

Project No. 750052: Uranium Reconnaissance Program

S. B. Ballantyne and K. Bottrill
Resource Geophysics and Geochemistry Division

As part of the Federal-Provincial Uranium Reconnaissance Program geochemical orientation surveys were carried out during July and August in south-central and southeastern British Columbia. In particular three pilot study areas were sampled, each with distinctly different modes of occurrence, physiographic, climatic and mineralogical features.

Fuki Donen Prospect Area

Situated within the Greenwood Mining Division, 11 miles northeast of Beaverdell or about 35 miles south-east of Kelowna, an area 18 by 15 km centred around the Dear Creek Fuki outcrop was sampled.

The original discovery was made in August, 1968 by geologists of Power Reactor and Nuclear Fuel Development Corporation, now operator, who were conducting a carborne scintillometer survey in the area. Since 1969, Nissho-Iwai Canada Ltd., the owners, have conducted yearly diamond drill programs on this claim group and others in the vicinity of Beaverdell.

Secondary uranium mineralization, identified as meta-autunite, in a rock specimen taken from the Dear Creek Fuki outcrop and analyzed spectrographically assayed 0.3 per cent U (Ruzicka, 1971). It is reported that "radiometric anomalies equivalent to 0.02 - 0.70 per cent U_3O_8 have been recognized" (Anon., 1973). Mineralization occurs in the basal sediments, mainly sandstone and conglomerate, of a Tertiary olivine basalt named the "Plateau Basalt Formation" (Anon., 1973). This flat-lying formation has a direct effect on the topography of the area which is a plateau with an elevation of 1300 m. Eleven small lakes are situated on the plateau with overburden and Quaternary sediments covering almost 70 per cent of the lakeshore and low lying area.

Stream sediments and lake sediments were collected at an average sample density of one sample per 5.8 km². Wherever possible, a heavy mineral concentrate was collected by means of a gold pan at the stream sediment sample location. Some stream and surface lake waters were also collected. The sediments were dried, sieved to minus 80-mesh and sent to Atomic Energy Canada, Ltd. (A. E. C. L.), Ottawa for uranium determination by delayed neutron activation. Preliminary results would seem to indicate that the lake sediment and stream sediment anomalies coincide with drilled buried uranium mineralization while the heavy mineral concentrates are not a reliable indicator.

Grand Forks Study Area

This study area is located north of Grand Forks, British Columbia, between Christina Lake to the east and the Granby River to the west. The Christina Range

of the Monashee Mountains runs roughly north-south at elevations to 1680 m while the Granby River Valley parallels it at approximately 465 m above sea level. Steep V-shaped valleys of all major creeks in the area cross-cut this north-south trend. The area is semi-arid with the drainage systems often being intermittent or dry. South-facing slopes are sparsely treed and show more outcrop than the heavily wooded north slopes or drift-covered flat area.

The general geology of the area is a raised fault block of high grade metamorphic igneous and sedimentary rocks which Little (1957), named the Grand Forks Group. A part of the Eastern Tectonic Belt (Wheeler, 1966), they are folded about east-southeast and northerly trending axes bounded to the east and west by two major Tertiary faults, namely the Kettle River Fault and the Granby River Fault (Preto, 1970). Preto (1970) divided this part of the Shuswap Metamorphic Complex into ten map-units.

The mineralization, uraninite with secondary uranophane, occurs in quartz-feldspar-mica pegmatites interlayering with other members of the gneissic complex (Anon., 1970).

Armstrong (1974) in his discussion on "porphyry" uranium deposits quotes assays of 0.60 - 100 per cent U_3O_8 for grab samples of the granite pegmatites taken from the Boundary Explorations prospect.

An 18- by 14-km area was sampled for stream sediments giving an average sample density of one sample per 3.45 km². Heavy mineral concentrates and stream waters were also collected where possible; however, many of the creeks were dry.

The samples were dried, sieved and sent to A. E. C. L. for uranium determination by delayed neutron activation. Further analysis is being completed and rock specimens taken from the study area examined.

Horsethief Creek and Forster Creek Study Area

This area is located within the Golden Mining Division Horsethief Creek, Forster Creek and much of their drainage system was sampled in the middle of August. Both lie within the Purcell Mountains that have elevations greater than 3000 m; they are glacier fed and they cross-cut the main structural and stratigraphic trends. The area is accessible by logging roads which run directly west from Radium Hot Springs.

Horsethief Creek was sampled to an elevation of 1500 m and Forster Creek to 1800 m elevation.

Concentrations of mechanically transported black sand containing columbium- and uranium-bearing minerals (uraninite, pyrochlore-microlite, euxenite-polycrase) are found in Forster Creek, and are thought to be representative of the Horsethief Batholith, a

porphyritic quartz monzonite of Cretaceous age (Reesor, 1973). On the other hand, sediments from the upper reaches of Horsethief Creek reflect the presence of Proterozoic Dutch Creek Formation consisting of slate, argillite, quartzite and some carbonate rocks.

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