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A GEOLOGIC AND GEOCHEMICAL TRAVERSE
ALONG THE NELLIE JUAN RIVER
KENAI PENINSULA, ALASKA

By G. Herreid

DESCRIPTIVE NOTES

The rocks along the traverse consist of graywacke and slate plus a scattering of crosscutting dikes and quartz veins. The rocks in the remainder of the area covered by the map appear by visual and aerial observation to be the same.

The graywacke is typically medium to dark gray with beds 1 inch to 2 feet thick and generally contains grains of silt to sand size. Pebble conglomerate is infrequent, and may contain scattered black slate or brown-weathering black limestone clasts. The graywacke is interbedded with black slate or argillite beds generally less than 1 - 2 feet thick. Contacts are generally sharp and no graded graywacke beds were seen. Where tops of beds could be determined, they faced upward to the southeast.

The graywacke is generally not foliated, but the argillaceous rock has slaty cleavage which cuts across the bedding in most outcrops. Slight movements along the cleavage have resulted in crenulation of contacts in some places, and in slicing of graywacke beds into lenticular boudins, often many feet in length,

Lack of traceable horizons makes determination of the large scale structure difficult. All fold axes and lineations seen were measured and plotted on the map. Despite the paucity of measurable minor fold axes and lineations, the common warping of beds, and the presence of cleavage crosscutting bedding are indications that major folding is present in the area. The regional axis of folding, based on only a few data, probably plunges moderately to the north east.

Light greenish andesite(?) dikes containing scattered bleached amphibole(?) laths in an aphanitic matrix are present at intervals averaging several hundred feet. They mostly dip steeply and strike

northeast and northwest. They range from 1 - 15 feet thick and cross-cut the graywacke with sharp contacts. Barren white quartz veins often occur in and along the dikes.

The greatest concentration of quartz veins was seen in the vicinity of Sample 30, where the rocks have been scoured clean by glaciers. Here groups of white quartz veins aggregating a foot or so in thickness over a width of 2 - 4 feet form offshoots perpendicular to shear zones running parallel to bedding in the graywacke-slate. The widest of these veins is 1 foot and the average length of the bunches is 100 feet. In this distance the veins, which may have an aggregate thickness of about 1 foot near the shear zone, spread out to discontinuous veinlets. There is a conspicuous lack of sulfides or strong limonitization. A geochemical stream sediment sample (#30) taken to test this zone shows only background amounts of copper, lead and zinc.

The composition of float throughout the area is constant. More than 99% is graywacke and black slate; less than 1% of the graywacke has limestone clasts. Quartz veins generally less than 1 inch and often less than 1/16 inch wide are present in 5 - 10% of the graywacke boulders. Light green dike float is sparse. Occasionally white granitic boulders are present. Rusty-stained slate and graywacke, in some cases with visible fine-grained pyrite, form less than 1% of the float. Most vein quartz is white and unstained.

Stream sediment geochemical samples were taken of all creeks crossed. Samples taken were of the finest sediment obtainable, and from below the water level, in most locations. Three samples contain slightly anomalous amounts of metals (#3, #5, and #6). These are all from one area on the east side of Lake Nellie Juan. Calcite veinlets with pyrite were seen in the float at #5. No other signs of mineralization were seen in the vicinity. Field work was done September 10-17, 1964.