PE-068-07

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STATE OF ALASKA
DIVISION OF MINES AND MINERALS

REPORT ON THE EMERICKS NICKEL PROSPECT, MT. HAYES QUADRANGLE

by

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November
1961

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SUMMARY

The Emericks nickel prospect is in the Alaska Range near the Richardson highway; it is accessible by road. Nine nickel-bearing lenses have been found at the prospect. The narrowest lens is 4 inches wide, and the widest is 8 feet wide. Ten samples from the lenses assayed 1.27 to 14.02 per cent nickel and 0.46 to 2.68 per cent copper.

INTRODUCTION

The Emericks nickel prospect is owned by Mr. Rollie Emericks, Box 951, Delta Junction, Alaska. It was examined on July 5 and 6, 1961, and again on September 12 and 13, 1961, by Robert H. Saunders, Mining Engineer, Division of Mines and Minerals.

LOCATION AND ACCESSIBILITY

The prospect is near the central part of the Mt. Hayes quadrangle at 63° 21' N latitude and 145° 42' W longitude. It is one-quarter to one-half mile east of the Richardson highway and a few hundred yards southwest of the terminus of the Canwell Glacier (plate I). It is in the Fairbanks Recording District.

An access road to the prospect leaves the Richardson highway half way between milepost 213 and milepost 214 (the mileage is measured from Valdez). The access road is on coarse, well-drained gravel, and, although it might be called a trail rather than a road, it is readily passable for automobiles during the summer. The road goes southeastward from the highway to a narrow, steep-walled canyon then goes northeastward along the floor of the canyon. Northeastward, the canyon widens to form a flat-floored valley. The prospect pits are on the hillside on the northwest side of the valley.

Midway through the canyon the access road skirts the toe of a talus slope 100 to 200 yards wide. After periods of heavy rainfall rocks tumble down the slope and bounce across the road, making driving on that part of the road dangerous and requiring periodic removal of boulders

to keep the road open. Undoubtedly the road through the canyon is subject to snow slides in late winter and early spring. Probably a route could be selected for a road or trail into the northeast end of the valley over terrain that would permit road-building without difficulty and would be free from dangers of snow slides and tumbling rocks.

The Richardson highway is open during the winter except for occasional periods during and after heavy snowfalls or strong winds. Distances by road from the prospect to some Alaskan communities are listed in table 1.

GEOLOGY

The geology of the region has been described in U. S. Geological Survey Professional Paper 41, GEOLOGY OF THE CENTRAL COPPER RIVER REGION, ALASKA, by W. C. Mendenhall (1905); in U. S. Geological Survey Bulletin 498, HEADWATER REGIONS OF GULKANA AND SUSITNA RIVERS, ALASKA, by Fred H. Moffit (1912); and in U. S. Geological Survey Bulletin 989-D, GEOLOGY OF THE EASTERN PART OF THE ALASKA RANGE AND ADJACENT AREA, by Fred H. Moffit (1954).

In the two older reports, the rocks in the vicinity of the prospect are included in the Chisna formation, but in the latest report they are a separate unit. The unit consists of sedimentary rocks, flow, rocks, and intrusive rocks. The sedimentary rocks include argillite, sandy or tuffaceous beds, limy grit or conglomerate, sandstone, quartzite, volcanic breccia, and limy tuff. The igneous rocks are basic lava flows and related intrusives; they make up the greater part of the

unit. The sedimentary and extrusive rocks in the unit are considered to be of Devonian to Permian age, and the intrusive rocks are considered to be of Devonian to Triassic age. In the prospect pits the wallrock is basic igneous rock or its alteration products.

A granitic intrusive lies east of the prospect along the south side of the Canwell Glacier. Most granitic rocks in this part of the Alaska Range are granodiorite of Mesozoic age.

A part of a fault that is one of the major structural features in Alaskan geology underlies the Canwell Glacier. The fault goes through Chatham Strait and Lynn Canal in Southeastern Alaska, where it has been called the Dyea fault; it extends across Yukon Territory, where it has been called the Shakwak fault; and it crosses Alaska through the Alaska Range and enters Bering Sea on the north side of the mouth of Bristol Bay. In most places the rocks on the north side of the fault are older than those on the south, but there are exceptions. The direction and amount of movement along the fault have not been determined.

MINERAL DEPOSITS

Nine nickel-bearing lenses have been exposed in hand-dug pits on the northwest side of the valley. The ridge in which the pits have been dug rises 200 feet above the valley floor, and the pits are 50 to 60 feet above the floor. There are no natural bedrock exposures near the pits; the hillside is covered by vegetation, soil, and slide material. The lenses strike into the hill; table 2 lists the attitudes of those lenses that were well-enough exposed at the time of examination to permit estimation of the strike and dip. Two lenses are exposed in the extreme

northeast pit; distances from there to the other lenses are: 90, 100, 380, 1050, 1100, 1125, and 1135 feet respectively. Plates II and III show the locations of the lenses; the numbers shown are the numbers of the samples that were taken during the first examination.

The prospect pits are small, and the lenses are exposed for only a few feet along the strike or down the dip. Because of the steep hillside slope, even a small pit ordinarily will not remain open for more than a few days. Whether the lenses pinch out completely or are parts of veins that pinch and swell is not evident. The narrower lenses are massive sulfides- predominantly pyrrhotite, chalcopyrite, and pyrite. The material in these lenses is magnetic. The eight-feet-wide lens where sample 7 was taken consists of basic igneous rock with sulfides disseminated through it. In this lens the sulfides are only a small part of the total mass, and it appears that a concentrate from this material would run higher in nickel and copper than would the massive sulfides in the narrower lenses.

Most of the lenses have been weathered only enough so that fractures and faces of the sulfides are stained with oxidation products of copper, nickel, and iron. At the extreme southwest pit, two lenses (samples 3F and 4F) had been weathered only to this degree where first exposed; however, after the face of the pit had been advanced a few feet farther into the hill, and probably also a few feet farther up the slope, the weathering appeared to have gone far enough to break down the sulfides completely (samples 11F, 12F, and 13F).

In a pit 300 feet southwest of the extreme northeast pit, some low-grade asbestos has been found. The fibers are short and are

so brittle that they can be crumbled easily. The asbestos is probably of no economic importance.

SAMPLES AND ASSAYS

The samples that were taken at the prospect were assayed by Donald Stein, assayer for the Division of Mines and Minerals at College, Alaska. Table 3 shows the assay results.

Samples 4 through 4F were assayed for gold and silver; none was detected. They were also checked for cobalt on a spectroscope, and none was detected. Samples 11F, 12F, and 13F were not assayed for gold, silver, and copper because of the high degree of oxidation of the material in those samples.

Sample 6 was taken by cutting chips from a two-feet-square exposure at the toe of the slope below the pit where samples 4 and 5 were taker. This could be an exposure of an extension of the lens cut by sample 4, or it could be a piece of float.

Sample 8 was a grab sample from material that had been sacked by Mr. Emericks. This material had been dug from a lens, and the lens subsequently had been covered by a slide. During the examination an attempt was made to uncover the lens, but loose rock kept sliding into the excavation. Mr. Emericks reported that the lens is 10 to 16 inches wide.

Samples 3F and 4F were taken from the extreme southwest pit from two lenses 10 feet apart. After additional digging had advanced the face of the pit a few feet farther into the hill, the lenses appeared to have merged into a 10-feet-wide mineralized zone. Samples 11F, 12F,

and 13F were cut end-to-end across the zone; the samples were cut horizontally, and the width represented by the twelve-feet-long channel is 9 to 10 feet. A four-inch-wide band of green, earthy material is at one side of the zone, and a 25-inch-wide band of brown-and-green, earthy material is near the other side of the zone; the intervening material is rock stained with limonite. The two bands of earthy material most likely are highly weathered portions of the two lenses that were cut by samples 3F and 4F, and any nickel in the intervening rock probably migrated there during the weathering process.

Table 1. Distances by Road from the Emericks Prospect to Some Alaskan Communities.

Community	Distance in Miles
Delta Junction	52
Fairbanks	150
Valdez	214
Anchorage	288
Seward	416

Table 2. Strikes and Dips of Lenses.

Sample Number	Strike	Dip
4	N40W	Vertical
9	S70W	30N
2F	S70W	50N
3F	S70W	50N
4F	N60W	75N
11F, 12F, 13F	S80W	60N

Table 3. Results of Assays.

Sample Number	Length of Channel	Per Cent Nickel	Per Cent Copper	Remarks
4	12 inches	3.03	0.46	
5	6 inches	2.58	1.46	
6	24 inches	4.73	0.82	Chip sample from 2-ft-square exposure.
7	8 feet	1.27	0.99	
8	Grab sample	14.02	1.22	Width reported to be 10 to 16 inches.
9	4 inches	8.07	2.68	
1F	8 inches	2.55	0.58	
2F	6 inches	2.87	0.70	
3F	6 inches	6.39	1.05	
4F	24 inches	4.84	1.40	
11F	5 feet	0.73	Not run	11F, 12F, and 13F were cut end-to-end across a zone 9 to 10 feet wide.
12F	5 feet	0.38	Not run	
13F	2 feet	0.38	Not run	

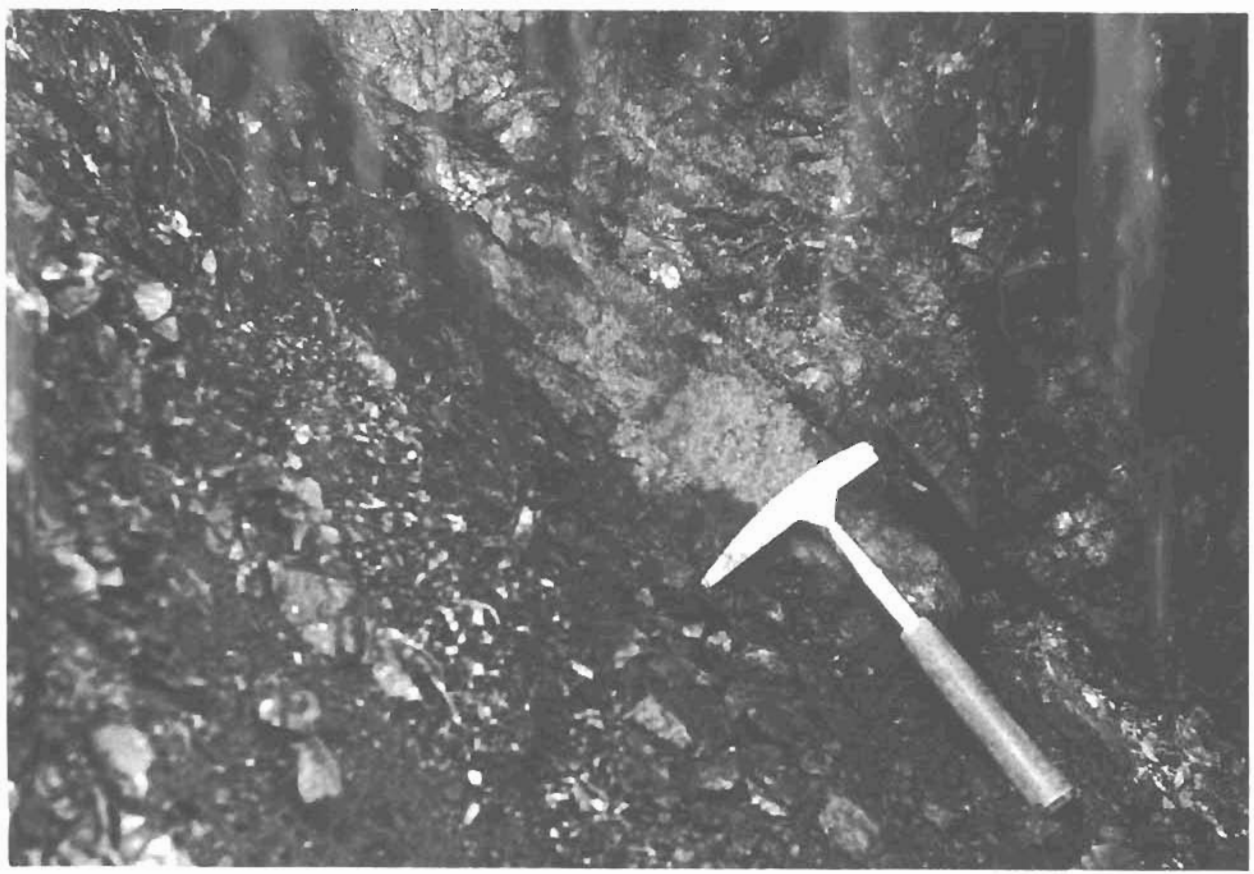


Fig. 1. Photograph of Six-Inch-Wide Lens. Sample 3F was cut across lens where head of pick lies.

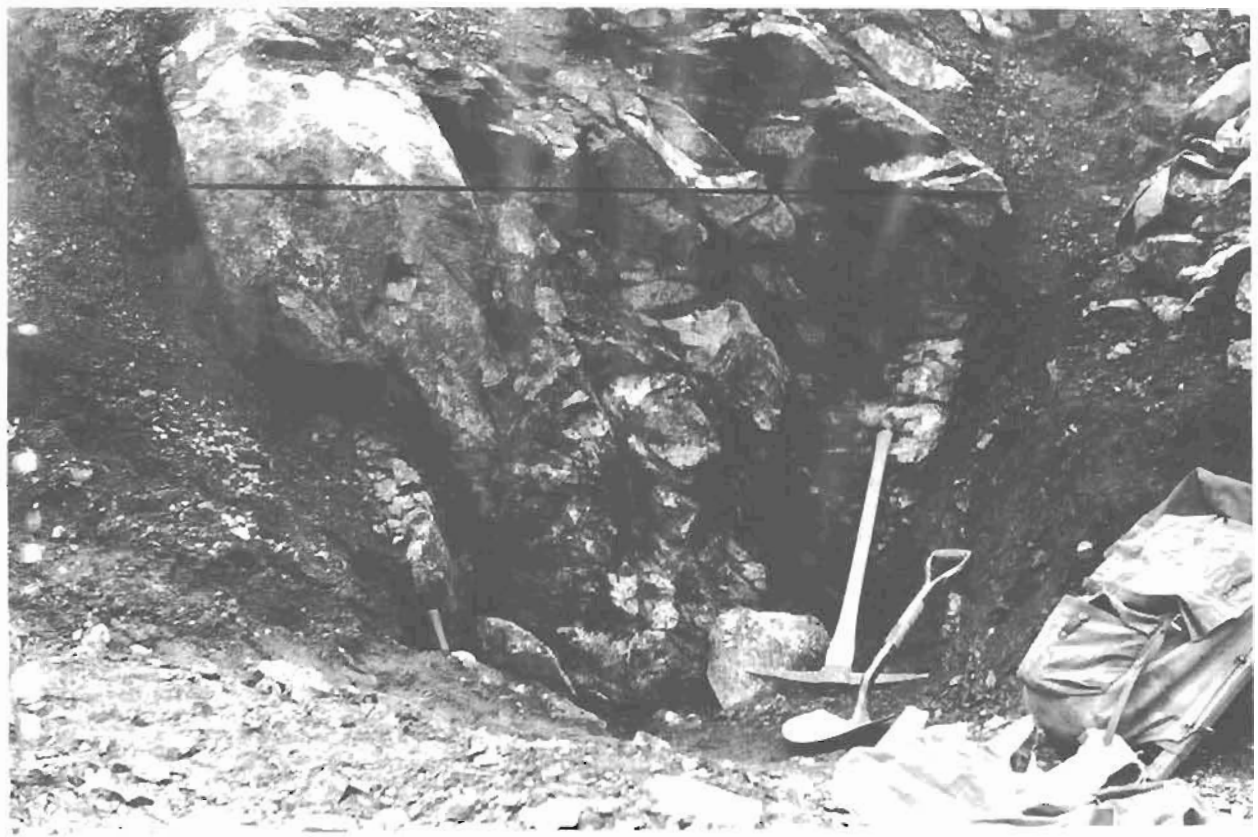
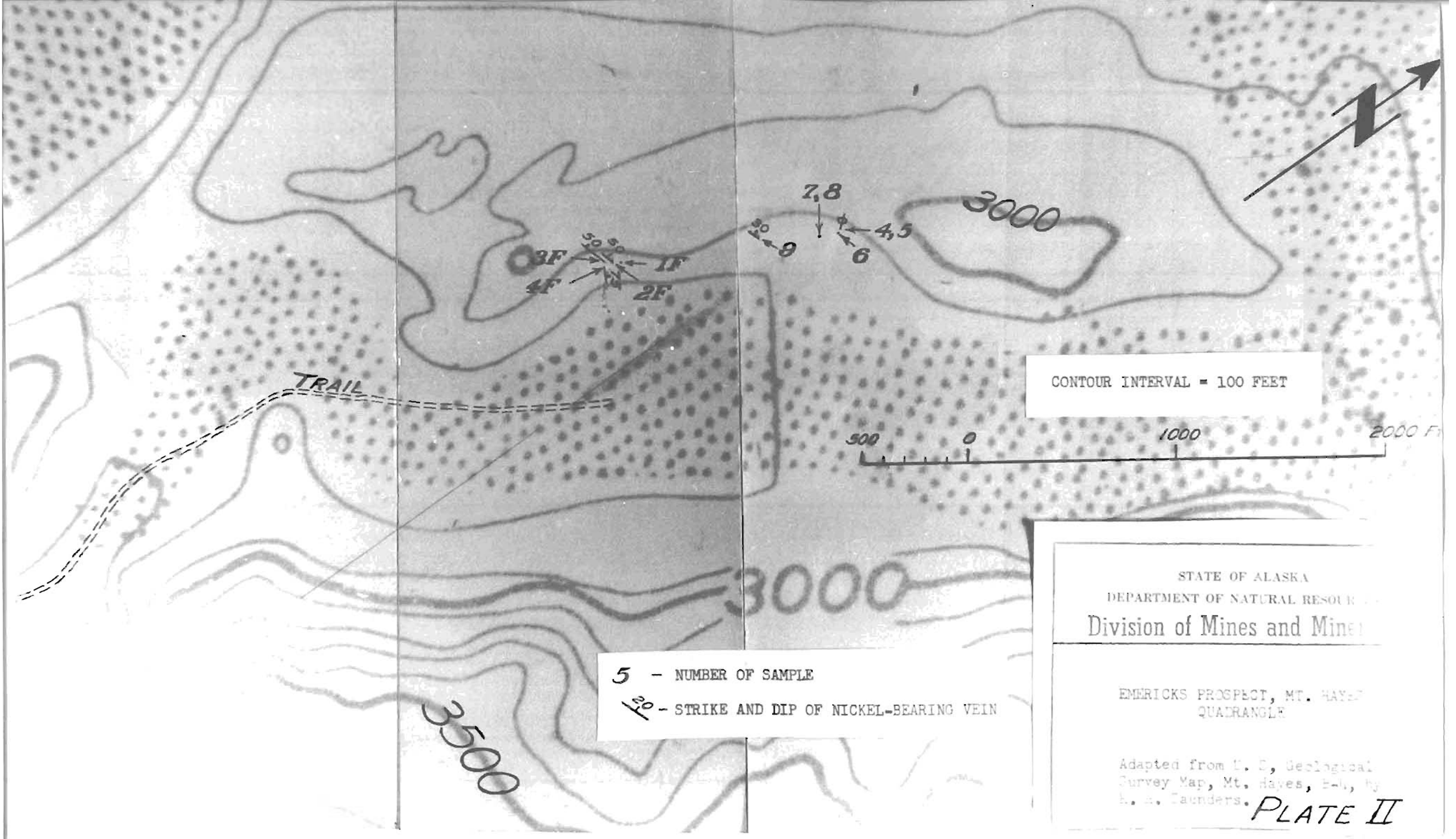


Fig. 2. Photograph of Eight-Feet-Wide Lens. Inked line lies across Lens where sample 7 was cut.


3F, 4F
2F
1F

PLATE III


3F, 4F
2F
1F


7,8
4,5
6
9
3F
1F
4F
2F
3000
3000
3500
TRAIL
CONTOUR INTERVAL = 100 FEET
500
0
1000
2000 F
5 - NUMBER OF SAMPLE
30 - STRIKE AND DIP OF NICKEL-BEARING VEIN
STATE OF ALASKA
DEPARTMENT OF NATURAL RESOU
Division of Mines and Min
EMERICKS PROSPECT, MT. HAYE
QUADRANGLE
Adapted from U. S. Geological
Survey Map, Mt. Hayes, B-4, by
E. M. Saunders.
PLATE II