

REPORT ON THE OCCURRENCE OF PHOSPHATE IN THE VICINITY
OF NUGGET STATION, UINTA COUNTY, WYOMING

BY

John C. Johnston and Wilho J. Kivi

Location and Accessibility

Nugget station is located on the Oregon Short Line Railroad at the junction of Twin Creek and Rock Creek. The Phosphate outcrops to the north of Nugget Station and east of Rock Creek in sections 28, 21, 4; T 22 N; R 118 W; and Sections 28, 29, 20; T 23 N; R 118 W. The first recognizable occurrence of the Phosphoria formation is found approximately two miles north of Nugget Station and on the south side of Sheep Creek Canyon, a tributary of Rock Creek. From there on northward the phosphate is more or less continuous, but is missing in places due to faulting. The area is readily accessible, from both the railroad and U.S. Highway number 30. Rock Creek flows through a flat-floored, alluvium filled, valley over which a fair automobile road has been built. The road extends along the valley floor at least ten miles northward from the railroad.

Scope of the Report

This report will not attempt to provide more than a preliminary survey of the occurrence and quality of the phosphate beds found in this area. Samples were taken from the lower thirty feet of the shales in one locality, (13 on the map). No report, as yet, is available on the Phosphatic content of the samples taken, but will be available in the future.

Field Work

The necessary field examinations were carried out during the days spent in the area, September 10 and 11, 1939. Detailed sections were impossible due to heavy cover, but a nearly complete section was obtained by measuring in two different localities. Most of the work was of a reconnaissance nature and no

attempt to interpret the geologic structure was made.

Drainage and Topography

The main drainage of the area proper is Rock Creek, a southward flowing tributary of Twin Creek, the main west drainage system of the area. The phosphate outcrops to the east of Rock Creek along a ridge 500 ft. in height which forms the east side of Rock Creek Valley. Numerous small and intermittent streams flow west into Rock Creek and all of them cut more or less precipitous canyons through the ridge-forming Paleozoic sediments. Eight miles north of the junction with Twin Creek two southward flowing streams join to form Rock Creek. One mile above the fork on the northeast branch the best exposures of the Lower Phosphoria shales were found. Plenty of water is available for mill purposes at all times of the year.

Geology

The geology of this particular area is quite complicated. Therefore it is impossible to determine without further investigation the extent of the effect of complicated structure on the phosphate-bearing beds. The phosphate is present at the three localities shown on the map and the outcrop of the formation is shown on the map as far as it was investigated by the party. The upper portion of the Phosphoria formation is competent to a rather high degree being, composed of hard cherts and dense limestones. The Wells formation which underlies the Phosphoria consists of massive limestones and very hard quartzites. The dips, in general are low, although at locality #3 they appeared to be overturned ~~and~~ to the east, which results in a dip to the west. Everywhere the phosphatic shales were covered to the depth of at least five feet. At localities #1 & 3 the cherty mudstones and limestones were exposed high up on the valley sides. More work is needed in order to

trace the Phosphoria outcrop to its full length, but at the present time it would be safe to say that the total lengths along the strike of the outcrops are at least eight miles.

Conclusions

More detailed knowledge of the immediate area through which the phosphate outcrops is much desired. Such additional information would be valuable in that a more definite estimate of the quality and the quantity could be secured. There are several apparently good mine locations which would require closer examination before definite recommendations could be offered. It might be said that the accessibility is quite good but commercial exploitation warrants further investigation.