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DMA Docket No. 3596

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CONTROLLED DOCUMENT

File Copy
Surname
J. Alt.
Kiilsgaard
Hedges

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

Mr. Albert G. Lotze

Northport, Washington

Re: Docket No. DMEA 3596 (Lead)
Albert G. Lotze
Gladstone Mine Group
Stevens County, Washington

Dear Mr. Lotze:

Your application for aid for an exploration project and other reports available to us in Washington concerning your application have been reviewed.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

Careful study of all our information, although noting mineralization on your leases indicates to us that the probability of disclosing minable ore reserves by your proposed program is not sufficiently promising to justify Government participation. We regret to advise you, under these circumstances, that your application for exploration assistance is denied. There might be a possibility that a program designed to explore the property in a more adequate manner could be given consideration.

We wish to thank you for your interest in the Defense Minerals Program and for bringing your property to our attention.

Sincerely yours,

Administrator

JWAlt/er 2/10/55
Copy to: Docket
Region I, NW Dist. (2)
Admr. R. File
Op. Committee
Base Metals
Mr. Bishop, BSBM
Mr. Kiilsgaard, USGS
Chron.

File

Mr. Albert G. Letse

Northport, Washington

Re: Docket No. DMA 3596 (Lead)
Albert G. Letse
Gladstone Mine Group
Stevens County, Washington

Dear Mr. Letse:

Your application for aid for an exploration project and other reports available to us in Washington concerning your application have been reviewed.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

Careful study of all our information, although noting mineralization on your leases indicates to us that the probability of disclosing minable ore reserves by your proposed program is not sufficiently promising to justify Government participation. We regret to advise you, under these circumstances, that your application for exploration assistance is denied. There might be a possibility that a program designed to explore the property in a more adequate manner could be given consideration.

We wish to thank you for your interest in the Defense Minerals Program and for bringing your property to our attention.

Sincerely yours,

Administrator

JWAlt/ar 2/10/55
Copy to: Docket
Region I, Ne Dist. (2)
Admr. H. File
Op. Committee
Base Metals
Mr. Bishop, BMBM
Mr. Kiilsgaard, UGS
Chron.

File

Reviewed by
DMEA OPERATING COMMITTEE

(date)

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

Mr. Albert G. Lotze

Northport, Washington

Re: Docket No. DMEA 3596 (Lead)
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Gladstone Mine Group
Stevens County, Washington

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Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

Careful study of all our information, although noting mineralization on your ~~leases~~ mineral property indicates ~~t~~ that the probability of disclosing minable ore reserves by your proposed program is not sufficiently promising to justify Government participation. We regret to advise, ~~you, under these circumstances,~~ that your application for exploration assistance is denied. However, ~~There might be a possibility that~~ a program designed to explore the property in a more ~~adequate~~ suitable manner could be given favorable consideration.

We wish to thank you for your interest in the Defense Minerals Program and for bringing your property to our attention.

Sincerely yours,

Acting Administrator

File Copy
Surname

Grisamer
Martin
Hedges
Newcomb

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

FEB 14 1955

Mr. Albert G. Lotze

Northport, Washington

Re: Docket No. DMEA-3596 (Lead)
Albert G. Lotze
Gladstone Mine Group
Stevens County, Washington

Dear Mr. Lotze:

Your application for aid for an exploration project and other reports available to us in Washington concerning your application have been reviewed.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

Careful study of all our information, although noting mineralization on your leased property indicates that the probability of disclosing minable ore reserves by your proposed program is not sufficiently promising to justify Government participation. We regret to advise, therefore, that your application for exploration assistance is denied. However, a program designed to explore the property in a more suitable manner could be given favorable consideration.

We wish to thank you for your interest in the Defense Minerals Program and for bringing your property to our attention.

Sincerely yours,

Frank E. Johnson
by ESY
Acting Administrator

JWAlt/er (rewritten 2/14/55)
(2/10/55)

Copy to: Docket
Region I, NW Dist. (2)
Admr. R. File
Op. Committee
Base Metals
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Chron.

Case

UNITED STATES
DEPARTMENT OF THE INTERIOR 500
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

February 11, 1955

Memorandum

To: The Administrator

From: Chief, Base Metals Division

Subject: Denial of Application, Docket No. DMEA-3596, Albert G. Lotze, Gladstone Mine Group, Stevens County, Washington, (Lead)

The cited application dated October 21, 1954, was received from A. E. Weissenborn, Executive Officer, Region I, Northwest District, by this Division on December 6, 1954.

The Field Team examined this property on November 4, 1954, and we received their report on January 31, 1955.

The Applicant proposes to sink a steeply inclined shaft to explore the No. 10 Chimney from surface to the 200 level. Expected length of this shaft is 150 feet, allowing 10 feet for skip pocket. From the bottom of the shaft, he plans to drive 400 feet of drifts and crosscuts and 1,000 feet of long hole drilling to explore the No. 10 Chimney on the 200 level.

All of the underground workings are now inaccessible.

The No. 10 Chimney in the Gladstone mine has been extensively developed on the 200 level and it must be assumed that it has been pretty thoroughly explored and the high grade pods of galena pretty well picked out. Probing for such pods as may remain by sinking a shaft, driving drifts and crosscuts at the 200 level elevation and long hole drilling from shaft and drifts, appears to be preparations for mining.

The search for a new ore "Chimney" or for the extension of a known one at greater depth might be a very desirable DMEA project, but the fact remains that the present project, as proposed by the Applicant and which is the only one he is interested in at the time, is not a suitable one for DMEA support.

We concur with the recommendations of A. E. Weissenborn, Executive Officer, Region I, Northwest District, and the Commodity members of the USBM and the USGS that this application be denied.

W. R. Griswold

W. R. Griswold

File Copy
Surname
J. W. Alt
Griswold
Martin

UNITED STATES
DEPARTMENT OF THE INTERIOR 500
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

February 11, 1955

Memorandum

To: The Administrator

From: Chief, Base Metals Division

Subject: Denial of Application, Docket No. DMEA-3596, Albert G. Lotze, Gladstone Mine Group, Stevens County, Washington, (Lead)

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The search for a new ore "Chimney" or for the extension of a known one at greater depth might be a very desirable DMEA project, but the fact remains that the present project, as proposed by the Applicant and which is the only one he is interested in at the time, is not a suitable one for DMEA support.

We concur with the recommendations of A. E. Weissenborn, Executive Officer, Region I, Northwest District, and the Commodity members of the USBM and the USGS that this application be denied.

JWAlt/er 2/10/55
Copy to: Docket
Base Metals
Chron.

W. R. Griswold

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

February 8, 1955

Memorandum

To: Mr. W. R. Griswold, Chief, Base Metals Division, DMEA

From: Thor H. Kiilsgaard, U. S. Geological Survey

Subject: Review of application and Field Team report, DMEA Docket 3596 (lead), Gladstone mine, Stevens County, Washington

I have reviewed the Field Team report on the cited application and noted that the field examiners have recommended approval of the application but that the Field Team differs in their recommendations, with the Bureau of Mines member recommending approval whereas the Survey member recommends denial.

Field examiners report the target to be explored by the proposed project as an ore-bearing chimney in the Metaline limestone. This deposit, known as the No. 10 chimney, ranges in width from 20 to 40 feet, and has a strike length of 240 feet. Ore previously mined in the chimney has occurred as small, high-grade pods and pipes of galena, cerussite, anglesite, and pyromorphite, enclosed in an oxidized groundmass. Total depth to which oxidation might be expected is unknown, although at the nearby Electric Point mine the lowest mine level was 800 feet below the surface and it was still in oxidized material.

Production from the Gladstone mine, during the period 1916 to 1953, is reported to aggregate 19,547 tons, which has yielded 9,499 ounces of silver, 1,611 pounds of copper, 15,291,892 pounds of lead, and 62,321 pounds of zinc. The most productive years were 1923 to 1926 inclusive, when 12,139 tons of ore were produced. The location of the productive parts of the Gladstone mine are not shown on the attached maps.

The Gladstone mine is reported to have been explored on the 100, 200, and 300 levels, the 300 level being about 300 feet below the surface. On the map accompanying the report it is impossible to tell if each of these three levels explored the No. 10 chimney, although the large scale map shows the chimney to have been thoroughly explored on the 200 level. Drifts were run the full strike length of the chimney and crosscuts driven to the periphery of the chimney. Also, two raises are shown as having been driven above the 200 level.

The No. 10 chimney also appears to have been explored by the Johnson shaft which was sunk by the applicant from the surface to an inclined depth of 136 feet, and from which Cole (U.S.B.M., RI 4392) reports a total length of 100 feet of "cayote" drifts were driven. The applicant states that he found high-grade lead sulfide ore near the bottom of the Johnson shaft and that he believes a considerable tonnage of this material still remains in the No. 10 chimney.

Field examiners recommend approval of a project consisting of 150 feet of inclined shaft from the surface to the 200 level, and of 400 feet of drifting and crosscutting on the 200 level. They justify the program on the basis it will explore the heretofore unexplored No. 10 chimney between the surface and the 200 level, and that it will explore ground in which old workings have been driven but of which little is known of the amount of ore remaining on the level.

In evaluating the application I have carefully weighed the favorable aspects of the proposal against those that are unfavorable. The property obviously has merit in that it has been a producer. On the other hand, there are many unfavorable features of the proposed work with respect to the property. The most unfavorable of these is that work will explore areas that previously could have been and probably were explored by the old workings. Jenkins, in Washington Department of Conservation and Development Bull. 31, states that No. 10 chimney was cut on the 200 level in 1924, and he notes the chimney was the largest that had been found in the mine. The mine map shows the chimney to have been thoroughly explored on the 200 level and records show the period 1924 to 1927 to have been the most productive in the history of the mine. Therefore, it seems logical to assume that part if not much of the production was from the No. 10 chimney, from above the 200 level. If the ore in the chimney had been disseminated and low in grade or if the period 1924 to 1927 had been a depression period there might have been reason to have left large quantities of ore in place above the 200 level; however, the time when the mine was most active was not a depression period and the ore in the chimneys is described by all reporters as being small, extremely high-grade bodies. It would be most unusual for ore of this type to have been left behind from previous operations. Furthermore, the Johnson shaft and drifts from that shaft must be considered to have explored part of the chimney. The bottom of the Johnson shaft cannot be too far above the 200 level. If the 200 is accessible by 150 feet of inclined shaft, of which 10 feet is for a sump, the Johnson shaft would have bottomed less than 10 feet above the 200 level. This shaft should certainly be considered as exploration between the 200 level and the surface.

Another negative factor to be considered is that the proposed shaft will connect with the old 200 level. We have no way of knowing the extent of workings from or on the 200 level, nor do we know the condition of these workings. As the workings are in altered and oxidized material and as all workings are caved at the surface, even such recent workings as the Johnson shaft which was worked in 1946, it is only logical to expect most of the 200 level to be caved, which would further complicate the applicant's proposed work on that level.

In view of the above unfavorable aspects of the proposal, I recommend denial of the application. The many questionable factors concerning the target to be explored make it impossible to justify the proposed work. If the applicant were to submit a more extensive proposal, or one that would test a new area perhaps the application could be reconsidered but under the present circumstances I believe the application should be denied.

Thor H. Kiilsgaard

Thor H. Kiilsgaard

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

February 8, 1955

Memorandum

To: Mr. W. R. Grimwald, Chief, Base Metals Division, DMEA

From: Thor N. Killingsord, U. S. Geological Survey

Subject: Review of application and Field Team report, DMEA Docket 3506 (lead), Gladstone mine, Stevens County, Washington

I have reviewed the Field Team report on the cited application and noted that the field examiners have recommended approval of the application but that the Field Team differs in their recommendations, with the Bureau of Mines member recommending approval whereas the Survey member recommends denial.

Field examiners report the target to be explored by the proposed project as an ore-bearing chimney in the Metaline limestone. This deposit, known as the No. 10 chimney, ranges in width from 20 to 40 feet, and has a strike length of 240 feet. Ore previously mined in the chimney has occurred as small, high-grade pods and pipes of galena, cerussite, anglesite, and pyromorphite, enclosed in an oxidized groundmass. Total depth to which oxidation might be expected is unknown, although at the nearby Electric Point mine the lowest mine level was 800 feet below the surface and it was still in oxidized material.

Production from the Gladstone mine, during the period 1916 to 1953, is reported to aggregate 19,547 tons, which has yielded 9,499 ounces of silver, 1,611 pounds of copper, 15,391,898 pounds of lead, and 68,381 pounds of zinc. The most productive years were 1923 to 1926 inclusive, when 12,139 tons of ore were produced. The location of the productive parts of the Gladstone mine are not shown on the attached maps.

The Gladstone mine is reported to have been explored on the 100, 200, and 300 levels, the 300 level being about 300 feet below the surface. On the map accompanying the report it is impossible to tell if each of these three levels explored the No. 10 chimney, although the large scale map shows the chimney to have been thoroughly explored on the 200 level. Drifts were run the full strike length of the chimney and crosscuts driven to the periphery of the chimney. Also, two raises are shown as having been driven above the 200 level.

The No. 10 chimney also appears to have been explored by the Johnson shaft which was sunk by the applicant from the surface to an inclined depth of 136 feet, and from which Dale (U.S.B.M., RI 4398) reports a total length of 100 feet of "coyote" drifts were driven. The applicant states that he found high-grade lead sulfide ore near the bottom of the Johnson shaft and that he believes a considerable tonnage of this material still remains in the No. 10 chimney.

Field examiners recommend approval of a project consisting of 150 feet of inclined shaft from the surface to the 200 level, and of 400 feet of drifting and crosscutting on the 200 level. They justify the program on the basis it will explore the heretofore unexplored No. 10 chimney between the surface and the 200 level, and that it will explore ground in which old workings have been driven but of which little is known of the amount of ore remaining on the level.

In evaluating the application I have carefully weighed the favorable aspects of the proposal against those that are unfavorable. The property obviously has merit in that it has been a producer. On the other hand, there are many unfavorable features of the proposed work with respect to the property. The most unfavorable of these is that work will explore areas that previously could have been and probably were explored by the old workings. Jenkins, in Washington Department of Conservation and Development Bull. 31, states that No. 10 chimney was cut on the 200 level in 1904, and he notes the chimney was the largest that had been found in the mine. The mine map shows the chimney to have been thoroughly explored on the 200 level and records show the period 1904 to 1907 to have been the most productive in the history of the mine. Therefore, it seems logical to assume that part if not much of the production was from the No. 10 chimney, from above the 200 level. If the ore in the chimney had been disseminated and low in grade or if the period 1904 to 1907 had been a depression period there might have been reason to have left large quantities of ore in place above the 200 level; however, the time when the mine was most active was not a depression period and the ore in the chimneys is described by all reporters as being small, extremely high-grade bodies. It would be most unusual for ore of this type to have been left behind from previous operations. Furthermore, the Johnson shaft and drifts from that shaft must be considered to have explored part of the chimney. The bottom of the Johnson shaft cannot be too far above the 200 level. If the 200 is accessible by 150 feet of inclined shaft, of which 10 feet is for a sump, the Johnson shaft would have bottomed less than 10 feet above the 200 level. This shaft should certainly be considered as exploration between the 200 level and the surface.

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In view of the above unfavorable aspects of the proposal, I recommend denial of the application. The many questionable factors concerning the target to be explored make it impossible to justify the proposed work. If the applicant were to submit a more intensive proposal, or one that would test a new area perhaps the application could be reconsidered but under the present circumstances I believe the application should be denied.

Thor M. Killagaard

THKillagaard:hlm
G-2/8/55

Copy to: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
G. M. Bishop, 3617 Interior

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
FEB - 2 1955

February 2, 1955

abb

Memorandum

To: W. R. Griswold
Chief, Base Metals Division, DMEA

From: J. H. Hedges, Bureau of Mines

Subject: DMEA-3596, Albert G. Lotze, Gladstone Mine, Stevens County, Washington

The "No. 10 Chimney" in the Gladstone Mine has been extensively developed on the 200 level and it must be assumed that it has been pretty thoroughly explored and the high grade pods of galena pretty well picked out. Probing for such plums as may remain by sinking a shaft (inclined for some unexplained reason), driving drifts and crosscuts at the 200 level elevation, and long hole drilling from shaft and drifts smacks strongly of preparation for mining. Hunting for pods of high grade that may have escaped detection during earlier operations might be done more expeditiously and at less cost by churn drilling from surface.

Although the examining team recommended approval, and the field team rendered a split decision, I concur with Weissenborn's recommendation that the application be denied.

J. H. Hedges

J. H. Hedges

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

DEPARTMENT OF THE INTERIOR
JAN 26 1955

January 11, 1955

alt

Mr. George C. Selfridge, Chairman
DMEA Operating Committee
Department of the Interior
Washington 25, D. C.

Reviewed by
DMEA OPERATING COMMITTEE
1-31-55
(date)

Re: Docket No. DMEA-3596 (lead)
Application examination
Albert G. Lotze
Gladstone Mine
Stevens County, Montana

Dear Mr. Selfridge:

Attached are four copies of a memorandum from Webster S. Anderson, mining engineer, and Willard P. Puffett, geologist, concerning a proposed project at the Gladstone mine, Stevens County, Washington.

The contemplated project is an unusual one; the applicant proposes to explore by means of a vertical shaft and some subsidiary work an "ore chimney" which has been quite well outlined by workings approximately 200 feet below the surface. All of the exploration will be above the 200 level which is now completely inaccessible. Except for the outline of the workings and of the ore chimney, both of which are shown on old maps, information as to what was found in the 200 level is very scant.

The examiners, recognizing the unusual nature of the proposal, nevertheless believe that DMEA participation in a modest project can be justified, even though the chimney has been well outlined at depth. They point to the production record of the property and to the fact that the ore "pods" or "pipes" which have been found within the chimney have been exceedingly rich. They believe that even though the ore chimney apparently has been quite systematically blocked out on the 200 level, there is extant no reliable information concerning what the workings explored and therefore the proposed work is exploration and not development.

It cannot be denied that within the No. 10 Chimney there is a possibility of finding some ore "pods" or "pipes," and that judging from the production record the pipes are rich enough so that the discovery of even a few small ones might more than repay the cost of the work. One must also conclude, however, that the apparently

rather complete development on the 200 level should have discovered most of the pipes that reach this level. It can be assumed that any that were found on this level were followed upward as far as they extended, and, therefore, there is a very real possibility that most of the ore above the 200 level has already been mined. It is true, on the other hand, that if the ore "pipes" were "pods" of small vertical dimension, a considerable amount of undiscovered ore might still exist above the 200 level. In this case, however, discovery of this ore would require exploration of the chimney at several levels, perhaps as close as 50 feet. Exploration of this sort would be expensive; because of the considerable size and irregular shape of the No. 10 Ore Chimney all parts of the chimney could not be adequately explored by long-hole drilling from the shaft -- an adequate job of testing probably would require a considerable amount of drifting on each level from which exploration was to be done. Supplementary drill holes then would not be excessively long and could be closely spaced, which would appear necessary because of the probable small size of the pods. It is somewhat questionable whether enough ore would be found to repay the cost of such exploration, although in view of the richness of the pods it is possible that it might. By the very nature of the deposit, however, it appears that even if the exploration were successful, it is unlikely that it would be possible to block out any substantial ore reserves; it seems more likely that any ore pods that were found would be mined out almost as soon as discovered. The deposit appears to fall in the class called by McLaughlin "extra-mensurate." Deposits of that type do not lend themselves to the orderly blocking out of ore reserves ahead of mining through systematic exploration and inherently do not appear in most cases therefore to fit into the DMEA program. The search for small pods of ore such as is proposed in the Gladstone project definitely appears to be of this type; it is something which a leaser might undertake profitably if he has luck, but mining and exploration are so closely intertwined, and the objectives are so limited that the work appears to fall outside the DMEA program. This does not mean that a project worthy of DMEA support could not be worked out at the Gladstone property. The search for a new ore "chimney" or for the extension of a known one at greater depth might be indeed a very desirable DMEA project, but it does mean that the project as proposed by the applicant is not a suitable one for DMEA support which is the only one he is interested in at the time.

It has been suggested that an appreciable tonnage of low-grade ore may exist in the ore chimneys. This is a possibility, yet it seems unlikely even though a few thousand tons of low-grade ore are reported to have been shipped from one of the nearby dumps. One would expect the zinc in the gossan over the ore chimneys to be removed, but the gossans should contain appreciable amounts of

lead if any sizable low-grade oreshoots exist. It is true that the gossans are not everywhere well exposed, yet rather extensive sampling by the Bureau of Mines in 1946 (Cole, John W., Investigation of the Electric Point and Gladstone Lead-Zinc Mines, Stevens County, Wash.: U. S. Bureau of Mines Report of Investigations, Bull. No. R. I. 4392, January 1949) does not give much encouragement. Without strong evidence from old records or other evidence to support the idea, the expectation of finding low-grade oreshoots does not appear strong enough to justify exploration.

For the above reasons the Field Team recommends denial of the present application, although recognizing that the property has been highly productive and that a feasible project with longer-range objectives than that proposed might well qualify for DMEA support. Such a project, however, would require a more extensive amount of work than the operator appears willing to undertake at this time.

By Field Team, Region I
Northwest District

A. E. Weissenborn
A. E. Weissenborn, Exec. Officer for PSV.
U. S. Geological Survey

Wing G. Agnew, Member
U. S. Bureau of Mines

Attachments (4)

cc: USBM (2)
USGS (SRO)
Puffett

P.S. The Bureau of Mines member of the Field Team concurs with W. P. Puffett, geologist, U. S. Geological Survey, and W. S. Anderson, mining engineer, U. S. Bureau of Mines, in recommending the approval of this modest application. Unit costs for this proposed project are certainly most reasonable, and the past production records would indicate the chances of recovery through royalties of the Government participation are better than average.

Wing G. Agnew
Wing G. Agnew

D Mea

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
So. 157 Howard Street
Spokane 4, Washington

November 16, 1954

MEMORANDUM

To: DMEA Field Team, Region II

From: Webster S. Anderson, Mining Engineer, U. S. Bureau of Mines and Willard P. Puffett, Geologist, U. S. Geological Survey

Subject: Application examination (lead), Albert G. Lotze, Gladstone Mine, Stevens County, Washington

APPLICANT

Albert G. Lotze
Northport, Washington

INTRODUCTION

The property was examined on November 4, 1954, by Willard P. Puffett, geologist, Geological Survey, and Webster S. Anderson, mining engineer, Bureau of Mines. Mr. Albert Lotze, applicant, accompanied the Field Team examiners.

SUMMARY AND RECOMMENDATION

It is recommended that the application be approved. The production from the Gladstone mine during the period from 1916 to 1953 has been 9,499 ounces of silver, 1,611 pounds of copper, 15,291,892 pounds of lead, and 62,321 pounds of zinc. A copy of the production record during this period is attached.

The ore bodies have formed in vertical chimneys along and adjacent to fracture intersections in dolomitic limestone. The ore consists chiefly of galena, cerussite, anglesite, and pyromorphite in a gangue consisting of earthy iron oxide, clay, sand, quartz, siderite, and brecciated dolomite. The shipments of crude ore, as shown on the smelter settlement sheets averaged from 22.95 to 80.7 percent lead.

The proposed shaft on the Silver Bell Fraction claim, will be sunk on the No. 10 ore chimney which has a length of at least 240 feet and a width of 20 to 40 feet. The most feasible exploration

Reviewed by
DMEA OPERATING COMMITTEE
1-31-55
(date)

program would be to sink on the gossan to the 200 level and then run lateral exploration headings from this level. Long holes should be drilled from the shaft and from the drifts and crosscuts to provide information as to the lateral extent of the chimney and to explore for ore lenses in the chimney. Total estimated cost of the project is $22,799.

LOCATION AND ACCESSIBILITY

The Gladstone mine is 4 miles southeast of Leadpoint, Washington, via a mountain road. The road is in good condition and will be kept open during the winter months by the applicant. The town of Leadpoint is 10 miles by road from Boundary, Washington, which is the nearest railroad loading point. Northport, Washington, is 20 miles west of Leadpoint and is the nearest source of supplies.

PROPERTY

The Gladstone property consists of five patented and five unpatented mining claims. Claim data are tabulated below and shown on the attached plan map:

Name of Claim	Patent Survey No.	Book No.	Page No.	Location
Moonlight	1254			Secs. 17 & 18 T. 39 N., R. 42 E. W.M., Stevens Co., Washington
Silver Bell Fraction	1254			
Silver Bell	1254			
Setting Sun	1254			
Lone Star	1254			
Lone Star Fraction		19	24	
Silver Lad		18	556	
Iron Duke		18	451	
Owl		15	499	
Lucky Strike		18	458	

The applicant wishes to explore the Moonlight and Silver Bell Fraction claims. He stated that all claims may be included in the exploration project contract if necessary. It is recommended at least that the Silver Bell claim be included as it will be benefited by the exploration.

The applicant is lessee of the property from the Gladstone Mining Company, Spokane, Washington. The period of the lease is 2 years, and the applicant is required to pay 10 percent royalty on shipments running under 30 percent lead and 15 percent royalty on shipments running better than 30 percent lead. The lease is dated the 15th day of October 1954. The Gladstone Mining Company will not grant a lease exceeding 2 years as it is desirous of selling the property. The applicant has had no difficulty in getting his lease extended in previous years. The applicant has obtained an Owner's Consent to Lion form which is attached to his application.

COMPETENCY OF APPLICANT

Mr. Albert G. Lotze has had 21 years of mining experience and has been leasing the Gladstone mine for 7 years. He is the owner and operator of a sawmill 5 miles north of the Gladstone mine and should be well qualified to supervise the exploration.

MINE WORKINGS

All of the underground workings are now inaccessible. The outline of most of these underground workings are shown on the large plan map which accompanies this report. This map also shows the underground workings at the neighboring Electric Point mine. Data available concerning the extent of the underground workings at the Gladstone mine show that this mine was developed by at least three main levels, the 100, 200, and 300. The lowest level, the 300, is at an elevation of 3,902 feet.

Access to the underground workings was from a main shaft on the Moonlight claim. Altitude at the collar of this shaft is 4,201 feet.

The attached small map, figure 1, shows the outline of the workings which have explored the No. 10 chimney underground. The outline of these workings was traced from a map submitted by the applicant, which was prepared for the Gladstone Mining Company in 1928.

As can be seen on this map, the main 200 level has traversed nearly the entire length of the No. 10 chimney, and crosscuts have been driven to the periphery of the chimney. Two raises are shown near the proposed shaft, but nothing is known of the height of these raises or the extent of any stoping which may have been completed near these raises.

The applicant reports that he sank the Johnson shaft on an incline to the west for 96 feet, drifted easterly for 25 feet from the bottom of this shaft, and then sank a winze, inclined from 60° to 80° for 40 feet from the east end of this drift. Insufficient care had been exercised in timbering the upper portion of this shaft, and it soon became unsafe for entry.

Although it is necessary to tightly crib shafts in the oxidized zone of the chimneys at the Gladstone mine, the operator reports that level workings, though in oxidized material, stand remarkably well and require little timbering. All old reports state that no water was found in any of the underground workings, which at the Electric Point mine extended to 800 feet beneath the surface. This lack of water may be the reason that level workings can be kept open for moderate lengths of time without the aid of timbering.

Past production from the Gladstone mine is shown on the attached sheet.

Production of the Gladstone mine, Northport district, Stevens County Washington, from 1901 to 1953, in terms of gross metal content of concentrates produced and crude ore shipped directly to smelters

Year	Ore (tons)	Gold (fine ounces)	Silver (fine ounces)	Copper (pounds)	Lead (pounds)	Zinc (pounds)
1901-16	No production reported					
1917	782	--	--	--	230,052	--
1918-19	No production reported					
1920	267	--	164	--	343,567	--
1921	No production reported					
1922	323	--	726	--	483,770	--
1923	2,826	--	1,467	--	2,207,737	--
1924	3,132	--	1,472	--	1/ 2,445,185	--
1925	4,283	--	2,000	--	1/ 3,491,608	--
1926	4,724	--	1,426	--	1/ 3,347,459	--
1927	290	--	155	--	365,162	--
1928	632	--	683	280	880,344	--
1929	17	--	33	28	24,869	--
1930	179	--	162	209	192,872	--
1931	156	--	95	178	150,565	--
1932	141	--	142	--	191,151	--
1933	101	--	84	--	118,086	--
1934	20	--	41	--	25,161	--
1935	58	--	64	28	44,003	--
1936	41	--	85	--	45,231	--
1937	54	--	101	--	78,350	--
1938	No production reported					
1939	24	--	58	--	34,085	--
1940	No production reported					
1941 2/	134	--	149	--	50,930	48,371
1942	17	--	15	--	20,898	--
1943	88	--	42	--	67,018	--
1944	203	--	54	278	118,999	4,344
1945-46	No production reported					
1947	121	--	88	448	87,194	2,404
1948 2/	717	--	82	--	94,832	5,000
1949	115	--	27	162	43,036	1,437
1950	No production reported					
1951	5	--	5	--	7,413	59
1952	53	--	28	--	48,166	170
1953	44	--	51	--	54,149	536
TOTAL	19,547	--	9,499	1,611	15,291,892	62,321

1/ Net production.

2/ Production figures represent gross metal content of crude smelting ore and mill heads.

GEOLOGY

Geological reports concerning the Gladstone mine have been published by Patty 1/ and Jenkins 2/. More recent work in the Gladstone Mountain area was completed by C. D. Campbell 3/ from 1942 to 1945.

According to Campbell's geologic map of the Gladstone Mountain area, the rocks underlying the Gladstone mine area are members of the Middle Metaline limestone of Middle Cambrian age. The predominant rock type is interbedded light and gray dolomite with the beds averaging 1-foot thick. The bedding strikes from north to northwest and dips from 15° to 40° to the SW. Several strong faults occur which strike slightly north of east and probably dip nearly vertically.

Campbell has mapped a wide fault zone, designated as the Red Iron Fault zone which strikes slightly east of north and dips about 45° to the east. The surface trace of this wide fault zone is about 3,000 feet west of the Gladstone mine, and, of course, the down-dip projection of this fault zone is about 3,000 feet below the surface of the Gladstone mine. This wide fault zone is probably a normal fault with the rocks to the east being down dropped about 1,000 feet along the dip of the fault. Because of its distance from the mine workings, it is doubtful that this fault zone has any significant bearing on the localization of any one of the ore shoots at the Gladstone mine, but it may represent a broad control for the mineralization of the entire area on its hanging-wall side which includes the rich ore-bearing chimneys found at both the Gladstone mine and the Electric Point mine.

The ore shoots at the Gladstone mine and at the neighboring Electric Point mine occur as vertical pipes or chimneys of oxidized material containing high-grade lead ore. The most important ore minerals are galena and cerussite and minor amounts of anglesite and pyromorphite. Within the ore shoots there are considerable amounts of limonite and some siderite. The wall rocks surrounding the oxidized zones shows little or no evidence of ore mineralization.

According to Patty 4/, the locations of the chimneys at the Gladstone mine are controlled by two sets of faults that intersect at angles of about 40°. One set of faults strikes S. 40° W., and the other set strikes S. 80° W. These faults dip nearly vertical and are marked by sharp striated walls. Patty 5/ also reports that in physical appearance the chimneys resemble the adjacent Electric Point ore bodies in that they are composed of varying sized boulders and nodules of pure galena occurring studded through a matrix of brown iron-stained sand and clay. The sand and clay carries lead carbonate which in certain chimneys is found to be rich enough to be shipped directly to the smelter.

1/ Patty, E. N., The metal mines of Washington: Washington Geol. Bull. 23, pp. 102-104, 1921.

2/ Jenkins, O. P., Lead deposits of Pend Oreille and Stevens Counties, Wash.: Wash. Department of Conservation and Development Bull. 31, pp. 90-94, 1924.

3/ Campbell, C. D., Maps of Lead-Zinc Deposits in part of Northport Mining District, Wash.: U. S. Geol. Sur. Open File report.

4/ Patty, E. N., op. cit. p. 103. 5/ Patty, E. N., Idem., p. 104

Most of the ore chimneys found on Gladstone Mountain have had a very small diameter. Those at the nearby Electric Point mine measured from 15 to 60 feet in horizontal diameter. At the Gladstone mine Chimney No. 1-11 measured 24 by 18 feet on the 200 level, and the No. 5 chimney measured 20 feet square on the 200 level. At the Electric Point mine four of these chimneys were found within the limits of 2 acres. Jenkins 6/ reports that ore has been mined from at least 10 chimneys. These chimneys range in depth from 100 to more than 800 feet.

Although the lowest level of the nearby Electric Point mine is 800 feet below the surface, the workings were still in oxidized material, and no water was found in any of the mine levels.

The largest chimney discovered at the Gladstone mine is the No. 10 chimney. This chimney was discovered in a drift on the 200 level. The dimensions of this chimney on the 200 level are 240 by 40 feet. Although old maps of the 200 level show this chimney to be well explored, no data are now available concerning the findings in these workings.

The applicant desires to sink his proposed shaft to explore the No. 10 chimney between the surface and the 200 level. He has located the headframe for the proposed shaft near the central portion of this chimney, just to the east of two older shafts which are not now accessible for examination. One of these old shafts, the Johnston shaft (see accompanying map), was sunk by the applicant some years ago but became unsafe for use and had to be abandoned. The applicant reports that several tons of good ore remained in the area surrounding the bottom of the shaft.

The surface in the vicinity of the proposed shaft has been bulldozed, yet little information could be obtained concerning specific geologic details, because of the great amount of soft, broken, and iron-stained rock in the bottom of the bulldozer cuts.

Without a doubt there has been considerable oxidation and iron staining in the immediate area, suggestive of a gossan. A narrow band of ore containing boulders of galena is reported to occur just north of the shaft, but this occurrence was covered by a large stockpile of lumber.

As a result of discussions with the applicant and reading of published reports concerning the No. 10 chimney, it is believed that this chimney represents a pipelike oxidized zone of considerable dimensions, but the ore occurs as podlike and small pipelike concentrations of galena and cerussite sporadically scattered throughout it.

6/ Jenkins, O. P., op. cit., pp. 92-93

A study of the smelter shipments of ore taken from the Johnson shaft show that the ore is exceedingly high grade, some of it approaching 80 percent lead. The oxidized lead ore minerals average slightly more than 20 percent lead; thus, it appears that sinking a shaft near the central part of the general outline of the chimney should have a reasonable geologic expectancy of encountering shipping grade ore and may find much additional lower grade ore that can be concentrated for shipment.

AVAILABILITY OF MANPOWER, MATERIALS, SUPPLIES, ETC.

Mr. Lotze has two miners presently employed at the property. He owns all equipment which will be used in the exploration program.

Water is not available at the property and will be hauled from near Leadpoint, Washington, to the mine. Timber will be required in all workings and will be obtained from the applicant's sawmill.

Supplies will be obtained from Northport, Washington, 20 miles west of Leadpoint, Washington, and from Colville, Washington, 43 miles south of Leadpoint.

PROPOSED EXPLORATION PROGRAM

The applicant proposes to sink a steeply inclined shaft to explore the No. 10 chimney from the surface to the 200 level. Expected length of this shaft is 150 feet, allowing 10 feet for skip pocket. From the bottom of the shaft he plans on driving 400 feet of drifts and crosscuts to explore the No. 10 chimney on the 200 level.

Available maps show that old workings have explored the No. 10 chimney on the 200 level, but nothing is now known of the condition of these workings. The applicant reports that it is his information that much of the old development work had encountered oxidized lead ore which was not sufficiently high grade to permit direct shipping to the smelter. The applicant has found high-grade lead sulfide ore near the bottom of the Johnson shaft, and he believes that a considerable tonnage of this material still remains in the No. 10 chimney.

The applicant's proposed project will explore that area of the No. 10 chimney from the surface to the 200 level which has not heretofore been explored. The drifting will explore ground in which old workings have been driven, but little is now known of the amount of lead ore on this level.

It is believed that in many respects the proposed project may be considered development, inasmuch as access will be gained from it to old underground workings; nonetheless, other chimneys in the Electric Point-Gladstone mine area have yielded considerable tonnages of high-grade

sulfide ore and lower-grade oxidized lead ore. As the old workings are now inaccessible, the safest and probably cheapest method to reach these old workings will be to sink a new shaft.

It is believed that sufficient sulfide ore will be found by the work to justify the expense of sinking the shaft and driving the drifts. Also, much information will be gained concerning the tonnages of oxidized lead ore that may remain in this chimney.

If it should be found that the old workings on the 200 level have remained open to allow examination of the walls, very little new drifting will be necessary. If these workings are all caved, new headings will need to be driven. Thus, in the following proposed program an allowance is made for driving 400 feet of drifts and crosscuts on a unit cost basis. No costs will be allowed for the rehabilitation or use of any old drifts or crosscuts.

In addition to the work proposed by the applicant it is recommended that long holes be drilled from the shaft and from the drifts and crosscuts to explore for possible small pipelike ore shoots that may be found in the chimney.

Exhibit "A" is a suggested outline for a project which the field examiners believe to be justified on the basis of present knowledge of the property. The project should be brought to completion within 1 year. The work will be carried on through the winter months.

Enclosures
Distribution:
DMEA(4)
USBM(5)
USGS(SRO)
Dockst
Puffett

EXPLORATION PROJECT CONTRACT
ALBERT G. LOTZE
DOCEKT NO. DMEA-

Exhibit "A"

Description of the Work

The purpose of the project is to explore an ore-bearing gossan by sinking, drifting, and crosscutting.

The program as outlined is as follows:

1. Sink a 5- by 8-foot (inside timber), two-compartment shaft to a depth of 150 feet. The shaft will be cribbed with 3-inch planking.

2. Cut a station at the 140-level.

3. Drift and crosscut from the 140 level for a distance not to exceed 400 feet. The drifts will be 5 by 7 feet in the clear.

4. Drill 1,000 feet of long holes from stations in the shaft and from the drifts and crosscut.

(1) Independent Contracts

None

(2) Labor, Supervision, Consultants

Schedule waived (included in unit costs)

(3) Operating Materials and Supplies

Schedule waived (included in unit costs)

(4) Operating Equipment

To be rented:

None

To be purchased:

None

To be furnished by Operator:

	Depreciation/month
Fairbanks Morse hoist with International gas motor power unit	$ 66.00
Hoisting bucket	15.00
Jackhammer	25.00
Ore car	15.00
105 compressor	80.00
Truck	40.00
Total	$241.00

26 days per month @ 1.5 feet per shift for

39-foot monthly advance $\frac{241}{39}$ = 6.18 per foot

(5) Rehabilitation and Repairs

None

(6) New Buildings, Improvements, etc.

Combination compressor house and storage shed	$250.00

(7) Miscellaneous

50 hours of dozer time during the winter month for snow removal @ $10/hour	$500.00
70 assays @ $2.50 each	175.00
Total	$675.00

(8) Contingencies

None

Estimated Costs of the Project

The cost estimate of shaft sinking is based on an average advance of 1.5 feet per shift. The shaft will be two compartments with an overall dimension of 5 by 8 feet in the clear.

Labor:	Cost/foot
2 Miners @ $16/shift	$21.33
1 Hoistman-trammer and surface laborer @ $15/shift	10.00
OAB, insurance, payroll taxes, etc., @ 10 percent	3.13
	$34.46
Supervision, bookkeeping (part-time) @ $150/month	$ 3.85

Supplies:	Cost/foot
Steel and bits	$ 0.50
Powder, 6 lbs./foot @ $21.75/100 lbs.	1.31
Caps, 5/round @ 3¢ each	0.10
Fuse, 40'/round @ $0.015/foot	0.40
140 feet 3/4" pipe @ $0.15/ft.	0.14
140 feet 2" pipe @ $0.34/ft.	0.32
Air hose, 50ft.@ $89.51/100ft.	0.32
Water hose, 50 ft. @ $70/100 ft.	0.25
Timber, 400 board feet per 5-foot set @ $50/1,000 bd. ft.	4.00
Gas for compressor, hoist and truck @ 20 gallons/shift @ $0.24/gal.	3.20
Total	$10.54

Summary:	Cost/foot
Labor	$34.46
Supervision	3.85
Supplies	10.54
Equipment depreciation	6.18
Total cost per foot for shaft sinking	$55.03
Contingencies	5.50
Total	$60.53

$60.53 per foot or say $61.00 per foot

Agreed Unit Costs:

150 feet of shaft @ $61/foot	$ 9,150.00
Cutting station at 140-foot depth, 350 cu. ft. @ $0.64/cu. ft.	224.00
*400 feet of drifting and crosscutting @ $25/foot	10,000.00
400 feet of timbering @ $5/ft.	2,000.00
70 assays @ $2.50 each	175.00
Construction of compressor house and storage shed	250.00
50 hours of dozer work for snow removal @ $10/hour	500.00
1,000 feet of long holing @ $0.50/ft.	500.00
Total estimated cost of the project	$22,799.00
Government participation @ 50 percent	$11,399.50

*No breakdown was made on the drifting and crosscutting costs as the applicant's costs are lower than prevailing costs in the region.

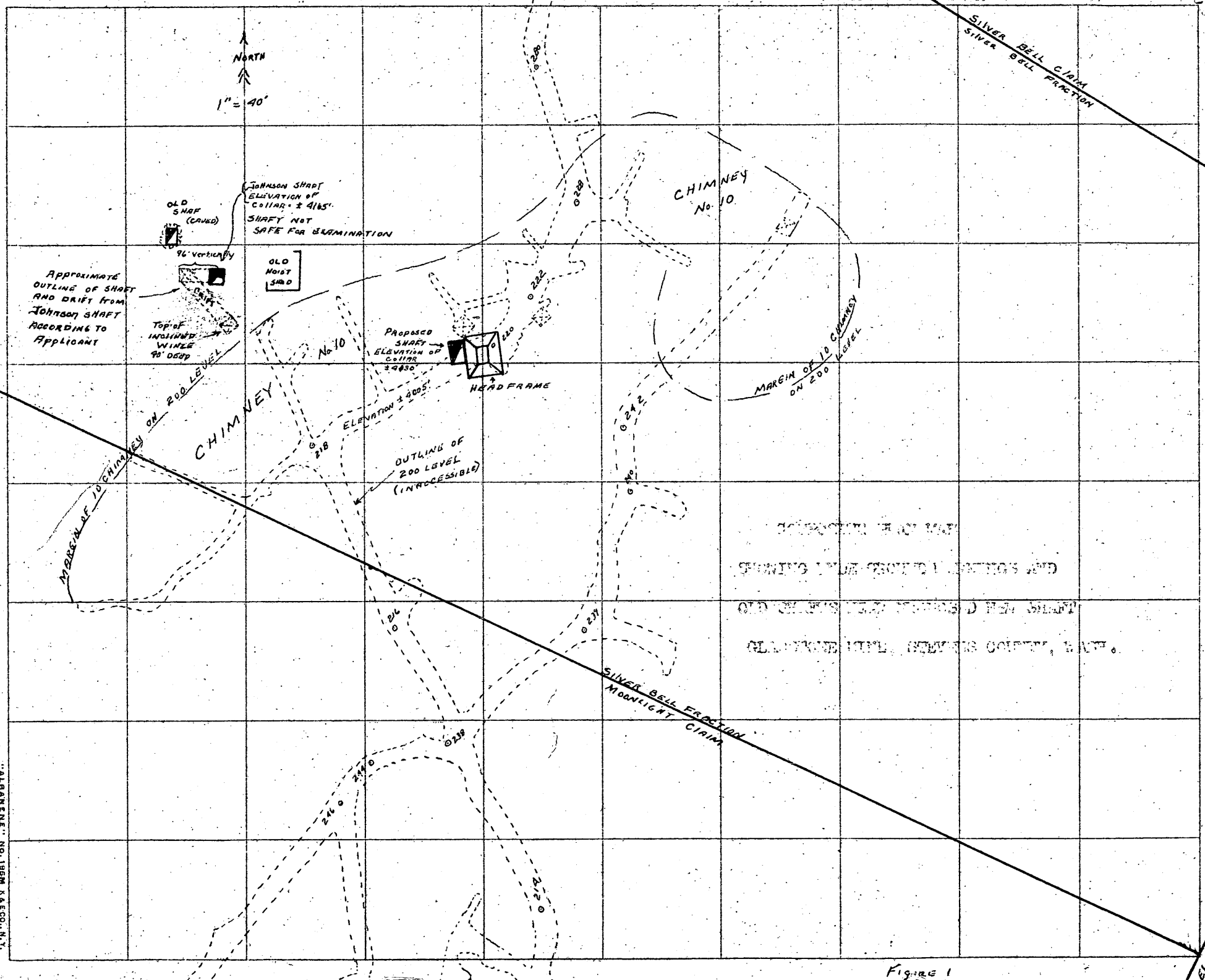
NORTH
1" = 40'
SILVER BELL CLAIM
SILVER BELL FRACTION
JOHNSON SHAFT
ELEVATION OF COLLAR = ± 4165'
SHAFT NOT SAFE FOR EXAMINATION
OLD SHAFT (CAVED)
96' VERTICALLY
OLD HOIST SHED
APPROXIMATE OUTLINE OF SHAFT AND DRIFT FROM JOHNSON SHAFT ACCORDING TO APPLICANT
DRIFT
TOP OF INCLINED WINZE 90' DEEP
CHIMNEY No. 10
PROPOSED SHAFT
ELEVATION OF COLLAR ± 4030'
HEAD FRAME
ELEVATION ± 4005'
MARGIN OF 10 CHIMNEY ON 200 LEVEL
OUTLINE OF 200 LEVEL (INACCESSIBLE)
CHIMNEY No. 10
MARGIN OF 10 CHIMNEY ON 200 LEVEL
SILVER BELL FRACTION
MOONLIGHT CLAIM
ELECTRIC POINT PROPERTY

Figure 1

XXXXXXXXXXXXXXXXX
So. 157 Howard Street
Spokane 4, Washington

[illegible] OF THE [illegible]
[illegible] Administration
[illegible]
[illegible] 2 0 1955

January 11, 1955

Mr. George C. Selfridge, Chairman
DMEA Operating Committee
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-3596 (lead)
Application examination
Albert G. Lotze
Gladstone Mine
Stevens County, Montana

Dear Mr. Selfridge:

Attached are four copies of a memorandum from Webster S. Anderson, mining engineer, and Willard P. Puffett, geologist, concerning a proposed project at the Gladstone mine, Stevens County, Washington.

The contemplated project is an unusual one; the applicant proposes to explore by means of a vertical shaft and some subsidiary work on "ore chimney" which has been quite well outlined by workings approximately 200 feet below the surface. All of the exploration will be above the 200 level which is now completely inaccessible. Except for the outline of the workings and of the ore chimney, both of which are shown on old maps, information as to what was found in the 200 level is very scant.

The examiners, recognizing the unusual nature of the proposal, nevertheless believe that DMEA participation in a modest project can be justified, even though the chimney has been well outlined at depth. They point to the production record of the property and to the fact that the ore "pods" or "pipes" which have been found within the chimney have been exceedingly rich. They believe that even though the ore chimney apparently has been quite systematically blocked out on the 200 level, there is extant no reliable information concerning what the workings explored and therefore the proposed work is exploration and not development.

It cannot be denied that within the No. 10 Chimney there is a possibility of finding some ore "pods" or "pipes," and that judging from the production record the pipes are rich enough so that the discovery of even a few small ones might more than repay the cost of the work. One must also conclude, however, that the apparently

rather complete development on the 200 level should have discovered most of the pipes that reach this level. It can be assumed that any that were found on this level were followed upward as far as they extended, and, therefore, there is a very real possibility that most of the ore above the 200 level has already been mined. It is true, on the other hand, that if the ore "pipes" were "pods" of small vertical dimension, a considerable amount of undiscovered ore might still exist above the 200 level. In this case, however, discovery of this ore would require exploration of the chimney at several levels, perhaps as close as 50 feet. Exploration of this sort would be expensive; because of the considerable size and irregular shape of the No. 10 Ore Chimney all parts of the chimney could not be adequately explored by long-hole drilling from the shaft -- an adequate job of testing probably would require a considerable amount of drifting on each level from which exploration was to be done. Supplementary drill holes then would not be excessively long and could be closely spaced, which would appear necessary because of the probable small size of the pods. It is somewhat questionable whether enough ore would be found to repay the cost of such exploration, although in view of the richness of the pods it is possible that it might. By the very nature of the deposit, however, it appears that even if the exploration were successful, it is unlikely that it would be possible to block out any substantial ore reserves; it seems more likely that any ore pods that were found would be mined out almost as soon as discovered. The deposit appears to fall in the class called by McLaughlin "extra-nonsurate." Deposits of that type do not lend themselves to the orderly blocking out of ore reserves ahead of mining through systematic exploration and inherently do not appear in most cases therefore to fit into the DMEA program. The search for small pods of ore such as is proposed in the Gladstone project definitely appears to be of this type; it is something which a lessee might undertake profitably if he has luck, but mining and exploration are so closely intertwined, and the objectives are so limited that the work appears to fall outside the DMEA program. This does not mean that a project worthy of DMEA support could not be worked out at the Gladstone property. The search for a new ore "chimney" or for the extension of a known one at greater depth might be indeed a very desirable DMEA project, but it does mean that the project as proposed by the applicant is not a suitable one for DMEA support which is the only one he is interested in at the time.

It has been suggested that an appreciable tonnage of low-grade ore may exist in the ore chimneys. This is a possibility, yet it seems unlikely even though a few thousand tons of low-grade ore are reported to have been shipped from one of the nearby dumps. One would expect the zinc in the gossan over the ore chimneys to be removed, but the gossans should contain appreciable amounts of

lead if any sizable low-grade oreshoots exist. It is true that the gossans are not everywhere well exposed, yet rather extensive sampling by the Bureau of Mines in 1946 (Cole, John W., Investigation of the Electric Point and Gladstone Lead-Zinc Mines, Stevens County, Wash.; U. S. Bureau of Mines Report of Investigations, Bull. No. R. I. 4392, January 1949) does not give much encouragement. Without strong evidence from old records or other evidence to support the idea, the expectation of finding low-grade oreshoots does not appear strong enough to justify exploration.

For the above reasons the Field Team recommends denial of the present application, although recognizing that the property has been highly productive and that a feasible project with longer-range objectives than that proposed might well qualify for DMEA support. Such a project, however, would require a more extensive amount of work than the operator appears willing to undertake at this time.

By Field Team, Region I
Northwest District

A. E. Weissenborn, Exec. Officer
U. S. Geological Survey

Wing G. Agnew, Member
U. S. Bureau of Mines

Attachments (4)

cc: USGS (2)
USGS (ERO)
Puffett

P.S. The Bureau of Mines member of the Field Team concurs with W. P. Puffett, geologist, U. S. Geological Survey, and W. S. Anderson, mining engineer, U. S. Bureau of Mines, in recommending the approval of this modest application. Unit costs for this proposed project are certainly most reasonable, and the past production records would indicate the chances of recovery through royalties of the Government participation are better than average.

Wing G. Agnew

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
So. 157 Howard Street
Spokane 4, Washington

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 26 1955

November 16, 1954

MEMORANDUM

To: DMEA Field Team, Region II

From: Webster S. Anderson, Mining Engineer, U. S. Bureau of Mines and Willard P. Puffett, Geologist, U. S. Geological Survey

Subject: Application examination (lead), Albert G. Lotze, Gladstone Mine, Stevens County, Washington

APPLICANT

Albert G. Lotze
Northport, Washington

INTRODUCTION

The property was examined on November 4, 1954, by Willard P. Puffett, geologist, Geological Survey, and Webster S. Anderson, mining engineer, Bureau of Mines. Mr. Albert Lotze, applicant, accompanied the Field Team examiners.

SUMMARY AND RECOMMENDATION

It is recommended that the application be approved. The production from the Gladstone mine during the period from 1916 to 1953 has been 9,499 ounces of silver, 1,611 pounds of copper, 15,291,892 pounds of lead, and 62,321 pounds of zinc. A copy of the production record during this period is attached.

The ore bodies have formed in vertical chimneys along and adjacent to fracture intersections in dolomitic limestone. The ore consists chiefly of galena, cerussite, anglesite, and pyromorphite in a gangue consisting of earthy iron oxide, clay, sand, quartz, siderite, and brecciated dolomite. The shipments of crude ore, as shown on the smelter settlement sheets averaged from 22.95 to 80.7 percent lead.

The proposed shaft on the Silver Bell Fraction claim, will be sunk on the No. 10 ore chimney which has a length of at least 240 feet and a width of 20 to 40 feet. The most feasible exploration

program would be to sink on the gossan to the 200 level and then run lateral exploration headings from this level. Long holes should be drilled from the shaft and from the drifts and crosscuts to provide information as to the lateral extent of the chimney and to explore for ore lenses in the chimney. Total estimated cost of the project is $22,799.

LOCATION AND ACCESSIBILITY

The Gladstone mine is 4 miles southeast of Leadpoint, Washington, via a mountain road. The road is in good condition and will be kept open during the winter months by the applicant. The town of Leadpoint is 10 miles by road from Boundary, Washington, which is the nearest railroad loading point. Northport, Washington, is 20 miles west of Leadpoint and is the nearest source of supplies.

PROPERTY

The Gladstone property consists of five patented and five unpatented mining claims. Claim data are tabulated below and shown on the attached plan map:

Name of Claim	Patent Survey No.	Book No.	Page No.	Location
Moonlight	1254			Secs. 17 & 18 T. 39 N., R. 42 E. W.M., Stevens Co., Washington
Silver Bell Fraction	1254			
Silver Bell	1254			
Setting Sun	1254			
Lone Star	1254			
Lone Star Fraction		19	24	
Silver Lad		18	556	
Iron Duke		18	451	
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COMPETENCY OF APPLICANT

Mr. Albert G. Lotze has had 21 years of mining experience and has been leasing the Gladstone mine for 7 years. He is the owner and operator of a sawmill 5 miles north of the Gladstone mine and should be well qualified to supervise the exploration.

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Access to the underground workings was from a main shaft on the Moonlight claim. Altitude at the collar of this shaft is 4,201 feet.

The attached small map, figure 1, shows the outline of the workings which have explored the No. 10 chimney underground. The outline of these workings was traced from a map submitted by the applicant, which was prepared for the Gladstone Mining Company in 1928.

As can be seen on this map, the main 200 level has traversed nearly the entire length of the No. 10 chimney, and crosscuts have been driven to the periphery of the chimney. Two raises are shown near the proposed shaft, but nothing is known of the height of these raises or the extent of any stoping which may have been completed near these raises.

The applicant reports that he sank the Johnson shaft on an incline to the west for 96 feet, drifted easterly for 25 feet from the bottom of this shaft, and then sank a winze, inclined from 60° to 80° for 40 feet from the east end of this drift. Insufficient care had been exercised in timbering the upper portion of this shaft, and it soon became unsafe for entry.

Although it is necessary to tightly crib shafts in the oxidized zone of the chimneys at the Gladstone mine, the operator reports that level workings, though in oxidized material, stand remarkably well and require little timbering. All old reports state that no water was found in any of the underground workings, which at the Electric Point mine extended to 800 feet beneath the surface. This lack of water may be the reason that level workings can be kept open for moderate lengths of time without the aid of timbering.

Past production from the Gladstone mine is shown on the attached sheet.

Production of the Gladstone mine, Northport district, Stevens County Washington, from 1901 to 1953, in terms of gross metal content of concentrates produced and crude ore shipped directly to smelters

Year	Ore (tons)	Gold (fine ounces)	Silver (fine ounces)	Copper (pounds)	Lead (pounds)	Zinc (pounds)
1901-16	No production reported					
1917	782	--	--	--	230,052	--
1918-19	No production reported					
1920	267	--	164	--	343,567	--
1921	No production reported					
1922	323	--	726	--	483,770	--
1923	2,826	--	1,467	--	2,207,737	--
1924	3,132	--	1,472	--	1/ 2,445,185	--
1925	4,283	--	2,000	--	1/ 3,491,608	--
1926	4,724	--	1,426	--	1/ 3,347,459	--
1927	290	--	155	--	365,162	--
1928	632	--	683	280	880,344	--
1929	17	--	33	28	24,869	--
1930	179	--	162	209	192,872	--
1931	156	--	95	178	150,565	--
1932	141	--	142	--	191,151	--
1933	101	--	84	--	118,086	--
1934	20	--	41	--	25,161	--
1935	58	--	64	28	44,003	--
1936	41	--	85	--	45,231	--
1937	54	--	101	--	78,350	--
1938	No production reported					
1939	24	--	58	--	34,085	--
1940	No production reported					
1941 2/	134	--	149	--	50,930	48,371
1942	17	--	15	--	20,898	--
1943	88	--	42	--	67,018	--
1944	203	--	54	278	118,999	4,344
1945-46	No production reported					
1947	121	--	88	448	87,194	2,404
1948 2/	717	--	82	--	94,832	5,000
1949	115	--	27	162	43,036	1,437
1950	No production reported					
1951	5	--	5	--	7,413	59
1952	53	--	28	--	48,166	170
1953	44	--	51	--	54,149	536
TOTAL	19,547	--	9,499	1,611	15,291,892	62,321

1/ Net production.

2/ Production figures represent gross metal content of crude smelting ore and mill heads.

GEOLOGY

Geological reports concerning the Gladstone mine have been published by Patty 1/ and Jenkins 2/. More recent work in the Gladstone Mountain area was completed by C. D. Campbell 3/ from 1942 to 1945.

According to Campbell's geologic map of the Gladstone Mountain area, the rocks underlying the Gladstone mine area are members of the Middle Metaline limestone of Middle Cambrian age. The predominant rock type is interbedded light and gray dolomite with the beds averaging 1-foot thick. The bedding strikes from north to northwest and dips from 15° to 40° to the SW. Several strong faults occur which strike slightly north of east and probably dip nearly vertically.

Campbell has mapped a wide fault zone, designated as the Red Iron Fault zone which strikes slightly east of north and dips about 45° to the east. The surface trace of this wide fault zone is about 3,000 feet west of the Gladstone mine, and, of course, the down-dip projection of this fault zone is about 3,000 feet below the surface of the Gladstone mine. This wide fault zone is probably a normal fault with the rocks to the east being down dropped about 1,000 feet along the dip of the fault. Because of its distance from the mine workings, it is doubtful that this fault zone has any significant bearing on the localization of any one of the ore shoots at the Gladstone mine, but it may represent a broad control for the mineralization of the entire area on its hanging-wall side which includes the rich ore-bearing chimneys found at both the Gladstone mine and the Electric Point mine.

The ore shoots at the Gladstone mine and at the neighboring Electric Point mine occur as vertical pipes or chimneys of oxidized material containing high-grade lead ore. The most important ore minerals are galena and cerussite and minor amounts of anglesite and pyromorphite. Within the ore shoots there are considerable amounts of limonite and some siderite. The wall rocks surrounding the oxidized zones shows little or no evidence of ore mineralization.

According to Patty 4/, the locations of the chimneys at the Gladstone mine are controlled by two sets of faults that intersect at angles of about 40°. One set of faults strikes S. 40° W., and the other set strikes S. 80° W. These faults dip nearly vertical and are marked by sharp striated walls. Patty 5/ also reports that in physical appearance the chimneys resemble the adjacent Electric Point ore bodies in that they are composed of varying sized boulders and nodules of pure galena occurring studded through a matrix of brown iron-stained sand and clay. The sand and clay carries lead carbonate which in certain chimneys is found to be rich enough to be shipped directly to the smelter.

1/ Patty, E. N., The metal mines of Washington: Washington Geol. Bull. 23, pp. 102-104, 1921.

2/ Jenkins, O. P., Lead deposits of Pend Oreille and Stevens Counties, Wash.: Wash. Department of Conservation and Development Bull. 31, pp. 90-94, 1924.

3/ Campbell, C. D., Maps of Lead-Zinc Deposits in part of Northport Mining District, Wash.: U. S. Geol. Sur. Open File report.

4/ Patty, E. N., op. cit. p. 103. 5/ Patty, E. N., Idem., p. 104

Most of the ore chimneys found on Gladstone Mountain have had a very small diameter. Those at the nearby Electric Point mine measured from 15 to 60 feet in horizontal diameter. At the Gladstone mine Chimney No. 1-11 measured 24 by 18 feet on the 200 level, and the No. 5 chimney measured 20 feet square on the 200 level. At the Electric Point mine four of these chimneys were found within the limits of 2 acres. Jenkins 6/ reports that ore has been mined from at least 10 chimneys. These chimneys range in depth from 100 to more than 800 feet.

Although the lowest level of the nearby Electric Point mine is 800 feet below the surface, the workings were still in oxidized material, and no water was found in any of the mine levels.

The largest chimney discovered at the Gladstone mine is the No. 10 chimney. This chimney was discovered in a drift on the 200 level. The dimensions of this chimney on the 200 level are 240 by 40 feet. Although old maps of the 200 level show this chimney to be well explored, no data are now available concerning the findings in these workings.

The applicant desires to sink his proposed shaft to explore the No. 10 chimney between the surface and the 200 level. He has located the headframe for the proposed shaft near the central portion of this chimney, just to the east of two older shafts which are not now accessible for examination. One of these old shafts, the Johnston shaft (see accompanying map), was sunk by the applicant some years ago but became unsafe for use and had to be abandoned. The applicant reports that several tons of good ore remained in the area surrounding the bottom of the shaft.

The surface in the vicinity of the proposed shaft has been bulldozed, yet little information could be obtained concerning specific geologic details, because of the great amount of soft, broken, and iron-stained rock in the bottom of the bulldozer cuts.

Without a doubt there has been considerable oxidation and iron staining in the immediate area, suggestive of a gossan. A narrow band of ore containing boulders of galena is reported to occur just north of the shaft, but this occurrence was covered by a large stockpile of lumber.

As a result of discussions with the applicant and reading of published reports concerning the No. 10 chimney, it is believed that this chimney represents a pipelike oxidized zone of considerable dimensions, but the ore occurs as podlike and small pipelike concentrations of galena and cerussite sporadically scattered throughout it.

6/ Jenkins, O. P., op. cit., pp. 92-93

A study of the smelter shipments of ore taken from the Johnson shaft show that the ore is exceedingly high grade, some of it approaching 80 percent lead. The oxidized lead ore minerals average slightly more than 20 percent lead; thus, it appears that sinking a shaft near the central part of the general outline of the chimney should have a reasonable geologic expectancy of encountering shipping grade ore and may find much additional lower grade ore that can be concentrated for shipment.

AVAILABILITY OF MANPOWER, MATERIALS, SUPPLIES, ETC.

Mr. Lotze has two miners presently employed at the property. He owns all equipment which will be used in the exploration program.

Water is not available at the property and will be hauled from near Leadpoint, Washington, to the mine. Timber will be required in all workings and will be obtained from the applicant's sawmill.

Supplies will be obtained from Northport, Washington, 20 miles west of Leadpoint, Washington, and from Colville, Washington, 43 miles south of Leadpoint.

PROPOSED EXPLORATION PROGRAM

The applicant proposes to sink a steeply inclined shaft to explore the No. 10 chimney from the surface to the 200 level. Expected length of this shaft is 150 feet, allowing 10 feet for skip pocket. From the bottom of the shaft he plans on driving 400 feet of drifts and crosscuts to explore the No. 10 chimney on the 200 level.

Available maps show that old workings have explored the No. 10 chimney on the 200 level, but nothing is now known of the condition of these workings. The applicant reports that it is his information that much of the old development work had encountered oxidized lead ore which was not sufficiently high grade to permit direct shipping to the smelter. The applicant has found high-grade lead sulfide ore near the bottom of the Johnson shaft, and he believes that a considerable tonnage of this material still remains in the No. 10 chimney.

The applicant's proposed project will explore that area of the No. 10 chimney from the surface to the 200 level which has not heretofore been explored. The drifting will explore ground in which old workings have been driven, but little is now known of the amount of lead ore on this level.

It is believed that in many respects the proposed project may be considered development, inasmuch as access will be gained from it to old underground workings; nonetheless, other chimneys in the Electric Point-Gladstone mine area have yielded considerable tonnages of high-grade

sulfide ore and lower-grade oxidized lead ore. As the old workings are now inaccessible, the safest and probably cheapest method to reach these old workings will be to sink a new shaft.

It is believed that sufficient sulfide ore will be found by the work to justify the expense of sinking the shaft and driving the drifts. Also, much information will be gained concerning the tonnages of oxidized lead ore that may remain in this chimney.

If it should be found that the old workings on the 200 level have remained open to allow examination of the walls, very little new drifting will be necessary. If these workings are all caved, new headings will need to be driven. Thus, in the following proposed program an allowance is made for driving 400 feet of drifts and crosscuts on a unit cost basis. No costs will be allowed for the rehabilitation or use of any old drifts or crosscuts.

In addition to the work proposed by the applicant it is recommended that long holes be drilled from the shaft and from the drifts and crosscuts to explore for possible small pipelike ore shoots that may be found in the chimney.

Exhibit "A" is a suggested outline for a project which the field examiners believe to be justified on the basis of present knowledge of the property. The project should be brought to completion within 1 year. The work will be carried on through the winter months.

Enclosures
Distribution:
DMEA(4) ✓
USBM(5)
USGS(SRO)
Docket
Puffett

EXPLORATION PROJECT CONTRACT
ALBERT G. LOTZE
DOCKET NO. DMEA-

Exhibit "A"

Description of the Work

The purpose of the project is to explore an ore-bearing gossan by sinking, drifting, and crosscutting.

The program as outlined is as follows:

1. Sink a 5- by 8-foot (inside timber), two-compartment shaft to a depth of 150 feet. The shaft will be cribbed with 3-inch planking.

2. Cut a station at the 140-level.

3. Drift and crosscut from the 140 level for a distance not to exceed 400 feet. The drifts will be 5 by 7 feet in the clear.

4. Drill 1,000 feet of long holes from stations in the shaft and from the drifts and crosscut.

(1) Independent Contracts

None

(2) Labor, Supervision, Consultants

Schedule waived (included in unit costs)

(3) Operating Materials and Supplies

Schedule waived (included in unit costs)

(4) Operating Equipment

To be rented:

None

To be purchased:

None

To be furnished by Operator:

	Depreciation/month
Fairbanks Morse hoist with International gas motor power unit	$ 66.00
Hoisting bucket	15.00
Jackhammer	25.00
Ore car	15.00
105 compressor	80.00
Truck	40.00
Total	$241.00

26 days per month @ 1.5 feet per shift for

39-foot monthly advance $\frac{241}{39}$ = 6.18 per foot

(5) Rehabilitation and Repairs

None

(6) New Buildings, Improvements, etc.

Combination compressor house and storage shed	$250.00

(7) Miscellaneous

50 hours of dozer time during the winter month for snow removal @ $10/hour	$500.00
70 assays @ $2.50 each	175.00
Total	$675.00

(8) Contingencies

None

Estimated Costs of the Project

The cost estimate of shaft sinking is based on an average advance of 1.5 feet per shift. The shaft will be two compartments with an over-all dimension of 5 by 8 feet in the clear.

Labor:	Cost/foot
2 Miners @ $16/shift	$21.33
1 Hoistman-trammer and surface laborer @ $15/shift	10.00
OAB, insurance, payroll taxes, etc., @ 10 percent	3.13
	$34.46
Supervision, bookkeeping (part-time) @ $150/month	$ 3.85

Supplies:	Cost/foot
Steel and bits	$ 0.50
Powder, 6 lbs./foot @ $21.75/100 lbs.	1.31
Caps, 5/round @ 3¢ each	0.10
Fuse, 40'/round @ $0.015/foot	0.40
140 feet 3/4" pipe @ $0.15/ft.	0.14
140 feet 2" pipe @ $0.34/ft.	0.32
Air hose, 50 ft. @ $89.51/100 ft.	0.32
Water hose, 50 ft. @ $70/100 ft.	0.25
Timber, 400 board feet per 5-foot set @ $50/1,000 bd. ft.	4.00
Gas for compressor, hoist and truck @ 20 gallons/shift @ $0.24/gal.	3.20
Total	$10.54

Summary:	Cost/foot
Labor	$34.46
Supervision	3.85
Supplies	10.54
Equipment depreciation	6.18
Total cost per foot for shaft sinking	$55.03
Contingencies	5.50
Total	$60.53

$60.53 per foot or say $61.00 per foot

Agreed Unit Costs:

150 feet of shaft @ $61/foot	$ 9,150.00
Cutting station at 140-foot depth, 350 cu. ft. @ $0.64/cu. ft.	224.00
*400 feet of drifting and crosscutting @ $25/foot	10,000.00
400 feet of timbering @ $5/ft.	2,000.00
70 assays @ $2.50 each	175.00
Construction of compressor house and storage shed	250.00
50 hours of dozer work for snow removal @ $10/hour	500.00
1,000 feet of long holing @ $0.50/ft.	500.00
Total estimated cost of the project	$22,799.00
Government participation @ 50 percent	$11,399.50

*No breakdown was made on the drifting and crosscutting costs as the applicants costs are lower than prevailing costs in the region.

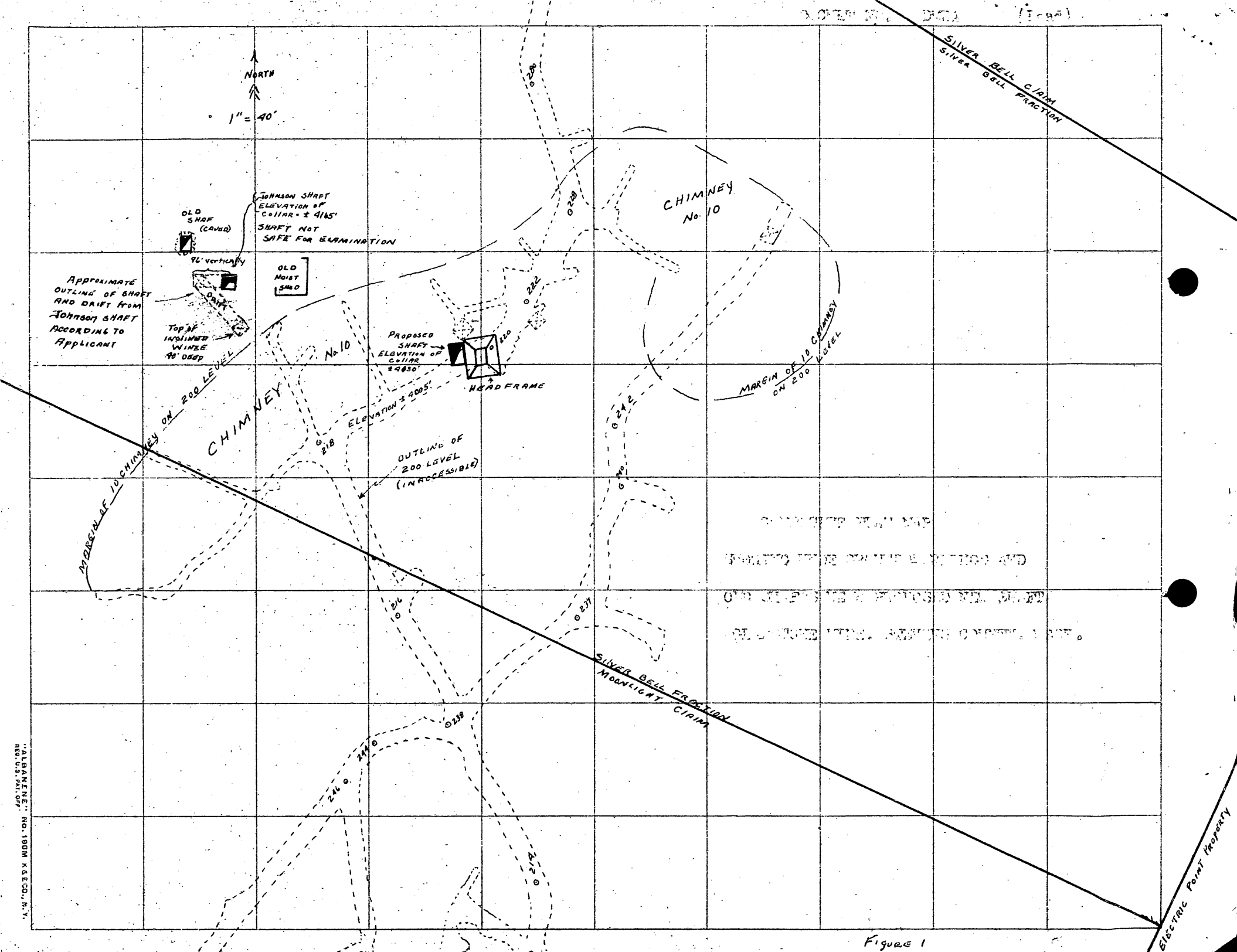

FIGURE 1

"ALBANENE" No. 180M K.G.E.CO., N.Y.
REG.U.S.PAT.OFF.

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

Surnamy
J. W. Alt
Surnamd
Selfridge
Jr Jordan
Montenegro

DEC 20 1954

Mr. A. E. Weissenborn
Executive Officer
DMEA Field Team, Region II
South 157 Howard Street
Spokane 4, Washington

Re: Docket No. DMEA-3596 (Lead)
Albert G. Lotze
Gladstone Mine Group
Stevens County, Washington

Dear Mr. Weissenborn:

This will acknowledge receipt of your letter of November 30, 1954, in which you state that a report of the cited application is in preparation and will be forwarded in the next few days.

We will hold this application in abeyance until the Field Team report is received.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

APPROVED:

/s/ Robert W. Geehan (RWG)
Member, Bureau of Mines

Thor H. Kiilsgaard (THK)
Member, Geological Survey

JWAlt/bjl (12/16/54)

Copy to: Docket
Admr. R. File
Op. Committee
Base Metals
Mr. Bishop
Mr. Kiilsgaard
Chron.

P.C.B.

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

December 7, 1954

Memorandum

To: Executive Officer, DMEA Field Team, Region II

From: Chief, Operation's Control and Statistics Division

Subject: Assignment of Docket Number

There is listed below the assigned docket number to an application recently received from Region II.

DMEA-3596 Albert G. Lotze

Robert E. Adams,
Chief, Operation's Control
and Statistics Division

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

December 7, 1954
Subject: DMEA-3596
Re: Exploration Assistance
Gladstone Mine Group

Mr. Albert G. Lotze

Northport, Washington

Dear Sir:

The receipt of your application dated October 21, 1954 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-3596 and referred to the Base Metals Division.

Kindly identify all future correspondence relating to your application by this docket number.

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

60932

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC 6 1954

November 30, 1954

Mr. George C. Selfridge, Chairman
DMEA Operating Committee
Department of the Interior
Washington 25, D. C.

Re: New application (lead)
Albert G. Lotze
Gladstone Mine group
Stevens County, Washington

Dear Mr. Selfridge:

Enclosed are the original and two copies of an application submitted by Mr. Albert G. Lotze, Northport, Washington, an original and three copies of Owner's Consent to Lien, executed on behalf of the Gladstone Mountain Mining Company by R. H. Graham and E. E. Nicholls, officers of the company, and three copies of a mining lease agreement between the Gladstone Mining Company and the lessee, Mr. Albert G. Lotze. It is noted that the lease ends October 15, 1956. The Gladstone Mining Company will not grant a lease exceeding two years as they are desirous of selling the property. The applicant has had no difficulty in getting his lease extended in previous years, however.

The property was examined November 4, 1954, when the examining team was in the area on other business. A report is in preparation and will be forwarded in the next few days.

Very truly yours,

A. E. Weissenborn

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

Enclosures

cc: USBM (2)
Puffett

MF-103
(Revised April 1952)

U. S. BUREAU OF MINES
RECEIVED
OCT 25 1954

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

SPOKANE, WASHINGTON

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC - 6 1954

Form Approved
Budget Bureau No. 42-R1035.2.

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. 3596
Metal or Mineral Lead
Date Received
Estimated Cost $23,775
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Albert G. Lotze
Northport, Washington

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized. Not applicable

(*c*) If a corporation, add to above statement, titles, names and addresses of officers. Not applicable

(*d*) If a partnership, add to the above statement the names and addresses of all partners. Not applicable

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract Moonlight and Silver Bell Fraction patented claims mineral survey number 1254 Sec. 17 and 18 Twp. 39 R 42 EWM Stevens County Washington

(*b*) State any mine name by which the property is known. Gladstone Mine Group

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise leasee

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property.

(*e*) If you own the land, describe any liens or encumbrances on it none

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice.

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes.

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. sheet attached

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you. sheet attached

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points. sheet attached

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power.

sheet attached

16—66551-1

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore lead

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc. sheet and map attached

(*c*) The work will start within 5 days and be completed within 12 months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations. sheet attached

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project: sheet attache

(*a*) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.). none

(*b*) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants. sheet attached

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel.

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be.

(*e*) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project.

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project.

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes.

(*h*) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above.

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

7. (*a*) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)?

(*b*) How do you propose to furnish your share of the costs?

[x] Money [x] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper.

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

Dated October 21, 1954

Albert G. Lotze
(Applicant)

By Albert G. Lotze

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.

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

METAL PRODUCTION GLADSTONE MOUNTAIN MINE STEVENS COUNTY WASHINGTON
For the years 1917 to 1953 inclusive

Year	Tons	Silver (ounces)	Copper (pounds)	Lead (pounds)	Zinc (pounds)	
1917	782			230052		
1920	267	164		343567		
1922	323	726		459582		
1923	2826	1467		2097350		
1924	3132	1472		2445185		
1925	4283	2000		3491608		
1926	4724	1426		3347459		
1927	290	155		346906		
1928	632	683	168	836327		
1929	17	33	20	23926		
1930	179	162	146	185157		
1931	156	95	125	144542		
1932	141	142		183487		
1933	101	84		113363		
1934	20	41		23189		
1935	58	64	18	40553		
1936	41	85		41685		
1937	54	101		72207		
1939	24	58		31413		
1941	52	41		46781		
1942	99	92		23013	41357	
1943	88	41		64300		
1944	203	54		116619		
1947	121	88	358	85450		
1948	717	82		94832	5000	This milled from dump
1949	115	27	162	43036	1437	
1951	5	5		7413	59	
1952	53	28		48166	170	
1953	44	51		54149	536	
Totals	19547	9467	997	15041317	48579	

The above information was compiled by the Bureau of Mines and is up to date.

From 1947 to 1953 inclusive the ore was mined by A. G. Lotze leasee, from Silver Bell Fraction.

85% of the above quanities was mined from the Moonlight and Silver Bell Fraction claims
45% of the total was mined from chimney number 10 in the Silver Bell Fraction of which a map is attached to this application.

Property inactive now. Photostats of some smelter sheets attached hereto.
There is a good truck road to this mine which is four miles from Leadpoint Washington and is fourteen miles from a railroad. Man power is available here and I have the necessary equipment to carry out the program.

Albert G Lotze
northport
wash

4 PHYSICIAL DESCRIPTIONS

Refer to RI 4392 January 1949 and supplements published by Bureau of Mines

I have been taking out small amounts of ore in number 10 chimney since 1947, mostly near the surface. In 1952 I opened up an old shaft and winze to a depth of 134 feet and took out 97 tons of lead ore which was in high grade sulphide and carbonate oxide ore. This at the smelter gave 102,315 pounds of smelted lead. I had some high grade sulphide ore in sight including at least 100 tons of carbonate which would assay 28% lead but it was not profitable to mine this through this old winze and shaft and also was to dangerous to do so. I also have knowledge that there is several hundred tons of additional ore on the two hundred level in number 10 chimney which was left by the company and which is shown through cross section A-A on plan on map which is submitted herewith.

D- The mine is on good truck road 4 miles from Leadpoint Washington, where there is a hotel, and is 24 miles from Northport Washington where supplies can be obtained. It is 14 miles to railroad at Boundary Washington. At Leadpoint and in the valley within 10 miles are many families and residence.

E*- Plenty of local miners and helpers are available. I have equipment such as gas hoist, gas air compressor, air hammer and hoses, light and heavy trucks, Allis Chalmer HD5 and HD9 bulldozers, miners tools, water tank and cistern. Water needs to be hauled 4 miles for which we are prepared only power required is for hoist and compressor which will be gas.

5 B- I propose to sink a new shaft in number 10 chimney farther down the hill from the old shaft which only requires 140 foot shaft to intersect the 200 foot level in the mine workings. I propose to drift westerly through the chimney 180 feet and easterly 120 feet to have haulage tunnels to remove this ore. I also propose to do at least 100 feet of cross cutting and I need to timber the shaft, drifts and cross cuts.

The attached maps show the proposed shaft site and this shaft will be 5 feet by 8 feet in the clear and will be two compartment and will be fully cribbed.

Applicant has had 21 years mining experience and has been leasing this property for seven years. This operation will be under my supervision.

Albert G Fo

6. ESTIMATE OF COSTS

Sinking and timbering 140 foot shaft at $75.00 per foot	$10,500.00
400 feet of drifts and cross cuts at $25.00 per foot	10,000.00
400 feet of timbering at $6.00 per foot	2,400.00
Building and erecting a new gallows frame for hoisting	275.00
Part time engineer	300.00
Geological consultants	300.00
	$23,775.00

This is a per unit cost and all taxes, insurance and labor will be paid there from.

Albert G Lotze
Northport
Wash.

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED

LEAD SETTLEMENT

Our Serial No. 76 - 0

Trail, B.C., October 2, 1952

In Account With Gladstone Mountain Mining Co., Radio Central Bldg., SPOKANE, Washington.

For Lead Ore

Lot No. 2

Car No. 2 V Cars

Received Sept. 12/52

Freight Value $

Freight Rate $

SCALE WEIGHT

Gross lb.	Tare lb.	Net lb.

WEIGHT OF SHIPMENT

Gross lb.	No. Sacks	Wt. of Sacks lb.	Net Wet Wt. lb.	%H₂O	Net Dry Wt. lb.	Dry Tons
			9,220	5.5	8,713	4.3565

ASSAYS

Gold oz. per dry ton	Silver oz. per dry ton	Wet Lead %	Zinc %	Sulphur %	Silica %	Iron %	Lime %	Arsenic %	Antimony %
Trace	.9	48.5	.6	3.4	11.3	14.2	1.3	.1	.1

AVERAGE QUOTATIONS

Week ending Sept. 13 1952

GOLD		$		Exchange	Less $1.25	Net $		oz.
SILVER	New York price	$				Net $		oz.
LEAD	New York price	16.00	c. lb.	4.0375% Disc.	Less 2.25	Net	13.104	c. lb.
ZINC "P.W."	St. Louis price		c. lb.		Less	Net		c. lb.

CONTENTS AND VALUE

CONTENTS			CONTENTS PAID FOR		NET QUOTATION		VALUE $
	ozs. GOLD	%		ozs. @ $		oz.	
	ozs. SILVER	%		ozs. @ $		oz.	
4,226	lbs. LEAD	92.5 %	3,909	lbs. @	13.104	c. lb.	512.24
	lbs. ZINC	%		lbs. @		c. lb.	

TOTAL GROSS VALUE $ 512.24

(Details below) 66.70

$ 445.54

Less treatment @ $ 15.31

Less: Trucking $ ~~15x00~~

Switching

Freight

$ 445.54

U.S. @ 3.8387% Disc.

$ 463.95

Less % Royalty on $ to M. Estes @ 35.00 FT Min. Load 7 Tons

35.00

$ 428.95

TREATMENT RATE

Base Charge		$ 15.00
Iron Zinc Penalty	14.2 x .22	3.12
Arsenic Antimony		
Moisture	.5 x .20	.10
Extra handling	Truck	.70
Lead credit/debit	18.5 x .10	1.85
Silica Lime credit	12.6 x .14	1.76
TOTAL TREATMENT PER DRY TON		$ 15.31

DV/ek

FORM 79 10M-7-52-L.P.

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED

LEAD SETTLEMENT

FINAL

Our Serial No. 1963 - C

Trail, B.C., April 7, 1953

In Account With

Gladstone Mountain Mining Company. 202 Radio Central Building, Spokane, Washington

For	Lot No.	Car No.	Received
Lead Ore	3	2 V. Cars	Feb. 19

Freight Value $ Freight Rate $

SCALE WEIGHT Gross lb.	Tare lb.	Net lb.	WEIGHT OF SHIPMENT Gross lb.	No. Sacks	Wt. of Sacks lb.	Net Wet Wt. 1 . 2 lb.	%H_2O lb.	Net Dry Wt. lb.	Dry Tons
						11,310	136	11,174	5.587

ASSAYS

Gold oz. per dry ton	Silver oz. per dry ton	Wet Lead %	Zinc %	Sulphur %	Silica %	Iron %	Lime %	Arsenic %	Antimony %
Tr.	1.7	80.7	.4	11.0	.7	1.1	1.0	.1	.1

AVERAGE QUOTATIONS

~~Week ending~~ March 1953

				Exchange				
GOLD		$			Less $1.25	Net $		oz.
SILVER	New York price	$ .8525		1.66761 % Disc.		Net $	.83828	oz.
LEAD	New York price	13.404	c. lb.	"	Less 3.0	Net	10.1805	c. lb.
ZINC "P.W."	St. Louis price		c. lb.		Less	Net		c. lb.

CONTENTS AND VALUE

CONTENTS			CONTENTS PAID FOR		NET QUOTATION		VALUE
	ozs. GOLD	%		ozs. @ $		oz.	$
9.50	ozs. SILVER	5.59 oz. % Min. Ded.	3.91	ozs. @ $	.83828	oz.	3.28
9,017	lbs. LEAD	92½ %	8,341	lbs. @	10.1805	c. lb.	849.16
	lbs. ZINC	%		lbs. @		c. lb.	

TOTAL GROSS VALUE $ 852.44

Less treatment @ $ 10.63 (Details below) 59.39

$ 793.05

Less: Trucking $ 0

Switching

Freight

$ 793.05

U.S. @ 1.84375% Disc. $ 807.95

Less % Royalty on $ to Trucking - H.E. Harris @ $8.00 W.T. 45.24

$ 762.71

Advanced $ 550.00

Balance $ 212.71 U.S.

TREATMENT RATE

Base Charge		$ 15.00
Iron ~~Zinc~~ Penalty	1.1 x .22	.24
Arsenic Antimony		
Moisture		
Extra handling	Truck	.70
Lead credit/~~debit~~	50.7 x .10	5.07
Silica Lime credit	1.7 x .14	.24
TOTAL TREATMENT PER DRY TON		$ 10.63

HEA:mh

FORM 79 10M-7-52-L.P.

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA LIMITED

LEAD SETTLEMENT

Our Serial No. 2013 - C

FINAL

Trail, B.C., April 8, 1953

In Account With

Gladstone Mountain Mining Company, 202 Radio Central Building, Spokane, Washington

For	Lot No.	Car No.	Received
Lead Ore	4	3 V-Cars	Feb. 23

Freight Value $ Freight Rate $

SCALE WEIGHT Gross lb.	Tare lb.	Net lb.	WEIGHT OF SHIPMENT Gross lb.	No. Sacks	Wt. of Sacks lb.	Net Wet Wt. lb.	% H2O 2.7	Net Dry Wt. lb.	Dry Tons
						29,200	788	28,412	14.206

ASSAYS

Gold oz. per dry ton	Silver oz. per dry ton	Wet Lead %	Zinc %	Sulphur %	Silica %	Iron %	Lime %	Arsenic %	Antimony %
Tr.	1.5	73.0	.6	9.8	1.3	3.7	1.4	.1	.1

AVERAGE QUOTATIONS

~~Week ending~~ March 1953

				Exchange			
GOLD		$			Less $1.25	Net $	oz.
SILVER	New York price	$ .8525		1.66761% Disc.		Net $ .83828	oz.
LEAD	New York price	13.404	c. lb.		Less 3.00	Net 10.1805	c. lb.
ZINC "P.W."	St. Louis price		c. lb.		Less	Net	c. lb.

CONTENTS AND VALUE

CONTENTS			CONTENTS PAID FOR		NET QUOTATION		VALUE
	ozs. GOLD	%		ozs. @ $		oz.	$
21.31	ozs. SILVER	14.21 % ozs. Min. Ded.	7.10	ozs. @ $	.83828	oz.	5.95
20,741	lbs. LEAD	92½ %	19,185	lbs. @	10.1805	c. lb.	1,953.13
	lbs. ZINC	%		lbs. @		c. lb.	

TOTAL GROSS VALUE	$	1,959.08
Less treatment @ $ 11.83 (Details below)		168.06
	$	1,791.02
Less: Trucking $		
Switching		
Freight		
	$	1,791.02
U.S. @ 1.84375% Disc.	$	1,824.66
Less % Royalty on $ to H. Harris @ $8.00 W.T.		116.80
	$	1,707.86
Advanced	$	1,250.00
Balance	$	457.86 US

TREATMENT RATE

Base Charge		$ 15.00
Iron ~~Zinc~~ Penalty	3.7 x .22	.81
Arsenic Antimony		
Moisture		
Extra handling	Truck	.70
Lead credit/~~debit~~	43.0 x .10	4.30
Silica Lime credit	2.7 x .14	.38
TOTAL TREATMENT PER DRY TON		$ 11.83

HEA:mh

FORM 79 10M-7-52-L.P.

Frm S45 10m 11-46 Miner

BUNKER HILL SMELTER

P.O. Address: KELLOGG, IDAHO
R.R. Station: BRADLEY, IDAHO

BUNKER HILL & SULLIVAN MINING & CONCENTRATING COMPANY

In Account With

GLADSTONE MOUNTAIN MINING CO.

Name of Mine: Gladstone Mine Lot No.: Smelter Lot No.: 448

Location: Boundary, Wash. R. R. Shipping Point: Boundary, Wash. Class: Sulphide

DATE OF ARRIVAL: 1/5/47 DATE OF SAMPLING: 1/8/47 DATE OF SETTLEMENT: 1-16-47

Car Initial	Car No.	H.O	Weight, lbs.
NYC	147127	5.0	23240

TOTAL GROSS WEIGHT	23240
Sacks Weight of Sacks	
GROSS WEIGHT OF ORE	
Moisture Pounds	1162
DRY WEIGHT OF ORE	22078

SETTLEMENT ASSAYS

Gold		Ounces Per Ton
Silver	.9	Ounces Per Ton
Copper		Per Cent
Lead	79.3-1.25=78.05	Per Cent
Iron	1.1	Per Cent
Insoluble	1.4	Per Cent
Sulphur	11.0	Per Cent
Zinc	1.0	Per Cent
Antimony		Per Cent
Arsenic	.02	Per Cent
Bismuth		Per Cent

E. & M. J. QUOTATIONS

		Per Oz.
		Per Oz.
		Per Oz.
Silver		
	=	Per Oz.
Lead		
1-5-47	= 12.55	Per Cwt.
Copper		
	=	Per Lb.

PAYMENT FOR METALS

				VALUE PER TON
Gold	Oz.	@	Per Oz.	$
Gold	Oz.	@	Per Oz.	$
Gold	Oz.	@	Per Oz.	$
Silver	Oz.	% @	Per Oz.	$
Lead 78.05	% 90%	@ .1255	Per Lb.	$ 176.315
Copper	%	% @	Per Lb.	$
			Gross Value	$ 176.315
LESS TREATMENT				$ 27.993
NET VALUE PER TON				$ 148.322

TOTAL OUNCES SILVER IN THIS SHIPMENT

TREATMENT

	PER TON
Treatment Charge (Based on).	$ 13.00
Less % Pb. under % @	$
Plus 28.05 % Pb. over 50 % @ .10	$ 2.805
Additional refining charge, Silver over Oz.	$ 15.805
Oz. @ cts. per Oz.	$
Sulphur Penalty over % @	$
Bismuth Penalty Lbs. @	$
Zinc Penalty over % @	$
Antimony over % @	$
Arsenic over % @	$
Moisture over % @	$
Freight on Lead to New York 1404.9 Lbs. @ $ 17.35 per ton	$ 12.188
TOTAL TREATMENT	$ 27.993

SETTLEMENT

DRY WEIGHT 22078 POUNDS= 11.039 TONS @ $ 148.322 PER TON EQUALS $ 1637.33

Less Freight from Shipping Point to Bradley, Idaho

Gross Weight 82900 Pounds= 41.45 Tons @ $ 5.25 per ton equals $ 217.61 $

~~Preliminary Payment~~ 3% Tax on 217.61 $ 6.53 $ 224.14

Extra Sampling $ $

Umpire Charges $ $

Switching or Transfer Charge $ $

$ $

$ $

$ $

$ $

to Spokane & Eastern Branch, Spokane, Washington NET PROCEEDS $ 1413.19

Rates subject to change without notice, except on ore under contract. An extra charge of $10.00 will be made for sampling all lots of less than five dry tons.

BUNKER HILL & SULLIVAN MINING & CONCENTRATING COMPANY,

BY

Form Rev 10m 11 46 Miner

BUNKER HILL SMELTER

P. O. Address: KELLOGG, IDAHO
R. R. Station: BRADLEY, IDAHO

BUNKER HILL & SULLIVAN MINING & CONCENTRATING COMPANY

In Account With

GLADSTONE MOUNTAIN MINING CO.

Name of Mine: Gladstone Mine Lot No.: Smelter Lot No.: 450

Location: Boundry, Wash. R. R. Shipping Point: Boundry, Wash. Class: Flot

DATE OF ARRIVAL: 4/4/47 DATE OF SAMPLING: 4/5/47 DATE OF SETTLEMENT: 4-18-47

Car Initial	Car No.	H.O	Weight, lbs.
UP	135095	15.1	104460

TOTAL GROSS WEIGHT	104460
Sacks. Weight of Sacks	
GROSS WEIGHT OF ORE	
Moisture Pounds	15773
DRY WEIGHT OF ORE	88687

SETTLEMENT ASSAYS

Gold		Ounces Per Ton
Silver	.96	Ounces Per Ton
Copper	.21	Per Cent
Lead	24.2-1.25=22.95	Per Cent
Iron	31.7	Per Cent
Insoluble	12.2	Per Cent
Sulphur		Per Cent
Zinc	.6	Per Cent
Antimony	.05	Per Cent
Arsenic		Per Cent
Bismuth		Per Cent

E. & M. J. QUOTATIONS

	Per Oz.
	Per Oz.
	Per Oz.
Silver	
	= Per Oz.
Lead	
4-4-47	= 15.00 Per Cwt.
Copper	
	= Per Lb.

PAYMENT FOR METALS

				VALUE PER TON
Gold	Oz.	@	Per Oz.	$
Gold	Oz.	@	Per Oz.	$
Gold	Oz.	@	Per Oz.	$
Silver	Oz.	% @	Per Oz.	$
Lead	22.95 % 90%	@ .150	Per Lb.	$ 61.965
Copper	%	% @	Per Lb.	$
			Gross Value	$ 61.965
LESS TREATMENT				$ 14.299
NET VALUE PER TON				$ 47.666

TREATMENT

	PER TON
Treatment Charge (Based on)	$ 12.00
Less 27.05 % Pb. under 50 % @ .10	$ 2.705
Plus % Pb. over % @	$
Additional refining charge, Silver over Oz.	$ 9.295
Oz. @ cts. per Oz.	$
Sulphur Penalty over % @	$
Bismuth Penalty Lbs. @	$
Zinc Penalty over % @	$
Antimony over % @	$
Arsenic over % @	$
Moisture over 8 % @ .20	$ 1.420
Freight on Lead to New York 413.1 Lbs. @ $ 17.35 per ton	$ 3.584
TOTAL TREATMENT	$ 14.299

TOTAL OUNCES SILVER IN THIS SHIPMENT

SETTLEMENT

DRY WEIGHT 88687 POUNDS= 44.3435 TONS @ $ 47.666 PER TON EQUALS $ 2113.68

Less Freight from Shipping Point to Bradley, Idaho

Gross Weight 104460 Pounds= 52.23 Tons @ $ 5.28 per ton equals $ 275.77 $

~~Preliminary Payment~~ 3% tax on 275.77 $ 8.27 $ 284.04

Extra Sampling $ $

Umpire Charges $ $

Switching or Transfer Charge $ $

$ $

$ $

$ $

$ $

to Gladstone Mountain Mining Co., Spokane, Washington NET PROCEEDS $ 1829.64

Rates subject to change without notice, except on ore under contract. An extra charge of $10.00 will be made for sampling all lots of less than five dry tons.

BUNKER HILL & SULLIVAN MINING & CONCENTRATING COMPANY

BY

MF-203
(Revised July 1, 1954)

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of Washington, County of Stevens, described as follows:1/

SILVER BELL, SILVER BELLE FRACTION, MOONLIGHT, SETTING SUN, LONE STAR, LONE STAR FRACTION, SILVER LED, IRON DUKE, OWL, and LUCKIE STRIKE, known as the GLADSTONE GROUP, and situated in the Northport Mining District.

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ **A. G. Lotze**

hereinafter called the "Operator"; and

WHEREAS, under the provisions of said contract the Government is entitled to a percentage royalty on production and to other rights and equities which do or may conflict with or be adverse to the rights of the undersigned:

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract or any amendment thereof shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract or any amendment thereof there is hereby granted to the Government a lien upon the land above referred to and upon any production of minerals therefrom until said royalty is fully paid or ten years have elapsed from the date of the contract, whichever occurs first.

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated _____, and recorded in book _____ page _____ official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

(OVER)

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

4. Changes and added provisions _____

_____

_____

_____

Dated this 18th day of October, 1954.

G ladstone Mountain Mining Compay

by _____ [Seal] President

_____ [Seal] Secretary

_____ [Seal]

MF-203
(Revised July 1, 1954)

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2/ A. G. Lotze

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4. Changes and added provisions _____

_____

_____

_____

Dated this 18th day of October, 1954.

Gladstone Mountaine Mining Company

by _____ [Seal] President

_____ [Seal] Secretary

_____ [Seal]

MF-203
(Revised July 1, 1954)

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2/ A. G. Lotze

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4. Changes and added provisions _____

_____

_____

_____

Dated this 18th day of October, 1954.

Gladstone Mountain Mining Company

by _____ [Seal] President

_____ [Seal] Secretary

_____ [Seal]

MF-203
(Revised July 1, 1954)

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2/ A. G. Lotse

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NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract or any amendment thereof shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract or any amendment thereof there is hereby granted to the Government a lien upon the land above referred to and upon any production of minerals therefrom until said royalty is fully paid or ten years have elapsed from the date of the contract, whichever occurs first.

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated _____, and recorded in book _____ page _____ official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

(OVER)

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

4. Changes and added provisions _____

_____

_____

_____

Dated this 18th day of October, 1954.

Gladstone Mountain Mining Company

by _____ [Seal] President

_____ [Seal] Secretary

_____ [Seal]

MINING LEASE

THIS AGREEMENT Made and entered into this 15th day of October, 1954 by and between the GLADSTONE MOUNTAIN MINING COMPANY, A Washington corporation, Lessor, and A. G. LOTZE, of Northport, Washington, Lessee.

WITNESSETH

WHEREAS the Lessor is the lawful and recorded owner of the GLADSTONE MINE, composed of the following mineral claims: SILVER BELL, SILVER BELLE FRACTION, MOONLIGHT, SETTING SUN, LONE STAR, LONE STAR FRACTION, SILVER LED, IRON DUKE, OWL, and LUCKIE STRIKE, known as the GLADSTONE GROUP, and situated in the Northport Mining District, County of Stevens, State of Washington, and

WHEREAS the Lessee is desirous of leasing the said group of TEN (10) claims, known generally as the Gladstone Mine and of taking possession of and working the same during the period of said lease and shipping the minerals extracted therefrom in accordance with the terms and conditions hereinafter set forth;

NOW THEREFORE this Agreement Witnesseth that the said Lessors for and in consideration of the royalties hereinafter reserved and the covenants and agreements hereinafter expressed and by the said Lessee to be kept and performed has granted, demised and let and by these presents does grant, demise and let unto the said Lessee all the above described mine and mining property with the appurtenances to have and to hold unto the said Lessee for the term ending October 15, 1956, expiring on noon of that day unless sooner forfeited or determined through the violation of any covenant hereinafter contained.

The Lessee shall have the right to use all buildings, machinery, equipment, rails, pipe, etc. now on the property, and hereby agree to keep anything so used in repair and good condition as found.

The Lessee shall have the right upon the termination of this agreement for any cause whatsoever to remove all tools, equipment, plant, machinery, supplies and personal property whatsoever, placed by the Lessee on the said mining property.

The Lessee shall not sublease any portion of the Gladstone property without written permission of the Lessor.

In consideration of the said demise the said Lessee covenants and agrees with the said Lessor as follows, to-wit:

1. To enter upon said mine and premises and to work the same in a first class, miner-like and workman-like manner keeping all new tunnels, shafts, winzes, raises reasonably-well timbered to protect the property and the men working therein and in the usual manner necessary to good and economical mining take out the greatest amount of ore possible with due regard to the over-all development and preservation of the said property as a workable mine and to the special covenants hereinafter reserved.

2. The Lessee will pay the wages of all workmen employed by the Lessee in or about the said mineral claims, and will pay all bills for material used by Lessee in connection therewith.

3. That the Lessee will post conspicuously on said property notice stating that the Lessee is working the said mining claims under a lease, and that liability for any accidents or injuries suffered by an employee of the Lessee shall be a liability of the Lessee and not of the Lessor.

4. The Lessee further agrees to keep posted at all times during the term of this lease in two or more conspicuous places on said mining property a proper legal notice to the effect that said mining property is being worked and operated under a lease and to the effect that the Lessor and said property is not and will not be liable for any debts of any kind contracted in connection with such operations under said lease, nor for any damage for personal injuries, or in any manner whatever by reason of any work being done or performed under said lease and shall, if so required, post and keep posted as foresaid any notice to the above effect that may be required or furnished by the Lessor.

5. The Lessee will take out and maintain as required by law in the State of Washington employer's liability insurance.

6. The Lessee agrees to accept full and exclusive responsibility and liability for the payment of any and all contributions or taxes for unemployment insurance or old age requirement benefits, pensions or annuities and business occupation taxes now or hereafter imposed by the Government of the United States and/or by the government of any state of the United States.

7. That the Lessee will perform or cause to be performed at least forty man shifts work per month for at least six months of the term considered as seasonal for working each year the lease remains in force commencing October 15, 1954.

8. That the Lessee shall ship all ore extracted from said premises with all convenient speed in regular lots as mined in the name of the Lessor to such smelter or smelters as may be mutually agreed upon between the party hereto and the Lessor shall on the date payments are made by the smelter mail to Lessee a duplicate smelter return together with check less the amount of royalty which royalty shall be TEN (10) per cent on the net smelter returns on lead and running under THIRTY (30) per cent and shall be FIFTEEN (15) per cent on ore running THIRTY (30) per cent or better in lead.

9. That the Lessor shall have the right of inspecting the said mining property at reasonable intervals and times, and

10. Finally, upon violation of any covenant or covenants hereinbefore reserved the term of this lease shall at the option of the Lessor expire and the said premises shall become forfeited to said Lessor and said Lessor or its agents may thereupon after demand of possession in writing enter upon said premises and dispossess all persons occupying same with or without process of law or at the option of said Lessor, said Lessee and all persons found in occupation may be proceeded against as guilty of unlawful detainer. This agreement and everything herein contained shall endure to the benefit of and be binding upon the parties hereto, their heirs, executors, administrators, successors, and assigns. The agreement may not be assigned by the Lessee in whole or in part without the written consent of the Lessor first obtained.

IT IS FURTHER UNDERSTOOD that this agreement contains the full understanding between the parties and supercedes all previous leases, agreements, or other arrangements heretofore entered into between the respective parties.

IN WITNESS WHEREOF the party of the first part has caused its corporate name to be hereunto subscribed and its corporate seal to be hereunto affixed and these presents to be executed by its duly authorized officers

and the party of the Second Part has hereunto set his hand and seal in duplicate on the day and year herein above written.

THE GLADSTONE MOUNTAIN MINING COMPANY

ATTEST:

E. E. Nicholls
Secretary

By R. H. Graham
President

L. E. Nicholls
Witness

A. G. Lotze
LESSEE

STATE OF WASHINGTON)
) ss.
County of Spokane)

On this 18th day of October, 1954, before me personally appeared; R. H. GRAHAM, to me known to be the President of the GLADSTONE MOUNTAIN MINING COMPANY, the corporation that executed the within and foregoing instrument and acknowledged the said instrument to be the free and voluntary act and deed of said corporation for the uses and purposes therein mentioned and on oath stated that he was authorized to execute said instrument and that the seal affixed is the corporate seal of said corporation.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.

Martha M. Merrill
Notary Public in and for the State of Washington, residing at Spokane, Washington. My commission expires Sept 5 1957.

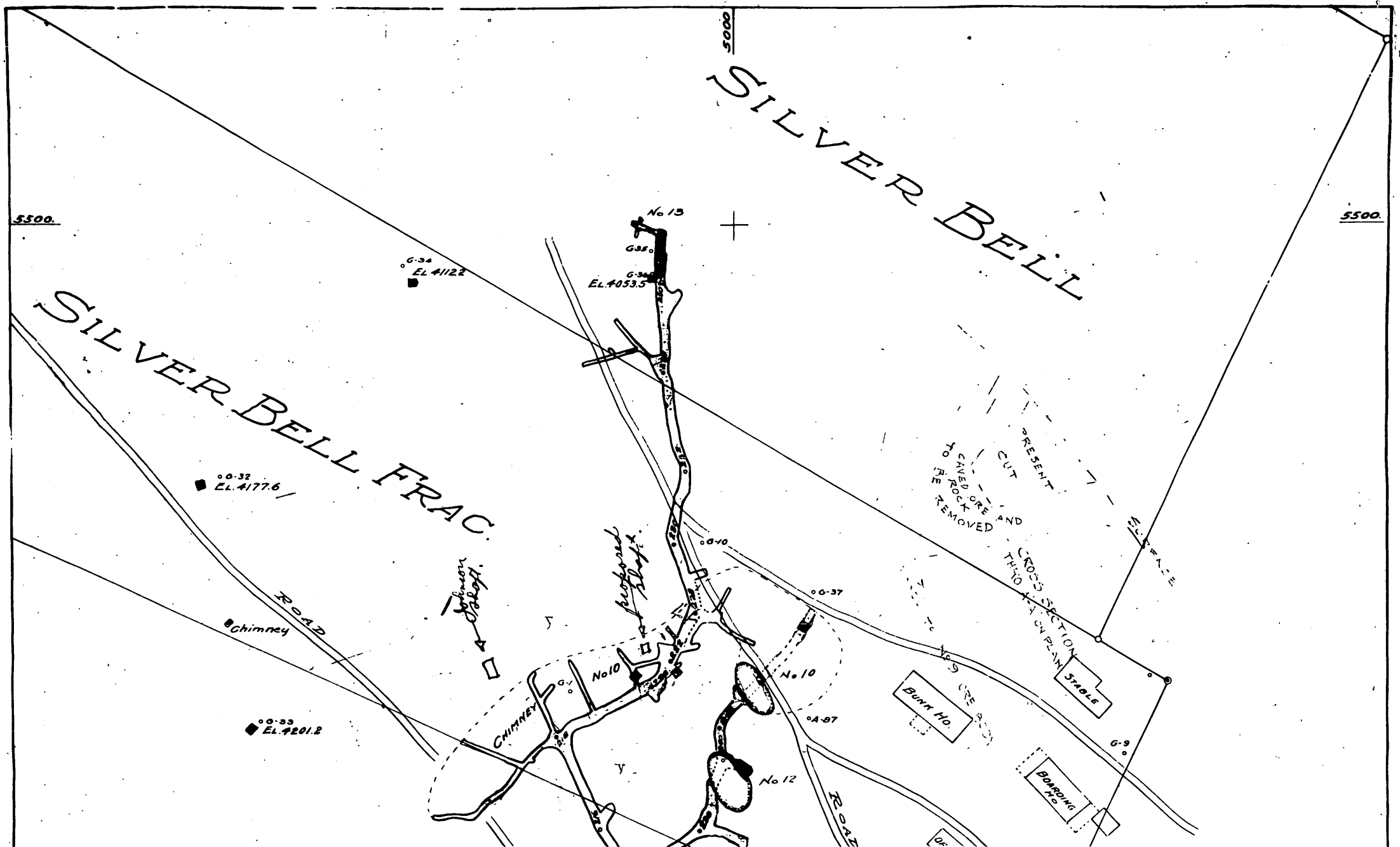
STATE OF WASHINGTON)
) ss.
County of Spokane

On this 18th day of Oct. A. D., 1954, before me personally appeared;

A. G. LOTZE, to me known to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

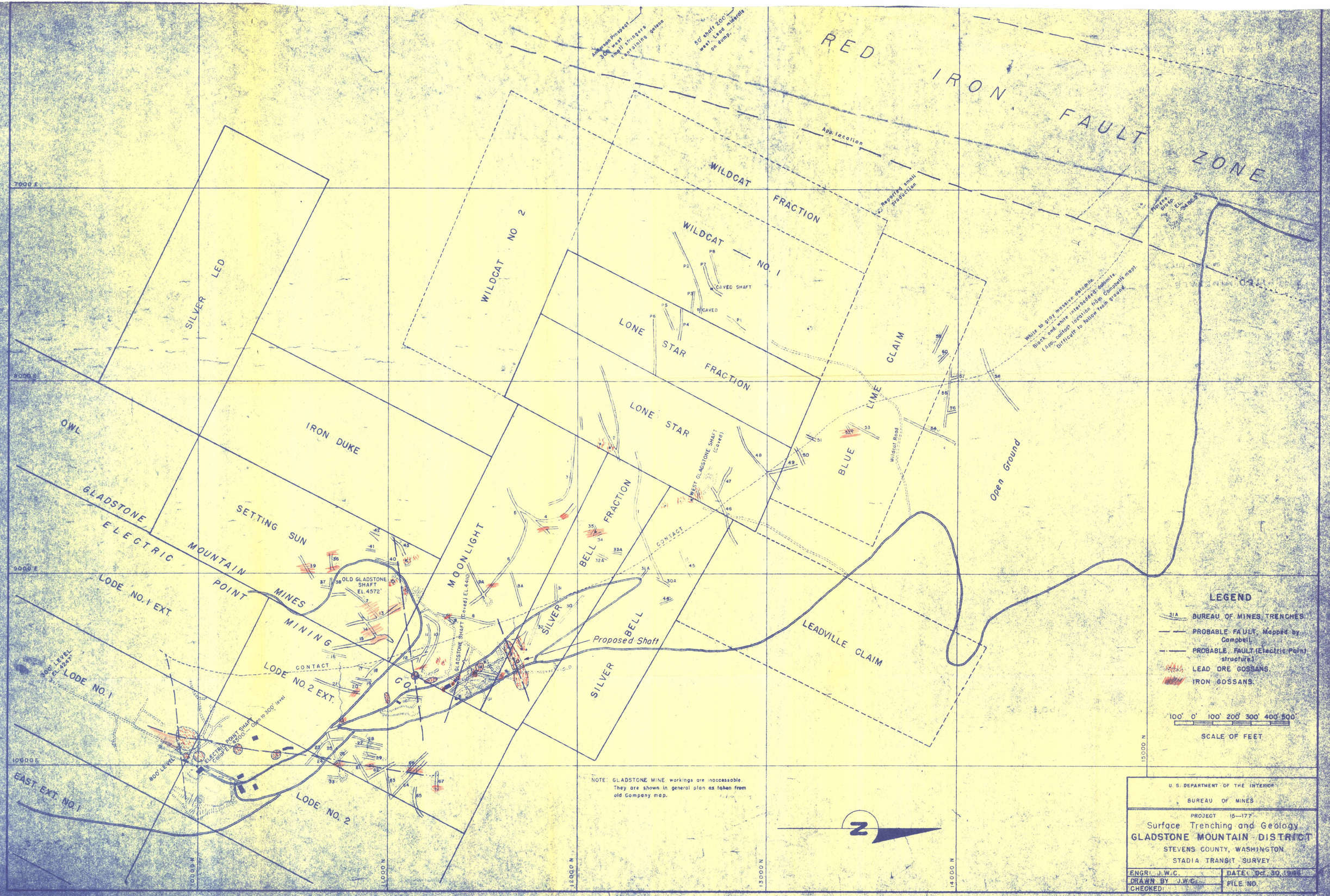
IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.

Martha M. Merrill
Notary Public in and for the State of Washington, residing at Spokane Washington. My commission expires Sept. 5 1957.


SILVER BELL
SILVER BELL FRAC.
5000
5500.
5500.
No 13
G35
G-34
EL 4053.5
G-34
EL 4112.2
G-32
EL. 4177.6
G-33
EL. 4201.2
Chimney
ROAD
Shaft
Proposed Shaft
G-10
G-37
No 10
No 10
CHIMNEY
A-87
No 12
ROAD
PRESENT CUT
CAVED ORE AND ROCK TO BE REMOVED
CROSS SECTION THRU A-A ON PLAN
SURFACE
BUNK HO.
STABLE
BOARDING HO
G-9

OFFICIAL BUSINESS
U. S. GEOLOGICAL SURVEY
SOUTH 157 HOWARD ST.
SPOKANE 4, WASHINGTON

Mr. George C. Selfridge, Chairman
Operating Committee
Defense Minerals Exploration Administration
Department of the Interior
Washington 25, D. C.


RED IRON FAULT ZONE
App. location
Reported small production
Anderson Prospect 300' west. Stringers containing galena
50' shaft 300' west. Lead minerals on dump.
Potlatch prosp. El. 3482.5
WILDCAT FRACTION
WILDCAT NO. 1
WILDCAT NO 2
SILVER LED
LONE STAR FRACTION
LONE STAR
CAVED SHAFT
CAVED
BLUE LIME CLAIM
White to gray massive dolomite.
Black and white interbedded dolomite.
(Approx. contact location from Campbell's map)
Difficult to follow from ground.
Wildcat Road
Open Ground
OWL
IRON DUKE
GLADSTONE
ELECTRIC POINT MINES
MOUNTAIN MINING CO.
SETTING SUN
MOONLIGHT
OLD GLADSTONE SHAFT EL. 4572'
WEST GLADSTONE SHAFT
GLADSTONE SHAFT (Caved) EL. 4410
SILVER BELL FRACTION
SILVER BELL
CONTACT
Proposed Shaft
LEADVILLE CLAIM
LODE NO. 1 EXT
LODE NO. 1
LODE CONTACT
LODE NO. 2 EXT.
LODE NO. 2
EAST EXT. NO. 1
300' LEVEL EL. 4247'
800' LEVEL
ELECTRIC POINT SHAFT Collar EL. 5200 - Open to 300' level
7000 E
8000 E
9000 E
10000 E
10000 N
11000 N
12000 N
13000 N
14000 N
15000 N
LEGEND
BUREAU OF MINES TRENCHES
PROBABLE FAULT, Mapped by Campbell.
PROBABLE FAULT (Electric Point structure)
LEAD ORE GOSSANS.
IRON GOSSANS.
100' 0' 100' 200' 300' 400' 500'
SCALE OF FEET
NOTE: GLADSTONE MINE workings are inaccessible. They are shown in general plan as taken from old Company map.
N
U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
PROJECT 15—177
Surface Trenching and Geology
GLADSTONE MOUNTAIN DISTRICT
STEVENS COUNTY, WASHINGTON
STADIA TRANSIT SURVEY
ENGR: J.W.C.
DRAWN BY J.W.C.
CHECKED:
DATE: Oct. 30, 1945
FILE NO.