

THE GEOLOGICAL SURVEY OF WYOMING
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REPORT

on

THE LOVELL WATER WELL

LOVELL, WYOMING

BY

S. H. KNIGHT

November 26, 1935

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The object of the studies made in connection with this report was to determine the probable depth of two reported water bearing sandstones in the Deadwood formation in a water well being drilled by the City of Lovell at the north end of Little Sheep Mountain.

The available data upon which this report is based are:

- (1) A knowledge of the regional geology;
- (2) The log of a well drilled by the Prairie Oil and Gas Company in the NE $\frac{1}{4}$ of Sec. 35, T. 56 W., R. 95 W. This well is located approximately four miles to the southeast of the Lovell well;
- (3) The log of the Lovell well to a depth of 3260 feet;
- (4) Cuttings from the Lovell well taken every ten feet from 800 feet to 1675 feet, and from 3,000 feet to 3260 feet;
- (5) A preliminary report on a new supply of domestic water for Lovell, Wyoming by C. J. Hares;
- (6) Published reports of the United States Geological Survey descriptive of the geological formations of the Bighorn Basin area.

No opportunity was afforded to make original field investigations in connection with this report.

CONCLUSIONS

From a study of all available data the following conclusions were arrived at:

(1) That the bottom of the Lovell well as shown in the submitted log (depth 3260 feet) was in the lower portion of the limy shale member of the Deadwood formation.

(2) That the Lovell well was begun at approximately the same stratigraphical horizon as the Prairie Oil and Gas Well.

(3) That the beds in the Lovell well are standing at a steeper dip angle (probably as high as 45 degrees) than the beds in the Prairie Oil and Gas Well.

(4) That in consequence of the steeper dip the vertical distance through the beds in the Lovell well is greater than in the Prairie Oil and Gas well. The ratio between the vertical depth between the beds in the two wells is approximately as follows:

The vertical depth through a bed in the Prairie Oil and Gas well is to the vertical depth through the same bed in the Lovell well as 1 is to 1.4.

(5) Applying this ratio to the logs of the two wells and allowing for a probable maximum error of 20% for computed depth of the Deadwood formation it is concluded

1. That the uppermost water bearing sandstone reported in the Prairie Oil and Gas well should be encountered at a depth of less than 3450 feet.

2. That the second water bearing sandstone reported in the Prairie Oil and Gas well should be encountered at a depth of less than 3850 feet.

3. That the granite should be encountered at a depth of less than 4050 feet.

4. It is possible that the uppermost sand may be encountered at any depth between 3260 feet and 3450 feet.

5. If and when drilling cuts the uppermost sand it would be possible to compute the depth to the second sand to within a few feet.

Respectfully yours,

S. H. KNIGHT,
State Geologist

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