UNITED STATES
DEPARTMENT OF THE INTERIOR
Geological Survey

PRELIMINARY REPORT ON THE GEOLOGY OF THE NELCHINA AREA, ALASKA

By

Arthur Grantz

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The illustrations comprising this report are preliminary and have not been edited or reviewed for conformity with the U. S. Geological Survey standards and nomenclature.

ILLUSTRATIONS

Stratigraphic sections

Flint - Int. 3717

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THE GEOLOGY OF THE NELCHINA AREA, ALASKA

Release to open file of a preliminary report by the Geological Survey on the geology of the Nelchina area, Alaska, was announced today by Secretary of the Interior Douglas McKay.

Prepared by Arthur Grantz, the report consists of a generalized geologic map of the Nelchina area, a reconnaissance geologic map of Anchorage D-2 quadrangle, a chart giving a general description of the exposed sedimentary rocks, and representative detailed stratigraphic sections of the exposed marine sedimentary formations.

Field work for this report was carried out in 1952 as part of an investigation of the petroleum possibilities of the Jurassic and Cretaceous marine sedimentary rocks occurring in the southeastern part of the Talkeetna Mountains and the southern part of the Copper River Basin. This work will be continued in 1953.

The Nelchina area lies about 120 miles northeast of Anchorage and is crossed by the Glenn Highway. In recent months there has been considerable interest in its petroleum possibilities.

More than 15,000 feet of unmetamorphosed marine sedimentary rocks of middle Jurassic to Upper Cretaceous age are present in the area. Shale and siltstone are the predominant lithologic types, but many beds of sandstone and some conglomerate occur throughout the exposed sedimentary section. At least four major unconformities, representing important periods of faulting or of folding, uplift, and erosion were found within the marine sedimentary sequence.

The Jurassic and Cretaceous rocks of the Nelchina area have undergone gentle to moderate folding. Many large high-angle faults are present, and faulting rather than folding has been chiefly responsible for the present distribution of the rocks units.

The marine sedimentary rocks are underlain by a thick sequence of volcanic rocks of lower Jurassic age which is at least a few thousand feet thick. They are overlain by a variable thickness of continental sediments of early Tertiary age, above which occurs a sequence of basic volcanic flows of late Tertiary age, attaining a maximum thickness of more than 2,500 feet.

The sedimentary rocks are well exposed in the southeastern Talkeetna Mountains but are exposed only in a few places in the southern part of the Copper River basin. In most places the bedrock underlying the Copper River basin is masked by a few hundred feet of glacial deposits.

In the western part of the Nelchina area the marine sediments are intruded by numerous basaltic dikes and sills of late Tertiary age. South of Sheep Mountain several small porphyritic intrusives of intermediate composition intrude the upper Cretaceous sedimentary rocks.

This report, with hand-colored maps, is available for public inspection at the Geological Survey offices in Washington, D. C., GSA Building, Washington, D. C.; 100 Old Mint Building, San Francisco, California; Subport, Juneau, Alaska; Office of Regional Mining Supervisor, Conservation Division, Anchorage, Alaska; and Alaskan Geology Branch, College, Alaska. A copy with uncolored maps but with formations shown by letter symbols is also available at the San Francisco office of the Geological Survey for use in making reproductions at private expense.

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