MR-195-24

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MEMORANDUM ON TESTS MADE DURING APRIL, 1943
BY JOESTING ON RADIO-ACTIVITY OF ROCKS.

During April tests for radioactivity were made on 25 samples of placer concentrates collected in 1942 from various parts of interior Alaska. These tests were similar to others made a year ago on 25 samples from other placers from interior Alaska.

To test for radioactivity, 100-gram portions of each sample were placed with X-ray film in light-tight pill boxes. Strips of perforated sheet lead cut in distinctive patterns were placed between the concentrates and the film, to assist in the recognition of true radiation effects. After 3 weeks exposure the films were developed and examined.

Of the 50 samples tested, only those from Grubstake and Moose Creeks in the Bonnifield district were sufficiently radioactuive to expose X-ray film. Anomalous exposures were obtained from samples containing high proportions of sulfide minerals and organic matter. It is believed that they were the result of slow oxidation of these materials, with consequent reduction of the film. Where the anomalous exposures are strong, the interfering materials may be removed with weak acids or oxidizing agents; ordinarily, however, they do not interfere with recognition of true radiation effects if perforated sheet lead masks are used.

Confirmatory tests of several samples were made by L. A. Sanderman of U. of W., using a Lauriten electroscope. These tests showed that with the exception of the Grubstake and Moose Creek samples, the content of radium or its equivalent in all samples is less than $10^{-9}$ grams/gram of material, which is the lower limit for commercial ore.

The above described tests were made to gain some idea of the occurrence of radio-active minerals over a considerable part of interior Alaska. It was assumed that radio-active minerals would, to some extent, be concentrated in placers and that placer concentrates would thus furnish information concerning radioactivity of the source rocks. If this assumption is correct, then it is apparent that, with the exception of the Bonnifield district, strongly radioactive deposits are not likely to be found in interior Alaska, at least in the areas contiguous to the placers tested. The tests also show that

relatively weak radioactivity can be detected by Agfa Non-screening X-ray film, which was the type used.

Tests to determine the source of radioactivity in the concentrates from Grubstake and Moose Creeks were inconclusive. No uranium was detected, and it is believed likely that the radiations come from zircon, which is one of the main mineral constituents in the two samples.