HF 2-171

105 - F

Geology

NATIONAL TOPOGRAPHIC SERIES — DEPARTMENT OF MINES AND TECHNICAL SURVEYS — FIRST EDITION — CANADA SHEET 105 F

LEGEND

Lithologic grouping based on local ground observation, air reconnaissance, and air photo interpretation as well as other sources.

6. Serpentinite or basic rocks - may include some of (5)
5. Competent Granitic terrane - may include much of (4) in the Pelly Mts granitic complex
4. Competent layered rocks - metamorphics, quartzites, volcanics, cherts, etc. — may include some rocks below
3. Incompetent slate, phyllite, and schist - may include minor competent members.
2. Competent limestone and dolomite - may include minor slate and other rocks
1. Cambrian limestone - full extent unknown

Structural lineaments (bedding, contacts, some faults)

Inferred or possible fault

Inferred dip — great, medium, or small.

Note: Much of this map is based on inference and is therefore subject to much revision

GENERAL GEOLOGY

SW TO NE

Schist, quartzite, limestone, and gneiss form the western margin of the Pelly Mountains, extending along the southwest side of the Quiet Lake batholith into Livingstone Creek and on northward in the Laberge map-area. These formations may be separated from younger rocks on the southwest by regional faults along Teslin River and South Big Salmon River. Gold, silver-lead, and copper showings are proof that this is a good belt for prospecting.

The Quiet Lake batholith appears to be simpler than the Pelly Mountains granitic complex. Little is known of the inferred stock.

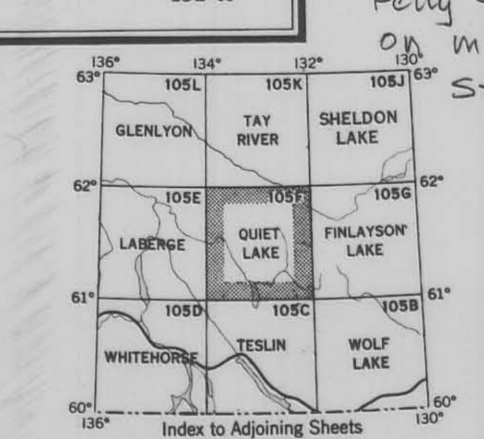
A broad belt of schist, quartzite, and limestone around the bend of Big Salmon River, probably of Paleozoic age, is apparently folded into a broad north-plunging anticline whose nose is occupied by a north-plunging, zoned ultrabasic body and is truncated beyond by a granitic salient of the Diuntarat Range. The west limb of this fold continues into the North Big Salmon valley in the Laberge map-area, and the anticlinal nose continues there. Ultrabasic bodies are scattered irregularly from beyond the North Big Salmon River, through the Big Salmon River in the Quiet Lake map-area, and on into the Teslin map-area around Red River. Although little other than asbestos and some silver-lead has been found along this general belt, the geologic complexity suggests that it should be very favourable for prospecting, especially for asbestos.

The Pelly Mountains granitic complex, the competent core of the Pelly Mountains, is the equivalent of the Cassiar batholith in B.C. and, with the Glenlyon batholith, forms part of the structural backbone of the Yukon. This complex includes much metamorphic rock or granitized equivalents as well as distinct intrusions, probably largely granodioritic. Prospecting possibilities appear to be limited to margins or metamorphic areas.

Northeast of the granitic complex is a broad belt of folded and faulted Paleozoic rocks ranging from Lower Cambrian to probable Mississippian age, with lithology alternating between incompetent phyllite members and competent limestone, dolomite, quartzite, greenstone, etc. Small stocks and other bodies of syenite, granodiorite, and diorite or gabbro cut these rocks. Folds here trend generally northwest to west-northwest with an almost east-west trend in the Ketza area. Major flat overthrust faults were noted by the Geological Survey of Canada (J.O. Wheeler) at the head of Ram Creek and south of White Creek, and these may be common. Northwest-striking faults are common, for example along Seagull Creek, at the head of White Creek, and in the Ketza area. Fissures related to, or parallel to, these faults carry much of the silver-lead mineralization in the Ketza region, particularly where these fissures intersect the Lower Cambrian Archeocyathus limestone member. Prospecting possibilities anywhere along this Paleozoic belt are excellent, as shown by recent discoveries of silver-lead, copper, lead-zinc, gold, molybdenum, and other minerals.

An incompetent section of slates with minor chert, quartzite, and limestone forms the northeast margin of the Paleozoic belt, and is bounded by a fault which forms the margin of a regional fault trough, the Pelly Trench. Within fault blocks in this trench, and northeast of it, more intensely metamorphosed rocks are reported, suggesting major displacements probably with downfaulting of the Pelly Mountains block, erosion of the northeast block, then up-faulting of the Pelly Mountains block in Late Tertiary or Pleistocene time to give the present land form. Conditions around the Shakwak Valley fault trench of the Kluane region are similar. The Pelly trench may exert indirect regional control on mineralization by localizing subsidiary structures.

Scale 1:250,000 or 1 inch = 4 miles (approximately)



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