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REPORT ON PIONEER CREEK CHROMITE PROSPECTS, ANCHORAGE DISTRICT, ALASKA - xx 85-96

Introduction

On June 4 and 5, 1942 an examination of the chromite prospects in the vicinity of Pioneer Creek was made by the writer at the request of Jonathan Garst of the War Production Board. Accompanying the writer were Leo Saarela, Territorial Assayer stationed at Anchorage and Gordon Picotte of the W. P. B. Following the examination Mr. Picotte spent several days sampling the showings. Analyses of the samples are included in this report. No information was submitted concerning the locations of the samples or the manner in which they were taken.

Location

Pioneer Creek is a small north-flowing tributary of the Knik River a few miles above its mouth. It is crossed by the Anchorage-Palmer highway at mile 33 from Anchorage. The best chromite prospects are found in the steep, narrow valley of Pioneer Creek about a mile above the highway crossing. Others are found on the ridges southwest of Pioneer Creek, overlooking Eklutna Creek.

Owners

At the time of the examination some uncertainty existed concerning the ownership of the ground. Pioneer Creek valley and adjacent areas are said to be part of an Indian reservation; nevertheless mining claims have been staked and some prospecting done by Mr. Skinner, who also owns a cabin on Pioneer Creek at the highway. It is not known to the writer whether

these claims, known collectively as the Skinner Prospect, have been recorded, or whether assessment work has been kept up.

Previous Investigations

A description of the geology of the Turnagain-Knik Region, by S. R. Capps, appears in U. S. Geological Survey Bulletin 642, pp. 147-194, 1916. No mention is made of the occurrence of chromite; at that time, however, base metal prospects were of little importance in this region.

Geology

The chromite occurs in a large mass of partially serpentinized dunite. Although no contacts were found exposed, the rock was apparently intruded in the form of a laccolith or large sill with steep-dipping contacts. Several zones of pyroxenite are found within the dunite. They are probably differentiation products of the same magma. Surrounding the dunite mass is a variety of lavas, tuffs, and fine-grained sedimentary rocks. All have been more or less altered to greenstone and have been faulted so that their identities and relationship to the dunite can be determined only by detailed study. It is apparent, however, that dunite and its serpentinized equivalent occupies much of the approximately 4 by 10 mile area between the Knik River and Eklutna Creek that was mapped by Capps as "mesozoic greenstone and andesite tuffs, with subordinate amounts of associated lavas and some interbedded sediments". (cf. U. S. Geol. Survey Bull. 642, Plate VIII).

Chromite is found in many parts of the dunite between Pioneer and Eklutna Creeks: in small pods and lenses; in thin, discontinuous bands; and sparingly disseminated through the rock in several places. Four zones are known in which the chromite is present in amounts markedly greater than in the normal dunite. Two of these zones are exposed in the canyon on Pioneer Creek and it is in them that the best showings are found; the others, of lower

grade, are found on a high ridge overlooking Eklutna Creek.

In Pioneer Creek the two zones have been traced by means of shallow pits and by a few natural exposures. They are several hundred feet apart, strike about N) N 60°W and dip about 45° NE. (see sketch). Within each zone are found a number of small chromite orebodies. Where it could be determined the strike of these bodies was found to be about N 40°W; thus they are apparently arranged en echelon within the zones as shown in the sketch.

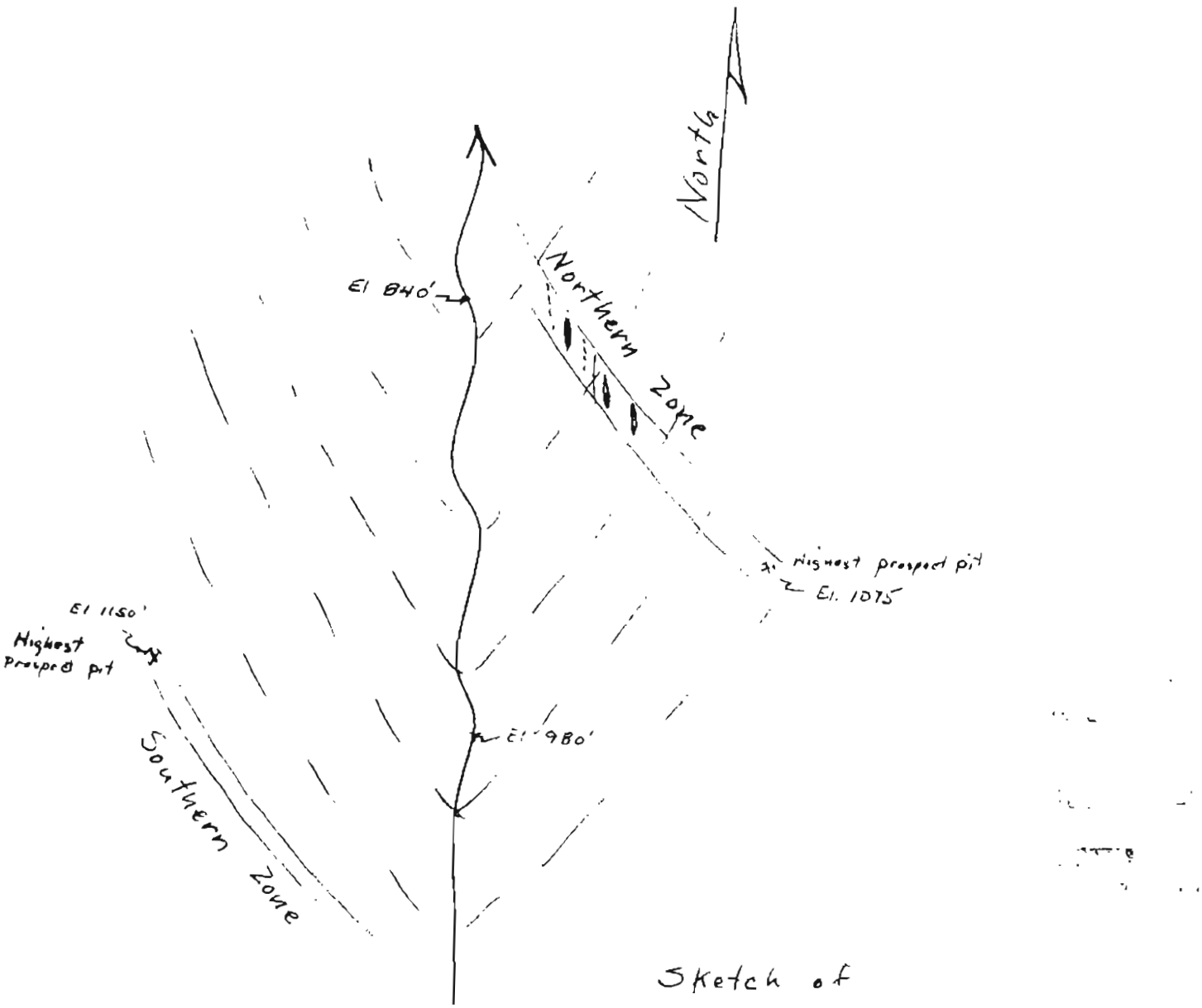
Magnetic Measurements

Determinations made in the field indicate that the magnetic susceptibility of the chromite is for the most part considerably higher that that of the enclosing dunite; both, however, are relatively strongly magnetic and in addition exhibit polarity. The susceptibility of the pyroxenite is also high, although it is lower that that of the dunite.

Dip needle readings taken at a number of places in the dunite area show that relatively large magnetic anomalies exist. They are apparently associated mainly with large-scale mineralogical and structural variations within the rocks rather than with the small segregations of chromite. The magnetic anomalies associated with the chromite are local in extent and are largely masked by those caused by variations in the enclosing rocks.

Showings

In the two zones on Pioneer Creek the individual orebodies vary from a few inches to about two feet wide and from about two to ten feet long. Some are moderately high-grade -- a few small pods were found that contained an estimated 40 percent Cr_2O_3 -- but most of them are of a much lower grade. It is estimated that the average tenor of the northern zone over a width of two feet is between 5 and 10 percent Cr_2O_3. That of the southern zone is probably lower. These estimates are based on showings in prospect trenches which were probably located in the higher grade portions of the zones.



Sketch of
Chromite Showings on Pioneer Creek
Head of Knik Arm
Anchorage District, Alaska
Scale 1" = 100' approx.
Orientation approximate
H. K. J. June 30, 1942

A few other small bunches of chromite were found between the two zones, on the west side of the creek. Since the slope is steep here, these orebodies may be part of the southern zone, the dip of which [illegible] coincides approximately with that of the surface.

Sampling

The results of sampling by Nicolle are shown in the following table:

Assay No.	Sample No.	Percent Chromium
1228	#2	3.24%
1229	# 3	4.06%
1230	# 4	1.51%
1231	# 5	0.90%
1232	# 6	0.86%
1233	# 7	3.96%
1234	# 8	17.95%
1235	#9	11.60%
1236	# 10	4.30%
1237	# 11	9.50%
1238	# 12, 13, 14.	3.50%
1239	# 15, 16, 17, 18.	1.66%
1240	# 19, 20.	3.22%
1241	21	1.32%
1242	# 22	3.15%
1243	# 23	7.53%
1244	24	3.46%
1245	# 25	15.50%
1246	# 26	3.12%
1247	# 27	3.00%
1250	# 28	11.47%
1251	29	7.20%
1252	30	3.78%
1253	31	1.70%

Sampling (cont.)

Assay No.	Sample No.	Precent Chromium
1254	# 32	8.50%
1255	# 33	3.12%
1256	# 34	4.83%

The analyses were made by Le. Saarela, Territorial Assayer stationed at Anchorage. It will be noted that the results are stated in terms of Cr and not Cr_2O_3.

Since no sketch map or description of the samples was submitted, it is impossible to compute the average tenor of the ore. The unweighted mean of the 35 analyses is slightly over 5 percent Cr, or about 7.5 precent Cr_2O_3. This is close to the estimated average tenor of the northern zone.

Conclusions and Recommendations

The known occurrences of chromite in the Pioneer Creek area are too small and too low-grade to be mineable, even under present conditions; further, it is believed unlikely that mineable deposits will be found in the area examined. It must be emphasized, however, that the area may not be unequivocally condemned by the results of the brief examination described here.

In view of the apparent urgent need for chromite, a more detailed geological survey of the area between Pioneer and Iklutna Creeks is recommended, together with reserve blocking and mapping of the chromite prospects. A search should also be made for dunite and related rocks in adjacent areas.

A reconnaissance magnetic survey, run in connection with a geologic survey, would furnish information concerning the value of magnetic

measurements in outlining areas of ultrabasic rocks favorable to the occurrence of chromite. Since magnetic anomalies are large in the Pioneer Creek area, a dip needle should be sufficiently sensitive for this purpose.

Because of the apparent small size and low tenor of the deposits in this area it is doubtful if they can be found directly by magnetic measurements. It is possible, however, that a detailed survey with an Askania-type vertical magnetometer would afford information concerning the existance of high-grade orebodies within known zones of chromite segregation, and also concerning the extension of these zones beneath barren overburden.

Henry R. Joesting

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Assoc. Mining Engineer
Territorial Department of Mines
College, Alaska
June 30, 1942

TERRITORY OF ALASKA

DEPARTMENT OF MINES

College, Alaska
July 3., 1942

Mr. B. D. Stewart
Commissioner of Mines
Juneau, Alaska

Dear Mr. Stewart:

Enclosed herewith is a report on the chromite prospects on Pioneer Creek, near Palmer.

Please excuse the poor job of typing. I engaged a girl for the work and she made so many mistakes, including the ommission of a whole paragraph, that I retyped part of it.myself.

The sketch was made from memory, after I returned from Claim Point, and hence is diagramatic only. I did not make a sketch at the time of the examination because I had thought that one would be made in connection with the sampling.

Respectfully yours

Henry R. Joesting

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Assoc. Mining Engineer