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EX-121

Reno, Nevada
January 28, 1942 175 ITEM 78

Subject: NICKEL INVESTIGATIONS --
PACIFIC COAST AND WESTERN STATES

To: Mr. Gustafson

From: Mr. Evans

INTRODUCTION

The existence of a substantial tonnage of garnierite mineralization, which can be considered possible ore until proven otherwise, at Riddle, Oregon, has been the impetus for a study of other west coast possibilities, the preliminary results of which are outlined below.

It has seemed inconceivable that a belt of rocks containing the basic essentials for garnierite concentration, as is represented by the Jurassic formations of California, Oregon and Washington, should contain only one deposit.

OUTLINE OF INVESTIGATIONS

Three steps appeared logical in an investigation of this type. These are: (1) Personal contact and discussion with individuals who are authorities on the geology of the coastal belt. (2) A study of all bibliographies and references pertaining to nickel in the areas under consideration. (3) Field reconnaissance of all properties uncovered by the above steps and a general reconnaissance based on any theories derived from this study.

CONCLUSIONS

Whereas other nickel occurrences have been found (as listed below), all of these appear to be of little value. This conclusion is based on the fact that in most cases all such properties have had the benefit of development and have been dropped. This, however, does not mean that examinations are not planned for each. Equally discouraging is the fact that those acquainted with the belt have had brought to their attention very few garnierite occurrences.

RECOMMENDATIONS

It is recommended that all known possibilities be examined. It is also recommended that the unmapped area on the California State Geological Map covering Siskiyou, Humboldt, Trinity and Mendocino counties be given field consideration after the rainy season. These counties occur to the south of the Riddle garnierite deposit and are in line with mapped Jurassic on their north and south limits.

AUTHORITATIVE SOURCES

The following parties were contacted regarding western garnierite possibilities:

- (1) Mr. Olaf P. Jenkins, State Geologist for California.
- (2) Mr. Walter W. Bradley, State Mineralogist for California.

Grade: Questionable material sent to Mass of the Bureau of Mines indicated 1% to 5% nickel by spectrographic analysis.

Conclusions: This is a new occurrence and worth examination as is planned.

Key West & Great Eastern

Refer to report by the writer under date of November 21, 1941, which covers these two properties.

Miscellaneous Occurrences

(Unverified and no detail.) On display at the State Bureau of Mines in San Francisco is a specimen of garnierite from the London mine, Churchill county. It has been impossible to find a London mine in the literature. The donors were Messrs. Bell, Curtis and Mason. On display also is a specimen of nickel ore from Columbus, Esmeralda county, presented by a C. A. Lockhardt. Mineral Resources for 1901 reports a nickel occurrence near Candelaria. Lincoln, in describing the Candelaria district, says, "In 1882, 10 tons of high-grade nickel ore were shipped to Swansea from near Columbus." Mineral Resources for 1901 also reports a nickel property near Burkeville, Lincoln county. Burkeville cannot be found on the map.

STATE OF CALIFORNIA

Of the properties listed below, the Friday mine is the only one that has been submitted to the western office. Reports by Dr. Fraser of Pasadena and by Paul Murphy, geologist, are in the Reno and the New Orleans files.

Friday Mine

Location: In San Diego county, 4 miles southeast of Julian and 40 miles from San Diego in the southwest quarter of Section 15, Township 13 South, Range 4 East, San Bernardino meridian.

Geology: Gabbro and norite are intrusive into the Julian schist series. The one pocket of mineralization developed by the Julian mine occurs as an apparent segregation in this basic intrusive. Magnetometer surveys across the extension of the basic intrusive indicate other "highs" which may be segregations of magnetite or magnetite with nickel-bearing pyrrhotite.

Grade: The California Bureau of Mines reports the sulphide as carrying 2% to 5% nickel. Samples cut by Paul Murphy from underground exposures are of interest:

<u>Sample</u>	<u>Width</u>	<u>Copper</u>	<u>Nickel</u>	<u>Cobalt</u>
1	6.0'	0.61%	2.63%	0.127%
2	5.0'	1.03%	2.83%	0.251%

Undeveloped goossens sampled by Murphy averaged 0.23% nickel and 0.17% copper.

Drilling: John Weller, former drilling contractor at Alum Gulch, did some drilling at the Friday mine. No values were cut. Weller stated that due to the lack of money the holes were too shallow to be of value. Weller furnished