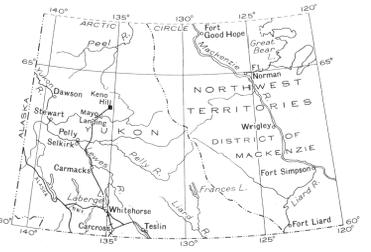


PRELIMINARY MAP 50-20A
KENO HILL
YUKON TERRITORY

Scale 1 Inch to 1,000 Feet - 1:20,000
Approximate magnetic declination 34° 35' East



LEGEND

- MESOZOIC OR LATER**
 - 3 Rhyolite, porphyritic rhyolite, and fine-grained granite
 - X7 Biotite lamprophyre
- PALEOZOIC (?)**
 - 6 Greenstone
- PROTEROZOIC OR LATER**
 - 5 Undifferentiated schist, minor thin-bedded quartzite
 - 4 Sheared, grey to black, thin-bedded quartzite; abundant graphitic schist
 - 3 Mainly graphitic schist
 - 2 Quartz-muscovite schist and quartz-muscovite-chlorite schist minor quartzite
 - 1 Mainly pale grey blocky quartzite; minor black schist

- Note: The stratigraphic succession of map-units 1 to 5 is uncertain
- Rock outcrop, area of mainly rock outcrop
 - Area of rock float of probably local origin
 - Bedding (direction of dip known, upper side of bed unknown)
 - Foliation (inclined)
 - Fault (known, assumed)
 - Lineament (possibly the trace of a vein or fault)
 - Vein (known, assumed)
 - Cabin, building
 - Adit (cave)
 - Shaft
 - Prospect pit
 - Open-cut
 - Road
 - Contour (approx. interval, 250 feet)
 - Mining property

Geology by K. C. McFadden, 1948, 1949.

MINING PROPERTIES

- | | |
|-------------------------|--------------------|
| 1 Lone Star and Fisher | 10 No. 6 |
| 2 "Sourdough Hill" | 11 Porcupine |
| 3 Thunderbird and Greta | 12 Helen Fraction |
| 4 Dorothy | 13 No. 9 |
| 5 Cross No. 1 | 14 Gold Hill No. 2 |
| 6 Black Cap | 15 Gambler |
| 7 Vanguard | 16 Stone |
| 8 Besner-Milosevich | 17 Ladue Fraction |
| 9 Sadié-Friendship | 18 Silver Basin |
| 10 Ladue | 19 Gold Queen |
| 11 Lucky Queen | 20 Klondyke |
| 12 Shamrock | 21 Caribou |

DESCRIPTIVE NOTES

Keno and Galena Hills are in central Yukon, some 220 miles north of Whitehorse. Equipment and supplies for the mining camp there are brought in from Whitehorse by river boat in the summer months via Yukon (Lewes) and Stewart Rivers. A motor road connecting Whitehorse and Mayo Landing, the latter some 40 miles by road south of the camp, is expected to be completed in 1950, and long stretches of it are already in use. A regular plane service is maintained between Whitehorse and Mayo Landing.

The geology and ore deposits of Keno Hill have been described by Cockfield¹ and those of Galena Hill by Stockwell². The general geology of the Mayo district has been studied by Stockwell³.

Pale grey, grey, and blue-grey quartzites (1) constitute the most easily outlined formations of the area, for although they form few outcrops, coarse rubble from them allows a fairly accurate delineation of the areas they occupy. Sedimentary textures are generally not preserved, and stratigraphic tops are rarely determinable. Interbeds of graphitic schists are common, but are much less conspicuous in outcrops than in underground workings.

The same schist is used in these notes and in the accompanying map legend to describe quartzite, and thin, with only minor true schist.

Pale, greenish, grey, or buff quartz-muscovite schist and quartz-muscovite-chlorite schist (2) in many places show a layering that dips steeply across the cleavage, but sedimentary textures are rarely observed. Limestone is interbedded with pale schists along Flat Creek, in a few places along the top of Galena Hill, and on Sourdough Hill.

Graphitic schist (3) rarely outcrops, and in most of its few exposures is thinly bedded, the laminae showing intense folding, with axial planes parallel to the foliation.

Sheared, grey to black, thin-bedded quartzite (4), with abundant black schist interbeds, forms a band that extends from Galena Creek, west of Galena Hill, to Sourdough Hill. A few outcrops and considerable float indicate a similar band across the summit of Keno Hill.

Within large areas, outcrops are so few that it is impossible to differentiate the various types of schist, although it seems certain that schist is the predominant bedrock. The rocks in such areas are mapped as undifferentiated schist (5).

Sheared greenstones (6) are highly resistant to erosion, and within large areas form the only outcrops. These rocks, although greatly altered, locally contain remnants of gneiss and schist, and show an igneous texture. The bodies best exposed are discontinuous along strike and lensoidal in cross-section, but their extent down plunge is unknown. Their origin is uncertain, but they may be lensoidal, concordant with the bedding, lensoidal, pipe-like igneous bodies, lenses bounded by low-angle faults, or possibly, in part, corral portions of folds.

The youngest rocks are sills of fine-grained, biotite lamprophyre (7), and sills of rhyolite, porphyritic rhyolite, and fine-grained granite (8). They were intruded after the shearing that affected the older rocks.

Both Keno and Galena Hills are marked by glacial drift deposited during two distinct intervals of glaciation: an early one when both hills were nearly completely overtopped by ice, and a later interval during which the ice covered only their lower slopes. The hills lie in the region of permafrost, where special knowledge and techniques are necessary in prospecting, mining, and the maintenance of roads and structures.

Although the rocks appear to form a gently to moderately dipping homoclinal succession, intense shearing, low-angle faults, and tight drag-folds indicate that the overall structure is probably complicated by large-scale recurrent folds. Such folds are believed to be responsible for the terminations of the quartzite bodies along the northern east of Keno Hill.

The folios of the schists show minute crenulations, most of which trend about southeast.

Keno Hill and adjoining Galena Hill are important for their ore deposits, which have yielded some \$30,000,000 in silver and lead since 1913. The ore occurs as fillings along faults that, with few exceptions, strike northeast and dip steeply southeast. Movement on the faults has commonly been such that the southeast side is offset towards the northeast. Most of the persistent and productive veins occur in the quartzites (1), and many of them, such as the No. 9, Lucky Queen, and Silver King veins, lie near the contacts of the quartzites with underlying or overlying schists. Other veins are found at or near contacts of schist and greenstone (Ladue, Cream), or along faults that bring schist and greenstone together (Stone, Besner-Milosevich, Greta, Tye-Rocket). A few veins are found along faults in greenstones, but have so far not proved rich. Productive veins have not been found in areas of schist where greenstones or quartzites are lacking. The principal ore minerals are galena (commonly carrying between 100 and 200 ounces of silver to the ton), grey copper (generally richer in silver than the galena), and sphalerite, which occur in a gangue of manganese silicates and quartz. Secondary minerals, locally important, include cerussite and wadley silver.

The veins are intersected by cross-faults along which offsets are to the right. Such faults are believed responsible for the offsets in the veins at the Ladue-Sadie-Friendship, Lone Star and Fisher, Arctic and Masaff, Calumet and Hector, and other properties. Strong, post-mineral shears parallel with the veins are especially conspicuous at Calumet and Hector mines and on the Keno group.

In the past, none of the ore shoots has been found to persist more than about 300 feet from the surface, but recent work at the Calumet mine suggests that some may continue to greater depths. In any case, the best evidence at hand suggests that the present land surface has exercised no control over the location of the known orebodies, and that other similar orebodies are to be found that do not extend to the surface and that may occur at considerable depths.

Vein-bearing faults are poorly exposed and difficult to trace except where they have offset easily recognizable horizons such as the contacts of the main quartzite bodies. Some of the north or northeast trending faults shown on the maps may carry veins, and certain lineaments seen in air photographs are possibly the traces of faults or veins and merit investigation.

The main producing mine at present is the Hector of United Keno Hill Limited. This company is developing the No. 9, Arctic and Masaff, and Elsie properties on Galena Hill, and the Moh, Lone Star, and Fisher claims on Keno Hill. Consolidated Yukon Mines Limited has been developing the Rio property and the Keno group on Galena Hill, and has been doing surface work on its holdings in Silver Basin Gulch on Keno Hill. Mayo Mines Limited is developing the Ram claim on Sourdough Hill. Numerous private individuals are prospecting their claims.

In view of the present price of silver, the possibility of finding one in some of the supposedly exhausted principal productive mines of the 1920s and 1930s, is increased, and such veins as the Ladue-Sadie-Friendship, Lucky Queen, No. 9, Calumet, and Silver King will probably justify further exploration.

¹Cockfield, W. E. Geol. Surv. Canada, Sum. Rept. 1920, pt. A, pp. 1-6; Sum. Rept. 1923, pt. A, pp. 1-21.
²Stockwell, C. H. Geol. Surv. Canada, Sum. Rept. 1925, pt. A, pp. 1-14.
³Stockwell, H. S. Mayo, Geol. Surv. Canada, Map 890A.

Note: The descriptive notes on this map apply also to the adjoining Preliminary Map 50-20B Galena Hill.