

NOTE:

The analysis of geologic data collected in 1947 has resulted in some revision in the stratigraphic picture of the Upper Cretaceous and early-Tertiary sequences of rocks. In connection with this revision it has become advisable to drop the use of the term "formation" as the time-rock unit designations A through I and instead to use the term "zone." Use of the term "formation" will be more appropriate in a more detailed tongue-member classification of the Upper Cretaceous rocks.

In these 1947 preliminary reports the time-rock units formerly called Formations E, F, G, H, and I are now called Zones E, F, G, H, and I. However, some changes in vertical limits have been made. These are discussed in the reports concerned.

As the term is used in the October 1947 reports, Zone A is, in general, the sequence of rocks formerly called Formation A. Exceptions are on the Oolamnavik and Kurupa Rivers where Zone A is equivalent to Formations A, B, and C. Zone A is dominantly a marine section of thick sandstone members separated by siltstone and shale. The thickness is fairly consistent, ranging from about 2,000 feet to about 2,500 feet as measured along streams from the Sagavanirktok to the Utukok Rivers. Zone A has proved to be a very persistent unit laterally. It has been recognized in the field on the Utukok, Colville, Kurupa, Oolamnavik, Killik, Chandler, Anaktuvuk, Nanushuk, and Sagavanirktok Rivers.

All rocks between the top of Zone A and the bottom of Zone E are now classified as Zone D. This sequence of rocks thickens from east to west ranging from about 2,500 feet on the Nanushuk to about 5,000 feet on the Utukok River. On the Nanushuk River it is mainly a marine shale section which becomes sandy and contains some coal near the top. Although marine tongues are present in the sections that have been studied to the west, deltaic-coastal, and terrestrial facies form a large part of the section. The units into which Zone D can be divided differ from river to river and are called d-1, d-2, etc. These divisions apply only to a particular river or area and are not to be considered correlative.

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U.S. Geological Survey

PRELIMINARY REPORT ON THE STRATIGRAPHY AND STRUCTURE OF THE
WOLF CREEK ANTICLINE, ALASKA

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INTRODUCTION

In 1946 U. S. Geological Survey Party 2 was assigned the task of carrying out detailed structural and stratigraphic investigations in the area of Maybe Creek*. Field studies indicated the presence of a large anticlinal structure whose axis lies just south of Wolf Creek. Later structural data compiled from aerial photographic studies indicated that the anticline is a closed structure 8-9 miles long, and as much as 6 miles wide. The evidence for a closure on the east end of the structure appears very strong, but not enough evidence was obtained to prove closure on the west end. In 1947 U. S. Geological Survey Party 1 spent two weeks at Wolf Creek, mapping bedding traces on the west end of the structure with plane table and alidade, in an attempt to prove or disprove west closure on the anticline. Party 1, consisting of 3 geologists, cook, and a "weasel" mechanic, left Umiat on July 21, and returned on August 5. Two "weasels" were used for the transportation of the party and equipment, and were also used extensively in mapping the area.

STRUCTURE AND STRATIGRAPHY

No attempt was made to restudy the entire Wolf Creek structure since previous field work and data obtained from studies of aerial photographs appear to prove that there is a closure on the east end of the anticline. On the west end of the structure a triangulation net was established, and all bedding traces that were observable in the field were mapped. Bedding traces, however, are not numerous in this area, and the majority of them are straight-line traces, and therefore useless for obtaining strikes and dips by the three-point method. Exposures of rock are few, and generally the outcrops are poor. Definite correlations between outcrops over any distance are therefore not possible.

* Stratigraphy and structure of the area of Maybe Creek, N.P.R. No. 4, Report No. 4, Richard G. Ray and William A. Fischer, 1947.

The data obtained by surface geologic studies is inconclusive. The only apparent way of determining whether the anticline has a closure to the west appears to be by subsurface studies of the area. The strongest statement that can be made on the basis of the surface geologic studies is that at one place there is a west plunge and a closure of 20 feet. This was determined by the mapping of a fairly persistent lithologic unit, designated as Horizon A on the accompanying map. This horizon was traced across the axis in two places, and several traces of it were mapped on the south side of the structure. On the north flank of the anticline, north of Wolf Creek, several traces were mapped. Strikes determined by the three-point method indicate that the bedding here is parallel or almost parallel to the axis. The same is true on the south side of the axis, wherever strikes could be determined. That is, the strikes of the strata on both flanks of the anticline are nearly parallel. The data obtained indicates that the axis of the anticline lies a little further south than was previously believed. However, on the west end of the structure there is not enough data available to locate the axis definitely. The position of the axis on the west end of the anticline, as shown on the map is only approximate.

Field examination of the rock that forms Horizon A indicates that this may be the same horizon that was mapped in the Umiat area as the top of Zone F. If this is true, then the conglomerate horizon used by Ray and Fischer in 1946 to delineate the F-G boundary would have to be in the lower part of Zone G. This would increase the thickness of Zone G in the area by approximately 300 feet. Ray and Fischer considered Zone G to be about 1350 feet. By increasing the thickness by 300 feet, Zone G would be 1650 feet thick. This compares favorably with the calculated thickness of 1575 feet for Zone G in the Umiat area. On the accompanying map, the boundary between Zone F and Zone G outlined by Ray and Fischer has left unchanged.

The boundary between Zone G and Zone H on the north limb of the Wolf Creek anticline has been somewhat altered. This is based on tracing the Umiat Sandstone (basal member of Zone H) from its westernmost expression on the south flank of the Umiat Anticline south to the north limb of the Wolf Creek Anticline.

On the return trip to Umiat a traverse was carried from the Wolf Creek structure to triangulation stations established on the Umiat Anticline in 1946.