

## A BITUMINOUS SANDSTONE DEPOSIT BIG HORN COUNTY

### Location and Ownership

The deposit is located in Secs. 32 and 33, T. 52 N., R. 89 W., and lies at an approximate elevation of 7600 feet on the west flank of the Big Horn Mountains. In dry weather, the deposit may be easily reached by automobile.

The deposit consists of 8 placer and 8 lode claims that are owned by Messrs. L. F. Burgess, William Scott, B. J. Burroughs, all of Basin, Wyoming, and L. Kay (address unknown to the writer). The prospect was examined on September 7, 1954, in the company of L. F. Burgess.

### Geology of the Bituminous Sandstone

The bituminous sandstone crops out in an elliptically-shaped hill that overlies the large dip slope formed by the Tensleep formation in this area. No stratigraphic section could be measured in the area due to lack of exposures, but it is reasonably certain that the section here overlies a sequence of red beds. By projection of dip of the section here, it is also reasonable to assume that the section would also be overlain by red beds except for their subsequent removal by erosion. In the area the rocks strike approximately N. 21° W. and dip 7° SW.

It is further believed that the bituminous sandstone lies within the basal part of the Phosphoria formation, but since the stratigraphy in the area was not studied by the writer, this is open to question.

Where initially exposed by a prospect pit, the bituminous sandstone is 10 feet thick and is underlain by one foot of dark gray crossbedded sandstone. This is further underlain by a tan calcareous sandstone of unknown thickness. Overlying the bituminous sandstone is a tan cross-bedded sandstone of unknown thickness which, together with overburden, extends to the top of the hill approximately 50 feet higher stratigraphically and topographically. The bituminous sandstone generally is crossbedded and is very tenaceous and resilient. It would undoubtedly make good road mix if the deposit were more advantageously located.

#### Size and Extent of the Deposit

As has been mentioned before, the bituminous sandstone crops out near the base of an elliptical-shaped hill whose major axis strikes N. 80° W. It is estimated that the maximum and minimum lengths of the axes of the hill are 2200-2500 and 1500 feet respectively. Beginning at the discovery pit at the east end of the deposit, the writer traversed clockwise around the base of the hill and noted 7 outcrops of bituminous sandstone that varied from one to twenty feet in thickness. The greatest exposure cropped out for a distance of approximately 600 feet and averaged about 15 feet in thickness. Apparently the deposit is very irregular or lenticular in thickness, and from the field studies the writer would judge

that an average weighted thickness would be about 10 feet. The maximum thickness for the overburden is estimated at 50 feet, and from an examination of the float (no outcrops were observed) which consists of tan colored poorly cemented slightly calcareous sandstone, the writer would judge that most of the material is bed rock with only a thin veneer of alluvium.

The tonnage of the deposit has been calculated from the above-listed figures as follows:

$$\frac{\pi \times 1500' \times 2500' \times 10' \times 2.65 \times 62.4 \text{ \#/ft}^3}{2000 \text{ \#/ton}} = 9,750,000 \text{ short tons bituminous sandstone}$$

The above figure of course is very approximate.

At the present time it is difficult to see any economic possibilities for the deposit due to the transportation involved and competition from local refineries with respect to road oil.



William H. Wilson  
Assistant State Geologist  
Geological Survey of Wyoming  
June 6, 1955

January 21, 1955

Mr. L. F. Burgess  
Basin, Wyoming

Dear Mr. Burgess:

We have completed the tests of the two samples of bituminous sandstone which you mailed to us with the following results:

Extraction of asphalt with carbontetrachloride.  
Percent asphalt found: Outcrop 13.2, 3-4 feet deep, 13.3  
Very light asphalt - high oil content.

Sincerely,

NATURAL RESOURCES RESEARCH INSTITUTE

/s/ R. D. Law

R. D. Law  
Petroleum Research Chemist

C  
O  
P  
Y

Mr. Wilson:

Copy of Burgess letter as per your request of June 3.

rgm

