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MR 68-2

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August 14, 1962

CONFIDENTIAL

REPORT

MR-068-02

NAME AND LOCATION OF MINE
Emerick Nickel-Copper Prospect located about one mile east of Mile 213½ Richardson Highway, 213½ miles northerly from the port of Valdez, Alaska in the Delta Mining Division, Fourth Judicial District of Alaska. Records are kept at Fairbanks, Alaska.

MR 68-14

OWNERSHIP AND TERMS
Rollie F. Emerick and his wife, Doris M. Emerick have warranted that they are the sole owners of thirty lode claims, designated Red Rock Mining Company Nos. 1 to 30, incl. and four placer mining claims designated Red Rock Mining Company Nos. 1 to 4, incl.

All claims within 2 miles of the center of the Red Rock group, including any claims staked by the vendor and accepted by vendee and any claims staked by vendee during the life of the option, are under option to Newmont Exploration Limited for a total purchase price of $500,000, payable as follows:

On or before November 30, 1961	$ 1,000	(paid)
" " " " December 31, 1962	9,000	
" " " " " 1963	20,000	
" " " " " 1964	30,000	
" " " " " 1965	50,000	
" " " " " 1966	50,000	
" " " " " 1967	340,000	
	$ 500,000	

As of this date the option is in good standing but could be canceled on sixty days notice by vendor since work has been suspended.

MR 68-13

An additional eight claims, designated Glacier Lake Mining Company Nos. 1 to 8, incl. were staked on July 30, 1962 by:

Rollie F. Emerick
Erwin F. Brakefield (who now claims to own an interest in the Red Rock group)
Paul R. Padilla (a Newmont employee, acting for Newmont)

These claims were recorded in Fairbanks on July 31, 1962 and are entered in Book 31, pages 276 to 282, incl.

The Glacier Lake group is within two miles of the center of the Red Rock group.

RECOMMENDATION

The surface and near-surface exposures of the known nickel-copper bodies, which have been sampled over a total vertical range of 1,000 feet and a horizontal distance of 9,000 feet, do not suggest the near-surface presence of an orebody of sufficient size and grade to sustain a profitable mining operation.

The option should be canceled.

SUMMARY

A 3,000,000 square feet block of nickeliferous, serpentinised rock was prospected along its eastern and western borders to determine if it contained minable orebodies.

About 10,000 feet of bulldozer trenching, of which only 3,200 feet gave exposures, were completed. Natural exposures and rock slides were examined in detail and geological mapping and sampling were carried into adjacent areas.

Nickel mineralization of ore grade is severely limited to small areas adjacent to faults and serpentinized, irregular ultra basic intrusions. A last minute discovery of a small orebody in diorite (granodiorite ?) did not alter the conclusion that orebodies of commercial grade and size are not likely to be found.

EXAMINATION

A nickeliferous serpentinized rock was sampled over a distance of 1,100 feet in 1958 by Herbert and, in 1959, by the U.S. Bureau of Mines. Average grade was about 0.30% nickel, excluding a few small lenses of solid sulfides. Tests by the Bureau of Mines at Douglas, Alaska indicated that a salable nickel concentrate could not be made by flotation, gravity or magnetic concentrating processes.

In 1961 a basic "ore dike" containing nickel and copper minerals was discovered and sampled by Herbert, the Bureau of Mines and the Alaska State Division of Mines. Metallurgical tests by the Bureau of Mines showed that a salable nickel concentrate could be made from the dike material.

Newmont occupied the mining premises on April 20, 1962, in accordance with the terms of its option, built roads, established a camp and made a surface reconnaisance.

Trenching with a Caterpillar D-8 bulldozer was begun on June 2 and continued on a single ten hour shift until the end of the shift on July 23. There were no major breakdowns but there was considerable minor trouble, some of which was attributable to faulty parts on the rented machine and much of which was caused by frozen ground and very swampy terrain. Weather was generally bad, with much wind and rain.

Efforts to cut through the glacial gravel on the crest of the 200 ft. high hill over the exposures were dropped when it was found that the gravel was more than twenty feet deep and largely frozen. A 1,600 ft. long cut at the base of the hill was completed and a cut of similar length just below the

crest was also completed. Other cuts were abandoned because of frozen or very deep gravel. Total trenching was about 10,000 feet, of which 3,200 feet gave exposures of bedrock or cemented slide rock immediately over bedrock.

A triangulation net covering 0.6 square miles was established with a linear closure of 1/8000 and supplemented by stadia and compass traverses. Magnetic variation was from 27°E to 34°E.

Geology was mapped with megascopic determination of rock types, assisted by some petrographic studies by Newmont, the University of Alaska and the Bureau of Mines.

Sampling was reasonably thorough and assaying was done by Coast Eldridge of Vancouver B. C. and by the State Division of Mines at Anchorage, Alaska.

MAPS

In separate enclosure are the following maps:

A. 1" to 200' geological map.

B. 1" to 40' detail map of bulldozer cuts and assays.

C. 1" to 200' assay map (overlay on map A)

D. 1" to 200' magnetic contour map (overlay on map A)

E. 1" to 1000' (plus of minus 150') aerial photograph

F. 1" to 50' map of showing on Glacier Lake group, known as "Forbes' Discovery".

DESCRIPTION OF PROPERTY

The property is easily accessible by a low level, unimproved gravel road, less than two miles in length, from Mile 213½ on the Richardson Highway. Rock exposures are reasonably good along the canyon walls and in bulldozer cuts along a steep hillside. Outcrops at other places are sufficient to identify bedrock types, with the possible exception of a rather large area westerly from the discovery. However, exposures at the western rim of the glacial gravel are co-related with known structure.

A body of nickeliferous rock, 1,600 feet wide at its eastern exposure, 1,100 feet wide at its western exposure, and 2,400 feet long extends northwesterly from a gravel filled valley. At its northerly limit the nickeliferous rock is bounded by a regional N55W fault; its southerly limit is presumably bounded by a fault of lesser magnitude, and its westerly limit is apparently faulted by a northerly fault with a horizontal displacement to the south of more than 2,000 feet (west wall to the south).

The nickeliferous rock is a more or less serpentinized complex of fine grained basic intrusions with some granular rocks and, quite possibly, serpentinized magnesia-rich sediments. Serpentinization is variable; on Map A the green coloring is used to designate rocks which contain serpentine

minerals in varying amounts and appear to be derived from various original types. The brown coloring is used to designate irregular intrusions into the "serpentinized rock". These intrusions are fine grained ultra-basic (?) rocks that are serpentinized along many fractures or are completely altered to serpentinite.

Magnetite is common in both types of rocks but its distribution, as is indicated on Map D, is variable and apparently related to structural controls. It does not appear to be a reliable guide to nickel mineralization.

Nickel is distributed in the nickeliferous rocks in very finely divided pyrrhotite, in the magnetic fraction and in the silicate fraction. Assays of these fractions, made in 1958, indicated nearly equal, low nickel content in each fraction.

At times, migration of nickel and its emplacement in oxidized minerals along fracture surfaces and bands in serpentine have formed specimens that obviously are richer than the average rock but there is no suggestion that an orebody of oxidized nickel minerals exists.

There are a few lenses and stringers of massive pyrrhotite. Invariably these are found adjacent to the wall of a serpentinite dike or pre-mineral fault and appear to be best developed between the walls of closely spaced parallel faults. The dark, dull pyrrhotite seems to have low nickel content (about 2%) but the brighter pyrrhotite appears to carry more nickel - assays up to 14% have been reported by others. In rare cases the pyrrhotite surrounds pyroxene grains.

In 1958, concentration tests on pyrrhotite were fruitless.

Near N 10,000; E 10,300 there is a dike-like body of what appears to be a mineralized gabbro but which has been petrographically classed as an altered, fine grained basic rock. Since gabbro more readily fits the field appearance of this rock it is so designated. This rock contains pyrrhotite, pentlandite and chalcopyrite and will yield a salable copper-nickel concentrate. Development was primarily aimed at determining the extent of this body and of the discovery of similar bodies.

At N 9,800; E 10,050 the probable extension of the "gabbro" was uncovered but it was nearly completely devoid of mineralization. A fine grained, ultra-basic rock adjacent to it carried only normal amounts of nickel.

The bulldozer cuts failed to show continuity of valuable nickel mineralisation and insufficient frequency of sulfide lenses. The cuts were supplemented by hand trenches (not mapped) to see if the slide material contained important amounts of float. While more trenching would have been desirable and should have been performed if deep, frozen gravel had not interfered with the work, it seems unlikely that the covered portion of the nickeliferous rocks contain a minable nickel orebody.

Chrysotile asbestos in extremely short fibers is fairly common but no asbestos of marketable grade was found.

West of the nickeliferous body there are numerous sills and dikes of basic rock that has been serpentinized. These are shown in green color but they do not contain nickel except at N 8,450; E 8,000, where a small plug of serpentinite intrudes a sill, and N 9,050; E 6,600, where the rock may be a faulted continuation of the nickeliferous body.

These sills and dikes intrude a highly altered quartz-rich rock that has been classed as quartzite, largely because of fine banding. West of E 7,000 and north of the nickeliferous body there is no question but that the rock (colored orange) is quartzite. In the later locations, pyrite is common.

Two northwesterly trending zones of copper mineralization were found in the south-central portion of the map area (Map A). Exposures are good and talus slopes reflect rock types in inaccessible places. Mineralization consists of chalcopyrite along small fractures and joints and as sparse dissemination in the rock. Disseminated chalcopyrite has also been found at other places and there is slight galena and rare scheelite. Partial sampling and visual inspection show that these zones do not contain a minable orebody within the mapped area.

The rock in which copper mineralization occurs has been difficult to classify. At times it has been called an altered diorite, and altered volcanic (clastic) and a quartzose sediment. Most likely it consists of water-laid flows, tuffs and sediments that have been metamorphosed. The rock, at times, may apparently grade from a basalt (indistinguishable megascopically from the basal dike rock) into a recognisable pebble conglomerate and then into a true conglomerate with stretched pebbles. Calcareous horizons, often conglomeratic, are not infrequent and it is capped by limestone conglomerate (with stretched pebbles) to the southeast and by fossiliferous limestone to the northwest.

In the southwest portion of the map area the rocks are largely dolomitic and there is the suggestion that the serpentinized rock in the nickeliferous block may have been partially derived from such dolomitic sediments.

In the northwestern and northeastern sectors there are gneissic rocks that are metamorphosed equivalents of diorite (granodiorite) which is exposed for several miles to the east. Within the area mapped as gneiss there are facies in which the rock is largely amphibole and some of the rock mapped as "serpentinized rock" may actually be hydrothermally altered gneiss. In other words, the original dioritic intrusion may have been more or less continuous across the map area. North of the nickeliferous rock and north of the gneiss in the northeastern sector there are calcareous phyllites, which were not examined in detail.

About one and one half miles easterly from the map area there is a large body of peridotite, intrusive into diorite (granodiorite ?). This body trends southeasterly and is offset to the south by a large northeasterly fault. The rock consists of equigranular olivine and pyroxene. No mineralization was seen and serpeninization is minor.

STRUCTURE

The prospect lies immediately south of the Denali fault system which is part of the main fault system of the Alaska Range and the broad arcuate system that extends from Bering Sea into Canada. The major intrusions, diorite (granodiorite?) and peridotite parallel the Denali fault. (About N55W).

A northeasterly series of fault were developed, accompanied or followed by fine grained basic dikes and sills. This system appears to extend, with some interruption for at least three miles WSW from the prospect.

Irregular ultrabasic dikes and sills followed the less basic intrusions and were accompanied by nickel mineralization and serpentinization of magnesia-rich rocks.

Northwesterly faulting became prominent at a later date. This faulting controlled sparse copper mineralization, the emplacement of porphyritic docite and diorite and, to a minor degree, may have remobilized some nickel mineralization.

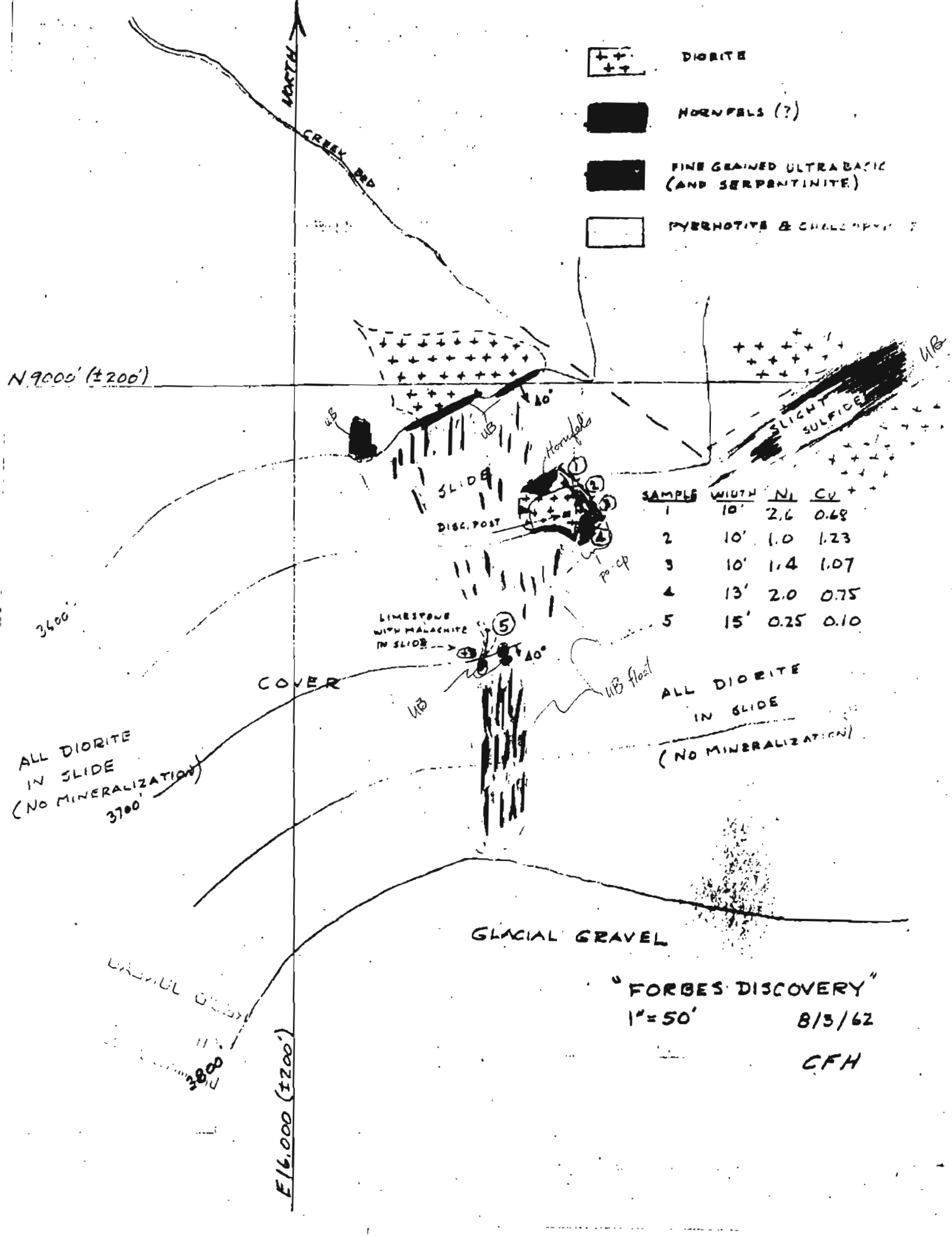
The last intrusion consisted of basaltic dikes. In the massive meta-sediments where the fault blocks could "float" these dikes are regular and show their greatest widths along the northwesterly fault system.

No basaltic dike of the late stage can be followed into the less competent rocks to the north but they are believed to exist as irregular bodies scarcely distinguishable from the less altered basic intrusions of an earlier area.

The last fauling was northerly or a little east of north, with the west side moving to the south. Displacements are in the hundreds of feet and the pattern continues for several miles to the east, where a large NE fault has its east wall moved to the south.

Rejuvenation of the N 55 W fault system appears to have been the last phase in the local tectonic history. In part, older faults were followed and, in part, new breaks were established.

Charles P. Herbert



SAMPLE	WIDTH	Ni	Cu
1	10'	2.6	0.68
2	10'	1.0	1.23
3	10'	1.4	1.07
4	13'	2.0	0.75
5	15'	0.25	0.10

"FORBES DISCOVERY"

1"=50' 8/3/62

CFH