa Formation
1497 feet, strongest gas; Minnelusa Formation
1626-1631 feet, good gas show, gas has distillate or condensate; Madison Limestone
1874 feet, good gas; Madison Limestone
2051-2062 feet, strong gas show; Red River Dolomite
f. Gas analysis - none

4. a. Kucera No. 3 Gingras (pt)
b. NW SW NE sec. 19, T. 3 N., R. 7 E.
c. Elevation - 3510-3550 feet
d. TD - 1235 feet
e. Gas, red beds; Spearfish Formation
960 feet, gas and tar sand; Converse sands of Minnelusa Formation
f. Gas analysis - none

5. a. Lion-Libertin No. 1 Government (pt)
b. SW NE sec. 9, T. 4 N., R. 11 E.
c. Elevation - 2595 feet KB
d. TD - 4346 feet
e. DST 1576-1593 feet; Greenhorn Limestone; Rec. 175 feet very sli GCM
4030-4038 feet, gas show; Minnelusa Formation
f. Gas analysis - none

6. a. Kucera No. 4 Gingras (pt)
b. SE SE NW sec. 19, T. 3 N., R. 7 E.
c. Elevation 3550-3590 feet
d. TD - 400? feet
e. Gas show; interval unknown
f. Gas analysis - none

7. a. Cosden No. 1 Zeal (pt)
b. SE NW sec. 16, T. 9 N., R. 17 E.
c. Elevation - 2178 feet
d. TD - 2970 feet
e. Gas; interval unknown
f. Gas analysis - none
g. Cable tools

8. a. Unnamed well (ww)
b. SE sec. 23, T. 11 N., R. 16 E.
c. Elevation - unknown

d. TD - unkown
e. Gas; interval unknown
f. Gas analysis - none

9. a. Gulick Gullickson well (ww)
b. SW sec. 14, T. 6 N., R . 5 E.
c. Elevation - unknown
d. TD - 660 feet
e. 345 feet, a "gas blow" sufficient to ignite; Sundance Formation (top)
445 feet, 100 feet thick, no less than 12 distinct "gas blows" in the interim, the last several of which threw heavy asphaltic oil over the top of a 40-foot mast; Spearfish Formation
f. Gas analysis - none

10. a. Midland No. 1 State "B" (pt)
b. NE SE sec. 31, T. 4 N., R. 11 E.
c. Elevation - 2811 feet KB
d. TD - 2881 feet
e. 1163-1747 feet, gas detector indicated an increasing amount of wet gas in the mud; top of Turner Sandy Member of Carlile Shale to the top of the Greenhorn Limestone
1726 feet, sli G odor; Turner Sandy Member of Carlile Shale
1728 feet, sli G odor; Turner Sandy Member of Carlile Shale
1731 feet, sli G odor; Turner Sandy Member of Carlile Shale
1734 feet, sli G odor; Turner Sandy Member of Carlile Shale
1736 feet, sli G odor; Turner Sandy Member of Carlile Shale
f. Gas analysis - none

MELLETTE COUNTY

1. a. Gulf No. 1 Olson (pt)
b. NE NW sec. 14, T. 43 N., R. 29 W.
c. Elevation - unknown
d. TD - 3195 feet
e. Gas; Niobrara Formation
f. Gas analysis - none

MINNEHAHA COUNTY

1. a. Unnamed well (ww)
b. NE sec. 3, T. 101 N., R. 51 W.
c. Elevation - unknown

d. TD - 198 feet
e. Gas; Pleistocene/Niobrara Formation contact
f. Gas analysis - none
g. "When we were taking the well apart this fall to put in a new pipe we could smell gas."

MOODY COUNTY

1. a. Unnamed well (ww)
b. Near Trent
c. Elevation - unknown
d. TD - unknown
e. Gas; Pleistocene drift
f. Gas analysis - none

PENNINGTON COUNTY

1. a. Conata oil test (pt)
b. SW NW sec. 11, T. 4 S., R. 16 E.
c. Elevation - 2451 feet
d. TD - 2467 feet
e. 2050-2090 feet, gas and some oil; Inyan Kara Group
2350 feet, gas; Morrison Formation-Sundance Formation interval
f. Gas analysis - none

2. a. Gypsy No. 1 Hunter (pt)
b. NE SW sec. 28, T. 3 N., R. 16 E.
c. Elevation - 2957 feet
d. TD - 5001 feet
e. 2347-2358 feet, core, showed trace of gas; Turner Sandy Member of Carlile Shale
f. Gas analysis - none
g. Rotary to 4573 feet, cable from 4573 feet to TD

3. a. Johnson - Andrews No. 1 Miser (pt)
b. NW NW sec. 9, T. 1 S., R. 8 E.
c. Elevation - 3290-3330 feet
d. TD - 850? feet
e. Approximately 300 feet, some gas encountered which burns several feet above the casing; Newcastle Sandstone
f. Gas analysis - none

4. a. Scenic Oil and Development Company No. 1 (pt)
b. NE NW sec. 15, T. 3 S., R. 13 E.
c. Elevation - 2780-2800 feet
d. TD - controversial, variously reported as 964 feet, approximately 1350 feet, and 386-2314 feet
e. 447 feet, gas show; Pierre Shale
f. Gas analysis - none

5. a. S. G. Sonneland well (ww)
   b. Center N. line sec. 14, T. 4 N., R. 17 E.
   c. Elevation - unknown
   d. TD - unknown
   e. Gas; interval unknown
   f. Gas analysis - none

6. a. Hanagan No. 1, No. 1-A Bloom (pt)
   b. NE NE sec. 11, T. 2 S., R. 16 E.
   c. Elevation - 2669 feet KB
   d. TD - 2182 feet (No. 1) and 4750 feet (No. 1-A)
   e. No. 1 well - 1379 feet, 80-100 unit gas kick in shale and sand; Niobrara Formation
      No. 1-A - 1379-1670 feet, 100 unit gas kick; Niobrara Formation
   f. Gas analysis - none

7. a. Watkins No. 35-14 Wheless-Federal (pt)
   b. SE SW sec. 35, T. 3 S., R. 16 E.
   c. Elevation - 2480 feet
   d. TD - 2709 feet
   e. Gas show (shale gas) up to 500 units; Newcastle Sandstone
   f. Gas analysis - none

8. a. Watkins No. 16-5 Wheless-State (pt)
   b. SE NW sec. 16, T. 4 S., R. 16 E.
   c. Elevation - 2450 feet
   d. TD - 2702 feet
   e. Gas kicks (shale gas) using native mud; Niobrara Formation and Greenhorn Limestone
   f. Gas analysis - none

9. a. Watkins No. 5-6 Wheless-Federal (pt)
   b. SE NW sec. 5, T. 4 S., R. 17 E.
   c. Elevation - 2425 feet
   d. TD - 2656 feet
   e. 1745-1875 feet, gas kick of 10-45 units above background; dry gas probably coming from black shale; Greenhorn Limestone
   f. Gas analysis - none

PERKINS COUNTY

1. a. Shell No. 1 Homme (pt)
   b. NW SE sec. 13, T. 20 N., R. 12 E.
   c. Elevation - 2768 feet KB
   d. TD - 9345 feet
   e. 3456-3457 feet, O and G show in black shale; Carlile Shale at Carlile-Greenhorn contact
      DST No. 2 3425-3457 feet; Greenhorn Limestone
      G - high 10, low 2

DST No. 3 4276-4305 feet; Fall River Sandstone; G - high 46, low 0, G - high 60, low 0
DST No. 5 6260-6290 feet; basal Minnelusa Formation; G - high 200-500, low 1110-480 (H2S)
6460-6483 feet, G - high 120, low 100, G in W, high 100, low 100 (H2S); Mission Canyon Formation
6652-6802 feet, G in fluid was 2.2V-12-8, 1.4V-4-8; Lodgepole Formation
DST No. 12 8141-8194 feet; Red River Dolomite; Rec. 660 feet M and GCSW

f. Gas analysis - none

2. a. Lemmon Oil Basin No. 1 Mitchell (pt)
b. SW SE sec. 33, T. 23 N., R. 15 E.
c. Elevation - 2500-2600 feet
d. TD - 1765? feet
e. 1600 feet, gas show; Pierre Shale
f. Gas analysis - none

3. a. Unnamed well (ww)
b. NW SE sec. 22, T. 14 N., R. 16 E.
c. Elevation - unknown
d. TD - unknown
e. Gas; interval unknown
f. Gas analysis - none

4. a. A. D. Keeney well (ww)
b. NE SE sec. 33, T. 22 N., R. 15 E.
c. Elevation - unknownn
d. TD - unknown
e. 1765 feet; heavy gas flow, supposedly; Pierre Shale
f. Gas analysis - none

5. a. Texaco No. 1 Crawford (pt)
b. SE SW sec. 20, T. 14 N., R. 11 E.
c. Elevation - 2588 feet
d. TD - 5000 feet
e. DST No. 1, 3240-3301 feet; Muddy sand; Rec. 2308 feet GC fresh W
f. Gas analysis - none

6. a. Investors No. 2 Baxter (pt)
b. NW SE sec. 22, T. 14 N., R. 16 E.
c. Elevation - 2400 feet KB
d. TD - 3502 feet
e. DST No. 1 3092-3103 feet; Muddy sand; Rec. 2370 feet SGCSW
f. Gas analysis - none
g. On 7/20/71 a swab test yielded 100% W, with a trace of O & G

7. a. Texas Pacific No. 1 Elson (pt)
b. NE NE sec. 24, T. 19 N., R. 16 E.

c. Elevation - 2555 feet
d. TD - 8343 feet
e. 2510 feet, sli total G increase from 8 ppm to 16 ppm; Niobrara Formation
6475-6485 feet, mud gas increased from 240 ppm to a peak of 403 ppm near and at top of limestone; Three Forks/Nisku contact
DST No. 1A 7123-7149 feet; Red River "A"; Misrun, Rec very H "questionably" GCM--sampler rec 1450 cc HGC rathole M at 250 psi--total G readings of mud run through the cuttings gas agitator 108 ppm including 53 ppm C1, 40 ppm C2, 40 ppm C3, 30 ppm C4 and 20 ppm C5
DST No. 1 7130-7149 feet; Red River "A"; Rec. 3800 feet sli GCSW, sampler rec. 2400 cc sli GCSW
f. Gas analysis - none

8. a. Webb No. 29-7 Federal (pt)
b. SW NE sec. 29, T. 20 N., R. 13 E.
c. Elevation - 2562 feet
d. TD - 8065 feet
e. 2305 feet; 78 units hotwire, 1454 ppm C1; Pierre Shale
2318 feet; 42 units hotwire, 2272 ppm C1, bkg G 8-12 units hotwire, 545 ppm C1; Gammon Ferruginous Member of Pierre Shale
2700-2736 feet; 150 units hotwire, 5453-6816 ppm C1, 227 ppm C2; Gammon Ferruginous Member of Pierre Shale-Niobrara Formation
2736 feet; gas dropped to bkg level of 8-16 units hotwire, 818-1090 ppm C1; Niobrara Formation
4331 feet; 2 units hotwire, 0 ppm C1; Sundance Formation
5411 feet; 230 ppm C1, 80 ppm C2, 41 ppm C3; Minnelusa Formation
5415 feet; 828 ppm C1, 120 ppm C2, 41 ppm C3, hotwire 12 units; Minnelusa Formation
5416 feet; gas dropped to bgk of 2-4 units hotwire and trace C1; Minnelusa Formation
Gas kick, 5 units hotwire, 92 ppm C1, trace C2, sli trace C3; cuttings gas 3-7 units, bkg gas 1-2 units hotwire with trace C1; Ratcliffe interval of Charles Formation
No gas increase over bkg; Mission Canyon Limestone
Gas increased 2 units over bkg on hotwire, increased 90 ppm over bkg on C1; bkg gas 0-1 units hotwire, 0 ppm C1, Red River "A"
DST No. 2 7845-7898 feet; Red River "B"; Rec. 180 feet GCM emulsion with scum O
7898 feet; trip gas, 20 units hotwire, 3990 ppm C1, 2320 ppm C2, 861 ppm C3, 165 ppm C4 and C5; gas was recycled, one circulation later 228 ppm C, 200 ppm C6; Red River "B"

7858-7880 feet; 6 units C1, 6.5 units C2, 20 units C3, 9.5 units C4; Red River "B"
7860-7868 feet; 6 units hotwire, 300 ppm C1, 800 ppm C2, 390 ppm C3; Red River "B"
7870-7880 feet; 4 units hotwire, 230 ppm C1, 480 ppm C2, 246 ppm C3; bkg gas 1-2 units hotwire, trace C1; Red River Dolomite
No gas increase over bkg; Red River "C"

f. Gas analysis - none

9. a. Webb No. 11-7 Smith (pt)
b. SW NE sec. 11, T. 21 N., R. 12 E.
c. Elevation - 2772 feet
d. TD - 8697 feet
e. DST 8410-8426 feet; Red River "A"; Rec. 60 feet G and very sli OCM emulsion
f. Gas analysis - none

10. a. Webb No. 5-13 State (pt)
b. SW SW sec. 5, T. 21 N., R. 12 E.
c. Elevation - 2792 feet
d. TD - 8830 feet
e. 2930-2940 feet; circulated G, 15 units methane; Gammon Ferruginous Member of Pierre Shale
3024 feet; circulated G; Gammon Ferruginous Member of Pierre Shale
3180 feet; 17 units, gradual buildup and decrease; tripped, then back to bottom, bkg tr-b units, chromatograph tr C1; Niobrara Formation
3738 feet; 6 units, gas increase to 15 units total; 12 chromatograph; Graneros Shale?
6620-6625 feet; 6 units hotwire, 1750 ppm C1, trace C2, Charles Formation
8618-8627 feet; 8 units hotwire, 1250 ppm C1, 28 ppm C2; Red River Dolomite
8636-8662 feet; 22 units hotwire, 5500 ppm C1; 171 ppm C2, trace C3; Red River Dolomite
8743-8747 feet; 6 units hotwire, 1750 ppm C1, 114 ppm C2, trace C3; Red River Dolomite
TG 22 units on hotwire, bkg gas 2-4 units hotwire; Red River Dolomite, just before Red River "B"

f. Gas analysis - none

11. a. Webb No. 8-14 Archibald (pt)
b. SE SW sec. 8, T. 21 N., R. 13 E.
c. Elevation - 2671 feet
d. TD - 8480 feet
e. 2540 feet; 7-14 units hotwire, 7000-9000 ppm C1, 150 ppm C2; Pierre Shale
2660 feet; C1 decrease to 3000 ppm; Pierre Shale
2990 feet; C1 decrease to 600-1000 ppm; Gammon Ferruginous Member of Pierre Shale
6345-6350 feet; 282 ppm C1, 110 ppm C2, 56 ppm

C3, 18 ppm C4; bkg G 50-100 C1; Ratcliffe zone of Charles Formation
6490 feet; 108 ppm C1 maximum, bkg G 30-60 ppm C1; Mission Canyon Limestone
7224 feet; 384 ppm C1, 96 ppm C2, 24 ppm C3, 1.5 units hotwire; Lodgepole Formation
1344 ppm C1, 288 ppm C2, 64 ppm C3, 7.5 units hotwire; cuttings gas 36 units; bkg G 100 ppm C1; 1.5 units hotwire, Bakken Formation
G dropped to bkg level; top of Three Forks Shale
DST No. 1 8205-8240 feet; Red River "A"; Rec. 1015 feet very sli GCSW
8213-8216 feet; G 3 units on hotwire, 432 ppm C1, 160 ppm C2, 52 ppm C3, 24 ppm C4; bkg G 100 ppm C1; Red River "A"
8284-8290 feet; G 330 ppm C1, 88 ppm C2, 28 ppm C3; Red River "B"
G 396 ppm C1, 77 ppm C2, 20 ppm C3; Red River "C"
TG 7488 ppm C1, 1672 ppm C2, 448 ppm C3, 24 units on hotwire; after Red River "A" zone test and show lasted only one circulation and was probably coming from the Lodgepole Formation-Bakken Formation interval

f. Gas analysis - none

12. a. Webb No. 3-2 Spenny (pt)
b. NW NE sec. 3, T. 22 N., R. 14 E.
c. Elevation - 2488 feet
d. TD - 8440 feet
e. 5608 feet; G 533 ppm C1, 227 ppm C2, 133 ppm C3, 36 ppm C4, trace C5, hotwire increase to 4 units; bkg G 50 ppm, 1.5 units hotwire; thin (10 feet) interbedded petroliferous shales in the Minnelusa Formation
DST No. 2 8165-8201 feet; Red River "A"; Rec 186 feet sli GCDM, 2136 feet sli GCSW
G 120 ppm C1, 28 ppm C2; bkg G 30-40 ppm C1, 0.75 units hotwire; Red River "B"

f. Gas analysis - none

13. a. Mule Creek No. 41-33 State (pt)
b. Center NE NE sec. 33, T. 13 N., R. 10 E.
c. Elevation - 2800 feet
d. TD - 6908 feet
e. 4527 feet; gas kick on logging unit, circulated 15 and 30 minutes, nothing in samples, must be TG; Spearfish Formation
5010-5012 feet; drilling break, slow to fast, then hard. About an hour after, a 20+ unit G kick developed with a 38 unit kick out of the cuttings. Mud check gave only 20 unit kick; Minnelusa Formation
5990-6000 feet; a higher than normal H2 gas kick was noted, but there was no indication of higher

methane or ethane; Lodgepole Formation
f. Gas analysis - none

EDITER COUNTY

1. a. Unnamed well (ww)
   b. SW sec. 5, T. 118 N., R. 78 W.
   c. Elevation - unknown
   d. TD - unknown
   e. Dakota Sandstone
   f. Gas analysis - Orsat analysis yielded CO2, 0.25%; O2, 0.49%; methane, 92.01%; ethane and higher 3.77%; N2, 3.48%; specific gravity (calculated), 0.592; specific gravity (observed); insufficient sample; average "n" 1.04; calculated gross BTU/cu. ft. at 60 degrees F and 15.025 psi, 1015

2. a. Leiberman well or Herron farm well (ww)
   b. NE sec. 26, T. 120 N., R. 78 W.
   c. Elevation - unknown
   d. TD - unknown
   e. Dakota Sandstone
   f. Gas analysis - none
   g. Produced a considerable amount of natural gas

3. a. Unnamed well (ww)
   b. S 1/2 sec. 22, T. 120 N., R. 77 W.
   c. Elevation - unknown
   d. TD - unknown
   e. Dakota Sandstone
   f. Gas analysis - none

4. a. Herman Rud well (ww)
   b. SE NE sec. 23, T. 120 N., R. 77 W.
   c. Elevation - unknown
   d. TD - 1818 feet
   e. Dakota Sandtone
   f. Gas analysis - none
   g. The well gave a little gas at first, but not enough to burn in the house.

5. a. Unnamed well (ww)
   b. E 1/2 SE sec. 25, T. 120 N., R. 78 W.
   c. Elevation - unknown
   d. TD - unknown
   e. Dakota Sandstone
   f. Gas analysis - none

6. a. Unnamed well (ww)
   b. SE SW sec. 35, T. 120 N., R. 77 W.
   c. Elevation - unknown
   d. TD - unknown

e. Dakota Sandstone
f. Gas analysis - none

7. a. Unnamed well (ww)
b. NW NW sec. 6, T. 119 N., R. 77 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone
f. Gas analysis - none

8. a. Unnamed well (ww)
b. W 1/2 SW sec. 12, T. 119 N., R. 78 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone
f. Gas analysis - none

9. a. Fred Genzler well (ww)
b. SE sec. 12, T. 119 N., R. 78 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone
f. Gas analysis - none
g. Gas used for domestic purposes; artesian well

10. a. Schlaller well (ww)
b. NE sec. 11, T. 117 N., R. 79 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone
f. Gas analysis - none
g. Artesian well

11. a. Fox well (ww)
b. SE sec. 18, T. 118 N., R. 76 W.
c. Elevation - 2071 feet
d. TD - 2260 feet
e. Dakota Sandstone
f. Gas analysis - none

12. a. Nels Peterson well (ww)
b. SW sec. 7, T. 120 N., R. 76 W.
c. Elevation - 2101 feet
d. TD - approximately 1950 feet
e. Dakota Sandstone
f. Gas analysis - none
g. A little gas

13. a. Soutner well (ww)
b. NE sec. 6, T. 120 N., R. 76 W.
c. Elevation - 2059 feet
d. TD - approximately 1855 feet
e. Dakota Sandstone
f. Gas analysis - none

14. a. Unnamed well (ww)
    b. Center sec. 12, T. 119 N., R. 76 W.
    c. Elevation - unknown
    d. TD - unknown
    e. Dakota Sandstone
    f. Gas analysis - none
    g. Much gas

15. a. Schoof No. 1 Thompson (pt)
    b. NE SW sec. 5, T. 118 N., R. 78 W.
    c. Elevation - 1669 feet
    d. TD - 1551 feet
    e. 1404 feet, gas show; near Graneros Shale-
       Dakota Sandstone contact
       1545-1550 feet, gas show; Fall River Sandstone
    f. Gas analysis - none

16. a. Unnamed well (ww)
    b. S 1/2 SE sec. 23, T. 120 N., R. 78 W.
    c. Elevation - unknown
    d. TD - unknown
    e. Dakota Sandstone
    f. Gas analysis - none

17. a. Unnamed well (ww)
    b. NE sec. 25, T. 120 N., R. 78 W.
    c. Elevation - unknown
    d. TD - unknown
    e. Dakota Sandstone
    f. Gas analysis - none

18. a. Unnamed well (ww)
    b. N 1/2 sec. 26, T. 118 N., R. 78 W.
    c. Elevation - unknown
    d. TD - unknown
    e. Dakota Sandstone
    f. Gas analysis - none

19. a. Unnamed well (ww)
    b. S 1/2 sec. 13, T. 118 N., R. 79 W.
    c. Elevation - unknown
    d. TD - unknown
    e. Dakota Sandstone
    f. Gas analysis - none

20. a. Unnamed well (ww)
    b. NE sec. 12, T. 117 N., R. 79 W.
    c. Elevation - unknown
    d. TD - unknown
    e. Dakota Sandstone
    f. Gas analysis - none

21. a. Unnamed well (ww)
    b. Center sec. 3, T. 117 N., R. 78 W.

c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone
f. Gas analysis - none

22. a. Unnamed well (ww)
b. N 1/2 sec. 18, T. 117 N., R. 78 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone
f. Gas analysis - none

23. a. Unnamed well (ww)
b. SW sec. 17, T. 117 N., R. 78 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone
f. Gas analysis - none

24. a. Unnamed well (ww)
b. NW sec. 22, T. 117 N., R. 78 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone
f. Gas analysis - none

25. a. Unnamed well (ww)
b. SE sec. 19, T. 117 N., R. 78 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone
f. Gas analysis - none

26. a. Unnamed well (ww)
b. Center N line sec. 33, T. 117 N., R. 75 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone
f. Gas analysis - none

27. a. Peterson well (ww)
b. SW sec. 6, T. 119 N., R. 77 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone
f. Gas analysis - none

28. a. William H. Mannan well (ww)
b. SW SW sec. 35, T. 119 N., R. 77 W.
c. Elevation - unknown
d. TD - 1900+ feet
e. Dakota Sandstone
f. Gas analysis - none

SHANNON COUNTY

1. a. Midwest Refining No. 1 Slim Buttes (pt)
   b. SW SE sec. 24, T. 36 N., R. 48 W.
   c. Elevation - 3250-3350 feet
   d. TD - 2445 feet
   e. 875-890 feet; sand, showed gas; Newcastle Sandstone
   f. Gas analysis - none

2. a. English-Martin No. 1 Eucks (pt)
   b. NE SW sec. 20, T. 36 N., R. 41 W.
   c. Elevation - 3504 feet
   d. TD - 3985 feet
   e. Gas show, interval unknown
   f. Gas analysis - none

3. a. Unnamed well (ww)
   b. SE sec. 34, T. 41 N., R. 47 W.
   c. Elevation - unknown
   d. TD - unknown
   e. 2200 feet; gas show; Newcastle Sandstone
   f. Gas analysis - none

SEINK COUNTY

1. a. Marsh gas occurrence - McKelvie Farm
   b. W 1/2 sec. 21, T. 114 N., R. 62 W.
   c. Elevation - unknown
   d. TD - not applicable
   e. Gas show; Pleistocene and/or Recent
   f. Gas analysis - greater than 90% methane
   g. Gas coming out of Lake Dudley; found to be swamp gas forming in muds at the bottom of the lake

2. a. Ashton well (ww)
   b. E 1/2 sec. 35, T. 118 N., R. 64 W.
   c. Elevation - unknown
   d. TD - unknown
   e. 66 feet, gas encountered, found in light colored clay overlain by blue clay; Pleistocene
   f. Gas analysis - none
   g. Gas took fire from a miner's candle

3. a. Unnamed well - Ashton (ww)
   b. E 1/2 sec. 35, T. 118 N., R. 64 W.
   c. Elevation - unknown
   d. TD - unknown
   e. 66 feet, gas as in well (2); Pleistocene
      89 feet, stronger gas flow, found in a light colored clay mixed with gravel and overlain with blue clay; Pleistocene

f. Gas analysis - none
g. Closed pressure was 46 pounds. This was piped into the Bowman Hotel and used for heating and cooking from November through March. During the same period, Stevens and Company heated and lighted their large general store from this well.

4. a. Unnamed well (ww)
b. Halfway between Ashton and Redfield
c. Elevation - unknown
d. TD - unknown
e. Gas; Pleistocene
f. Gas analysis - none
g. Gas piped in and used for several months in the cook stove

5. a. John Clifford well (ww)
b. E 1/2 sec. 11, T. 117 N., R. 64 W.
c. Elevation - unknown
d. TD - unknown
e. 75 feet, gas; Pleistocene
f. Gas analysis - none
g. Gas piped into the house where it furnished fuel and light from the fall of 1885 until the next July.

7. a. Ashton area wells (ww)
b. Legals unknown
c. Elevations - unknown
d. TDs - unknown
e. 450 feet, strong gas flow; Carlile Shale
650 feet, gas flow; Graneros Shale
700 feet, strong gas flow; Graneros Shale
f. Gas analysis - none

8. a. Unnamed well (ww)
b. 2 miles SE of Ashton
c. Elevation - unknown
d. TD - 160 feet
e. Gas; Pleistocene/Pierre Shale contact
f. Gas analysis - none

9. a. Unnamed well (ww)
b. Approximately 7 miles SE of Ashton
c. Elevation - unknown
d. TD - 66 feet
e. Gas; Pleistocene
f. Gas analysis - none
g. Gas not inflammable

10. a. Unnamed wells (ww)
b. 3-5 miles north of Ashton
c. Elevations - unknown
d. TDs - unknown

e. 180-200 feet, gas struck; Pleistocene/Pierre Shale contact
f. Gas analysis - none

11. a. Redfield well (ww)
b. Legal unknown
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. It was the custom of the homeowner to illustrate to guests by igniting gas from the petcocks on the radiators in the home which had a hot water heating system

12. a. Spink County REA well (ww)
b. SE sec. 3, T. 116 N., R. 64 W.
c. Elevation - unknown
d. TD - 863 feet
e. Approximately 90 feet, some gas; Pleistocene drift
f. Gas analysis - none

STANLEY COUNTY

1. a. Marsh gas occurrence
b. South bank of the Cheyenne River just a short distance from the mouth
c. Elevation - unknown
d. TD - not applicable
e. Gas; Pleistocene and/or Recent
f. Gas analysis - none
g. Bubbly spring with very muddy water, not a drinking proposition. Is muddy because it boils up through thick mud along the bark. Bubbles of gas, collected in inverted glass. Is inflammable and has an odor faintly like H2S, not sure. Comes up at 5 or 6 places, most of which are covered at high water.

2. a. City of Ft. Pierre well (ww)
b. SW sec. 33, T. 5 N., R. 31 E.
c. Elevation - 1443 feet
d. TD - 1169 or 1338 or 1480 feet?
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Well was utlized for the gas

3. a. F. B. Davis well - Ft. Pierre Plunge (ww)
b. SW sec. 33, T. 5 N., R. 31 E.
c. Elevation - unknown
d. TD - approximately 1265 feet

e. Gas; Dakota Sandstone
f. Gas analysis - none
g. There was gas enough to heat the Plunge rooms and the house, 20 fires were required in the winter.

4. a. George Huston Ranch-old Paradis Ranch (ww)
b. E 1/2 NE NE SE sec. 7, T. 5 N., R. 29 E.
c. Elevation - 1780 feet
d. TD - approximately 1500 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Gas was never used

5. a. Otto Huckfeldt - Rural Credits owned land (ww)
b. Center sec. 10, T. 5 N., R. 29 E.
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none

6. a. Peter Sorenson well (ww)
b. Center SW sec. 21, T. 5 N., R. 30 E.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone
f. Gas analysis - none
g. Gas was used to heat and light a 5-room house

7. a. E. J. Lacy P. O. well-E. C. Klopping (ww)
b. NW sec. 35, T. 7 N., R. 28 E.
c. Elevation - 1712 feet
d. TD - 1500 to 1600 feet
e. Gas; Dakota Sandstone
f. Gas analysis - U.S. Bureau of MInes--CO2, 3.1%; O2, 0.6%; methane, 88.7%; ethane, 0.0%; N2 and He by difference, 7.6%; total, 100%; He content, 0.04%
State Chemical Lab (1939)--CO2, 2.8%; O2, 2.4%, CO, 0.2%, balance burns with a bluish yellow flame, it gives no test for unsaturation, probably methane.
g. Made gas from the time it was drilled. It was flowing salty water and gas in 1935. The well was still making gas on 7/25/50. No measurement was attempted but it appears to be less in volume than when the gas was collected and analyzed some years ago. The gas was originally used for cooking and for heating the house.

8. a. Sunshine Ranch well (ww)
b. 11 miles south and 14 miles east of Pierre
c. Elevation - unknown
d. TD - 1262 feet
e. 600 feet, dry gas; Niobrara Formation

1262 feet, gas in artesian sand; Dakota Sandstone
f. Gas analysis - none

9. a. Lindestrom well (ww)
b. SE sec. 15, T. 109 N., R. 79 W.
c. Elevation - unknown
d. TD - unknown
e. Dakota Sandstone
f. Gas analysis - none
g. The artesian well supplied gas for heating the house and buildings for many years. It was said to be carrying more gas than any gas well since the first one was drilled at the Indian School 43 years before

10. a. Ft. Pierre Hospital well-Cook well (ww)
b. SW sec. 33, T. 5 N., R. 31 E.
c. Elevation - 1434 feet
d. TD - 1315 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Gas was used for lighting and cooking

11. a. Rural Credit-I. O. Stanley well (ww)
b. NE sec. 4, T. 109 N., R. 79 W.
c. Elevation - 1829 feet
d. TD - 1605 feet
e. Gas, Dakota Sandstone
f. Gas analysis - none
g. The well showed gas when first drilled

12. a. Frank Whalen well (ww)
b. NW sec. 27, T. 109 N., R. 79 W.
c. Elevation - 1841 feet
d. TD - approximately 1570 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Well had gas when first drilled

13. a. U.S. Resettlement-Frank Oberle well (ww)
b. NW NE sec. 21, T. 109 N., R. 79 W.
c. Elevation 1833 feet
d. TD - approximately 1570 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Produced gas when drilled

14. a. South Dakota Development No. 1 Standing Butte (pt)
b. SE NE sec. 9, T. 7 N., R. 27 E.
c. Elevation - 1958 feet
d. TD - 3508 feet
e. 933-963 feet; gray sandy shale carrying dry gas; Niobrara Formation

1735-1905 feet; sandstone carrying water with G and O showing; Dakota Sandstone
2625-2657 feet; hard sand rock showing gas and tar; Minnelusa Formation
2660-2665 feet; broken formation of sand and shale, more gas; Minnelusa Formation

f. Gas analysis - none

15. a. Wendte RR well (ww)
b. SW sec. 5, T. 3 N., R. 29 E.
c. Elevation - 1592 feet
d. TD - 1395 feet
e. 1280 feet, gas began; Graneros Shale/Dakota Sandstone
f. Gas analysis - none

16. a. Meers Township well (ww)
b. SE SE sec. 8, T. 5 N., R. 28 E.
c. Elevation - 1925 feet
d. TD - 1790 feet
e. Gas; Niobrara Formation
1690-1750 feet; sandstone with W and G; Dakota Sandstone
f. Gas analysis - none

17. a. Willow Creek Township well No. 3 (ww)
b. SE sec. 22, T. 5 N., R. 29 E.
c. Elevation - 1934 feet
d. TD - 1768 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none

18. a. Shell No. 1 McCrone (pt)
b. NW NW sec. 23, T. 3 N., R. 25 E.
c. Elevation - 2035 feet KB
d. TD - 4010 feet
e. 760 feet, tiny gas show in cuttings; Pierre Shale
766-870 feet; Pierre Shale; Rec. 50 feet sli GCM
f. Gas analysis - none

19. a. Sioux City Stock Yards-Ike Geyer well (ww)
b. SW SE sec. 17, T. 7 N., R. 27 E.
c. Elevation - unknown
d. TD - 2000 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

20. a. Rural Credits Board-Pitzen Ranch well (ww)
b. NE NE sec. 5, T. 4 N., R. 26 E.
c. Elevation - 1898 feet
d. TD - 1699 feet

e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

21. a. Giddings well (ww)
b. SW SW sec. 3, T. 4 N., R. 28 E.
c. Elevation - unknown
d. TD - 1480 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. The gas was used to supply the house

22. a. W. C. Lewis well (ww)
b. SE sec. 20, T. 6 N., R. 29 E.
c. Elevation - 1888 feet
d. TD - 1760 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

23. a. Mrs. George Huston well (ww)
b. NW NW sec. 8, T. 5 N., R. 29 E.
c. Elevation - unknown
d. TD - 1980 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

24. a. Rural Credits Board well (ww)
b. SE NE sec. 10, T. 5 N., R. 29 E.
c. Elevation - unknown
d. TD - 1489 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

25. a. Rural Credits Board well (ww)
b. NE NE sec. 28, T. 5 N., R. 30 E.
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

26. a. Grandena Giddings well (ww)
b. SE SE sec. 12, T. 5 N., R. 30 E.
c. Elevation - 1804 feet
d. TD - 1600 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

27. a. Celia Samuelson well (ww)
b. SE NW sec. 33, T. 5 N., R. 31 E.

c. Elevation - 1494 feet
d. TD - 1315 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

28. a. Phillips No. 1 State-Dakota (pt)
b. NW NW sec. 16, T. 6 N., R. 27 E.
c. Elevation - unknown
d. TD - 4206 feet
e. Gas; Niobrara Formation/Codell Sandstone Member of Carlile Shale
f. Gas analysis - none
g. Gas could be heard escaping from the casing head, no odor

29. a. Gulf No. 1 Stanley-Federal (pt)
b. SE NW sec. 22, T. 8 N., R. 26 E.
c. Elevation - 1700 feet KB
d. TD - 3988 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none

30. a. Schlaikjer No. 1 Triple U et al. (pt)
b. NE NW sec. 9, T. 7 N., R. 27 E.
c. Elevation - 1939 feet KB
d. TD - 2850 feet
e. DST No. 1 1784-1812 feet; Dakota Sandstone; Rec 1150 feet sli GCW
f. Gas analysis - none

31. a. Cabot No. 1-36 State (pt)
b. NW NW sec. 36, T. 5 N., R. 28 E.
c. Elevation - 1988 feet
d. TD - 1110 feet
e. DST No. 1 870-920 feet; Niobrara Formation; GTS in 5 minutes, TSTM
868-918 feet, gas; Niobrara producing zone
f. Gas analysis - O2, 0%; N2, 8.02%, CO2, 0%; methane, 90.39%; ethane, 1.40%; propane, 0.15%, 0.041 GPMcf; iso-butane, 0.02%, 0.007 GPMcf; N-butane, 0.02%, 0.006 GPMcf; gross BTU/cu. ft. at 60 degrees F and 14.7 psia (dry basis), 944; specific gravity (calculated from analysis), 0.596; specific gravity (measured), 0.601
g. On 7/6/78, gas was gauged at 7980 cu. ft/day from 868-918 feet in the Niobrara Formation

32. a. Cabot No. 1-24 Cabot-State (pt)
b. NE NE sec. 24, T. 7 N., R. 27 E.
c. Elevation - 2108 feet
d. Td - 1250 feet
e. 1094-1104 feet; gas; Niobrara Formation producing zone
f. Gas analysis - none

g. On 8/30/78, gas volume was less than 1680 cu. ft/day
On 9/1/78, there was a show of gas ahead of the swab, from 1094-1104 feet depth

33. a. Unnamed well (ww)
b. NE NE SE sec. 22, T. 3 N., R. 30 E.
c. Elevation - unknown
d. TD - 1575 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. "Wells on this location seem to have considerable gas and flow very fast."

34. a. Phillips well (ww)
b. SW sec. 32, T. 6 N., R. 31 E.
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none

35. a. Turner well (ww)
b. SW sec. 21, T. 5 N., R. 30 E.
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none

36. a. Unnamed well (ww)
b. N 1/2 sec. 33, T. 5 N., R. 31 E.
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none

37. a. State well (ww)
b. Center S line sec. 16, T. 109 N., R. 78 W.
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none

38. a. Graves No. 1 Nemec (pt)
b. SW SW sec. 23, T. 3 N., R. 25 E.
c. Elevation - 2044 feet
d. TD - 1601 feet
e. 695 feet, 5 total hydrocarbon (TH) units, probably from a dark shale at approximately 687 feet; Pierre Shale
702-733 feet; up to 20 TH units, probably from dark shale at approximately 695-729 feet; Pierre shale
733-737 feet; 20 TH units, probably from dark shale at approximately 729-734 feet; Pierre Shale

1115 feet; 15 TH units, probably from chalk at approximately 1115 feet; Niobrara Formation
1120 feet, 18 TH units, probably from chalk at approximately 1120 feet; Niobrara Formation
1381 feet, 25 TH units, probably from dark shale at approximately 1374 feet, Carlile Shale
1399-1422 feet; 10-13 TH units, probably from dark shale at approximately 1386-1411 feet; Carlile Shale
1436 feet and deeper; 5 TH units, probably from dark shale at approximately 1422 feet and deeper; Carlile Shale

f. Gas analysis - none

39. a. Cities Service No. 1 Barrick (pt)
b. SW NE sec. 18, T. 7 N., R. 28 E.
c. Elevation - 2070 feet
d. TD - 3995 feet
e. 2783 feet; water flow with some methane gas; Minnelusa Formation
f. Gas analysis - none

40. a. Cabot No. 1-22 Prince and Sons (pt)
b. NE SW sec. 22, T. 5 N., R. 27 E.
c. Elevation - 1993 feet
d. TD - 1220 feet
e. DST No. 1 926-966 feet; Niobrara Formation; Rec 210 feet SG and WCM
f. Gas analysis - none

41. a. Sodagas No. 1-24 Stoesser (pt)
b. SE SE sec. 24, T. 5 N., R. 28 E.
c. Elevation - 1955 feet
d. TD - 970 feet
e. Gas; Niobrara "B" chalk zone
f. Gas analysis - none
g. Gas insufficient to set casing; a vey sli amount of crossover in the upper Niobrara "B" chalk zone

42. a. Williams well (ww)
b. NW NW sec. 10, T. 7 N., R. 27 E.
c. Elevation - 1958 feet
d. TD - 2005 feet
e. Gas, interval unknown
f. Gas analysis - none
g. Slight gas odor

SULLY COUNTY

1. a. Unnamed well (ww)
b. SW SW sec. 21, T. 113 N., R. 80 W.

c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well, gas was lit with a match but it was not steady as the water would fill the pipe and shut it off

2. a. Pearl Township well No. 1 (ww)
b. SE sec. 3, T. 115 N., R. 79 W.
c. Elevation - unknown
d. TD - approximately 1587 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Gas/water ratio was 1/5

3. a. Pearl Township well No. 2 (ww)
b. SE sec. 3, T. 115 N., R. 79 W.
c. Elevation - approximately 1850 feet
d. TD - 1646 feet
e. 1600-1645 feet; gas; Dakota Sandstone
f. Gas analysis - none
g. Gas/water ratio was 1/5

4. a. Hallam well (ww)
b. S 1/2 SE sec. 19, T. 116 N., R. 78 W.
c. Elevation - unknown
d. TD - unknown
e. 1595 feet, gas; Dakota Sandstone
f. Gas analysis - none
g. Similar to wells (2) and (3)

5. a. Rabe well (ww)
b. SW sec. 27, T. 113 N., R. 79 W.
c. Elevation - 1840 feet
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

6. a. Waitt Brothers No. 1 (ww)
b. NW sec. 12, T. 113 N., R. 81 W.
c. Elevation - 1792 feet
d. TD - 1600+ feet
e. Gas; Lakota Formation
f. Gas analysis - none
g. Artesian well

7. a. Waitt Brothers No. 2 (ww)
b. SW sec. 14, T. 113 N., R. 80 W.
c. Elevation - 1769 feet
d. TD - approximately 1700 feet
e. Gas; Lakota Formation
f. Gas analysis - none

g. Artesian well with a considerable amount of gas

8. a. Albert C. Trumble well (ww)
   b. SW sec. 9, T. 113 N., R. 79 W.
   c. Elevation - 1777 feet
   d. TD - 1600+ feet
   e. Gas; Lakota Formation
   f. Gas analysis - none
   g. Artesian well with some gas

9. Joe McGuire well (ww)
   b. SE sec. 13, T. 114 N., R. 79 W.
   c. Elevation - 1798 feet
   d. TD - approximately 1400 feet
   e. Gas; Dakota Sandstone
   f. Gas analysis - none
   g. Artesian well

10. a. George C. Trumble well (ww)
    b. SW sec. 35, T. 114 N., R. 79 W.
    c. Elevation - 1761 feet
    d. TD - 1500+ feet
    e. Gas; Dakota Sandstone
    f. Gas analysis - none
    g. Artesian well with a considerable amount of gas

11. a. C. E. Swenson well (ww)
    b. SW sec. 8, T. 115 N., R. 79 W.
    c. Elevation - 1819 feet
    d. TD - 1792 feet
    e. Gas; Lakota Formation
    f. Gas analysis - none
    g. Artesian well with some gas

12. a. W. H. Becker well (ww)
    b. SE sec. 23, T. 116 N., R. 79 W.
    c. Elevation - 1841 feet
    d. TD - 1638 feet
    e. Gas; Dakota Sandstone
    f. Gas analysis - none
    g. Artesian well with some gas

13. a. Ed Wagner well (ww)
    b. NE sec. 12, T. 116 N., R. 79 W.
    c. Elevation - 1821 feet
    d. TD - 1610 feet
    e. Gas; Dakota Sandstone
    f. Gas analysis - none
    g. Artesian well with some gas

14. a. Leland Warne well (ww)
    b. NE sec. 15, T. 113 N., R. 78 W.
    c. Elevation - 1784 feet
    d. TD - 1475 feet

e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well with some gas

15. a. Albert Lamhein (XO Ranch) well (ww)
b. SE sec. 10, T. 115 N., R. 78 W.
c. Elevation - 1874 feet
d. TD - 1596 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well with gas

16. a. J. Cavenaugh well (ww)
b. SW sec. 3, T. 116 N., R. 78 W.
c. Elevation 1874 feet
d. TD - 1615 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well with some gas

17. a. Boyd Chipman well (ww)
b. SE sec. 14, T. 115 N., R. 77 W.
c. Elevation - 1868 feet
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well with some gas

18. a. A. C. Brehe well (ww)
b. NW sec. 33, T. 116 N., R. 76 W.
c. Elevation - 1835 feet
d. TD - approximately 1600 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well with a small amount of gas at times

19. a. Edwin Archer well (ww)
b. SE sec. 13, T. 116 N., R. 76 W.
c. Elevation - 1850 feet
d. TD - 1600 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well with considerable gas

20. a. Unnamed well (ww)
b. NW sec. 3, T. 116 N., R. 77 W.
c. Elevation - unknown
d. TD - 1800 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. "When water is first pumped, there is considerable gas in the well."

21. a. G. L. Reynolds well (ww)

b. SW sec. 3, T. 113 N., R. 75 W.
c. Elevation - unknown
d. TD - 1422 feet
e. 650 feet, show of gas; base of Niobrara Formation
1000-1050 feet, much gas; Dakota Sandstone
1150-1250 feet, gas show; Dakota Sandstone
f. Gas analysis - none

22. a. Wadleigh Ranch well or D. Barton well (ww)
b. SE sec. 32, T. 113 N., R. 79 W.
c. Elevation - 1744 feet
d. TD - 1565 feet
e. 783-785 feet; very hard sandstone with gas;
Carlile Shale, probably Turner Sandy Member
1400 feet; gas and water; Dakota Sandstone
1510-1565 feet; gas; Dakota Sandstone
f. Gas analysis - none
g. Gas/water ratio 1/3; well made over 12,000 cu. ft./day from 3-inch casing; gas was used in the house

23. a. D. G. Martin well (ww)
b. NE sec. 30, T. 115 N., R. 78 W.
c. Elevation - 1873 feet
d. TD - 1578 feet
e. Gas, Dakota Sandstone
f. Gas analysis - none
g. Some gas

24. a. John Newman well (ww)
b. NE sec. 12, T. 115 N., R. 79 W.
c. Elevation - 1887 feet
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Some gas

25. a. John Sutton ranch well (ww)
b. NW sec. 8, T. 116 N., R. 79 W.
c. Elevation - 1545 feet
d. TD - 1260 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. There was a considerable amount of gas and it was used for heating

26. a. Florence Zebroski well (ww)
b. NW sec. 13, T. 115 N., R. 80 W.
c. Elevation - 1902 feet
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. A little gas

TODD COUNTY

1. a. Rosebud Sioux Tribe No. 1 Tribal Land (pt)
   b. NW NW sec. 7, T. 38 N., R. 31 W.
   c. Elevation - 2730 feet
   d. TD - 3395 feet
   e. 1750 feet, 20 units G while circulating; Niobrara Formation
   Gas indications noted in the Carlile Shale
   Approximately 2000 feet; 350 units G; approximate depth of Greenhorn Limestone
   2235-2275 feet; 350 units G; Graneros Shale
   2840 feet; bubbles were forming in the mud; Fall River Formation
   f. Gas analysis - none

TRIPP COUNTY

1. a. General Crude No. 1 Vogt (pt)
   b. NE SE sec. 25, T. 99 N., R. 79 W.
   c. Elevation - 2158 feet
   d. TD - 2886 feet
   e. 930 feet, gas show; Niobrara Formation
   f. Gas analysis - none

2. a. Gulf No. 1 Keyapaha State (pt)
   b. SW NE sec. 27, T. 96 N., R. 79 W.
   c. Elevation - 2716 feet KB
   d. TD - 3005 feet
   e. Gas; Niobrara Formation
   f. Gas analysis - none

3. a. Cahill No. 1 Neilson (pt)
   b. SW SW sec. 7, T. 99 N., R. 76 W.
   c. Elevation - 1995 feet
   d. TD - 1411 feet
   e. 640-650 feet; sli G odor; Pierre Shale
   650-660 feet; odor of G; Pierre Shale
   655 feet; odor of G or circulation sample; Pierre Shale
   660-670 feet; odor of G; Pierre Shale
   670-680 feet; increasing odor of G; Pierre Shale
   680-690 feet; strong odor of G; Pierre Shale
   690-700 feet; decreasing odor of G; Pierre Shale
   700-710 feet; odor of G; Pierre Shale
   710-720 feet; odor of G; Niobrara Formation
   720-730 feet; odor of G; Niobrara Formation
   730-740 feet; odor of G; Niobrara Formation
   740-750 feet; odor of G; Niobrara Formation
   Strong shows of gas were encountered between 640 and 740 feet in the lower Pierre and upper Niobrara Formation. Porosity is poor with

apparently little fracturing of shale
f. Gas analysis - none

4. a. Carter Unit No. 3 Waters (pt)
b. NE SE sec. 21, T. 99 N., R. 79 W.
c. Elevation - 2192 feet
d. TD - 1480 feet
e. Gas seen in DM; Greenhorn Limestone
Swab test; Greenhorn Limestone; test rec. O, G and W on third stroke of test at which time gas was ignited
1462 feet; gas bubbles noted on mud pit; unlagged; Belle Fourche Shale
f. Gas analysis - none

5. a. Kucera No. 1 Bartels (pt)
b. SW SE sec. 23, T. 100 N., R. 77 W.
c. Elevation - 1874 feet KB
d. TD - 2387 feet
e. 530-660 feet; gas show; Niobrara Formation
f. Gas analysis - none

TURNER COUNTY

1. a. Schmidt well (ww)
b. Approximately 3 miles south of Dolton
c. Elevation - unknown
d. TD - greater than 100 feet
e. Gas; Pleistocene drift
f. Gas analysis - none
g. Gas flowed for several months

UNION COUNTY

1. a. Bergstrom well (ww)
b. SW SW NW NW sec. 4, T. 92 N., R. 50 W.
c. Elevation - unknown
d. TD - 89 feet
e. 82-89 feet; sand and gravel, very tight, gas escaping from open hole when auger pulled but it wouldn't burn; Pleistocene drift
f. Gas analysis - none

WALWORTH COUNTY

1. a. John C. Kulm well (ww)
b. NW SE sec. 27, T. 122 N., R. 77 W.
c. Elevation - 1770 feet

d. TD - approximately 1800 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. There was much gas bubbling up with the water and going to waste

2. a. Wilson well (ww)
b. NE SW sec. 25, T. 122 N., R. 78 W.
c. Elevation - 1812 feet
d. TD - 1752 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well, gas enough to run the cook stove and then some

3. a. Wilson shallow well (ww)
b. NE SW sec. 25, T. 122 N., R. 78 W.
c. Elevation - unknown
d. TD - 145 feet
e. Gas; Virgin Creek Member of Pierre Shale
f. Gas analysis - methane
g. There was no gas when the well was idle but on pumping it developed a lot. Flame would shoot out 2-3 feet from the casing when lit. The Wilson's used this gas for awhile but discontinued because of the necessity of pumping it

4. a. Akaska area wells (ww)
b. Legals not known
c. Elevations - unknown
d. TDs - (1) unknown and (2) 110 feet
e. (1) 140 feet, gas; Pierre Shale
(2) Bored well, blew as if it had gas; Pierre Shale
f. Gas analysis - none

5. a. Selby well(s) (ww)
b. Center N line sec. 4, T. 123 N., R. 76 W.
c. Elevation - unknown
d. TD - 1890 feet
e. 1880 feet; gas with water; Dakota Sandstone
f. Gas analysis - none
g. Flame 3 to 6 feet high by 1.5 feet in diameter

6. a. Iowa Ranch well (ww)
b. SW of Selby
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none

7. a. Akaska well (ww)
b. Legal unknown
c. Elevation - unknown
d. TD - unknown

e. Gas, interval unknown
f. Gas analysis - none
g. Mr. Parmley thought this was the strongest well; it was used in burning brick

8. a. Mobridge swimming pool well (ww)
b. Legal unknown, on flat at east end of Missouri River bridge
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none

9. a. Mobridge city park well or Lincoln Park well (ww)
b. SE sec. 26, T. 124 N., R. 80 W.
c. Elevation - approximately 1600 feet
d. TD - 1750 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. The gas supplied the bathhouse and resort with light and heat

10. a. Unnamed well (ww)
b. SE sec. 19, T. 121 N., R. 77 W.
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none

11. a. Unnamed well (ww)
b. SE sec. 25, T. 121 N., R. 78 W.
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none

12. a. Minneapolis and St. Louis RR Co well or LeBeau well (ww)
b. S 1/2 sec. 8, T. 121 N., R. 78 W.
c. Elevation - 1547 feet
d. TD - 1498 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. Artesian well

13. a. Akaska well (ww)
b. NE NE sec. 3, T. 121 N., R. 77 W.
c. Elevation - 1699 feet
d. TD - 1686 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none

14. a. Unnamed well (ww)
b. SE sec. 21, T. 122 N., R. 77 W.

c. Elevation - unknown
d. TD - 1990 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none
g. There was gas with the water, but it ceased when the well quit flowing a year after it was drilled

15. a. Unnamed well (ww)
b. NW sec. 34, T. 124 N., R. 77 W.
c. Elevation - unknown
d. TD - 135 feet
e. Gas; Pleistocene/Pierre Shale contact
f. Gas analysis - none
g. "Well has natural gas and the water tastes salty."

16. a. Unnamed well (ww)
b. SE NW sec. 25, T. 122 N., R. 78 W.
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none

17. a. Unnamed well (ww)
b. NW SW sec. 19, T. 121 N., R. 77 W.
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none

18. a. Unnamed well (ww)
b. S 1/2 NE sec. 20, T. 121 N., R. 78 W.
c. Elevation - unknown
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none

19. a. Eiteneier well (ww)
b. NW SE sec. 19, T. 121 N., R. 78 W.
c. Elevation - 1825 feet
d. TD - 1785 feet
e. Gas- Dakota Sandstone
f. Gas analysis - none
g. Gas was spurting out of the joints, not used

20. a. Lowrie RR station well (ww)
b. SW NE sec. 11, T. 121 N., R. 76 W.
c. Elevation - 1873 feet
d. TD - unknown
e. Gas; Dakota Sandstone
f. Gas analysis - none

YANKTON COUNTY

1. a. Rittershaus No. 1 Jamesville Colony (pt)
   b. NW SW sec. 29, T. 96 N., R. 56 W.
   c. Elevation - 1160 feet
   d. TD - 1221 feet
   e. Gas show; interval unknown
   f. Gas analysis - none

2. a. Unnamed wells (ww)
   b. Center sec. 18, T. 96 N., R. 55 W.
   c. Elevation - unknown
   d. TD - unknown
   e. Gas; Pleistocene drift
   f. Gas analysis - none
   g. "In 1934 tried to drill a well in the chalk rock but were unsuccessful as we ran into a flowing well at 306 feet. The pressure was so great that a man could not hold it. The air made all who worked with the well sick. The old sand well was 144 feet deep and there was 7 feet of water but it was not sufficient and the same gas was present but not with half the pressure."

ZIEBACH COUNTY

1. a. Cheyenne River Indian Reservation Cherry Creek Station well (ww)
   b. SE sec. 32, T. 8 N., R. 22 E.
   c. Elevation - 1741 feet
   d. TD - 1878 feet
   e. Gas; Dakota Sandstone
   f. Gas analysis - none
   g. Artesian well with a small leakage of gas

2. a. Cheyenne River Indian Reservation Red Scaffold well (ww)
   b. SE sec. 6, T. 9 N., R. 19 E.
   c. Elevation - 1996 feet
   d. TD - 2385 feet
   e. Gas; Dakota Sandstone
   f. Gas analysis - none
   g. Artesian well with some gas

3. a. Clavel well (ww)
   b. NW SW NW sec. 13, T. 10 N., R. 23 E.
   c. Elevation - unknown
   d. TD - 1800 feet
   e. Gas; Dakota Sandstone
   f. Gas analysis - none

4. a. Cosden No. 1 Tanburg (pt)

b. SE NW sec. 9, T. 11 N., R. 19 E.
c. Elevation - 2328 feet
d. TD - 3604 feet
e. Gas; Dakota Sandstone
f. Gas analysis - none

5. a. Phillips No. 1 State (pt)
b. SE NW sec. 20, T. 11 N., R. 23 E.
c. Elevation - 2249 feet KB
d. TD - 3002 feet
e. DST No. 1 1660-1775 feet; Codell Member/Turner Sandy Member of Carlile Shale; Rec. 218 feet sli G and WCM
f. Gas analysis - none

6. a. Herndon No. 1 Butler (pt)
b. NE NE sec. 21, T. 12 N., R. 19 E.
c. Elevation - 2444 feet KB
d. TD - 5590 feet
e. Gas; interval unknown
f. Gas analysis - none

7. a. Norris Oil No. 1 Cheyenne (pt)
b. SW SE sec. 25, T. 15 N., R. 21 E.
c. Elevation - 2288 feet
d. TD - 5587 feet
e. Sli methane show; Niobrara Formation
f. Gas analysis - none

MISCELLANEOUS

1. Shows of gas encountered along the very top of the quartzite ridge between Mitchell and Sioux Falls which were encountered in the vicinity of Lester. (Letcher or Lesterville are the only choices in South Dakota Place Names.)

2. a. Meade Stratigraphic
b. Probably Meade County
c. Elevation - unknown
d. TD - 2316 feet
e. Gas; interval unknown
f. Gas analysis - none

3. A. Rockford No. 1
b. Legal unknown
c. Elevation - unknown
d. TD - 1370 feet
e. Gas; interval unknown
f. Gas analysis - none

4. a. Thompson Ranch (ww)

b. Legal - unknown
c. Elevation - unknown
d. TD - 1700 feet
e. Much gas; interval unknown
f. Gas analysis - none

5. a. Mullen Ranch well (ww)
b. 12 miles south of Mobridge; either Dewey or Walworth County
c. Elevation - unknown
d. TD - unknown
e. 1600 feet, gas; Dakota Sandstone
f. Gas analysis - none

6. a. August Winter well (ww)
b. Probably Lake County
c. Elevation - unknown
d. TD - unknown
e. Gas; Pleistocene drift
f. Gas analysis - none
g. Total of four explosions at this well, possible formation of methane or marsh gas