FILE COPY
SURNAME:

Lemmon / H
Holderer

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION
WASHINGTON 25, D. C.

July 9, 1951

Mr. N. B. Chessher
422 Gazette Building
P. O. Box 889
Reno, Nevada

In reply please refer to:
DMA-1077

Dear Mr. Chessher:

On April 27, Mr. G. M. Standifer filed a request for an exploration project of $20,000 to $150,000 on behalf of Chessher and Standifer, the work to be done on the Cabin Gulch claims, Monte Cristo, White Pine County, Nevada. Mr. Standifer subsequently informed us that he wished to withdraw this application.

We now have from you and Mrs. Chessher, in partnership as the Monte Cristo Tungsten Company, an application for a development loan of $150,000 to be followed by a production loan of $1,350,000 if exploration is successful. We assume that this is the only valid application now on file.

The Monte Cristo deposits have not been adequately sampled, trenched, or explored; therefore, the only assistance that Defense Minerals Administration could consider would be an exploration project toward which you would have to provide 25 percent of the cost.

Exploration applications must be accompanied by maps and descriptions of proposed work so that the exploration contract can clearly define precisely what work is to be done. The information that we have about the Monte Cristo deposits suggests that a modest-scale program could be laid out in steps, permitting abandonment of the project if the first steps were unsuccessful. If you wish to submit such a proposal, we shall consider it.

For your information we enclose a copy of the exploration contract, form MF-200.

The Government is not now purchasing ore, and has no plans for doing so. Low grade ore has no value to the defense effort unless a large enough quantity is available to warrant building a concentrator. Therefore, we are encouraging exploration by participation loans rather than by purchase of low-grade ore.

Very truly yours,

DMLemmon:awj

George B. Holderer

George B. Holderer
Chief, Tungsten Branch

cc:Adm. Reading File
Mr. Holderer
Mr. Lemmon
DMA Field Team III
F I L E S
Reports and Records

Enclosure

FILE COPY
SURNAME:

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION
WASHINGTON 25, D. C.

June 21, 1951

Mr. H. B. Chessher
422 Gazette Building
Reno, Nevada

Subject: DMA-1077X
Re: Exploration Loan
Monte Cristo Tungsten
Prospect

My dear Mr. Chessher:

Receipt is acknowledged of your application and attachments of May 15, 1951 for an exploration loan under the Defense Production Act of 1950.

The application was assigned Docket Number DMA-1077X and was referred to Mr. George B. Holderer, Chief, Tungsten Branch on June 15, 1951.

In any future correspondence relating to your application, kindly refer to DMA-1077X.

Sincerely yours,

LANDON F. STROBEL

Landon F. Strobel
Executive Secretary

LFSTROBEL:js
cc: Strobel-2
Files
Holderer
Lyon

5/7/51

Memorandum

To: Production Expansion Division

Through: Director, Supply Division

From: Tungsten Commodity Branch

Subject: DMA Docket No. 1077

Applicant: H.B. Chessher and G.M. Standifer
422 Gazette Bldg.
P.O. Box 889
Reno, Nevada

The applicants have requested an exploration loan of from $20,000 to $150,000 on a participating basis to explore their tungsten deposits. The extent of the exploration and amount of the loan will be determined by the success of the surface exploration, which will be undertaken first. If merited by surface exposures, additional underground exploration will be continued by diamond drilling, drifting or both.

This committee recommends favorable consideration for an exploration loan under the conditions outlined in our attached memorandum.

P.B. Ta[illegible]
Chairman, Tungsten Commodity Committee.

STANDARD FORM NO. 64

REPORT AND RECOMMENDATION OF COMMODITY COMMITTEE ON APPLICATION FOR GOVERNMENT ASSISTANCE

Office Memorandum • UNITED STATES GOVERNMENT

TO : P. R. Bradley, Jr., Tungsten Branch, DMA DATE: May 4, 1951

FROM : D. M. Lemmon, U. S. Geological Survey

A. Name and Address of Applicant

~~SUBJECT: Application for exploration loan~~ Docket No. DMA 1077

H. B. Chessher and G. M. Standifer Commodity-Tungsten

422 Gazette Bldg.

Reno, Nevada

P.O. Box 889

B. Property

Monte Cristo claims
Secs. 16, 21, and 28, T. 16 N., R. 57 E.
White Pine Mining district
White Pine County, Nevada
Approximately 62 miles west of Ely by road.

C. Conclusions

1. The Monte Cristo tungsten deposits are a possible source of a moderate tonnage of tactite containing 0.5 or more percent of WO_3, and a much larger tonnage containing 0.2 to 0.3 percent of WO_3. Previous sampling is inconclusive, but suggests that the average tungsten content is too low for a large-scale operation at $65 per unit.

2. In order to explore the deposits, the following steps should be taken, in sequence:

a) Prepare a geologic and topographic map of the mineralized area.
b) Trench and systematically sample the surface.
c) If results from surface sampling and mapping are satisfactory, undertake underground exploration by diamond drilling, adits, or both.

D. Recommendations

It is recommended that an exploration loan be favorably considered for an amount adequate to perform the required mapping, trenching, and surface sampling. The applicant should provide a competent geologist to supervise the work. No commitment should be made for a larger loan to cover a more extensive underground exploration program until results of the surface work are known.

The layout of the initial surface exploration program should be approved by a DMA field team representative.

E. Proposal

An exploration loan is requested with 75 percent Government participation, with minimum expenditure of $20,000 and maximum expenditure of $150,000. According to the applicant the "work will consist of diamond drilling, churn drilling, shafting, tunnelling, trenching, road building, assaying and whatever is necessary to properly sample and prove the tungsten deposit. The details of the work can be settled by your engineer inspecting the property with our representative and agreeing on the program."

Approved:

Director for Semi-Precious

P. R. Bradley Jr.
Chairman, Tungsten Commodity Committee

File Contents to PED

DMA - 1077

H. B Chessher & G.M. Standifer

422 Gazette Bldg.

Reno, Nevada.

Completed Form 103

Letter Standifer to Boyd enclosing applicat. 4/27/51

Report on Monte Cristo Tungsten Deposit by J.G. O'Brien with print of claims 9/15/41

Report by Glenn G. Gentry 2/15/51

" " David D. Baker 4/16/51

" " H.L. Hazen 1/24/51

P. R. Bradley, Jr., Tungsten Branch, DMA May 4, 1951

D. M. Lemmon, U. S. Geological Survey

Application for exploration loan DMA 1077
H. B. Chessher and G. M. Standifer Tungsten
422 Gazette Bldg.
Reno, Nevada
(P.O. Box 889)

Property

Monte Cristo claims
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History of the deposit

Tungsten was discovered at this locality in June 1939. A group of 30 claims were staked and leased in 1940 to Goldfield Consolidated Mines Co. In July and August 1940, Goldfield Consolidated had the area photographed from the air, then cut about 200 channel samples, each 5 feet long and weighing 50 pounds. The work was done under the direction of H. N. Witt, who reported that the samples were "first crushed to 1/4 inch and put through a Jones samples splitter, retaining a 5 pound cut. This cut was then ground in pulverizer to 20 mesh. Exactly one pound was weighed out from the pulp for panning and the remainder conserved for check assay. The panning procedure was constantly checked by examining concentrates and tails under the ultra-violet lamp. A final concentrate was weighed on pulp scales and the result expressed in percentage of scheelite (80 percent WO_3). The panner on this job although an experienced gold panner had no previous experience with scheelite and his concentrates proved to be dirty and consequently overweight. This was in part due to the presence of fluorescent powellite and the endeavor of the panner to save all heavy fluorescent material in his concentrates."

Of 145 samples panned, only 23 contained the equivalent of 0.3 percent WO_3 or greater. Six of the panned samples were analyzed by Hanks, who reported a much lower content of WO_3 than indicated by panning.

Goldfield Consolidated gave up the option after obtaining these results.

In 1943, D. M. Lemmon of the Geological Survey spent 2 nights examining the exposures in ultra-violet light, and concluded that the only mineralization of possibly acceptable grade was located on the Cabin Gulch claim where a band 8 feet wide and 160 feet long appeared to average 0.4 to 0.6 percent of WO_3.

The following reconnaissance examinations were made for Messrs. Chessher and Standifer in 1951:

On January 10, Mr. H. L. Hazen, mining and metallurgical engineer (Metallurgist and V.P., Central Comstock Mines Corporation) visited the Cabin Gulch claim, took 4 samples from 2 short adits (each 10 feet long) and spent 2 hours examining the surface exposures in ultra-violet light after dark. He took a sample to Virginia City for testing by sink-float, and concluded that the method was not applicable.

A letter from David D. Baker to Mr. Chessher, dated April 16, 1951, states that Baker spent an afternoon and evening at the deposit. Baker estimated, from lamping, that the average grade of the deposit was about 0.3 percent of WO_3.

Glenn G. Gentry, Mining Engineer, examined the deposits on January 10 and again on February 11-12, 1951. He took 13 samples, of which 7 ranged from 0.45 to 3.9 percent WO_3, 6 ranged from 0.03 to 0.19. He concluded that the deposit contained between 500,000 and 1,000,000 tons of ore containing 0.25 to 0.50 percent of WO_3.

Geological summary

Scheelite-bearing tactite occurs at a number of places in a belt about 2 miles long and half to three quarters of a mile wide. The tactite is a replacement of folded and faulted Paleozoic limestone; no igneous rocks are exposed nearby.

Although there appears to be a large amount of tactite, the different bodies are not continuous. Scheelite is erratically distributed in the tactite, only a small part of which contains enough scheelite to be low-grade ore. The best scheelite mineralization is on the Cabin Gulch claim, about 1 mile north from Monte Cristo Spring. An irregular mineralized zone on the north side of Cabin Gulch Canyon is estimated to contain 0.4 to 0.6 percent of WO_3 in the best portion, 160 feet long and 8 feet wide. Elsewhere in the district, the tungsten content is less, and much of the fluorescent material is powellite rather than scheelite.

D. M. Lemmon

DMLemmon:gt

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Don Lemmon

D. M. Lemmon

1077

Monte Cristo, White Pine Co., Nev

Referred to Lemmon 5/1/51

Form MF-103
(April 1951)

U. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Dma-1077
Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. .....

Date received .....

Participation .....

Name and address of applicant

H.B. Chessher & G.M. Standifer
422 Gazette Bldg
P.O. Box 889 Reno, Nevada
phone #5260

Date April 27, 1951

FILL IN THIS BLOCK

Date of application April 27th - 1951

Estimated cost Minimum $20,000.00 Maximum $150,000.00

Mineral or metal Tungsten

Percentage of Government participation 75%

Location of mine Monte Cristo Claims
White Pine County, Nevada

Date of filing MF-100 .....

DMA Docket Number, if available .....

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four signed copies of the application to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive officer thereof, with your name and address on each sheet of the application and all accompanying papers. If any question is inapplicable, or if you cannot answer it, so state on the form. Where the space provided for answer is insufficient, answer on a separate sheet, annex it to the application form, and refer to it in space for answer. If the application is approved, you will be presented with an exploration project contract on Form MF-200, for your signature.

THE APPLICANT

*1. Is applicant an individual, partnership, or corporation?
*2. If a partnership, state names and addresses of partners.
*3. If a corporation, state names and addresses of officers, directors, and five largest stockholders.
*4. Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who will manage the project.
*5. Are you the owner or the lessee of the property?
6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

8. Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.
9. How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 23 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.
    (*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

    NOTE.—If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*b*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

*11. State the present and former names of the property, if any.
*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.
*13. State source and quantity of water available for operations and its sufficiency at all seasons. State amount of power to be used, rate per hour or other cost, and source.
*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.
15. State in detail how the ore could be shipped and how and where milled.
*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.
*17. Production:
    (*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.
19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?
21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.
22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:
    (*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.
    (*b*) Supervisors, by numbers and positions, with salaries of each.
    (*c*) Cost of necessary repairs to existing facilities, structures, and buildings.
    (*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.
    (*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.
    (*f*) Cost of rental for equipment which the operator proposes to rent.
    (*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.
    (*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.
    (*i*) Cost of power, water, utilities, and any other items not provided for above.
24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and belief.

H. B. Chesser & G. M. Standifer
(Name of company)

By G. M. Standifer
(Signature of authorized official)

April 27, 1951
(Date)

Partner
(Title)

Title 18, U. S. Code (Crimes), Section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

Washington, D. C.
April 27, 1951

Mr. James Boyd
Administrator
Defense Minerals Administration
Washington, D. C.

Subject: Exploration Loan Monte Cristo Tungsten Prospect
White Pine County, Nevada

Dear Sir:

I herewith hand you application for exploration loan for development of the Monte Cristo tungsten prospect in White Pine County, Nevada, and attach herewith engineering reports by mining engineers, Jos. G. O'Brien, Ely, Nevada; Glenn G. Gentry, Reno, Nevada; David D. Baker, Reno, Nevada; and H. L. Hazen, Carson City, Nevada. These reports contain a full description of the property.

Our application contemplates a maximum expenditure of $150,000.00 of which the government participation would be 75% - and if our test drilling should not be favorable we will stop the work after spending approximately $20,000.00.

This sampling and exploratory work will consist of diamond drilling, churn drilling, shafting, tunnelling, trenching, road building, assaying and whatever is necessary to properly sample and prove the tungsten deposit. The details of the work can be settled by your engineer inspecting the property with our representative and agreeing on the program. Please have your engineer contact Mr. H. B. Chessher, Reno, Nevada, to make arrangements for the inspection and closing of the formal contract.

Thanking you for your kind attention to this matter, I am,

Yours very truly,

H. B. CHESSHER & G. M. STANDIFER

By G. M. Standifer
G. M. Standifer
Partner
422 Gazette Building
Reno, Nevada

Phone #5260
P.O. Box 889

Dma - 1077

RECONNAISSANCE REPORT

C
O
P
Y

ON THE

MONTE CRISTO TUNGSTEN DEPOSIT

LOCATION:

The Monte Cristo Tungsten Deposit lies on the west slope of White Pine Mountain (formerly designated by the G.L.O., Pogonip Ridge), in the White Pine Range, White Pine Mining District, White Pine County, in east central Nevada, and with respect to the G.L.O. survey occurs chiefly in Sections 16, 21 and 28, Township 16 North, Range 57 East, M.D.B.& M.

It is approximately 52 miles by airline and 62 miles by road, west of Ely, the county seat and the center of an important mineral bearing area which, among other things, contains Nevada's most important copper mining activities. The area is served by U. S. Highways 6, 50 and 93 and by the Nevada Northern Railway, a feeder line which leaves the S.P.R.R. at Cobre, 140 miles to the north. To reach the Monte Cristo Tungsten Deposit from Ely, U. S. Highway 50 is travelled for 45 miles in a westerly direction, and from this point fair desert roads of generally easy grades extend into the Monte Cristo section which lies about 15 miles south of U. S. Highway 50. From the main desert road short roads extend into the canyons which disect the deposit thus making large portions of it fairly accessible to motor vehicles.

PROPERTY:

The known portions of the deposit are covered by 34 contiguous unpatented lode mining claims of approximately 20 acres each which are owned and held as two contiguous groups of 16 and 18 claims respectively. Both of these properties, singly or collectively, are now available to prospective operators.

CLIMATE:

The climate is typical of the high altitudes of eastern Nevada, short pleasant summers followed by a brief fall season with the winter snow storms sometimes arriving as early as the middle of November. The winters are generally severe and the ground is covered with snow for at least four months of each year. The annual precipitation, chiefly snow, seldom exceeds 15 inches. The heaviest rain fall occurs during mid-summer and early fall. Sub-freezing temperature is the rule during the winter months. Occasional heavy snows during these months may be expected to interfere to some extent with mining operations.

VEGETATION:

Nearly fifty percent of the surface of the deposit consists of bare rock outcroppings and talus covered slopes and is barren of any vegetation. But in other parts of the deposit and in adjacent areas there is a considerable growth of stunted pinon pine, juniper and mountain mahogony trees with here and there small open grassy areas and occasionally small thickets of brush. On the lower slopes and at the base of White Pine Mountain desert sage and scattered juniper trees are the principal vegetable growths. The timber growth is chiefly valuable for domestic uses but some of it is also suitable for light mining operations.

EXHIBIT No. 2.

ELEVATIONS:

The elevations at the deposit range from a minimum of around 72000 feet near the north end to nearly 8000 feet at the south end. The maximum elevation of 9015 is at a point on the ridge which divides Hoppe and Little fair canyons. The mean or average elevation of the deposit is approximately 8000 feet.

TOPOGRAPHY:

The surface of the deposit and its immediate vicinity is extremely rugged in character and consists chiefly of a series of short steep westerly trending canyons which head high up on the western slope of White Pine Mountain and drain into Newark Valley on the west.

The sides of the canyons are generally steep and in places are characterized by the presence of small bluff-like outcroppings which are surrounded by talus covered slopes which generally culminate in rocky bluffs forming the narrow crests of the ridges lying between the canyons. The canyons range from 500 to over 1600 feet in depth and their slopes will often exceed 45°. Their floors have, in some instances, grades in excess of 600 feet to the mile.

WATER:

No water flows in any of the canyons excepting during a period of heavy rains. Two perennial springs occur in the immediate vicinity of the deposit. One of these, lying above and about one quarter mile east of the deposit in Hoppe Canyon at an elevation of 9100 feet is reported to have a flow of 15 gallons per minute. The other spring, known as the Monte Cristo Spring, lies at the base of White Pine Mountain about one quarter mile west of the deposit at an elevation of 7300 feet. It is reported to have an average flow of over 300 gallons per minute.

Other possible sources of water supply exist at Green's Ranch and in Newark Valley. At Green's Ranch, which is about six miles south of the deposit, there are several large springs, the water from one of which is reported to exceed in volume that of Monte Cristo Spring. The deposit lies near the southern end of Newark Valley which covers several hundred square miles and is the natural drainage basin of several mountain ranges. Its water table lies to the surface and there is every reason to believe that Newark Valley can be expected to be an unfailing source of water supply, when needed, for mining and milling operations of any magnitude.

HISTORY:

The western or Monte Cristo section of the White Pine Mining district, although less than six miles southwest of Hamilton section, has heretofore received little attention from geologists and mining men who have covered the Hamilton and adjoining areas. These areas were noted for their rich silver and silver-lead mines during the period 1867-1887 with a reported production of over $20,000,000.00 and during this period the prospecting of these areas must have been intense. But for some reason, possibly because of a difference in the rock formations, the Monte Cristo section was overlooked. Apparently the only exception to this was the mining operations carried on near the head of a gulch near Monte Cristo and which operations are reported to have produced $80,000.00 in gold from comparatively shallow workings in a quartz vein. The gulch referred to is now known as $80,000.00 Gulch.

In 1875-1876 a small matte - smelter was erected near Monte Cristo Spring to treat the ores of the Shermantown section which lies about six miles to the southeast of Monte Cristo. This smelter apparently never operated as is indicated by the condition of the flues and the complete absence of slag in the vicinity.

There is a dearth of published geological data on the Monte Cristo section. As far as is known to the writer none of the geologic papers listed in the bibliography of the Hamilton district have mentioned the Monte Cristo section. A brief mention of a contact-metamorphic zone at Monte Cristo is made by Francis Church Lincoln in "Mining Districts and Mineral Resources of Nevada", page 258.

The Monte Cristo Tungsten Deposit was discovered in June, 1939, and by the end of 1939, 34 lode mining claims covering all visible portions of the deposit had been located. Shortly after its discovery the writer made several visits to the deposit with a view of determining its economic possibilities. Later through the efforts of the writer the Goldfield Consolidated Mining Company entered the district and made, under the direction of Mr. Herbert N. Witt, their chief geologist, a partial examination of the deposit. This consisted of aerial surveying and mapping followed by the extensive use of fluorescent lights of surface outcroppings and this in turn followed by the cutting of numerous samples which were later tested for their economic minerals. In addition to the scheelite which was sought for mineral the tests revealed the presence of considerable powellite in the ore. The presence of this mineral in the deposit had hitherto been unsuspected, and although the tests apparently revealed the presence of scheelite in satisfactory quantities, Mr. Witt, due to the presence of the powellite, became fearful of an involved metallurgical problem in the treatment of the ore and abandoned all further investigation of the deposit.

At that time no process that would successfully separate powellite from scheelite existed, but since then a process has been developed and is now in successful use in the treatment of a similar ore being mined near Bishop, Calif.

GEOLOGY:

The country rock of the White Pine Mining District consists of Paleozic sediments which have been intruded by quartz-monzonite and granodiorite in late Cretaceous or early Tertiary time. According to Larsh a geologic section of the White Pine Mining District comprises over 15,000 feet of Paleozic rocks made up as follows:- Over 1,000 feet of Cambrian limestones and slates; 7,000 feet of Ordoviciam sediments, including Upper and Lower Pogonip limestones; Eureka Quartzite and Lone Mountain limestones; 2,000 feet of limestone of Devonian age; and 5,400 feet of Carboniferous sediments, including shale, sandstone and limestone.

Large areas of the White Pine Range are underlined by a batholithic mass of quartz-monzonite or its differentiates. In the Monte Cristo section the batholith is represented by a small stock or cupola composed of a quartzose granitoid rock which is undoubtedly a differentiate of the monzonite and which occurs as a small nearly conical peak, several hundred feet high, at the western base of White Pine Mountain. The peak borders a large contact metamorphic zone on the west and its position suggests that it is the termination of a spur or finger from the main batholith which lies at some distance to the southeast.

Although unexposed in other portions of the section the finger appears to trend and possibly dip to the southeast as is indicated by the degree of metamorphism of the overlying rocks and the tilted position of their strata which in some places appear as a low anticline dipping about 15° to the southeast.

The intrusion of the monzonite in the Monte Cristo area uplifted and metamorphosed the overlying sediments and those at the contact with the small stock forming a contact metamorphic zone of considerable extent which, owing to limited marginal exposures, makes the defining of its surficial area somewhat difficult. But the zone is roughly pear-shape in plan with its small end to the north. It

has a visible strike length of over 10,000 feet with its long axis striking NW-SE. At its smaller or northern end it is approximately 125 feet wide. From this point its width progressively increases towards the south until at a point about 2,500 feet from its southern end it reaches a width of over 2,600 feet. From this point to its southern end it narrows and is finally obscured by the overlay limestone.

In but few places is the border or margin of the metamorphic zone clearly defined. Much of it is obscured by vegetation or by a mantle of talus. Where exposed, excepting in a few places, there is no sharp division between the metamorphic and sedimentary rocks, but rather a gradual transition from one to the other. But at its northern end the zone appears to split into pointed fingers that pass into or under the limestone.

Still on the west side of White Pine Mountain, to the east and northeast of the contact metamorphic zone, but separated from it by a wide belt of Pogonip limestone, is a large intrusion of granodiorite. With the exception of the stock on its western border there are no visible intrusive rocks within close proximity to the contact metamorphic zone. But on its eastern border considerable quartz-monzonite porphyry float occurs, indicating the nearby presence of dikes or sills of this rock.

PETROLOGY:

The surface of the contact zone can roughly be divided into areas according to the color of its rocks. Beginning near its northern end and coinciding with its long axis a strong belt of garnetized rock of irregular width extends almost to its southern end. This belt ranges in width from a few feet to over 500 feet and in color from a light rusty color to a rich dark brown, according to the degree of garnetization. On either side of the garnet belt but still within the borders of the contact zone the rocks range in color from a light gray to a deep greenish gray.

As a rule the garnet belt stands above the surrounding areas in bold relief, usually as blocky bluff-like masses with talus covered bases. The rocks are strongly jointed by two systems of joint planes which strike at near right angles to each other. And in the best developed of these systems the joint planes coincide with the long axis of the contact zone and have nearly vertical dip.

Excepting where completely garnetized the rocks of this belt consist chiefly of garnet, quartz, calcite and greenish mineral resembling chlorite with scheelite apparently the only ore mineral.

The mineral constituents of the rocks in the gray areas are similar to those of the rocks of the garnet belt with the exception that although general garnetization of these areas occurs to only a slight degree. The garnets appearing chiefly as narrow bands in the rock or in the planes of fissility where the rock has a schistoes structure. The rocks have a medium to fine grain texture and in places are largely composed of quartz which occurs in granular form or as thin seams or as narrow veinlets.

The ore minerals of these areas are scheelite and powellite which apparently are the only minerals occuring in the deposit in sufficient quantities to be of economic value. At the northern end of the zone some gold is found, and in various parts of the zone small amounts of malachite are seen. Iron pyrite occurs sparingly and in a few small areas.

FAULTING:

Several faults in the contact zone were observed. None of these were given a close study by the writer as they have apparently had little influence on the formation of the ore deposit within the contact zone. The principal faults are pre-mineral and their fissures are generally occupied by quartz veins of little economic value. Minor folding or contorting with some slight overthrusting of the limestone strata occurs on a portion of the eastern border of the contact zone.

ORE DEPOSIT:

EXTENT: There is a strong possibility that the entire visible contact metamorphic zone may be an ore deposit. This belief is based on the results obtained from sampling and other investigations of various portions of the zone. These investigations, though far from covering in detail all portions of the zone, revealed the presence of scheelite and powellite over large areas. Probably a thoroughly systematic sampling would reveal other areas that were subcommercial or barren. A systematic sampling of the entire zone is beyond the means of the property owners. Over 200 samples cut by the claim owners and possibly that many more cut by the Goldfield Consolidated Mining Company together with the widespread use of fluorescent lights have failed to reveal any large portion of the contact zone that was barren of scheelite and/or powellite.

ORE MINERALS: The ore mineralization or enrichment, as in most contact-metamorphic deposits where little or no secondary concentration has taken place, is erratic, and while dissemination of the ore minerals is general, local concentrations appear to be the rule. This was indicated by the use of fluorescent light rather than by sampling. Through this method the enrichment was frequently shown to occur in strong zones of varying width and strike length.

Within these zones there is generally considerable uniformity in the distribution of the ore minerals, but occasionally the enrichment also appears as highly concentrated parallel streaks or narrow belts within the zones. Some of these belts are up to four feet in width.

Towards the northern end of the deposit in an area of good exposures an enrichment zone over 100 feet in width occurs. Sampling of this zone has revealed a WO_3 content of over 1% for the zone with one belt near the middle of the zone running from 3% to 8% WO_3.

It is noticeable that in these zones of enrichment quartz is the predominant mineral and occurs chiefly as granular quartz; in seams or veinlets or, in irregular masses. The scheelite appears to be associated with the quartz and the higher the quartz content in the ore the greater the scheelite content.

Scheelite (calcium tungstate), contains 80.6% tungsten trioxide and 19.4% lime. It occurs in the ore as individual crystals, crystalline aggregates, and in small granular masses. Its color is a pale, grayish white to nearly transparent, closely resembling the quartz in this respect. The scheelite crystals are generally quite small in size ranging from less than 1/16 inch to slightly over 1/8 inch in diameter. Their size and color make them practically indistinguishable, without the aid of fluorescent light, from the granular quartz crystals.

Powellite (calcium molybdate) contains when pure, according to its formula, $Ca\ Mo\ O_4$, 47.9% molybdenum and 52.1% lime. But powellite from many sources has been found to carry from 10% to 12% tungsten trioxide which is believed by

many authorities to be present as scheelite and in a mechanical mixture rather than a chemical compound.

The powellite appears to be an oxidation product of the primary sulphide molybdenite and it occurs in the ore of the deposit as a grayish white powdery mineral occupying minute seams or as a coating of the scheelite. This mineral cannot be distinguished in the ore by the unaided eye but can easily be detected in the ore concentrates through the use of fluorescent light or by analysis.

The Monte Cristo contact metamorphic zone consists chiefly of limestones altered to tactite by solutions accompanying the intrusion of a granitic rock. The scheelite-powellite deposits within the zone are of the replacement type, yet, are apparently singularly free of the undesirable mineral elements ordinarily present in minerals of the contact-metamorphic deposits. The ore, in consequence, does not contain serious amounts of copper or iron pyrites. No phosphorous mineral is known to be present, and molybdenum occurs in the powellite only. Some manganese oxides are found in association with the few quartz veins occuring within the zone.

SAMPLING: The deposit has not been systematically sampled. This task is beyond the means of the present owners who have to date cut about 200 samples in various parts of the deposit, chiefly with a view to determining the extent of the ore mineralization. And, as before mentioned, the Goldfield Consolidated Mining Company cut a considerable number of samples over a large portion of the deposit. As far as is known to the writer, few if any of these samples were barren of scheelite or powellite.

To date the tests of the samples taken have revealed their WO_3 content to be from .2% to over 6%, with an average of .6% for all of the samples. These figures do not include the WO_3 content of the powellite. This mineral occurs in varying amounts and generally exceeds the scheelite in the ore in the ratio of at least 2 to 1.

The sampling, although of a reconnaissance nature only, has indicated a wide spread, though erratic, distribution of the scheelite throughout the contact metamorphic zone and leads to the belief in the possibility of the existence of a huge low grade commercial ore deposit embracing most if not all of the zone. But the writer is more inclined to the belief that a thorough investigation of the deposit would result in the discovery of certain large areas bearing ores of a grade much higher than the average indicated for the whole contact zone. In mining these areas, selective mining would, in a sense, be employed.

MASS OR VOLUME OF THE ORE DEPOSIT: Until it is definitely determined by a thorough sampling and by other investigations such as core drilling or exploratory mining operations the mass or volume of the commercial ore body or bodies lying within the contact metamorphic zone cannot even be estimated, but on the assumption that the entire zone constitutes a workable low grade ore deposit its mass or volume is indicated by the following calculations:- A base line established at the lowest point in the deepest canyon dissecting the contact metamorphic zone and coinciding with the long axis of the zone has a length of over 10,000 feet. The average width of the zone exceeds 1,000 feet and the average vertical depth from the surface to the base line exceeds 600 feet. This presents a deeply serrated figure from which is deducted two-thirds of the mass of a regular solid of similar dimensions, giving a rock mass over 166,000,000 tons above the base line. The ore mineralization extends to an unknown depth below the base line but until this horizon is investigated no estimate of volume can be made.

In the above tonnage estimates only the rock mass within the tactitic area of the contact metamorphic zone was considered. The enclosing zone which at best is poorly defined and is thought to be barren was not included. The dimensions given for the above tonnage estimates were based on the sampling elsewhere mentioned in this report and which indicated a general though erratic scheelite enrichment within the area. Whether or not the entire rock mass is similarly enriched remains to be seen. In this connection one interesting fact is offered. Sampling the rocks exposed in the bottoms of the canyons has revealed no apparent change in the grade of enrichment between them and the rocks of the tops of the highest ridges.

Although as yet unproven, there is a bare possibility that the entire rock mass referred to constitutes an ore deposit of commercial grade, and, that, although possible, the writer believes this to be unlikely and holds to the belief previously expressed that a thorough investigation of the deposit is more likely to reveal it as consisting of a number of unconnected and erratically distributed deposits, some of which may be of large volume, surrounded by areas carrying ore of sub-commercial grade.

PLANS AND COSTS OF INVESTIGATION: It is advisory to divide this work into two stages with the execution of the second stage contingent on the results obtained from the first stage of the investigation. The preliminary or first stage to consist of the usual checking of claim lines, titles, physical conditions, etc., followed by a careful examination of the surface with fluorescent lights to determine the character, extent and grade of the scheelite mineralization; the richer zones to be indicated for later sampling. This to be followed by the sampling and assaying of the ore of these zones and the results obtained plotted on a sample map or chart. If the results obtained from this sampling were satisfactory then stage No. Two would naturally follow. The cost of the first stage of the investigation would range between $3,000.00 and $5,000.00 and would consume a period of about ninety days time.

The Second Stage of the investigation would cover the sampling of other portions of the deposit as indicated by the fluorescent light. Areas showing satisfactory results would then be subjected to sub-surface exploration by core drilling, tunneling, crosscutting or shaft sinking as deemed expedient, followed by a thorough sampling of all exposed faces.

The cost of this stage of the investigation would approximate $100,000.00 and would consume approximately one year's time. Not all of the contact metamorphic zone could be investigated as outlined for the above amount. The subsurface investigation would naturally be confined to the most favorable areas and areas with unfavorable surface showings would largely be eliminated from this class of investigation. The writer believes that well within the cost and time limits as set forth several commercial ore bodies large enough to warrant the initiation of plans for extensive mining and milling operations would be delineated.

WORKING METHODS AND COSTS: A large portion of the deposit is ideally situated for cheap, large scale mining operations, using open pit or quarrying mining methods. If necessary, mining operations could be carried on simultaneously in all of the five canyons that dissect the contact metamorphic zone. Short down grade hauls from these canyons to a mill centrally located at Monte Cristo Spring are of considerable importance in any plan of economic operations.

On the basis of a production of 500 tons daily the mining, milling and hauling costs should not exceed $3.00 per ton. With a larger daily production the costs would necessarily be lower. The costs are segregated as follows:

Mining $0.50; Hauling to be done by trucks, $0.25 per ton; Milling and marketing, $2.25 per ton.

FINANCIAL ASPECTS: The ore bodies within the tactitic area are probably large and may be expected to sustain long term mining and milling operations. It is believed that some of these ore bodies will average as much as 1% WO_3 per ton, while other smaller bodies will run as high as 3% WO_3 per ton. But using .5% WO_3 as the minimum grade of ore that can be worked at a profit (on the basis of 500 tons per day), with reasonably efficient concentrating methods, the recovery should not be less than 80%, or 8 lbs., of WO_3 per ton of ore treated.

At the present market price of $22.00 per unit of 20 lbs. the recovered WO_3 would have a value of $8.80. From this amount is deducted the operating costs of $3.00 per ton, leaving a net of $5.80 per ton. Further deductions in the form of overhead, taxes, etc. are to be made. But in view of the rapidly changing tax structure the writer has not attempted to fix these charges.

CONCLUSION: While the extent and quality of the Monte Cristo tungsten deposit are not as yet unknown it has the possibility of becoming the largest commercial deposit of its kind in the U. S. In size compares favorably with any of the porphyry copper deposits or the Climax Molydenite deposit. In the event an investigation shows it to be commercial the capital putting it over would be in a leading position in the tungsten markets of the U. S. The deposit is undoubtedly worthy of at least a good preliminary investigation.

In fixing the minimum tungsten trioxide content of the ore at .5% only the mineral scheelite was considered as the source of this. Its associated mineral, powellite, through the contained tungsten trioxide and molybdenum, would add considerably to the net value of the ore.

Respectfully submitted

JOS. G. O'BRIEN
Mining Engineer
Box 968
Ely, Nevada

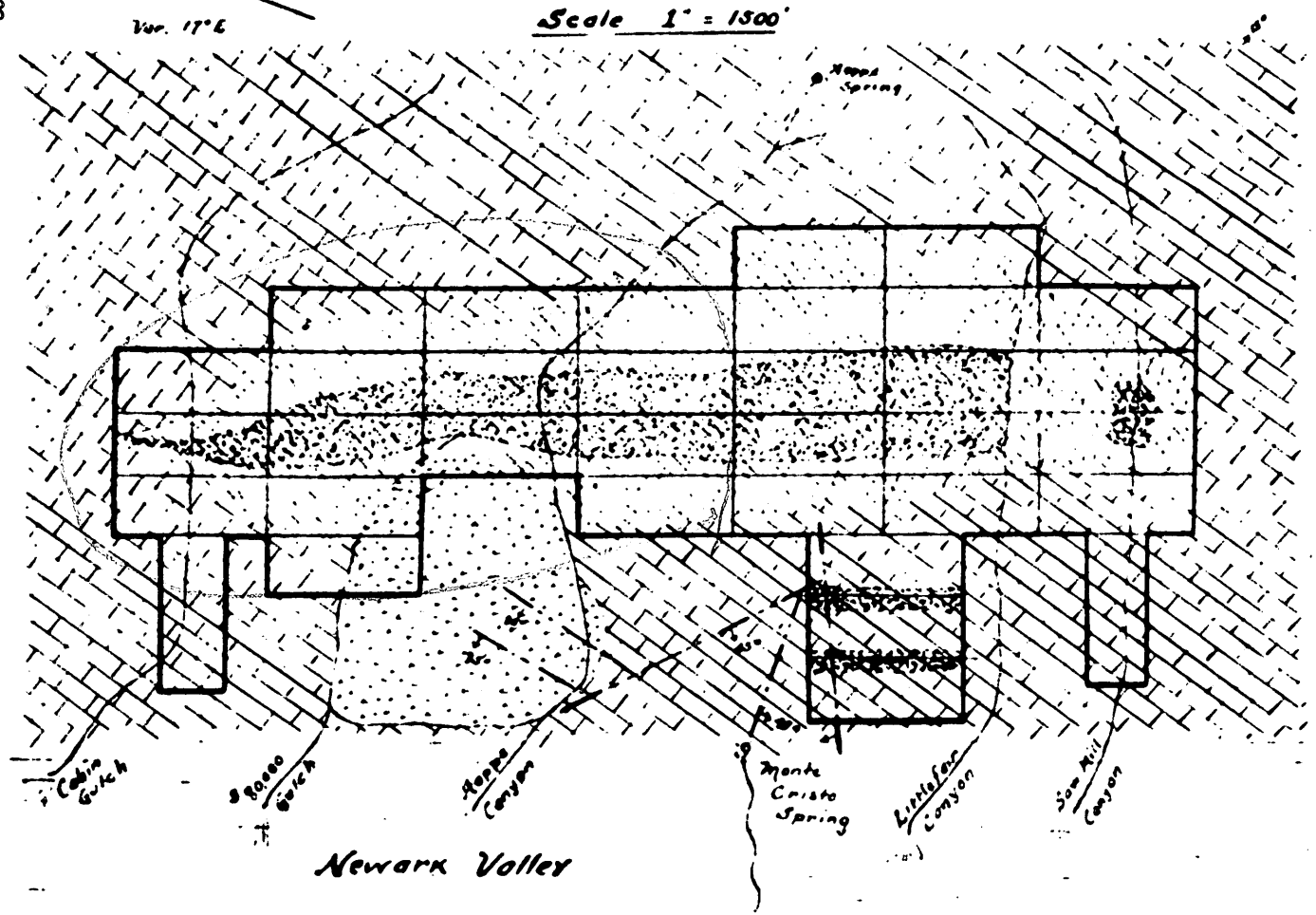
Sept. 15, 1941.

dma-1077

MONTE CRISTO TUNGSTEN DEPOSIT

CLAIM MAP AND AREAL GEOLOGY -

Scale 1" = 1500'



GEOLOGY -

- Cambrian Limestones and slates -
- Contact Metamorphic zone - consisting chiefly of lime silicates - calcite and quartz and carrying Scheelite and Powellite in commercial quantities -
- Garnetized belts -
- Intrusive stock of quartzose granitoid rock - probably a monzonite differentiate Late Cretaceous or Early Tertiary -
- Detrital Material - Pleistocene -

LEGEND -

Property consists of 34 unpatented lode mining claims - aggregating approximately 680 Acres - Claims defined by solid black lines - Location of gulches, canyons and springs indicated -

Brunton Survey - Areal Geology approximate -

Survey and Map by Jos. G. O'Brien, Mining Engineer - Ely, Nevada - May 21, 1941 -

Dma-1077

Reno, Nevada
February 15, 1951

Mr. H. B. Chessher, Manager
Monte Cristo Tungsten Company
422 Gazette Bldg.
P. O. Box 889
Reno, Nevada

Dear Sir:

Pursuant to your request, I have examined the surface outcroppings, two short tunnels and one shallow shaft located on the Monte Cristo scheelite tungsten mining property situated in White Pine Mining District, White Pine County, State of Nevada. The property consists of a group of 12 unpatented lode mining claims, and said group, so I am informed, has been owned by the same two owners since scheelite was first discovered thereon in 1939. The scheelite ore deposit covers a large area within the boundaries of said group of claims.

An initial examination was made by me on the afternoon and evening of January 10, 1951, for the purpose of determining the extent of the scheelite ore deposit in the area considered by the owners to be the part of the entire deposit that is the most amenable to economical mining with a power shovel. A snowstorm beginning in the evening of January 10, 1951, prevented my return to the property the following day for a further detailed study. On February 11th and 12th, 1951, I again visited the property and spent a large part of the time in lamping the scheelite exposures and in studying the geology and making measurements of the scheelite ore exposures on the surface. My report follows.

GEOLOGY

A report previously made by Jos. G. O'Brien, E.M., dated September 15th, 1941, covers the aforesaid group of 12 claims and also other claims in the district. It is a lengthy report and in part states as follows, to-wit:

> "The country rock of the White Pine mining district consists of Paleozoic sediments which have been intruded by quartz monzonite and granodiorite in the late Cretaceous or early Tertiary time."

and I agree with that statement. My examination indicates that the metamorphosed zone in which the scheelite ore deposits occur covers a very large area.

ORE DEPOSIT

The scheelite deposit on this group of claims occurs in a contact metamorphosed zone consisting principally of limestones altered to tactite by solutions accompanying the intrusion of granitic rock. There are three recognized scheelite ore zones, being the central zone, the westerly zone and the easterly zone. The central zone is approximately 140 feet in width at its most prominent exposure, and the westerly zone is over 80 feet in width at its most prominent exposure. The easterly zone is badly covered with slide rock, and the extreme easterly part forming the easterly wall of the entire mineralized zone is the only part that is exposed to view at this time.

SAMPLING

A total of 13 tungsten trioxide determinations were made on samples taken from the deposit, and all of the determinations were made by Union Assay Office, Inc., Salt Lake City, Utah, with the following results, to-wit:

EXHIBIT No. 3

No. 1 ..... 0.140 % WO_3
No. 2 ..... 0.075 % WO_3
No. 3 ..... 0.825 % WO_3
No. 4 ..... 0.555 % WO_3
No. 5 ..... 0.160 % WO_3
No. 6 ..... 0.090 % WO_3
No. 7 ..... 0.500 % WO_3
No. 8 ..... 0.450 % WO_3
No. 9 ..... 2.270 % WO_3
No.10 ..... 0.670 % WO_3
No.11 ..... 0.190 % WO_3
No.12 ..... 0.030 % WO_3
No.13 ..... 3.900 % WO_3

The aforesaid samples were used as patterns to make preliminary estimates of the tungsten trioxide content in the remaining parts of the mineralized zone from which no samples were taken. An ultra-violet fluorescent lamp, a very large Mineralight, was used extensively in traversing the length and width of the deposit, and the Mineralight showed that the deposit contained a uniform distribution of scheelite mineralization over a large area, the like of which I have never examined during my extensive experience in the examination and sampling of scheelite properties. By the use of the Mineralight and the aforesaid assay results, I believe I was able to arrive at a fairly accurate estimate, as hereinabove stated, of the possible gross tonnage of ore averaging 0.25% to 0.50% WO_3 in this deposit.

MINERALIZATION

In my examination of this deposit, it was observed that a very small amount of powellite and iron pyrite were contained in the scheelite ore. The scheelite crystals appear to range in size from 1/32" to 1/4" and were well disseminated throughout the tactite rock. The scheelite crystals appear to be firm and I do not anticipate too much difficulty in making a high grade concentrate by gravity concentration when a mill is made available for processing the scheelite ore from this property. There is a small amount of garnet in the ore, and the molybdenum content does not appear excessive. A representative sample of high grade ore from this property was selected and sent to Union Assay Office, Inc., Salt Lake City, Utah, for tungsten trioxide and molybdenum assays, and the determinations were as follows, to-wit:

3.900 % WO_3
0.062 % Mo

From the said determinations it is observed that the ratio of tungsten trioxide (WO_3) to molybdenum (Mo) is around 62 to 1. This indicates that a ton of 60% WO_3 concentrates should contain not more than 1% Mo if said ratio is maintained throughout the deposit, and I have no reason to believe that such ratio will not occur.

TONNAGE AND VALUES

My examinations revealed that a very definite mineralized zone extends for a length of approximately 500 feet by 400 feet in width with a depth of at least 150 feet. It is my belief that this particular zone will produce by power shovel operation in open pit between 500,000 and 1,000,000 tons of scheelite ore containing between 0.25% and 0.50% WO_3 per ton. In making said tonnage estimate I have not given consideration to, or included therein, the probable tonnage of commercial scheelite ore in the areas of extension, both north and south, of this deposit. I have not stressed in this report the importance of the enriched lenses of scheelite ore, assaying 0.75% WO_3 or more, which occur at several places in the deposit which are amenable to underground mining methods. It is my belief that the deposit is topographically suited for power shovel

operation in open pit and if the minimum grade of ore to be mined by power shovel in open pit is to be kept above 0.25% WO_3 then the enriched lenses will be needed to maintain a mill head assaying in excess of said minimum. Therefore, I do not recommend the exclusive mining of the high grade ores averaging 0.75% WO_3 or better and thereby spoiling such an excellent open pit operation.

DEVELOPMENT

It is my opinion that before any large scale development campaign is undertaken, that the deposit should be carefully surveyed and mapped. The mapping should indicate the large zones that are mill ore. The zones too low in value for milling should be properly marked in order that the pit operator will be able to mine selectively with power shovel, sending to waste dump the rock broken which will be below the minimum grade established for milling.

I agree with your proposed plan to construct a road with an upgrade of not more than 12½% to the bottom of the deposit as exposed on surface and thence a switch-back road of same grade from bottom to top of the deposit. The open cuts representing the roadway will expose at several horizons appreciable widths of the various zones of enrichment in the deposit as exposed on the surface but now covered with slide rock. In addition, the roadway will make almost any part of the deposit accessible. The slope of the hillside is approximately 30 degrees. Adits into the deposit, and diamond drill holes, will be easily driven from the roadway. Obviously, a deposit of the magnitude evidenced by the surface exposures of this deposit will require several thousand feet of adits, crosscuts and diamond drill holes in order to fully explore and prove or disprove the tonnage and grade of ore estimated in this report.

CONCLUSION

I believe that this deposit is worthy of the amount of development work recommended in this report and that such development work will prepare the deposit for subsequent large scale operations in open pit by power shovel methods. All recommendations made in this report are based upon the present price of tungsten trioxide created by the National need for this strategic mineral for defense purposes. My estimate of 500,000 to 1,000,000 tons of ore averaging 0.25% to 0.50% WO_3 is a very conservative one, and there is an excellent chance of developing several times this amount of ore when northerly and southerly extensions of this deposit are explored.

During World War II I was employed by the Reconstruction Finance Corporation and Metals Reserve Company as Supervising Engineer, and during said time I purchased approximately 160,000 tons of tungsten ore and examined and visited many tungsten properties. I am convinced that the Monte Cristo tungsten deposit, as above described, is one of the largest known potential open pit tungsten mines in the State of Nevada.

Respectfully submitted

Glenn G. Gentry
Mining Engineer
P. O. Box 2518
Reno, Nevada

April 16, 1951

XXXXXXXXXXXXXX
XXXXXXXXXX XXXXXX
Reno, Nevada
1380 Sierra Street

Mr. H. B. Chessher
Gazette Building
Reno, Nevada

Dear Sir:

Pursuant to your instructions, I visited the Monte Cristo Tungsten Deposit and spent one afternoon and evening making a reconnaissance of the surface exposures and going over the outcrops with a fluorescent lamp. No samples were taken and no attempt was made to survey or measure the orebodies. In the time available it was possible to cover only the portion of the deposit that occurs on the North side of the canyon known as Cabin Gulch. Although my inspection was brief, I can say without hesitation that the deposit is the largest occurrence of undeveloped low-grade tungsten ore that I have seen or know of in the Western United States.

The North side of Cabin Gulch is quite steep and although a great deal of the lower slope is covered with talus the upper portion is uncovered and the tactite bodies outcrop boldly. The scheelite bearing tactite occurs in this area as three bands--a central band standing almost vertically, on each side of which is another band dipping at a steep angle. The three ore bands apex at a point near the crest of the ridge and spread out toward the bottom of the canyon. The central band is roughly 25 feet in thickness and both the eastward and westward bands range from 30 to 50 feet in thickness. All of these tactite bodies can be traced for about 250 feet down the mountainside before they are obscured by the mantle of talus.

The general impression that I gained from lamping the deposit with a fluorescent lamp is that the average grade of the mineralized tactite is about 0.3% WO_3.

Assuming a total length of 750 feet for the 3 bands, an average thickness of 30 feet, and a depth of 100 feet, the possible tonnage of ore in this section of the deposit would be 225,000 tons. Since no intrusive rocks were observed in the vicinity of the tactite bodies it is possible that many hundreds of feet of metamorphosed limestone may be found lying above the batholith of quartz monzonite that uplifted the sedimentary rocks. Thus, the geologic possibilities for greatly

EXHIBIT No. 4

XXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXX
Reno, Nevada
1380 Sierra Street

increasing the estimated tonnage are very good, and a program of diamond drilling to explore the formations at depth should be undertaken.

At one point in the central band where it has been opened up by an open cut and a shallow pit, I would judge the grade to be 1% over a width of from 6 to 8 feet. This section should be explored since it might be of sufficient importance to support a small scale mining and milling deposit. Such a mill could serve as a pilot testing plant for working out the metallurgy of the lower grade ore.

Very truly yours,

David D. Baker

DAVID D. BAKER

DDB:jm

REPORT OF PRELIMINARY INSPECTION TRIP AND
PRELIMINARY LABORATORY TESTS

MONTE CRISTO TUNGSTEN DEPOSIT

January 24, 1951

On January 10, 1951, H. B. Chessher, Glenn Gentry, J. R. Murphy, and H. L. Hazen arrived on the Monte Cristo Tungsten property about 3:30 in the afternoon. We walked over the outcrop of the tungsten bearing rock that I considered a lime schist. The name of Tactite has been given by Larsh to this type of formation. The original locator, J. R. Murphy, showed us the outcrop area that he said was all mineralized with schleelite.

The formation was on edge and the strata were exposed across the strike of the formation. It has been partially eroded and the hillside had almost the slope of rest. The gulley at the bottom of the slope is most probably on a fault plane. We went over the mineralized area first during daylight, and could see scheelite fluoresce only when the rock inspected was covered with a blanket to exclude the light.

Only two small adits have been started into this formation, each going into the hill about 10 feet. At the top of the formation Murphy sank a shaft down a short distance that I guessed was also about 10 feet. The lower adit is only a short distance above the bottom of the gulley. The upper adit was near the shaft at the top of the mineralized area and I guessed about 600 feet up the hill side.

During the daylight, and without use of the mineralight, H. B. Chessher and I cut two samples from the face of the lower adit across a distance of about 6 feet. The rock here was obviously low grade when inspected under a blanket with a mineralight. Then Glenn Gentry and I cut two samples across the face of the upper adit across 70 inches. Under the blanket this appeared to be good ore.

Analysis of samples by Union Assay Office, Inc.

No. MC 1	Across 6 ft. of the face of lower adit near floor.....	0.140 % WO_3
No. MC 2	Across 6 ft. of the face of lower adit about 5 ft. above floor.....	0.075 % WO_3
No. MC 3	Across 70 inches of the face of upper adit near floor....	0.825 % WO_3
No. MC 4	Across 70 inches of the face of upper adit five feet above floor.....	0.555 % WO_3

After darkness fell (the wind was blowing and it was snowing a little) we spent two hours walking slowly back and forth across the mineralized area inspecting all the rock with mineral lamps. Some of the strata was much higher grade than the average, but the entire area was mineralized. Murphy told us that the measured exposure that we were inspecting was 400 feet wide and 600 feet high. I could well believe it.

After returning to the laboratory in Virginia City we made sink-float tests on portions of sample No. 4. These tests showed, under a mineralight, that it would be impossible to obtain a concentration of the tungsten at any size that could be treated by the sink-float system. The rock is well garnetized. It is very heavy, and half of the ore sank in pure acetylene tetra-bromide with a specific gravity of 2.968. But the mineralight showed that the float contained just as much scheelite as was contained in the sink.

We next made sink-float tests on a portion of sample No. 2. I thought it possible that such a low grade material might float on a liquid in which ore as good as sample No. 4 would sink. The tests on sample No. 2 in pure acetylene tetra-bromide also gave

EXHIBIT No. 5

an even split of the sample at a specific gravity of 2.968 and the sink contained just as much scheelite as did the float.

The above tests proved to my satisfaction that sink-float would be of no value in the treatment of this ore.

We then started panning tests on portions of Sample No. 4. We found that the scheelite crystals did not crush free from the gangue until the ore was ground to pass a 40 mesh screen. We then carefully ground a portion of sample No. 4 to passa 40 mesh screen and panned it very roughly, trying to produce a low tail rather than a good concentrate. After the first panning was completed we panned the first tailing again, producing a second pan concentrate. During this work we slopped over a "slime" product which was quite coarse and which settled and filtered very rapidly.

The results of this panning were assayed by Union Assay Office, Inc., with the following results:

Product	Weight %	% WO_3	% Content WO_3
1st Concentrate	16.01	2.27	70.48
2nd Concentrate	8.25	0.67	10.67
Sand Tail	46.92	0.19	17.28
Slime Tail	28.82	0.03	1.56
Head - Sample #4	100.00	0.515	99.99
Assay Head		0.555	

I feel that the following probabilities are indicated by the preliminary tests:

1. This ore must be ground to pass 40 mesh before it can be concentrated.

2. This ore should be first concentrated over tables at 40 mesh. The slime tail would be very low grade and should be discarded. The sand tail should be re-ground and concentrated.

But if an ore deposit is established in the area and the Government will purchase tungsten ore as during the last War, I would judge that shipping ore could be mined directly from this deposit and a large profit obtained with a minimum capital investment.

Respectfully submitted

H. L. Hazen, Mining Engineer
P. O. Box 128
Carson City, Nevada

Form MF-103
(April 1951)

Dma-1077

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. .....

Date received .....

Participation .....

Name and address of applicant

H. B. Chessher + G. M. Standifer
422 Gazette Bldg
Reno, Nevada
P.O Box 889
phone 5260

Date Apr 27-1951

FILL IN THIS BLOCK

Date of application April 27-1951

Estimated cost Minimum $20,000.00 Maximum $150,000.00

Mineral or metal Tungsten

Percentage of Government participation 75%

Location of mine Monte Cristo Claims
White Pine County, Nevada

Date of filing MF-100 .....

DMA Docket Number, if available .....

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*1. Is applicant an individual, partnership, or corporation?
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16—64067-1

Drake Lake, Nev.

THE PROPERTY

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24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and belief.

H. B. Chessher & G. M. Standifer By G M Standifer
(Name of company) (Signature of authorized official)

April 27 - 1951 Partner
(Date) (Title)

Title 18, U. S. Code (Crimes), Section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

Dma-1077

Washington, D. C.
April 27, 1951

Mr. James Boyd
Administrator
Defense Minerals Administration
Washington, D. C.

Subject: Exploration Loan Monte Cristo Tungsten Prospect
White Pine County, Nevada

Dear Sir:

I herewith hand you application for exploration loan for development of the Monte Cristo tungsten prospect in White Pine County, Nevada, and attach herewith engineering reports by mining engineers, Jos. G. O'Brien, Ely, Nevada; Glenn G. Gentry, Reno, Nevada; David D. Baker, Reno, Nevada; and H. L. Hazen, Carson City, Nevada. These reports contain a full description of the property.

Our application contemplates a maximum expenditure of $150,000.00 of which the government participation would be 75% - and if our test drilling should not be favorable we will stop the work after spending approximately $20,000.00.

This sampling and exploratory work will consist of diamond drilling, churn drilling, shafting, tunnelling, trenching, road building, assaying and whatever is necessary to properly sample and prove the tungsten deposit. The details of the work can be settled by your engineer inspecting the property with our representative and agreeing on the program. Please have your engineer contact Mr. H. B. Chessher, Reno, Nevada, to make arrangements for the inspection and closing of the formal contract.

Thanking you for your kind attention to this matter, I am,

Yours very truly,

H. B. CHESSHER & G. M. STANDIFER

By G. M. Standifer
G. M. Standifer
Partner
422 Gazette Building
Reno, Nevada

Phone #5260
P.O. Box 889

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Dma - 1077
Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

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Date received .....

Participation .....

Name and address of applicant

H. B. Chessher & G. M. Standifer
422 Gazette Bldg
Reno, Nevada
P.O Box 889
phone 5260

Date Apr. 27 - 1951

FILL IN THIS BLOCK

Date of application Apr 27 - 1951

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White Pine County, Nevada

Date of filing MF-100 .....

DMA Docket Number, if available .....

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H. B. Chassher & G. M. Standifer
(Name of company)

By M. Standifer
(Signature of authorized official)

Apr 27 - 1951
(Date)

Partner
(Title)

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16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

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Administrator
Defense Minerals Administration
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By G. M. Standifer
G. M. Standifer
Partner
422 Gazette Building
Reno, Nevada

Phone #5260
P.O. Box 889

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

dma - 1077

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

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Name and address of applicant

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(Name of company)

By G M Standifer
(Signature of authorized official)

April 27, 1951
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