Se. 157 Howard Street
Spokane 8, Washington

January 29, 1951

Through: The Operating Committee
Defense Minerals Administration

Mr. Robert N. Ridgeway
Ferrous Metals Committee
Defense Minerals Administration
U. S. Department of the Interior
Washington 25, D. C.

Dear Mr. Ridgeway:

I have been awaiting some additional information from the Bureau of Mines before replying to your letter of December 14 in which you refer to DMA docket no. 71, application of R. B. Taft, Utility Mining Company, for a development loan on the Mackinaw nickel-copper property, Snohomish County, Washington. This has now arrived in the form of a memorandum from John W. Taber to S. H. Lemin under date of August 30, 1946, and a copy of this memorandum is enclosed for your information. I have been under the impression that the Bureau of Mines had more recent information on the property.

In examining the Geological Survey files I find that there is a fairly complete report on the property including detailed geologic and assay maps. This report was written by John J. Collins and S. C. Creasy of the Geological Survey in 1944. It is my understanding that there has been practically no additional work on the property since this report was written. Copies of this report should be available to you from the commodity files of the Geological Survey and consequently I am not including a copy of the Collins-Creasy report with this letter, although one could be sent you if necessary.

It seems to me, therefore, that we have all the information concerning the Mackinaw mine that we are likely to get from anything but a very extensive study of the general area surrounding the mine, which would require a rather elaborate project and would likely run into months or even years of time.

According to the Bureau of Mines estimates there are approximately 40,000 tons of indicated and inferred ore reserves on

the property and two deposits with some possibilities of increasing the amount of inferred ore. The grade averages 1.7 percent copper, 0.9 percent nickel, and 0.14 ounces of gold. According to Bureau of Mines estimates and War Minerals Report 156, January 1944, operating costs based on production of 200 tons per day would be about $9 a ton. Very likely this cost would be considerably higher under present conditions. The problem, therefore, boils down to whether ore in the grade and amount of the Bureau estimates can be profitably worked at the present time. There is also the additional problem of the recovery of the nickel as there are at present insufficient ore reserves to justify the construction of a smelter or refinery to recover nickel from the nickel concentrate. The nickel concentrate would have to be shipped to some refinery for treatment. Are there plants in this country to which the nickel concentrate could be shipped? If so, would or would not the shipping charges be excessive?

It is entirely possible that the area surrounding the Mackinaw mine may justify additional exploration which to be most effective should consist of geologic mapping of the surface, followed by diamond drilling or other exploration if this seemed desirable. Work in this area might be patterned after the Blackbird district, Lemhi County, Idaho, where geologic mapping by the Survey and drilling by the Bureau of Mines have assisted in developing large reserves of cobalt-copper ore. A project of this nature would require several years to complete and I do not believe that it could be done at the present time under DMA funds. This, however, is entirely aside from the present application, and it seems to me that further examination of the present workings of the mine to check on the ore reserves claimed by the applicant would not add anything to our present knowledge of the property. I think, therefore, that although a reconnaissance of the Mackinaw area may be desirable at our convenience sometime this spring or summer in order to determine the desirability of the general area for further exploration, no further information should be required to reach a decision on this particular application. However, I would be very pleased to have your opinion on this matter and will carry out whatever instructions that you see fit to make to the field team.

Sincerely yours,

A. E. Weissenborn
Executive Officer, DMA
Field Team, Region II

cc: Glenn C. Reed

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ALBANY DIVISION, MINING BRANCH
P. O. Box 492, Albany, Oregon

August 30, 1946

MEMORANDUM

To : S. H. Lorain

From : John W. Taber

Subject: Supplemental investigation of the Mackinaw mine, Snohomish County, Washington

At your request and as a consequence of the recent inquiry of R. D. Taft of Everett, Washington, I have made a brief supplementary examination of the Mackinaw mine, Snohomish County, Washington. The examination was made July 21, 1946, in the company of Mr. Taft, owner of the property. The examination consisted of a walk-over inspection of openings and cuts previously examined by an engineer of the Bureau of Mines. I also made a Brunton survey of the No. 2 level, which was inaccessible at the time of the first examination. (See attached sketch map).

The Mackinaw mine was first examined by the Bureau of Mines in July, 1943. The data obtained from this examination were presented in War Minerals Report 156. The report concludes that the deposit contains 10,000 tons of ore having a computed average grade of 2.41% Cu., 0.74% Ni, 0.193 oz. Au per ton and 0.22 oz. Ag per ton. An additional 30,000 tons is reported in another deposit. It was concluded that this second deposit contained more nickel and less copper than the ore which was sampled. Metallurgical investigations by the Bureau of Mines indicated that the ore can be treated successfully by flotation and tabling to yield separate nickel and copper concentrates. However, it was also concluded that an economic operation of the property was not indicated at the prevailing price of nickel.

Following the previous examination of the property, a Federal financed mine access road was constructed for a distance of about 1 mile between the county road and the mine. At about the same time a $20,000 R.F.C. loan was obtained to be used for development of the property through the Utility Mining Co., an organization formed by Taft for the purpose of operating the property. The company planned to complete 700 feet of development in the initial program. The full amount of the loan was subsequently expended in constructing a camp, cleaning out and catching up a cave near the portal of the No. 2 adit level, and 90 feet of new development. The operation was then discontinued. The following winter, two thirds of the camp buildings and most of the equipment were damaged or destroyed by snowslides. No work has since been done on the property.

The ore deposits are in serpentinized periodotite along a well defined steep-dipping fault-fissure which approximately follows a contact between the peridotite and thin bedded quartzite and argillite schists. Some ore mineralization also occurs within the main peridotite mass, apparently independent of the fault-fissure deposition. Both the deposits in the peridotite adjoining the fault-fissure and those at a distance from the fissure are comparatively large masses of ore-mineralized peridotite. The deposits are roughly tabular but do not have defined walls. Exposures at the surface are scattered over an extremely precipitous terrain with many sheer cliffs. Without detailed maps available of the development and surface features of the deposit, it was impossible to form a clear-cut picture of the geologic structures controlling the ore deposition. Hence an attempt to predict possible extensions of the ore would be out of order at this time.

The principal ore mineral is chalcopyrite, as determined by previous Bureau of Mines tests. Small quantities of nickel minerals believed to be nickel arsenides of unknown composition are also present.

The problems presented by the Mackinaw mine are that the ore is low grade and that the known bodies are apparently discontinuous and comprise a limited reserve. A fairly elaborate mill would be required at the outset to begin production. A substantially greater ore reserve would have to be determined before the required mill construction would be justified.

The deposit doubtlessly deserves continued exploration. However, there is some question as to the manner in which this should be done. I believe that diamond drilling, as requested by Mr. Taft, would be inadvisable without further preliminary investigation. The deposits should first be mapped and well sampled. Mapping should include a study of structural features related to the deposit. To determine the advisability and type of exploration appropriate for the deposit would require further study after a comprehensive preliminary examination. The examination could be accomplished by an engineer with the assistance of two men in about 30 days. An allotment of about $1,000 (including engineer's salary) would be required for the preliminary examination.

John W. Taber
Mining Engineer

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ALBANY DIVISION, MINING BRANCH
P.O. Box 492, Albany, Oregon

August 30, 1946

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John W. Taber
Mining Engineer