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Item 15

Branch of Mineral Deposits

December 2, 1959

Air Mail

Memorandum

To: S. Warren Hobbs, Chief, Branch of Mineral Deposits

From: H. K. Stager, Branch of Mineral Deposits

Subject: Visit to the Mt. Wheeler mine, White Pine County, Nevada

On November 17, 1959, while in eastern Nevada on DMEA business, I inspected the activities of Beryllium Resources, Inc., at the Pole Adit of the Mt. Wheeler mine. During the day spent on the property I made two trips underground, one in the morning accompanied by Mr. Ted Brady, mine superintendent, who took me to all of the working faces and explained the work that had been done and plans for present and future work; and again in the afternoon accompanied by Messrs. Dale Terry and Dick Pascoe, geologists for the Operator, to examine geologic features of the deposit and to collect specimens of the ore minerals.

Since the purchase of the property in September by Beryllium Resources, Inc. from Mt. Wheeler Mines, Inc., the new Operators have rehabilitated most of the mine and surface installations including track, air, water, and ventilation lines throughout the tungsten zone (DMEA-2082 area), rebuilt the change-room, compressor house, powder magazine, cook and bunk house, geology and engineering office with a core storage and sample preparation section.

A contract with MacPherson Drilling Company of Montrose, Colorado for 10,000 feet of diamond-drilling has been started and eight men are employed operating two underground diamond-drills on a two-shift-per-day basis. About 24 holes had been completed for a total of 2,500 feet. Eleven holes have been drilled from the No. 4 north lateral, 1 hole from the No. 6 north lateral, and 12 holes in the vicinity of station 29 in the main adit. The holes are AX in size and range from 30 feet to 200 feet in length. Core recovery is excellent. Most of the holes are drilled upward or downward at a slight angle to determine the thickness of the mineralized limestone bed and the grade and extent of the beryllium-bearing ore shoots.

At the time of the inspection one drill was drilling north from the No. 2 south lateral and one drill was drilling near station 29 in the main adit. To date the area being most extensively explored is about 1,000 feet long and 300 feet wide. None of the cores had been logged or sampled at the time of the inspection but close examination revealed numerous well developed crystals of phenacite and beryl. Examination under ultraviolet light also indicated abundant scheelite. The cores will be logged, split, and sampled by Terry and Pascoe. The core samples, as well as all cut mine samples will be crushed and pulverized at the mine and then shipped to the laboratories of Brush Beryllium Company where they will be assayed for BeO, WO_3, and CaF_2. Beryllium Resources has purchased two "Berylometers" but as yet have not been able to obtain an AEC permit for the use of the radioactive isotope so are unable to obtain the necessary Antimony 124 to operate the instruments. However, they expect to have a permit soon and will be able to scan all of the cores and test all mine samples and specimens for beryllium content. Terry and Pascoe demonstrated that it is possible to distinguish phenacite from quartz, both in hand specimens, cores, and even underground in the working faces but I find it quite difficult unless there are crystal faces exposed. About 85 percent of the contained beryllium in the ore is in the form of phenacite, 10 percent is in the form of beryl, and the other 5 percent is made up of helvite, chrysoberyl, bertrandite, and other rare beryllium minerals.

In addition to the diamond-drilling the Operators are driving two development headings in the tungsten-beryllium zone. About 14 men are engaged in this work on a two-shift-per-day basis. The No. 7 north lateral is being driven north under the Wheeler (CM) limestone bed and has been advanced 155 feet from the main adit. One or more raises will be put up into the overlying ore zone from this lateral. Another face (slusher drift) is being driven eastward in the ore zone from the No. 5 north lateral raise and will eventually connect with a raise and drift from the No. 7 lateral. This face is in good grade ore and the material is being stockpiled outside of the main adit for mill testing in a pilot plant that is to be built by the Operators. The stockpile contained about 200 tons of ore and another 200 tons was broken in the slusher drift. This ore is reported to average about 2.0 percent BeO. Abundant phenacite crystals are visible in the broken ore and in the drift face.

As yet it is not possible to accurately appraise the beryllium reserves or potential of the mine but the results of all sampling and testing to date are favorable and the staff of Beryllium Resources, Inc. are enthusiastic and confident that they can develop enough ore

of a suitable grade to sustain a major mining and milling operation at the property.

The members of the mine staff were friendly and cooperative. The reason for denying access to U.S.G.S. personnel on the last visit (September 24, 1959) was explained to be the result of an agreement contained in the purchase contract between Mt. Wheeler Mines and Beryllium Resources. By the terms of this contract Mt. Wheeler Mines had the option of selling all of its stock (1,900,000 shares) to Beryllium Resources for $0.25 per share up to November 15, 1959 with Beryllium Resources forced to buy or give up the property. After this date the agreed purchase price of the stock increased and a different arrangement went into effect. For this reason the officers of the corporation directed the mine staff to deny access to all Mt. Wheeler Mines personnel and in fact everyone except their own employees so that no leak of information could occur to prompt the Mt. Wheeler Mines stockholders to force the stock purchase. No outsiders were allowed in the mine and no stock was sold by the Mt. Wheeler Mines stockholders. I was one of the first visitors allowed in the mine after the November 15 deadline and was assured that in the future all U.S.G.S. geologists would be welcome at the property at any time. The geologists (Terry and Pascoe) were confident that the officers of Beryllium Resources would welcome any studies of the deposit that the U.S.G.S. might care to make provided that the results of any studies would be made available to them and that nothing would be published until after the critical period of their purchase agreement with Mt. Wheeler Mines (about 1 year). However, Terry stated he would confirm this with the corporation officers and give me a positive answer.

In the event that Beryllium Resources does not complete the purchase of the property all maps, assays, logs of drill holes, and diamond-drill cores will become the property of Mt. Wheeler Mines (this is provided for in the purchase contract). The president of Mt. Wheeler Mines, Mr. James Williams, informed me that if this occurs he will make all of the information available to the U.S.G.S. for any studies we might wish to make. So it appears that the large amount of factual information now being accumulated on the beryllium content of the deposit will be available to us no matter what happens.

It is my present plan to visit the property whenever I am in eastern Nevada on DMEA or OME business and to obtain as much information as possible including maps, logs, assays, and specimens. This will

probably be about once every month or six weeks. This information, together with my growing suite of specimens, will be available at my office in Menlo Park for anyone in the Survey that may wish to make use of it.

cc: Director's reading file

Kirkemo, H.
✓ Lemmon, D. M.
Whitebread, D. H.
Griffitts, W. R.

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Room 2233 Bldg 25

15 December 1959

Mr. S. Warren Hobbs, Chief
Branch of Mineral Deposits
U. S. Geological Survey
Washington 25, D.C.

Dear Warren:

I was very much interested in Stager's memo of December 2 about Mt. Wheeler Mines.

Regardless of the outcome of the present exploration, I think it is of the utmost importance that the deposit be thoroughly studied. During the last four years I've been getting as much data as possible from the literature, concentrating upon non-pegmatitic deposits, but have not heard of anything resembling the Mt. Wheeler deposit. The association of beryl, phenacite, and minor helvite and bertrandite has been found in a couple of unusual pegmatites but not from sedimentary rocks, metamorphosed or otherwise.

The closest thing that I know of to the Mt. Wheeler deposit are some deposits in the Lake Baikal area in western USSR. Govorov describes greisenized light-colored granites and skarns that are cut by tin-fluorite-beryllium veins. In altered granite the beryllium mineral is phenacite, $BeSiO_4$, in skarns, the mineral is chrysoberyl, $Be(AlO_2)_2$. This difference is attributed at least in part to the composition of the wall rock. Govorov's paper is very interesting but is incomplete enough to be more tantalising than satisfying. In the Baikal area and in the others I've read about the geologic environment of the ore deposits is given inadequate attention, which prevents the synthesis of an overall geochemical pattern for beryllium in non-pegmatitic deposits. We know only that there are differences in mineralogy, paragenesis, alteration effects, related rocks, etc., without knowing why.

I hope the project in the Mt. Wheeler quad can give us the information on this district that we lack in the others. Perhaps with one thorough study we can begin to make sense out of the mass of incomplete descriptions. I would like to see a detailed paragenetic study tied into the structural history of the deposit, with as much data as possible on structural controls and temperatures of deposition--both actual temperatures at the site of deposition and temperature gradients. The structural controls presumably include both major elements that determined the position of the deposit as a whole, and minor structures that controlled shoots within the deposit. The time relations between these fractures, the fractures containing lead-zinc minerals, intrusives, and other structures presumably will be learned from Whitebread's work.

The deposit has been said to contain 500,000 tons of ore averaging 1% BeO. This would be about equivalent to 5,000 tons of BeO, 1,500 tons of Be metal, or 50,000 tons of beryl. For comparison, our total supply last year was about 5,000 tons, somewhat below consumption as stocks were being reduced. The alleged 500,000 tons of ore would be about a 7-year supply for the present market, which is quite impressive when we consider that we normally produce only 8% of our needs. Beryllium is now said to be "hot" and various people are talking of making aircraft and missiles of it and of burning it as missile fuel. Estimates of "requirements" based on these speculative uses generally are in the range of thousands of tons of metal. If we adopt a conservative 1,500 tons as the annual "requirement", we will need to find and exhaust annually a deposit of the sort Mt. Wheeler has been said to have. It seems evident to me that these "requirements" will never be met, hence the possible uses cannot be fully developed. The present beryllium boom is based upon speculative uses, not actual uses, for the metal and must inevitably subside. If the Survey should pick up special funds for beryllium work we should expect a rather abrupt end eventually when the bubble bursts.

I'll be glad to cooperate with anyone who is working on the deposit, by supplying references, acting as an agent in getting analyses, or otherwise, and hope to visit the district but do not intent to "muscle in" on the project.

Sincerely yours,

Wallace W. Griffitts

cc: D. H. Whitebread
P. E. Hotz
H. K. Stager
D. M. Lemmon
H. Kirkemo

[redacted]

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Item 15

Thurs 9/24/59

Mt Wheeler Mines

Dale Terry, Geol — PO Box 1208, Ely, Nev
Ted Brady, Mine Supt

Hidden Splendor
A P Kibbe, President

Dale L. Hayes, Gen Mgr
Dick Britton, Spec Asst

304 First Security Bldg, SLC

Norman C Williams. Cons Geol

STANDARD FORM NO. 64 2830 0015 (331) Item 15

Office Memorandum · UNITED STATES GOVERNMENT

TO : Dwight M. Lemmon DATE: October 20, 1959

FROM : H. K. Stager

SUBJECT: Mt. Wheeler mine

Attached is a copy of the letter that I received yesterday from Norman C. Williams of Beryllium Resources, Inc., in reply to my request for permission to visit the Mt. Wheeler mine.

I do not believe it is worth the trouble to try to buck their desire to keep visitors out so will delay my next visit to Ely until after the 15th of November so that I can visit Mt. Wheeler on the same trip as my next inspection of the mine at Hamilton.

Hal

BERYLLIUM RESOURCES, INC.
1370 SOUTH THIRD WEST
SALT LAKE CITY 15, UTAH

HUNTER 4-4382

October 15, 1959

Mr. H. K. Stager, Geologist USGS
United States Dept. of the Interior
Office of Minerals Exploration
4 Homewood Place
Menlo Park, California

Dear Mr. Stager:

This will acknowledge your letter of October 7, relative to your visit and interest in our Mt. Wheeler mine.

I am very sorry that your visit to the mine on September 24, was to no avail. We have a rather strange sort of agreement with Mt. Wheeler Mining Company, wherein itis most undesirable for anyone other than our employees to go into the mine until November 15, and it is for that reason that we have denied outside visitors access to the mine.

We are fully aware of the Geological Survey and Bureau of Mines authority to enter the mine as a result of the D. M. E. A. loans. I have explained this in detail to Steve Wilson, and Bruce Clemmer of the Salt Lake Bureau of Mines office, and they are sympathetic to our cause. I would like to have the opportunity to explain this situation to you also.

I would be very delighted to have you and members of your staff visit the Mt. Wheeler properties for whatever period of time you wish, but I would greatly appreciate it if your visit could be deferred until after November 15.

I can appreciate your interest in the occurrence of phenakite at the Mt. Wheeler properties, for it is most unusual if not unique. As soon as possible after the November 15 date, I hope to publish both a scientific and popular article on this occurrence so that the search for beryllium by others may be aided somewhat. I assure you, you do not require any references to qualify for your visit to the property; I know you well by reputation, and am more than pleased to cooperate with the Geological Survey and Bureau of Mines in any way I can.

Sincerely yours,

Norman C. Williams
Vice President

NCW:bb

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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Report No. MM-8 For Harold K. Stager Date Sept. 11, 1959

Requested by

Lot No. MM-8

Samples collected by H. K. Stager from the Pole Adit, Mt. Wheeler mine, White Pine County, Nevada for identification of the contained beryllium minerals.

Two distinct beryllium minerals were found in the suite of specimens submitted. Their properties are listed below.

Beryl - Pale blue euhedral to subhedral crystals showing distinct zoning on the basal pinacoidal sections.

Omega - light blue
Epsilon - colorless 1.579 ± .003
Uniaxial - negative
Density - less than 2.86

X-ray pattern matches that of ASTM data for beryl.

Phenacite - Colorless translucent euhedral to subhedral crystals

Omega - 1.650 ± .004 colorless
Epsilon - 1.668 ± .004 colorless

These indices are somewhat low for phenacite as recorded in the literature.

Uniaxial positive
Density - > 2.86 < 3.00

X-ray pattern matches that of ASTM data given for phenacite.

The pale blue beryl appears to be restricted to late veins and is not found in intimate contact with the phenacite. Phenacite is contemporaneous with those minerals making up the tactite.

Four of the representative rocks were studied by thin section and bulk mineral separations were made to establish mineral content.

Sample #1 - Blue fluorite-bearing rock with medium-grained texture. Fluorite and sericite are the most abundant minerals forming contemporaneously. Euhedral grains of pyrite can be seen in the hand specimen. Phenacite is present in the ground mass as ragged grains and makes up less than one percent of the rock. Late shears are healed with dolomite and fluorite.

(continued)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Report No. MM-8 For Harold K. Stager Date Sept. 11, 1959

Requested by

Lot No. _____

Sample #2 - Coarse-grained tactite containing visual scheelite and pyrite in a sericite-carbonate groundmass. Careful examination of this rock reveals euhedral colorless crystals of phenacite (similar to quartz in appearance). In thin section, the phenacite may form rosettes or individual grains within the carbonate-sericite matrix. Phenacite may be between 3 to 5 percent of this rock.

Sample #3 - Medium-grained blue fluorite-bearing rock with irregular dark brown patches produced by a superficial manganese oxide stain. Sericite and fluorite are the most abundant minerals with very minor carbonate. Phenacite was observed as a minor constituent forming irregular patches within the fluorite-sericite groundmass and makes up less than one percent of the rock.

Sample #4 - Mottled brown medium-grained sericite-fluorite rock containing pale blue beryl in cross-cutting veins. Sericite is more abundant in this specimen than in those previously described. Phenacite is present within the sericite-fluorite groundmass and appears to have formed earlier than the beryl.

Further detailed work on this material is necessary to establish the distribution of beryllium in this deposit as it is possible that beryllium may be camouflaged in some of the more common rock-forming minerals.

CC: T. Nolan, Director
D. Lemmon

By R. G. Coleman
R. C. Erd R. C. Erd

R. G. Coleman
Geochemistry and Petrology Branch

☆ U. S. GOVERNMENT PRINTING OFFICE: 1955—331760

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Item 15

P. O. Box 735, Milford, Utah

September 14, 1959

Mr. S. W. Hobbs
U. S. Geological Survey
Washington 25, D. C.

Dear Warren:

Hal Stager will be at Ely, Nevada about September 22 for an OME examination at Hamilton, Nevada. He will let me know when it is convenient to spend a day with me, and possibly Don Whitebread, at Mt. Wheeler Mines to look at the accessible parts of the workings where beryllium has been identified. I expect we will be there on the 23 or 24.

I talked with Hal, Roscoe Smith, Allen Griggs, and Bob Coleman, and looked at specimens that Coleman was testing. I understand that Bob identified phenacite by X-ray and optics, as well as the readily apparent beryl. The "concentrate" reported by Kennecott is a precipitate after chemical digestion, and is therefore not indicative of the mineral in the rock.

The occurrence of beryl and phenacite in mineralized limestone is interesting and warrants attention. Information on tonnage and grade at Mt. Wheeler Mines, as of a few weeks ago, seemed to me to be pretty sketchy insofar as appraising economic possibilities. The development of a portable instrument for identification of beryllium, perhaps on the principal of the "beryllometer" now being tested in Denver, is a real need in prospecting for phenacite or colorless, fine-grained beryl; we are very likely overlooking such minerals.

From discussions with Ralph Erickson, and Al Maranzino, who are at Milford this week, I gather that chemical field tests are not apt to be useful. So let's do some more pushing on the "beryllometer" principal.

Sincerely,

Dwight M. Lemmon

cc: Stager
Whitebread

2830 0015

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Item 15

Branch of Mineral Deposits
345 Middlefield Road
Menlo Park, California

September 29, 1959

Air Mail

Memorandum

To: S. Warren Hobbs

From: Dwight M. Lemmon

Subject: Mt. Wheeler Mines

On Thursday, September 24, I accompanied Hal Stager, Don Whitebread, Bill Rogers, Ralph Erickson, Al Maranzino, and Bill James to the adit portal of Mt. Wheeler Mines, Snake Range, White Pine County, Nevada.

We met Dale Terry, geologist, and Ted Brady, mine superintendent for Beryllium Resources, Inc., who stated that their orders were to forbid all visitors without authorization from one of the following: A. P. Kibbe, President, Hidden Splendor Mining Co.; Dale Hayes, General Manager; Dick Britton, Special Assistant; or Norman C. Williams (University of Utah), Consulting Geologist. Terry was pleasant, and regretful, but firm--despite Hal's reminder that the U. S. Government had a lien against production of $250,000. We waited several hours fruitlessly for arrival of the brass, by plane, from Salt Lake City, then left.

Terry was even unwilling to admit the occurrence of phenacite until Hal explained he had specimens, and showed them.

The enclosed clipping from the Salt Lake Tribune (September 20, 1959) states that Mt. Wheeler Mines sold all its capital stock to Beryllium Resources, a subsidiary of subsidiaries of the Atlas Corporation, for an ultimate price of $1,900,000, down payment unspecified.

At the mine, the road has been freshly graded by the County road crew from the mine to the paved Minerva road, and the air strip at the Kirkeby Ranch was also graded Thursday. The boarding house was being repaired, living trailers installed, new track installed in the adit, and other buildings erected. A drill crew is expected.

The vigor of operation suggests that Beryllium Resources plans prompt exploration to determine economic feasibility before the next stiff payments are due. I infer from discussions with Terry that sampling of the "tungsten workings" near the portal is planned first, by saving the cuttings of long percussion holes in the limestone bed of the Pioche shale.

Hal Stager will request permission from the management for members of the U.S.G.S. to visit the property, and will inform the new management of the right of OME representatives to visit the property.

At present, we can do nothing at the property; when possible, Hal Stager and Don Whitebread should obtain periodic information on activities and should grab geologic and mineralogic information.

The difficulty of identifying phenacite at sight encourages the collection of abundant samples for Be determination; Beryllium Resources apparently plans to sample tungsten and fluorite occurrences in the Snake Range because this is the mineral association at Mt. Wheeler.

The possible association of tungsten and beryllium was extensively investigated in the late 1940's by Gene Cameron for U.S.G.S. I believe his work (and the observations of many others) indicates the futility of re-sampling these old properties for Be.

Enclosure

CC: Harold K. Stager
Donald H. Whitebread
Wallace R. Griffitts
Harold Kirkemo

✓ Lemmon

DML:mmb

7830 0015

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Item 15

Branch of Mineral Deposits

April 27, 1960

Air Mail

Memorandum

To: M. R. Klepper, Assistant Chief Geologist, Geologic Division
Through: S. Warren Hobbs, Chief
Branch of Mineral Deposits

From: H. K. Stager, Branch of Mineral Deposits

Subject: Current status of the Mt. Wheeler Mine, White Pine County, Nevada

On April 23, 1960, while in Denver, Colorado, to attend the National Western Mining and Energy Conference, I discussed the current status of the Mt. Wheeler mine with Mr. J. D. Williams, president of Mt. Wheeler Mines, Inc., owners of the property, and Dr. Norman C. Williams, vice-president of Beryllium Resources, Inc., recent operators of the mine.

Beryllium Resources, Inc., completed 11,009 feet of exploratory diamond drilling in 95 holes and drove 700 feet of drifts, crosscuts, and raises between September 1959 and March 1960. As a result of this exploration the operators estimated measured and indicated reserves of 40,000 tons of 0.75 percent BeO ore. About 2,000 tons of ore of this grade was mined and stockpiled at the mine. All mining was stopped during the last week of January and diamond drilling was stopped the last of February pending renegotiation of the lease and purchase price. Total cost of the venture, including lease payments, equipment, supplies, etc., during the period of exploration , was reported by Beryllium Resources to be about $400,000. During March Beryllium Resources attempted to renegotiate the purchase price downward from the original $1,900,000 (cash) to $500,000. The owners would not accept the lower price and on March 21, 1960, the lease and option to purchase was declared in default and the property was returned to the full control of the owners. Beryllium Resources has removed all of their equipment and machinery from the property, including track, pipe, ventilation tube, supplies, etc. The buildings have not been dismantled or removed, except possibly for part of the compressor house that had to be dismantled in order to remove the machinery. Most of the track, pipes, ventilation tube, etc., is stored on the Kirkeby Ranch in the valley below the mine.

Mr. James D. Williams was at the property for the last week of March and the first two weeks of April while the mine was being sampled and examined by several mining companies interested in the possible purchase of the property. Mr. Williams would not say who these mining companies were but did tell me that a new option has been given and exploration of the deposit will be resumed by June 1st, at which time the mine will be completely rehabilitated including track, ventilation, assay laboratory, etc.

Feelings between Mr. J. D. Williams of Mt. Wheeler Mines and Dr. Norman C. Williams of Beryllium Resources are very strained so that I did not attempt to get them together to compare their views on the exploration or potential of the deposit. From talking to them both separately, and from my own studies of the deposit, I think it reasonable to infer reserves of twice the tonnage measured and indicated by exploration to date and feel that the potential of the mine and district is many times this amount. The geometry of the deposit, however, will result in an expensive exploration and mining operation. The metallurgy of the ore is still to be developed and proven.

In answer to Bob Pearson's letter to me of April 21, 1960, I feel that the deposit is not economic at its present state of development, but there is far too much beryllium there to say that it never will be. Certainly there is strong justification for a great deal more exploration and study.

CC: W. R. Griffitts
H. Kirkemo
D. M. Lemmon
D. H. Whitebread

7830 0015

331

Item 15

Branch of Mineral Deposits

February 4, 1960

Air Mail

Memorandum

To: S. Warren Hobbs, Chief, Branch of Mineral Deposits

From: H. K. Stager, Branch of Mineral Deposits

Subject: Visit to Mt. Wheeler mine, White Pine County, Nevada

On January 21, 1960, while in eastern Nevada on DMEA business, I again inspected the activities of Beryllium Resources, Inc., at the Pole Adit of the Mt. Wheeler mine. Accompanied by Messrs. G. G. Gentry and A. C. Johnson of the U. S. Bureau of Mines, and Dale Terry, resident geologist for the Operator, I examined the work that had been completed since my previous inspection on November 17, 1959.

About 25 men were employed at the time of the inspection, 2 diamond drills were operating and mining was being carried forward in 3 headings, all working 2 shifts per day. About 600 feet of drifting, crosscutting, and raising, and about 6,500 feet of diamond drilling has been completed by the Operator since the start of the exploration project.

The east drift from the No. 5 north lateral has been extended about 250 feet east to a point where the ore shoot is cut off by a north striking fault. This fault is also exposed in the main adit a short distance east of the No. 6 lateral. The No. 7 lateral has been extended 240 feet north of the main adit and a raise put up into the ore zone, following a six-inch quartz vein, at a point about 180 feet north of the adit. From this raise drifts have been driven 60 feet east and 70 feet west along the quartz vein and ore shoot. About 20 feet west of the raise a crosscut has been driven north 60 feet in the limestone. This crosscut intersected a parallel quartz vein and ore shoot at 30 feet, which has been drifted on for about 30 feet west and 5 feet east. About 2,000 tons of ore estimated to average about 1 percent BeO had been mined from these workings and is stockpiled near the main adit portal

awaiting shipment to a pilot plant being assembled in Salt Lake City. None of the new workings had been mapped geologically but mapping was started on the day of the examination. Samples of working faces, walls, backs, and cars of ore trammed to the stockpile have been scanned by a "Berylometer" and sent to Brush Beryllium laboratories for chemical assays.

The diamond drilling, totaling about 50 holes, has consisted chiefly of 100- to 200-foot, low angle, holes drilled north and south from the main adit and from the ends of north and south laterals. The company geologists were reluctant to disclose the detailed results of this drilling and I did not press them for the information. I did determine that all of the cores had been scanned under a Berylometer at one-half-foot intervals and samples had been cut, pulverized, and shipped to Brush Beryllium for assay. No chemical assays had asyet been received. Except for the scanning and notations as to the principal contacts the cores had not been logged. At the time of the visit one drill was drilling north from the end of No. 8 lateral and one drill was drilling near Station 41 at the "No assay" vein.

As the drifting and diamond-drilling progress the distribution of the beryllium is becoming more apparent. The principal ore shoots are in the lower 15 feet of the CM (or Wheeler) limestone bed and are localized along east-striking vertical quartz veins. The quartz veins are a few inches to several feet thick and contain few, if any, beryllium minerals within or below the ore shoots. Veins less than about four inches thick do not appear to have carried beryllium-bearing solutions into the limestone and no ore shoots have been found associated with them. The ore shoots that have been explored average about six feet wide and extend outward from the quartz veins from a few feet to as much as ten feet on each side. The average strike length of the several known ore shoots has not been determined but probably exceeds 1,000 feet. About ten shoots are known from drilling and exposures in workings and outcrops. The Operator states that they have developed measured and indicated reserves of about 30,000 tons of ore that averages about 1 percent BeO. My own guess as to the total tonnage, including inferred reserves, at this time is about 100,000 tons of ore of about this same average grade. These reserves are contained in a block of ground about 1,000 feet wide and 3,000 feet long, north of the main Pole Adit. The few holes drilled south of the adit have intersected quartz veins and some scheelite but only traces of beryllium. No exploration has been done north of the "North Adit".

Because of the problems involved in mining the long, thin, gently raking ore shoots, difficult ventilation, less tonnage than originally inferred, and uncertain metallurgy of the phenacite-bertrandite-scheelite-fluorite ore, the Operators (Beryllium Resources, Inc.) are renegotiating the

purchase price ($1,900,000) of the property with the owners (Mt. Wheeler Mines, Inc.). As a result all mining was stopped during the week following my visit and only diamond drilling exploration is being carried on at this time. Unless a new lower purchase price can be agreed upon before the next payment is due on March 10, 1960 there is a strong possibility that the property will be returned to Mt. Wheeler Mines, Inc.

My next scheduled visit to the mine will be on February 9 and 10, 1960. I will be accompanied on this visit by Donald E. Lee, G. & P. Branch, from the Menlo Park office.

Director's reading file

CC: W. R. Griffitts
H. Kirkemo
Lemmon, D. M. ✓
D. H. Whitebread

Stager

HKS:bgs

2830 0015

(331)

Item 15

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON

Aug 25, 1959

Mt. Wheeler Mines, White Pine Co., Nevada

Hal Stager Memo of Aug 21 & Kirkemo:—

100 000 tons measured ore 1% BeO
250,000 – 500,000 indicated + inferred 0.75± % BeO.
"Concentrate" made by Kennecott assayed 20% BeO.

Specimens being worked on by Coleman seen 8/25 by DMZ consisted of altered lst (Mt Wheeler bed?) with irregular veins of bluish beryl up to 3/4" wide containing 20% beryl. Abundant fluorite, some scheelite in rock. Other Be minerals not yet recognized. Pyrite specks.

Stager 9/3/59 will visit Ely about Sept 21 and will call Milford & meet DMZ and Whitehead for day at Mt Wheeler adit on 23 or 24.

Coleman has identified phenacite in specimens with scheelite and fluorite.

Kennecott's treatment of ore involved removing Ca impurities (calcite, scheelite, and also chlorite) by hot flotation, then "cold flotation", then residue digestion with hot H_2SO_4 for 3 hrs, eventual precipitation as BeO. 75%± ? recovery.

Bob Grogan called Stager last Friday out from Ely and planned to visit mine over weekend! Du Pont interested in property & yield 5000 tons/yr of beryl.

7830 0015

(337)
Item 15

December 11, 1959

AIRMAIL

Mr. H. K. Stager
U. S. Geological Survey
Branch of Mineral Deposits
345 Middlefield Road
Menlo Park, California

Dear Hal:

Your memo to S. Warren Hobbs dated December 2, 1959, regarding your visit to the Mt. Wheeler mine is interesting and timely. We had wondered what activity there had been since the initial publicity on the purchase of the property in September. Your report shows that Beryllium Resources, Inc. is giving the prospect serious evaluation.

In order to assist us in understanding the exploration program, I traced a part of the plan map and section of the Pole Adit that accompanied the Final Field Team report on Docket DMRA 3428 and attempted to show the exploration you reported. I have difficulty, however, in showing the exploration you describe because the Field Team map does not identify No. 7 lateral. Lack of data on bearing and inclination of drill holes prohibits showing them but I assume you will accumulate this information on subsequent visits. I can only show the general site of the exploration from the available data as indicated on the enclosed map. If you have plotted these workings and drill holes on a map and on cross sections, could you send a copy to me so we could keep posted on these and new developments as you report them?

You state that none of the cores from 24 holes (2,500 feet) had been logged or sampled by the company geologists at the time of your visit on November 17. This is surprising because I would expect them to log the core as soon as it is available and to ship the split core for assay as soon as possible. I would guess that having chemical assays available would be a worthwhile check on the reliability of their berylometers when they are in operating condition.

Can you get an idea as to distribution of beryllium mineralization from inspection of the core? Are the beryllium minerals more or less confined to the same vertical and horizontal

limits as the tungsten mineralization, i.e. within the CM limestone bed in a narrow zone along east-striking quartz veinlets? Are beryllium minerals uniformly distributed in the ore zone or do they occur in concentrated patches or masses? These are some of the geologic aspects that will determine whether the deposit can support a mining operation and, if so, how large an operation might be possible.

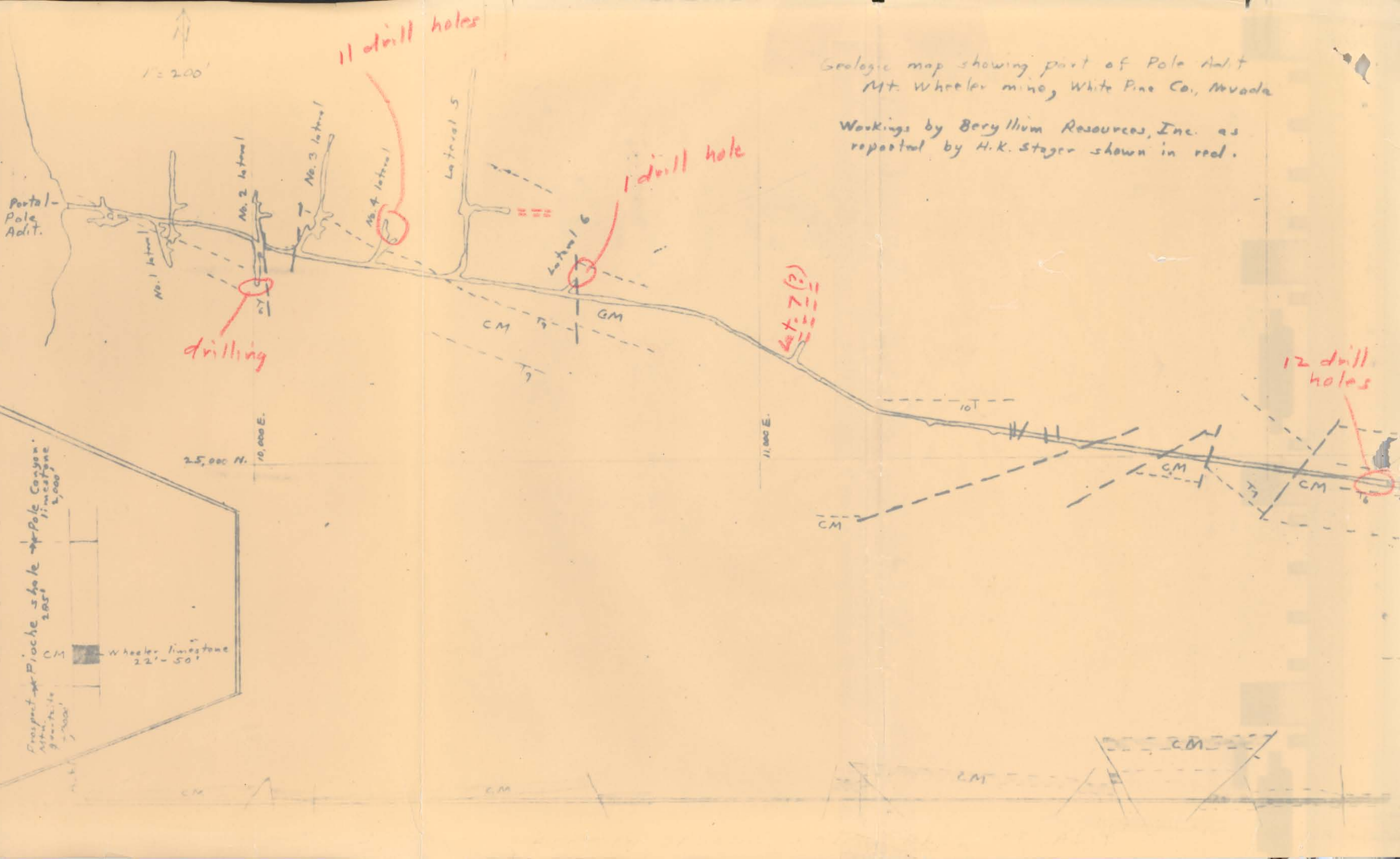
We look forward to your periodic reports on the property as your schedule permits. We would appreciate a sketch or map of the new exploration you have already reported if you have a copy available.

Best wishes for a joyous holiday season.

Sincerely yours,

Harold Kirkemo

Enclosure
cc: S. Warren Hobbs
C. L. Rogers
W. R. Griffith
D. M. Lemmon
Director's reading
Branch reading
Chron. file
Docket file
HKirkemo/mm
G-MD-12-11-59



Geologic map showing part of Pole Adit Mt. Wheeler mine, White Pine Co., Nevada

Workings by Beryllium Resources, Inc. as reported by H.K. Steger shown in red.

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Item 15

Branch of Mineral Deposits

December 17, 1959

AIR MAIL

Mr. Harold Kirkemo
U. S. Geological Survey
Room 5222, Interior Building
Washington 25, D. C.

Dear Kirk:

Thank you for your letter of December 11, 1959, pointing out my oversight in not providing a suitable base map to be used as a reference when describing new developments at the Mt. Wheeler mine. To correct this I am enclosing a print of the DMEA 200-scale map of the entire mine with all laterals properly identified. I have added the new drifting and cross-cutting work done by Beryllium Resources, Inc. (to November 17, 1959). This map is rather large but I think each of the interested persons to whom I will send copies of my periodic reports of my visits to the mine should have a single map showing the entire mine. In the future when I send additional maps or sketches they will cover only pertinent parts of the mine and will be on larger scales but will be tied to survey stations, or show coordinates, so that you can transfer the information to the large map if you wish.

I do not, as yet, have the collar coordinates, bearings, inclinations, or logs of the completed drill holes, but I expect to obtain them on my next visit and will send them to you in my next report. I, too, was surprised at the time of my last visit to learn that the company geologists had not logged or sampled the cores from the 24 completed holes. They did have an assistant washing the cores and placing the boxes in the proper order so that they could start logging and sampling within a few days. Their sample splitting and preparation room had just been completed and I feel sure that by now they are caught up with this important work.

As to the distribution of the beryllium mineralization, it is difficult to say at this stage what the controls and limits are. A great deal of detailed sampling, mapping, and

mineralogic study will be necessary before this is known. My impression from brief looks at diamond-drill cores, mine walls and faces, is that the beryllium minerals are not uniformly distributed in the ore zone but are present in the greatest concentration in and near the tungsten ore shoots and the fluorite zone (Station 29 - assay map enclosed) within the CM limestone bed. However, thin veinlets of bright blue beryl are exposed near the portal of the adit in the underlying Pioche shale and numerous mine samples indicate a high beryllium content along minor structures in areas of no visible scheelite, fluorite, or beryl, as at the "No assay" vein (map enclosed).

Best wishes for the holiday season.

Sincerely yours,

H. K. Stager

Enclosures

CC (including maps):
S. Warren Hobbs
C. L. Rogers
W. R. Griffitts
D. M. Lemmon ✓
D. H. Whitebread

LOCATION NO ASSAY VEIN MINE MT WHEELER LEVEL POLE ADIT