Maps exhibits

in Map drawer

DMA Form 1

DEFENSE MINERALS ADMINISTRATION
Control Slip

CONTROLLED DOCUMENT

DMA Docket No. 2124

DO NOT DETACH THIS SLIP

Action on this document is recorded and controlled in Reports and Records Branch. Any movement of this document between divisions or offices of DMA or movement outside DMA must be reported to the Reports and Records Branch. Actions taken that affect status of the case must also be reported.

This document has been recorded as

EXPLORATION PROJECT

Any action taken to change the type of request for assistance must be promptly reported to the Reports and Records Branch. Use DMA Form 2 for submitting these reports.

Routing Slip

To:	Code 350 Lead-zinc Br.	Date	10/2/51
To:	Coordinating Committee	Date	10/5/51
To:	R+R	Date	OCT 8 - 1951
To:		Date	
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CONTROLLED DOCUMENT

500

FILE COPY
SURNAME:

Moulds

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

MAR 1 1 1952

Honorable Lyndon B. Johnson
United States Senate
Washington, D. C.

My dear Senator Johnson:

This is to acknowledge your letter of March 5, 1952 in regard to the present status of the Sunrise Mining Company, Docket No. DMEA 2124.

On March 6, 1952 a letter was sent to Mr. A. N. McCallum, Secretary, Sunrise Mining Company, notifying him of the denial of their application for Government assistance for their proposed exploration project.

Attached for your information is a copy of the letter that was sent to Mr. A. N. McCallum.

Sincerely yours,

C. O. Mittenderf

Acting Administrator
Defense Minerals Exploration
Administration

Enclosure - 1

JWAlt/hmj
3-6-52
cc to: Adm. R. File
Docket File Copy
Mr. Bishop
Mr. McKnight
Region VI
Mr. Moulds
Mr. Alt VI

RICHARD B. RUSSELL, GA., CHAIRMAN
HARRY FLOOD BYRD, VA.
LYNDON B. JOHNSON, TEX.
ESTES KEFAUVER, TENN.
LESTER C. HUNT, WYO.
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LEVERETT SALTONSTALL, MASS.
WAYNE MORSE, OREG.
WILLIAM F. KNOWLAND, CALIF.
HARRY P. CAIN, WASH.
RALPH E. FLANDERS, VT.
WILLIAM H. DARDEN, CHIEF CLERK

United States Senate

COMMITTEE ON ARMED SERVICES

March 5, 1952

Re: Docket No. DMEA 2124
Sunrise Mining Company

Dear Sir:

With reference to our previous correspondence concerning the above matter, I would appreciate it if you would advise me of the present status of the application.

With best wishes, I am

Sincerely,

Lyndon B. Johnson

Lyndon B. Johnson

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAR 6 1952

Office of the Administrator
Defense Minerals Administration
Department of the Interior
Washington 25, D.C.

FILE COPY
SURNAME:

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

JUN 23 1952

Mr. Frank W. Jessen
3111 Tom Green Street
Austin 5, Texas

Dear Mr. Jessen:

In accordance with your request dated June 20, 1952, there are returned herewith exhibits filed with your application, docket DMEA No. 2124.

Sincerely yours,

ROBERT E. ADAMS

J.N. 6-23-52

Robert E. Adams
Administrative Officer
Defense Minerals Exploration
Administration

Enclosures

REAdams:sh
June 23, 1952

CC: Adm. Regding File
Mails and Files
R. E. Adams

CHEMICAL ENGINEERING

PETROLEUM ENGINEERING

FRANK W. JESSEN
CONSULTING ENGINEER
3111 TOM GREEN STREET
AUSTIN 5, TEXAS

Jun 20, 1952

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 23 1952

Mr. C.O.Mittendorf
Acting Administrator
Defense Minerals Administration
Washington 25, D.C.

Dear Mr.Mittendorf:

With reference to the application of Sunrise Mining Company for the exploration loan under the Defense Minerals Administration, Docket No.DMEA 2124, may I request that all data submitted to your office be returned to me.

You may recall that the exploration application was denied by the Defense Minerals Administration on March 6, 1952. This action was somewhat of a surprise since it had been our impression from conversation with some of the "local" personnel in and around Tucson, Arizona that the completed application carried all details required and was prepared in much better form than most such applications.

You may be interested in knowing that development work (such as outlined in the application) has been carried out with substantial success and that mining is now proceeding in a 15 foot high grade lead ore body. Other ore bodies have been explored also.

Your kind attention to the matter of returning the quadruplicate copies of the application will be appreciated.

Very truly yours

Frank W. Jessen

cc:A.N.McCallum Jr.

FILE COPY 500
SURNAME:

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

J. W. A.
Moulds
Hayes
Hedges

MAR 6 1952

S. D.

Mr. A. N. McCallum, Secretary
Sunrise Mining Company
702 Scarbrough Building
Austin, Texas

Re: Docket No. DMA-2124
Sunrise Mining Company

Dear Mr. McCallum:

With reference to your application of September 21, 1951, for exploration project assistance for additional drifting and cross-cutting in the Glove Mine of the Sunrise Mining Company, the Government has made a detailed study of the data submitted by you, and also, all geological and field data presently available.

We find that prior exploration conducted by sinking shafts, driving tunnels, drifts and crosscuts has not resulted in a significant production of mineral. Your proposal to further explore the mineralized zone, therefore, does not appear to be sufficiently supported by geological or production evidence to substantiate the possibility of discovery and production of a significant amount of base metal. Your application for exploration assistance under Mineral Order-5 is, therefore, denied.

We appreciate the opportunity to review your project in the interest of strategic mineral discovery and ultimate production, and regret that it does not fulfill the requirements for Government participation.

Sincerely yours,

C. O. Mittenderf (for) 3/5

Acting Administrator
Defense Minerals Exploration
Administration

JWAlt/hmj
3-3-52
cc to: Adm. R. File
Docket File Copy
Mr. Bishop
Mr. McKnight
Region VI
Mr. Moulds
Mr. Alt

FILE COPY 500
SURNAME:

J. W. A.
Moulds

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

FEB 6 1952

Memorandum

To: C. O. Mittendorf
Acting Administrator

From: Base Metals Division

Subject: Recommendation for denial of application for exploration project assistance. Docket No. DMA-2124, Sunrise Mining Company, c/o A. N. McCallum, Jr., Secretary and Treasurer, 702 Scarbrough Building, Austin, Texas.

The subject application for exploration project assistance was filed with the Defense Minerals Administration, under date of September 21, 1951, for a project amounting to $68,000.00 to explore the Glove Mine in Santa Cruz County, Arizona.

The Commodity group reviewed the application and on October 9, 1951, recommended a Field Team examination by Region IV. This report was received and reviewed by the DMEA Operating Committee on January 25, 1952.

The Property:

The Sunrise Mine, formerly known as the Glove Mine, and also the Sheehy-O'Donnel Group, consists of 15 unpatented claims and is located in the San Cayetana Mining District on the western slope of the Santa Rita Mountains, Santa Cruz County, Arizona, in sec. 30, T. 20 S., R.14 E. It is owned by Johanna O'Donnel, Edward T. Sheehy, Jerry Sheehy, Pat J. Sheehy and Katherine Sheehy. The Sunrise Mining Company, a corporation, holds the property under a purchase agreement for a period of 5 years from May 8, 1951. The total purchase price of $135,000.00 payable before May 8, 1956.

The principal workings are 4 shafts, 45, 50, 67 and 110 feet deep, and about 1500 feet of lateral workings, driven from the shafts as well as adits from the surface.

Applicant states there are no facilities or equipment on the property. Buildings would have to be erected and the major portion of the necessary equipment would have to be purchased.

The Field Team Report states that the present operations consist of: "A contractor is advancing the east adit; driving a drift westerly from near the end of the same adit and sinking a winze from the most northerly drift on the 23 foot level of the west adit. The work is being done by 3 miners. The contractor receives $32.50 a foot for lateral headings. He furnishes all equipment and supplies. The principal equipment consists of 2 portable compressors, 3 pneumatic drills and 2 mine cars. Water for drilling and domestic use is hauled to the mine in barrels.

Structures on the property consist of 2 tent houses, 1 small storage shed, and a light headframe at the Rover shaft."

Geology:

The underground workings have been driven in the hanging wall block of a large, low-angle overthrust fault, consisting of massive to thick-bedded Naco limestone of Pennsylvanian Age, which has been thrust northeastward.

Quartz Monzonite and cretaceous shales in the footwall block below the mine workings are estimated to be at a depth of 200 feet from the surface. Several faults of small displacement parallel the strike of the limestone and cut the beds at steep angles toward the northeast. Two or three porphyry dikes have been intruded along the trend of these faults.

The ores have a high content of lead and zinc, associated with a few ounces of silver per ton, and usually consist of mixed sulfides and carbonates, thus making beneficiation and marketing difficult and expensive. Mineralization is localized as veins along faults and bedding planes, and at contacts between limestone and dikes and sills of porphyry. Veins frequently intersect at small angles, both along the strike and the dip of the limestone. Small lenticular orebodies are commonly found at these intersections. However, the orebodies are erratically distributed and are not confined

to any particular limestone horizon or to any recognized structural controls. A typical ore body may be as large as 25 feet long, 30 feet thick and from 1 to 4 feet wide and the largest exploited prior to the examination by the Field Team yielded about 400 tons and the known production from 1911 to date has amounted to approximately 700 tons.

About 2,200 tons of oxide and sulfide lead-zinc ore are indicated in 3 places. At the east adit a 25 foot drift and the Rover shaft partially explore a body of specular hematite that is about 65 feet long, 6 feet wide and 50 feet thick and estimated to contain about 2000 tons of low grade lead-zinc ore. This assays 2.8 percent lead and 9.7 percent zinc, present as carbonates.

The Project:

The applicant proposed to extend the east adit, the west adit, and the 23-foot level to the "Birdseye" porphyry, to drift along the porphyry-limestone contact, and to extend existing drifts. It was estimated the work could be completed in one year at a cost of $68,350.00. This would include approximately 1095 of drifting and crosscutting, purchase of equipment and supplies, rental of equipment, and getting a supply of water to the mine.

Conclusion:

The property has been explored by 4 shafts and approximately 1500 feet of lateral workings on two mineralized areas about 600 feet apart. This work has resulted in a production of 683 tons of oxidized lead-zinc-silver ore from widely scattered zones of mineralization. The ore occurs as lenses ranging in thickness from 1 inch to 3 feet and average less than 1 foot with the most extensive mineralized zone yielding only about 400 tons. The ore is mainly oxidized and while the production has averaged 26% lead, 15½% zinc and 7½ oz of silver, it is not presently amenable to concentration and must be shipped for lead-silver values.

The proposed exploration consists of extension of the present tunnel on the Rover and Glove workings and drifting in various places from these tunnels. The proposed work is thus predominantly advancement on presently known breaks or faults in the oxidized zone.

While the oxidized ores have shown a high base metal content, the tonnage produced by previous exploration and development

has been small in tonnage and scattered in area, and the possibilities of finding a significant tonnage of smelting ore by the proposed additional exploration in the oxidized zone appear unfavorable.

The Base Metals Division, therefore, concurs with the previous recommendation by the Region and commodity specialists in the denial of this application by the Sunrise Mining Company and recommends that the attached letter be sent.

D. E. Moulds 3/5

JWAlt/DEMoulds/hgj 3-3-52
cc to: Adm. R. File
Docket File Copy
Mr. Moulds
Mr. Alt

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

MAR 3 1952

Memorandum

To: C. O. Mittendorf
Acting Administrator

From: Base Metals Division

Subject: Recommendation for denial of application for exploration project assistance. Docket No. DMA-2124, Sunrise Mining Company, c/o A. N. McCallum, Jr., Secretary and Treasurer, 702 Scarbrough Building, Austin, Texas.

The subject application for exploration project assistance was filed with the Defense Minerals Administration, under date of September 21, 1951, for a project amounting to $68,000.00 to explore the Glove Mine in Santa Cruz County, Arizona.

The Commodity group reviewed the application and on October 9, 1951, recommended a Field Team examination by Region IV. This report was received and reviewed by the DMEA Operating Committee on January 25, 1952.

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The ores have a high content of lead and zinc, associated with a few ounces of silver per ton, and usually consist of mixed sulfides and carbonates, thus making beneficiation and marketing difficult and expensive. Mineralization is localized as veins along faults and bedding planes, and at contacts between limestone and dikes and sills of porphyry. Veins frequently intersect at small angles, both along the strike and the dip of the limestone. Small lenticular orebodies are commonly found at these intersections. However, the orebodies are erratically distributed and are not confined

to any particular limestone horizon or to any recognized structural controls. A typical ore body may be as large as 25 feet long, 30 feet thick and from 1 to 4 feet wide and the largest exploited prior to the examination by the Field Team yielded about 400 tons and the known production from 1911 to date has amounted to approximately 700 tons.

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has been small in tonnage and scattered in area, and the possibilities of finding a significant tonnage of smelting ore by the proposed additional exploration in the oxidized zone appear unfavorable.

The Base Metals Division, therefore, concurs with the previous recommendation by the Region and commodity specialists in the denial of this application by the Sunrise Mining Company and recommends that the attached letter be sent.

D. E. Moulds

D. E. Moulds

CHEMICAL ENGINEERING

PETROLEUM ENGINEERING

FRANK W. JESSEN
CONSULTING ENGINEER
3111 TOM GREEN STREET
AUSTIN 5, TEXAS

leave resp attached

J.W.C. 3/6/52

March 3,1952

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAR 5 1952

Mr.C.O.Mittendorf
Acting Administrator
Defense Minerals Exp.Adm.
Department of the Interior
Washington, D.C.

Re: Docket No. DMEA 2124
Sunrise Mining Company

Dear Mr.Mittendorf:

We have been informed in previous correspondence of the receipt of the Field Team report on the application of Sunrise Mining Company for an Exploration Project.

Since the Field Team report was received by the Washington office of the Defense Minerals Administration on January 15,1952, we have been anticipating a reply from your offices as to the approval or disapproval of the application. Any information you may be able to give us at this time will be appreciated.

Very truly yours

Frank W. Jessen

Frank W. Jessen

cc: A.N.McCallum
Lyndon B.Johnson

MF-500

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

REFERENCE SLIP

DATE 3/7/52

REFERRED TO:

1. Miles & Miles - 4070
2.
3.
4.

FOR:

..... Action	..... Recommendation
..... Approval	..... Record of .....
..... Comment	..... Referring to .....
..... Conference	..... Reply for signature of .....
..... Consideration	..... Rewriting
X Filing	..... Signature
..... Instructions	..... Suggestions
..... Investigation	..... Your information
..... Initials	
..... Mailing	
..... Previous correspondence	

REMARKS: This document is in your office.

Check (X) before the items needing attention.

D. E. Moulton

Initials of sender.

GPO 16—63815-1

DMA-2124X
Sunrise Mining Co.
Glove Lead-Zinc Mine
Santa Cruz County, Ariz.

Comments

The field team recommended the denial of this application and judged from a review of the facts setforth in the docket their conclusion was warranted.

Although the ores have a fairly high lead-zinc content there is no doubt that the bulk of the ores in the deposits are not economic at this time. This is due not only to the relationship of size to grade of the small scattered lenses, but also to the metallurgical difficulties attending the marketing of such mixed oxide and sulfide ores of lead-zinc. Custom mills deduct the oxide metal content and make payments only for the sulfide lead and zinc and ordinarily refuse to accept highly oxidized ores. Thus, if ore was produced from the property, it is probable that much if not all, would be shipped to a lead smelter where penalties rather than payments would be made on the zinc content.

Even though it was possible to profitably operate this property it would seem that the scattered discontinuous orebodies are so small that they could not contribute worthwhile quantities of lead and zinc and for this reason alone would scarcely justify government aid. The largest lense, formerly mined, produced about 400 tons of ore, whereas others yielded but a few tens of tons.

The known production from 1911 to date has amounted to approximately 700 tons which resulted from nearly 2000 feet of exploration and development work.

The applicant has requested a loan totaling $68,000 with which to further explore the area on and above the present bottom level of the mine. The field team inferrs that 1000 tons of additional ore may exist in this area lying above the lowest level. The inferred reserves located below the proposed work were estimated as of the order of 30 to 40 tons per foot of depth. Thus the limited extent of the orebodies causes a prohibitive per ton cost for just exploration and as there are no indications of the existence of larger deposits, the recommendation for denial appears in order.

L. L. Farnham by Orr Bishop

L. L. Farnham
Bureau of Mines

Orr Bishop 2/20/52

DMA-2124X
Sunrise Mining Co.
Glove Lead-Zinc Mine
Santa Cruz County, Ariz.

Comments

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L. L. Farnham
Bureau of Mines

IN REPLY REFER TO:

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

February 18, 1952

Memorandum

Re: DMA-2124
Glove Lead-Zinc Mine
Santa Cruz County, Arizona
$68,000
Lead, zinc

To: Mr. D. E. Moulds

From: E. L. Newcomb

Subject: Geological recommendation

The field team report on the Glove mine recommends that the application be denied for the following reasons:

(1) The inadequate ore reserves ?,

(2) The improbability of making any significant new discoveries

(3) The high cost of exploitation.

The applicant proposes to extend the east adit, west adit, and 23-foot level a sufficient distance to explore the downward extension of mineralization and possible mineralization along a limestone-porphyry dike contact.

The underground workings have been developed in the hanging wall block of a large, low-angle overthrust fault, consisting of massive to thick-bedded Naco limestone of Pennsylvanian age, which has been thrust northeastward. Quartz monzonite and Cretaceous shales in the foot wall block below the mine are estimated to lie at a depth of 200 feet from the surface. The limestones strike N 70° W and dip 25-75 degrees northeast. Several faults of small displacement parallel the strike of the limestone and cut the beds at steep angles toward the northeast. Two or three porphyry dikes have been intruded along the trend of these faults.

The ore consists of mixed sulfides and carbonates, which is difficult to beneficiate and market. Mineralization is localized as veins along faults and bedding planes, and at contacts between limestone and dikes and sills of porphyry. Veins frequently intersect at small angles, both along the strike and the dip of the limestone. Small lenticular orebodies are commonly found at these intersections. However, the orebodies are erratically distributed and are not confined to any particular limestone horizon or to any special set of structural controls.

The mine has been developed by over 2000 feet of shafts, adits, drifts and crosscuts, which have produced approximately 1000 tons of ore. Most of this tonnage was oxidized ore, which was shipped for its lead and silver values.

The property has been explored enough to indicate that significant discoveries of merchantable ore cannot be expected from the applicant's proposed work. A denial of the application is recommended.

E. L. Newcomb

E. L. Newcomb
Geologist

I concur
O M Bishop

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

February 18, 1952

Memorandum

Re: DMA-2124
Glove Lead-Zinc Mine
Santa Cruz County, Arizona
$68,000
Lead, zinc

To: Mr. D. E. Moulds

From: E. L. Newcomb

Subject: Geological recommendation

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E. L. Newcomb
E. L. Newcomb
Geologist

O. M. Bishop

ELNewcomb:emp
Copies to: Geol. Div. files
Branch files 4208
Directors reading files 4214
Branch reading files 4214
E. T. McKnight
O. M. Bishop 3423 Interior Bldg

FILE COPY
SURNAME:

FE Johnson
Moulds

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

DMA - 2124

JAN 28 1952

My dear Senator Johnson:

This will acknowledge receipt of your letter dated January 23, 1952, referring to our previous letter to you of December 14, 1951, regarding the status of an application of the Sunrise Mining Company for an Exploration Project.

Please be advised that the Field Team report has just been received in this office. After study and analysis of the Commodity Division the approval or disapproval of this application will be determined.

When a decision has been made on this application you will be informed accordingly.

Sincerely yours,

C. O. Mittendorf (fw)

Acting Administrator
Defense Minerals Exploration
Administration

Hon. Lyndon B. Johnson
United States Senate
Washington, D. C.

READAMS/bih
1/25/52
cc to: Admr's. Reading File
Mails & Files 1-28 J. D.
Messrs. FEJohnson
Moulds

62

RICHARD B. RUSSELL, GA., CHA[illegible]
HARRY FLOOD BYRD, VA.
LYNDON B. JOHNSON, TEX.
ESTES KEFAUVER, TENN.
LESTER C. HUNT, WYO.
JOHN C. STENNIS, MISS.
RUSSELL B. LONG, LA.
STYLES BRIDGES, N.H.
LEVERETT SALTONSTALL, MASS.
WAYNE MORSE, OREG.
WILLIAM F. KNOWLAND, CALIF.
HARRY P. CAIN, WASH.
RALPH E. FLANDERS, VT.

WILLIAM H. DARDEN, CHIEF CLERK

United States Senate

COMMITTEE ON ARMED SERVICES

January 23, 1952

F E Johnson

Field Report on to Dr Olson 1/24

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 25 1952

Dear Sir:

My files do not indicate that a full reply has been received since ~~XXXXXXXXX~~ your letter of December 14, 1951 regarding the status of the application of the Sunrise Mining Company for an Exploration Project.

Won't you please look into this as soon as possible? If a complete reply will be delayed, I wish you would tell me so that I can let my constituent know.

Your help will be very much appreciated.

Sincerely,

Lyndon B. Johnson

Mr. Frank E. Johnson
Defense Minerals Administration
Washington 25, D. C.

Notify Johnson when completed

FILE COPY
SURNAME:

Moulds

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

Mr. Frank W. Jessen
3111 Tom Green Street
Austin, Texas

Re: Docket No. DMEA 2124
Sunrise Mining Company

Dear Mr. Jessen:

With reference to your recent letter and the application of the Sunrise Mining Company for an Exploration Project Contract, we have been advised that the field report on the project was forwarded to Washington under date of January 15th. As soon as this report is received, it will be reviewed and you will be advised as soon as possible as to the final action.

Sincerely yours,

D. E. Moulds (MEH)

D. E. Moulds, Acting Chief
Base Metals Division
Defense Minerals Exploration
Administration

DEMoulds/meh 1/18/52
cc to: Adm. R. File
Docket File Copy
Mr. Moulds
Mr. Bishop
Mr. McKnight
Region IV (2)
Chron.

M. Stripped O.R.

BL

OFFICE OF THE ADMINISTRATOR

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

224 New Customhouse
Denver 2, Colorado

January 15, 1952

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, DMEA, Region IV

Subject: Final Report, DMA Docket 2124, Sunrise Mining Company, Glove Lead-Zinc Mine, Santa Cruz County, Arizona

Enclosed herewith are the original and two copies of the Final Report on the subject docket.

The application is for Government assistance in exploration work estimated to cost $68,000 and involved the construction of surface facilities and an unspecified amount of drifting along contacts and to extend existing drifts.

The principal workings are 4 shafts and about 1500 feet of lateral workings. The lateral workings have been driven from the shafts as well as adits from the surface.

Naco limestone and shales of Paleozoic age have been intruded by monzonite sills that generally follow the bedding of the sedimentary rocks.

Ore mineralization occurs as widely scattered lenses and is confined to the fault zones at the sill-limestone contacts and in the sediments.

The mine contains little or no measured ore.

A study of indicated and inferred ore reserves indicates that the ore is too low in grade to be of economic significance.

Conclusions of the examining team were that chances of

developing deposits of economic ore at greater depth are unfavorable, therefore they recommend that the application for Government assistance in exploration work be denied, with which we concur.

The brochure is also enclosed.

for W. H. King
J. H. East, Jr.

A. H. Koschmann
A. H. Koschmann

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
1-25-52
(date) HB

Mining Division
Region IV

January 15, 1952

Memorandum

To: DMA Field Team, Region IV
From: Acting Chief, Mining Division, Region IV

Subject: Final Report, DMA Docket 212, Sunrise Mining Co., Cleve Lead-Zinc Mine, Santa Cruz County, Arizona

Enclosed herewith are the original and seven copies of the section on Summary, Conclusions and Recommendations by the Geological Survey and Bureau of Mines examining team, and the Engineering Section by the Bureau of Mines.

The brochure is also enclosed.

It has been recommended that the application be denied.

W. H. King
W. H. King

JAN 21 10 35 AM '52
DEPARTMENT OF THE INTERIOR
WASHINGTON, D.C.

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

200 New Customhouse
Denver 2, Colorado

January 2, 1952

Memorandum

To: DMA Field Team, Region IV

From: A. H. Koschmann

Subject: DMA Docket 2124, Glove Mine (Lead-Zinc), Sunrise Mining Company, Santa Cruz County, Arizona

Enclosed are the original and 7 copies of the geologic report by J. N. Faick and J. A. MacKallor of the U. S. Geological Survey covering the above docket.

It has been recommended that the loan be denied.

A. H. Koschmann
A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (8)

December 10, 1951

Memorandum

To : Paul T. Allemann, Denver, Colorado

From : Chief, Arizona-New Mexico Br., Mining Division, Region IV

Subject: Final Report, DMR Docket 2182, Sunrise Mining Co's. Clove Lead-Zinc Mine, Santa Cruz County, Ariz.

Enclosed are original and 7 copies of the section on Summary, Conclusions and Recommendations by J. H. Feick of the Geological Survey and T. M. Romslo of the Bureau of Mines, and the section on Engineering by Romslo for the above report.

This report has my approval.

Brochure is enclosed.

Walter R. Storms

CC: P.T. Allemann (7)
C.A. Anderson
DMR-2124
RF

WRStorms:alb

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P.O.Box 4126, University Station
Tucson, Arizona

December 26, 1951

Memorandum

To: Field Team, Region IV, Denver, Colorado
Through: Mr. A. H. Koschmann

From: Mr. A. F. Shride, Tucson, Arizona

Subject: Geologic Report, DMA 2124, Glove Mine (Lead-Zinc), Sunrise Mining Company, Santa Cruz County, Arizona

The original and 7 copies of the above geologic report by J. E. Faick and J. A. MacKaller of the Geological Survey are enclosed.

This report and the conclusions that an exploration loan be denied for lack of geologic probability of significant discoveries of lead-zinc have my approval.

A. F. Shride
Acting District Supervisor
Arizona-New Mexico

Enclosures 8

UNITED STATES
DEPARTMENT OF THE INTERIOR
OSCAR L. CHAPMAN, SECRETARY

DEFENSE MINERALS ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMA-2124 - Sunrise Mining Company's

Glove Lead-Zinc Mine

Santa Cruz County, Ariz.

J. N. Faick, Geologist
U. S. Geological Survey

T. M. Romslo, Mining Engineer
U. S. Bureau of Mines

December 1951

als

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

By J. N. Faick[1] and T. M. Romslo[2]

The Glove lead-zinc mine, Santa Cruz County, Ariz. was examined in connection with an application by the Sunrise Mining Co. for Governmental aid on a proposed exploratory project. The examination was made by the Defense Minerals Administration, under docket DMA-2124, as part of a program authorized by the Defense Production Act of 1950.

The Sunrise Mining Co. proposed an exploratory project that was designed to develop reserves of lead-zinc ore. The project involved the driving of lateral headings from existing underground workings. Estimates prepared by the applicant indicated the project could be completed in one year at a cost of $68,350.

The Glove mine has a recorded production of 683 tons of ore of which 612 tons contained an average of about 26 percent lead, 15.5 percent zinc, and 7.5 ounces of silver a ton. The remaining production, 71 tons, contained 32 percent lead, and about 6 ounces of silver a ton. Total production was probably not over 1,000 tons. The ore was largely of the oxidized type and was shipped for its lead and silver values.

At the mine, steeply dipping limestone and shale beds are cut by sills of quartz monzonite. The sills generally follow the beds, and their contacts with the sedimentary rocks are delineated by faults. Faults also occur in the sediments where they follow the strike of the bedding. The dip of these faults is the same or slightly steeper than the dip of the sediments.

1/ Geologist, U. S. Geological Survey.
2/ Mining Engineer, U. S. Bureau of Mines.

The deposits that were originally worked from the surface, were marked by outcrops of manganese and iron oxides and a small amount of copper carbonate. These deposits, and zones of ore mineralization in the mine workings are present at widely scattered places in the fault zones. The ores were largely oxidized to a depth of about 100 feet from the surface. Ore that is mainly of the sulfide type, galena and sphalerate, is presently exposed at this depth on the 23-foot level of the west-adit workings and in a drift from the east adits. It occurs as lenses that range in thickness from 1 inch to 3 feet, and average less than 1 foot. The most extensively mineralized zone, now essentially worked out, yielded several hundred tons of ore.

The mine has been developed by 4 shafts and about 1,500 feet of lateral workings. At present, a contractor is engaged in driving 2 exploratory headings and also is sinking a winze on sulfide ore.

There is little or no measurable ore in the 4 widely scattered deposits exposed on the property. These deposits have a total of 2,200 tons of indicated ore, containing 3.8 percent lead, 10.3 percent zinc, and 0.8 ounces of silver a ton. Inferred reserves above the adit levels are estimated at 800 tons of ore containing 21 percent lead, 18 percent zinc, and 4 ounces of silver a ton. The inferred reserves below the adit levels are estimated at 30 to 40 tons of ore per foot of depth.

About 2,000 of the 2,200 tons of indicated reserves are present as oxides that are not readily amenable to concentration. This ore would have to be shipped to a smelter. It does not constitute economic ore because the base smelting charge plus freight and royalty would

exceed the value of the ore. Estimates also show that the remaining indicated reserves and the inferred reserves could not be exploited at a profit. This ore, part oxide and part sulfide, would have a market value of $70 to $75 a ton. It would yield smelter payments of about $40 a ton, an amount insufficient to defray the estimated development and mining costs of about $70 a ton.

It is recommended that the requested exploratory loan be denied because the chances of developing deposits of economic ore are unfavorable.

THE SUNRISE MINING COMPANY
GLOVE LEAD-ZINC MINE
SANTA CRUZ COUNTY, ARIZONA
DMA 2124

Geology

By
John N. Faick
and
Jules A. MacKallor
Geologists, U. S. Geological Survey

THE SUNRISE MINING COMPANY
GLOVE LEAD-ZINC MINE
SANTA CRUZ COUNTY, ARIZONA
DMA 2124

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ILLUSTRATIONS

Fig. 1	Location Map of Glove (Sunrise) Mine	See Engineering Report
Fig. 2	Principal Workings of Glove Group of Claims	Following Page 1
Fig. 3	Cross Section A-A of Glove (Sunrise) Mine	" " 1
Fig. 4	Cross Section B-B of Glove (Sunrise) Mine	" " 1

INTRODUCTION

The Sunrise mine, formerly known as the Glove mine, and also the Sheehy-O'Donnel, is located in the Tyndall Mining District on the western slope of the Santa Rita Mountains, in Sec. 30, T. 30 S., R. 14 E. From Amado, Arizona, a station on the Southern Pacific Railroad, the mine can be reached by about 10 miles of fair dirt road.

The mine is in an area studied by Schrader and Hill[1/] and also by Anthony[2/], and it has been the subject of several private reports. It was examined by a field team for the Defense Minerals Administration in November, 1951. Accompanying this geological report is a composite mine map, Figure 2, and two cross sections, Figures 3 and 4. These are modified from private maps prepared by Robert Lenon, Registered Mining Engineer, Patagonia, Arizona.

GENERAL GEOLOGY

The mine is at an altitude of about 4500 feet in an area of moderate relief which is bounded on the north by a steep hill rising to an altitude of about 5,000 feet; on the south by Cottonwood Wash, which drains westward toward the Santa Cruz valley. The mine is developed in thick bedded to massive Naco limestone of Pennsylvanian age. This limestone strikes N. 70° W. with northeasterly dips ranging from 25 to 40 degrees on the western side of the mine area and 55 to 75 degrees on the eastern side. The formation is thought to be from 1200 to 1500 feet thick, but it is doubtful if a full section is exposed near the mine. The formation appears rather uniform in character with no indication that

---

1/ Schrader, F. C. and Hill, J. M., Mineral Deposits of the Santa Rita and Patagonia Mountains, Arizona: U. S. Geol.Sur.Bull. 582, pp.185-187, 1915.
2/ Anthony, J. W., Geology of the Montosa-Cottonwood Canyons Area, Santa Cruz County, Arizona: Univ. Ariz. Thesis, p. 84, 1951.

PRINCIPAL WORKINGS ON GLOVE GROUP OF CLAIMS, SANTA CRUZ CO., ARIZONA
FIG. 2 DMA 2124

EXPLANATION

- Shaft or winze
- Raise
- Ore sample taken by Lenon
- Ore sample taken by DMA
- Ore

SAMPLES TAKEN BY DMA

Sample No.*	Width Ft.	Gold Oz/T	Silver Oz/T	% Pb	% Zn
81	3.5	0.005	0.4	0.17	0.12
82	3.5	Trace	0.3	0.12	4.55
83	3.5	0.005	0.9	3.95	0.43
84	5.0	0.005	0.7	2.00	3.35
85	0.8	0.01	3.0	16.50	14.15
86	2.5	0.01	3.4	12.10	18.10
87	3.7	Trace	0.3	0.55	1.05

*U.S.B.M. Nos. 14581 - 14587

SAMPLES TAKEN BY LENON

Sample No.	Width Ft.	Gold Oz/T	Silver Oz/T	% Pb	% Zn
1	3.0	Trace	1.8	6.7	8.6
2	15.0	Trace	0.3	1.2	2.0
3	4.0	0.20	4.5	7.5	9.2
4	4.0	Trace	3.2	19.3	13.2
5	1.7	Trace	2.3	8.1	31.5
6	3.5	Trace	3.3	9.5	25.3
7	0.7	Trace	3.3	9.8	25.3
8	4.5	Trace	Trace	4.5	9.3
9	8.0	Trace	Trace	1.2	10.2
10	2.0	Trace	2.0	17.3	28.6
11	1.0	Trace	3.7	19.0	6.2
12	2.0	Trace	2.8	27.2	13.5
13	3.0	Trace	9.2	35.0	28.4
14	1.5	Trace	1.3	17.1	10.5

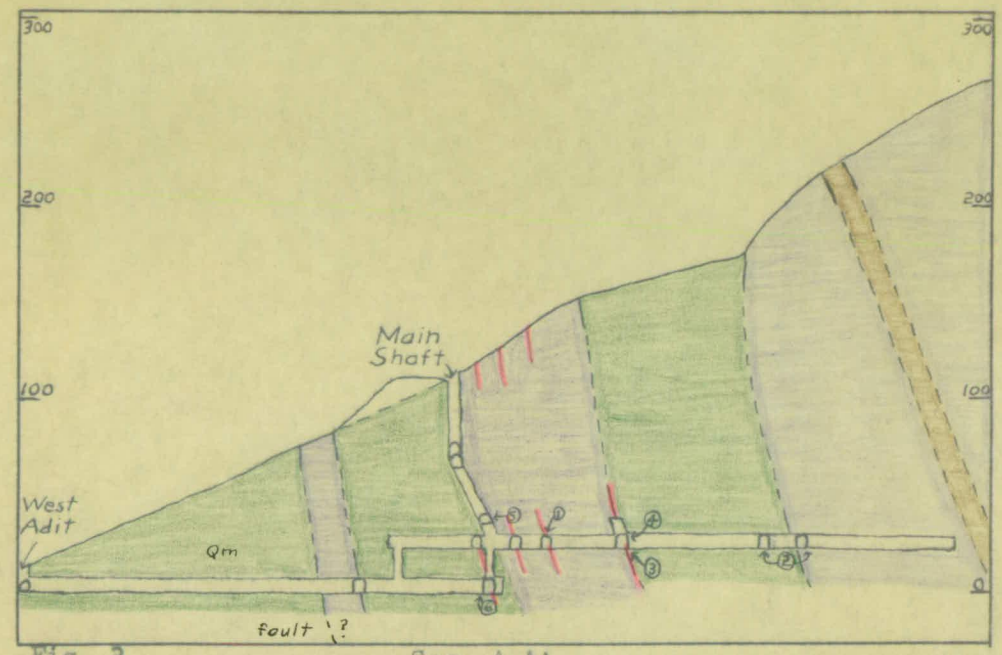

Fig. 3 Sec. A-A'

CROSS-SECTIONS OF GLOVE MINE

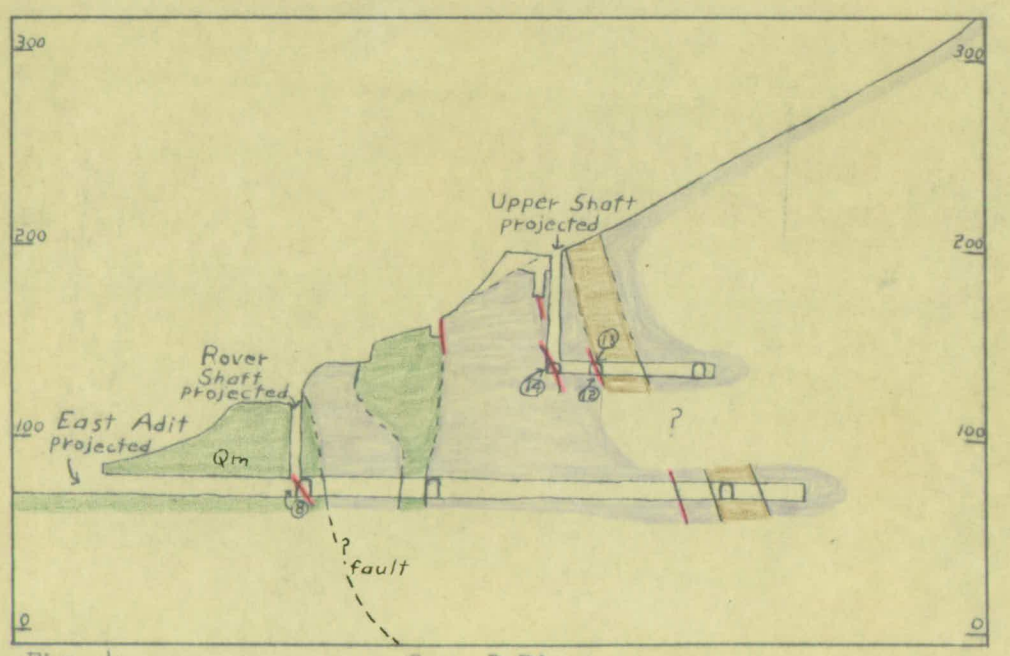

Fig. 4 Sec. B-B'

Scale: 1" = 100'
DMA 2124

Explanation
- Limestone
- Porphyry
- "Birdseye" porphyry
- Ore
- Sample taken by Lenon

any one bed may be more favorable for ore deposition than another and all of the known ore is confined to about the lower one-third of the section. The Pennsylvanian limestone at this locality appears to be conformable with the overlying Permian limestone and quartzite formations exposed on the hill several hundred feet north of the mine.

According to Anthony[3/] these formations compose the upper plate of a gigantic thrust fault that has developed by compressive forces from the southwest. This fault has thrust the Pennsylvanian and Permian sediments over the upturned edges of a westerly dipping Cretaceous formation which is not exposed in the vicinity of the mine.

Exposed in Cottonwood Gulch and several hundred feet south of it is a fine-grained, equigranular, pinkish quartz monzonite (Qm porphyry of figs. 3 and 4). This is intrusive in character and is thought to have found access along the thrust fault that brought the Pennsylvanian and Permian limestones to their present position overlying the Cretaceous formations. Both adits of the Sunrise mine penetrate a few tens of feet of this quartz monzonite before entering the Naco limestones, and the contact between the two formations can be seen on the surface between the adits. Along the contact faulting has produced gouge and breccia, and flexed the limestone beds in a zone 2 to 12 feet thick. This fault strikes nearly parallel to the strike of the limestone beds and dips from 30 to 60 degrees to the northeast, and is possibly a component of the main thrust fault. The depth of the main thrust fault below the principal workings of the mine is unknown but it is thought to be about 200 feet.

3/ Op. cit., pp. 37-39.

The steep easterly dipping Naco limestone beds have been cut by faults dipping 60 to 80 degrees to the northeast and these may locally follow bedding planes or cut obliquely across the formation. Little displacement has taken place along these faults but their presence is often emphasized by the occurrence of mineralization and by dikes or sills intruded along them. These dikes or sills are grayish green and fine grained, and both equigranular and porphyritic types are present. An easily recognized type of dike, called "Birdseye" porphyry by the miners, lies along the northern boundary of the main mineralized zone. This dike is about 12 feet thick and is characterized by feldspar phenocrysts as large as $\frac{1}{2}$ inch long set in a felsitic groundmass.

ORE DEPOSITS

The ores of the Sunrise mine are lead and zinc with traces of copper, silver and very small amounts of gold. The primary minerals are black and honey yellow sphalerite and galena accompanied by relatively rare pyrite and chalcopyrite, and are generally associated with inconspicuous quartz and carbonate gangue. Specularite is closely associated with the lead-zinc mineralization and usually occurs in tiny veinlets in shattered limestone, and in lenticular masses and nodules usually measuring less than 2 or 3 inches across, but a 2000-ton body of specularite containing low values in lead and zinc is exposed by the Rover shaft and East adit. Garnet float occurs near the most westerly mine workings but was not seen associated with the ore, however it is thought to be related to the same period of mineralization.

The sulfide minerals have been strongly but incompletely oxidized throughout the vertical extent of the zone exposed by the

mine workings. Oxidation has yielded anglesite and cerussite associated with limonite and copper stains. The ores, both sulfides and carbonates, tend to be massive with a high content of lead and zinc.

The minerals mentioned commonly form veins from 1 to 8 inches wide on subparallel fractures in limestone or on obscure bedding planes or along contacts between limestone and dikes. These veins frequently intersect at small angles both along the strike and along the dip and at these intersections there is commonly a sufficient increase in mineral content to form small lenticular shaped bodies of ore. A typical ore body may be as large as 25 feet long, 30 feet thick and from 1 to 4 feet wide and the largest exploited prior to this examination yielded about 400 tons. Ore bodies are erratically distributed throughout the zone cut by faults and dikes and are not confined to any particular limestone bed or to any special set of structural conditions.

Alteration associated with mineralization appears unusually intense for this type of deposit. The limestone has been partially recrystallized to pink marble, and in other places is stained grayish and brownish. This area of discoloration is quite pronounced and occupies an area extending about 400 feet north of the quartz monzonite-limestone contact and 1500 to 2000 feet along the strike of the beds.

DEVELOPMENT, PRODUCTION, AND EXPLORATION

Fifteen or twenty scattered outcrops of mineralized material are exposed in an area 400 feet by 1500 feet, elongated along the strike of the beds. The outcrops have been explored by test pits, trenches, shafts, and adits, most of which are shown on Figures 2, 3, and 4. The mine has been explored and developed by four shafts, which are 45, 50, 67, and 110 feet deep; and by 1700 feet of adits, drifts, and crosscuts.

Location and assays of samples are shown on Figure 2. Most of the 17 samples taken by Lenon indicate that the ore is high grade, but they are misleading because they do not represent actual mining widths nor do they indicate the marketing difficulties inherent in the extremely oxidized ore.

The Sunrise mine has produced about 680 tons of ore from three small stopes and scattered occurrences of minor importance. The shipments were as follows:

613 tons	26% lead	15.5% zinc	7.5 oz./ton silver
71 tons	32% lead	---	6.0 oz./ton silver

Other ore bodies similar to those previously discovered may remain above the adits; but because of their small size and erratic distribution, they would not repay the cost of exploration, development, and mining. Combined production and reserves above the adits amount to from 30 to 40 tons per foot of depth, and the same ratio is expected to persist downward to the thrust fault. From the exposures in the adits, it does not appear that the limestone near the thrust is particularly favorable for ore deposits, and the underlying quartz monzonite and shales are unfavorable hosts.

ORE RESERVES

Measured Ore

There is no measured ore.

Indicated Ore

About 2200 tons of oxide and sulfide lead-zinc ore are indicated in 3 places. At the east adit a 25 foot drift and the Rover shaft partially explore a body of specular hematite that is about 65 feet long, 6 feet wide and 50 feet thick and estimated to

contain about 2000 tons of low grade lead-zinc ore. This assays 2.8 percent lead and 9.7 percent zinc, present as carbonates. The ore is too low grade to be shipped to either a custom smelter or a pigment plant, and is not amenable to present methods of beneficiation, therefore, must be regarded ad non-commercial. It is probable that the ore will terminate at the thrust fault, near the adit level.

An ore body that produced about 400 tons of oxidized ore was exploited through the upper shaft. This is essentially mined out but another small ore body 20 feet north of it has been partly developed on the 65 foot level from this shaft. This second ore shoot is from 6 to 18 inches wide and has been exposed by about 40 feet of drifts, and is thought to extend vertically about 40 feet above the level. It is estimated to contain 150 tons of oxidized ore with a grade of 30 percent lead, 20 percent zinc and 6 ounces of silver per ton. This ore is to be developed through a drift now being driven from the east adit, which at the time of this examination had found 10 to 20 tons of partially oxidized ore about 100 feet east of the ore being sought.

A small ore body about 35 feet long, 3 feet wide, and 20 feet in vertical dimension is being developed by a winze from the 23 foot level in the west adit workings. Part of the ore body was mined out and was found to pinch out about 10 feet below the 23 foot level and a few feet above the level. It is estimated to contain about 50 tons of sulfide ore containing 14.3 percent lead, 16.1 percent zinc, and 3.2 ounces of silver.

Inferred Ore

The ore body exposed on the 65 foot level of the upper shaft is assumed to extend downward to the level of the east adit, a distance of about 60 feet. It is about 1 foot wide, 40 feet long, and is thought to contain about 250 tons of strongly oxidized ore estimated to contain about 20 percent lead and 20 percent zinc and about 4 ounces of silver per ton.

The ore body now being developed on the 23 foot level of the west adit may contain about 50 tons of inferred ore, in addition to the indicated ore mentioned above. A 20 foot westerly extension of the known ore body is assumed. The ore contains 14 percent lead and 16 percent zinc and about 3 ounces of silver per ton.

An estimated 500 tons may eventually be produced from as yet undiscovered ore bodies above the adit. This should be approximately the same grade as previously discovered and is expected to contain about 21 percent lead, 18 percent zinc and 4 ounces of silver per ton.

Summary of Reserves

Summarized below are the ore reserves of the Sunrise or Glove mine:

Class	Location	Percent Lead	Percent Zinc	Ounces Silver	Tons	Comments
Measured ore					None	
Indicated ore						
	Hematite ore body	2.8	9.7	---	2000	Not commercial
	Upper shaft	30	20	6	150	Oxidized
	West adit	14.3	16.1	3.2	50	Sulfide
Total indicated ore (grade weighted)		3.8	10.3	0.8	2200	Mixed sulfide and oxide
Inferred ore						
	Upper shaft	20	20	4	250	Oxidized
	West adit 23 level	14	16	3	50	Sulfide
	Undiscovered ore bodies	21	18	4	500	Mixed sulfide and oxide

Summary of Reserves, Cont'd.

Class	Location	Percent Lead	Percent Zinc	Ounces Silver	Tons	Comments
Total inferred ore		20	18	4.	800	Mixed sulfide and oxide
GRAND TOTAL					3000	

SUMMARY

The Sunrise (Glove) mine is developed in a 1200 to 1500 foot thick series of massive to thick bedded limestones, composing the upper plate of a gigantic thrust fault that isunderlain by quartz monzonite and Cretaceous shales at an unknown depth, but thought to be about 200 feet. The limestones strike N. 70° W. and dip from 25 to 75 degrees northeast and have been cut by several faults with nominal displacement; and have been intruded by 2 or 3 dikes or sills that strike parallel to the strike of the beds and dip steeply to the northeast.

The ores have a high content of lead and zinc, associated with a few ounces of silver per ton, and usually consist of mixed sulfides and carbonates thus making beneficiation and marketing difficult and expensive. The ores are localized as veins on faults and bedding planes and along contacts between limestone and sills and dikes. Veins are 1 to 8 inches wide but increase appreciably in size at intersections of favorable structure and at those places form small ore bodies. The distribution of the ore is erratic and favorable structures are not everywhere mineralized, and no limestone bed appears more favorable than any of the others.

The mine has been developed by about 2000 feet of workings which have resulted in a production of about 680 tons. Reserves of commercial grade ore of all classes are estimated at 1000 tons. It is imporbable that any significant discoveries would result from additional exploration.

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the Sunrise (Glove) mine does not justify additional exploration of development because of : (1) the inadequate ore reserves, (2) the improbability of making any significant new discoveries, (3) the high cost of exploitation.

For these reasons it is recommended that the application for Government assistance be denied.

SUNRISE MINING COMPANY'S
GLOVE LEAD-ZINC MINE
SANTA CRUZ COUNTY, ARIZ.
DMA-2124

Engineering Report

By T. M. Romslo
Mining Engineer
U. S. Bureau of Mines

December 1951

SUNRISE MINING COMPANY'S
GLOVE LEAD-ZINC MINE
SANTA CRUZ COUNTY, ARIZ.
DMA-2124

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Proposed exploration	7
Conclusions	7
Recommendations	7

ILLUSTRATIONS

Figure	Following page
1 Location map	2
2 Principal workings (see Geological report)	
3 Cross-sections of Glove mine (see Geological report).....	

INTRODUCTION

The Glove lead-zinc mine, Santa Cruz County, Ariz. was examined in connection with an application by the Sunrise Mining Co. for Governmental aid on a proposed exploratory project. The examination was made by the Defense Minerals Administration under docket DMA-2124, as part of its program authorized by the Defense Production Act of 1950. It was carried out to determine if the Government should participate with the company in financing the cost of the proposed work. This report contains information obtained during the course of the investigations and also presents conclusions and recommendations regarding the merits of the proposed work.

The proposed work was designed to develop reserves of lead-zinc ore by driving cross-cuts and drifts from existing underground workings. The company's estimates indicated that the work could be completed in one year at a cost, including purchase and rental of equipment, of $68,350.

The examination was made November 8 and 9, 1951, by J. N. Faick and J. McKallor, Geological Survey, and T. M. Romslo, Bureau of Mines. Robert Lenon, a mining engineer of Arizona and an agent for the applicant, accompanied the engineers during the first day of the examination. Samples were obtained from the mine on November 13 by McKallor, and B. C. Brown, Bureau of Mines. Brown, Faick and Romslo revisited the mine November 21 to examine an ore occurrence that had been encountered subsequent to November 13.

PHYSICAL FEATURES AND CLIMATE

The property is at the southwest base of the Santa Rita Mountains. It is in an area of moderately rugged topography at an altitude of about 4,500 feet. Cottonwood Canyon heads near the property and drains west to the Santa Cruz river.

The climate is characteristic of the intermediate altitudes of Southern Arizona. The summers are hot and the winters are mild. Precipitation of about 15 inches annually is confined mainly to heavy rainfalls during July, August and September, and to light rainfalls and a little snow during the winter months.

There are no permanent streams in the district.

Vegetation on the property consists of native grasses and a variety of shrubs and cacti.

LOCATION AND ACCESSIBILITY

The property is about 6 air-miles east of the village of Amado, Ariz. Amado is on paved U. S. Highway 89, about 35 miles south of Tucson. The property may be reached from Amado by traveling 6 miles easterly on a county-maintained road and thence southeasterly for 3.8 miles on an unimproved road to the mine.

The nearest railroad shipping point is about 4 miles south of Amado at Chavez Siding on the Tucson-Nogales Branch of the Southern Pacific Railroad. A road from Chavez Siding to the property, distance about 6 miles, is not readily negotiable by automobile at present.

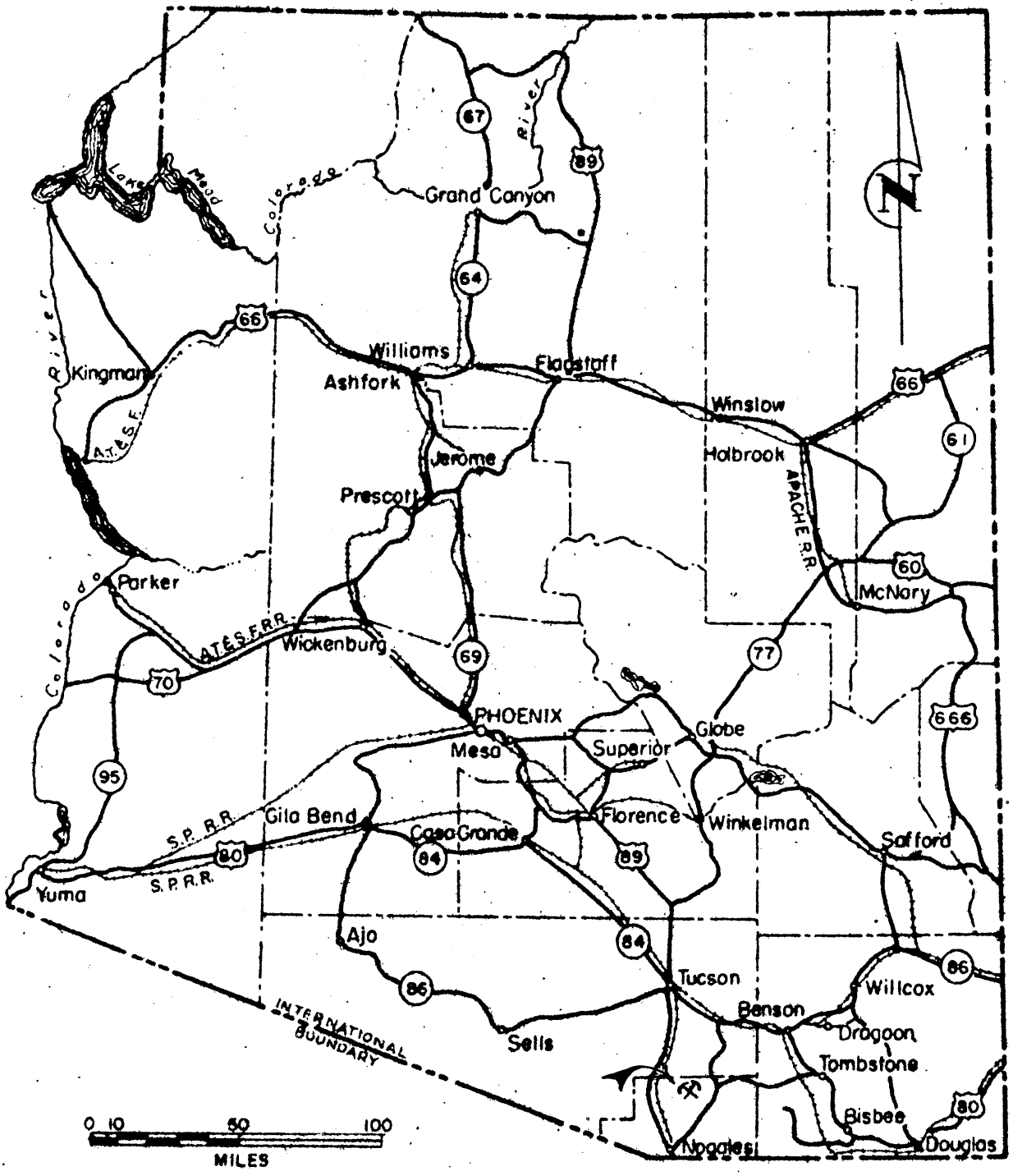

Fig. 1 Location Map, Sunrise Mining Company's Glove Pb-Zn Mine, Santa Cruz County, Arizona

DMA 2124

HISTORY AND PRODUCTION[1/]

The property was located in 1907 by Edward T. Sheehy, Nogales, Ariz. It has been owned since then by Sheehy and various associates. Most of the present development work was done during the period, 1911-17. In 1914, Thomas M. Park produced the largest quantity of ore mined from the property. Most of Park's production was from the 125-foot shaft, but he also mined ore from the 50-foot and 67-foot shafts.

Activity at the mine from 1917 to 1951 was confined to operations in 1925 by Jerry Sheehy and in 1949 by E. J. Sikes. The Sunrise Mining Co. started operations shortly after obtaining control of the property in May 1951. It has carried out some exploratory work and has produced about 30 tons of ore. This ore is stored at the mine for future shipment.

Estimates indicate that at least 683 tons of ore have been shipped from the property. Incomplete records for the period from 1911 to 1917 show shipments of approximately 612 tons of ore that averaged about 26 percent lead, 15.5 percent zinc, and 7.5 ounces of silver a ton. The remaining 71 tons, shipped during 1925 and 1949, averaged about 32 percent lead and about 6 ounces silver a ton of ore.

PROPERTY AND OWNERSHIP

The property, known as the Glove or the Sheehy-O'Donnel group, consists of 15 unpatented mining claims in Sec. 30, T. 20 S., R. 14 E., San Cayetana Mining District, Santa Cruz County, Ariz. It is owned by Johanna O'Donnell, Edward T. Sheehy, Jerry Sheehy, Pat J. Sheehy, and Katherine Sheehy, all of the State of Arizona.

1/ Anthony, John W., Geology of the Montosa-Cottonwood Canyons Area, Santa Cruz County, Ariz., Master's Thesis, Univ. Arizona, 1951.

The Sunrise Mining Co., a corporation, holds the property under a purchase agreement. The agreement is for a period of 5 years from May 8, 1951. The principal terms of the agreement are: (1) payment of $16,000 before initiating stoping operations; (2) royalty payments of 15 percent on ore with a value to $30 a ton, and 20 percent on ore with a value in excess of $30; and (3) a total purchase price of $135,000, payable before May 8, 1956.

GEOLOGY AND DEPOSITS

Naco limestone and shales of Paleozic age have been intruded by monzonite sills that generally follow the bedding of the sedimentary rocks. The formations have a westerly strike and dip northward at steep angles. Faults occur at the sill-limestone contacts and also are present in the sediments, where they normally follow the bedding.

Ore mineralization is confined to the fault zones at the sill-limestone contacts, and in the sediments. It occurs as widely scattered lenses. The most extensively mineralized zone was at the upper workings. There mining has left an opening that averages about 3 feet wide, and 30 feet long, and that extends from about 15 feet below the surface to a depth of about 55 feet. This zone is reported to have yielded 300 to 400 tons of hand-sorted oxidized ore.

Gosson outcrops of manganese dioxide, iron oxides and a little copper carbonate occur at each of the deposits that were originally worked from the surface. The ore occurred largely as oxidized lead and zinc minerals to a depth of at least 98 feet. This depth corresponds with the 23-foot level at the west adit where the ore at one

place is mainly of the sulfide type. The sulfide ore consists of galena, sphalerite, and a little chalcopyrite. Pyrite also is present in small amounts.

ORE RESERVES

The mine contains no measured ore.

The indicated reserves are present in 4 widely scattered deposits. These reserves have been estimated at 2,200 tons containing 3.8 percent lead, 10.3 percent zinc and 0.8 ounce of silver a ton.

The inferred reserves above the adit levels, ore that could possibly be developed by the proposed exploratory work, has been estimated at 800 tons. This ore would be mainly of the oxidized type and would contain an estimated 21 percent lead, 18 percent zinc, and 4 ounces of silver a ton. Inferred reserves below the adit level have been estimated at 30 to 40 tons per foot of depth.

Approximately 2,000 tons of the indicated reserves are present in the deposit at the Rover shaft. This deposit appears to be bottomed at a thrust fault exposed in the adit level. The ore, containing an indicated 2.8 percent lead, 9.7 percent zinc, and 0.6 ounce silver a ton, is highly oxidized. It is not amenable to concentration and would have to be marketed as a direct shipping ore. It does not constitute economic ore because smelting charges alone exceed the market value. Furthermore, the remaining 200 tons of indicated ore and the 800 tons of inferred ore above the adit levels could not be developed and mined at a profit. This ore, containing an estimated 22 percent lead, 18 percent zinc, and 4 ounces of silver a ton, has a smelter value of

$70 to $75 a ton. It would yield about $40 a ton to the shipper after royalty payments of $15 and smelter charges of about $20. To develop the ore would require a minimum of 1,500 feet of lateral workings at an estimated cost of $60,000, or $40 a ton. Mining costs, estimated at $30, would bring the total cost a ton to over $100. Similar estimates indicate that development of economic ore below the adit levels cannot reasonably be expected.

PRESENT STATUS

Mine Workings

The principal workings are 4 shafts and about 1,500 feet of lateral workings (fig. 2). The lateral workings have been driven from both the shafts and from the surface. The adits are equipped with track.

Present Operations

A contractor is advancing the east adit, driving a drift westerly from near the end of the same adit and sinking a winze from the most northerly drift on the 23-foot level of the west adit. The work is being done by 3 miners. The contractor receives $32.50 a foot for lateral headings. He furnishs all equipment and supplies. The principal equipment consists of 2 portable compressors, 3 pneumatic drills, and 2 mine cars. Water for drilling and domestic use is hauled to the mine in barrels.

Structures on the property consist of 2 tent houses, 1 small storage shed, and a light headframe at the Rover shaft.

PROPOSED EXPLORATIONS

The applicant proposed to extend the east adit, the west adit, and the 23-foot level to the "Birdseye" porphyry, to drift along the porphyry-limestone contact, and to extend existing drifts. It was estimated the work could be completed in one year at a cost of $68,350.

CONCLUSIONS

Less than 1,000 tons of oxidized lead-zinc ore have been produced from 2 zones that have been rather extensively developed and exploited. The largest deposit, now essentially mined out, yielded 300 to 400 tons of ore.

Areas of gossan indicated the presence of the 2 productive zones. Other mineralized zones may be present but there are no criteria for determining where they may occur.

The 4 widely scattered and partially exposed deposits have an indicated 2,200 tons containing 3.8 percent lead, 10.3 percent zinc, and 0.8 ounce of silver a ton, and an inferred 800 tons containing 21 percent lead, 18 percent zinc, and 4 ounces of silver a ton. These reserves, confined to the zone that would be influenced by the proposed exploration, do not constitute economic ore. Furthermore, there is no reason to believe that economic ore would be encountered at lower horizons.

RECOMMENDATIONS

A Governmental loan for exploration at the Glove lead-zinc mine should be denied because the proposed work cannot be expected to develop economic ore.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

REGION IV

OFFICE OF
REGIONAL DIRECTOR

224 NEW CUSTOMHOUSE
DENVER 2, COLORADO

January 15, 1952

Air Mail

Memorandum

To: D. E. Moulds, Acting Chief, Base Metals Division

From: Regional Director, Region IV

Subject: DMEA 2124 - Sunrise Mining Company

Your teletype of January 14 requested status of Sunrise Mining Company, Arizona, Docket DMEA 2124.

The report was forwarded to Washington today, and the Field Team recommended denial of the application.

J. H. East, Jr.

J. H. East, Jr.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 17 1952

REGIONAL DIRECTOR

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

224 NEW CUSTOMHOUSE
DENVER 2, COLORADO

January 15, 1952

Air Mail

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To: D. E. Moulds, Acting Chief, Base Metals Division

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J. H. East, Jr.

J. H. East, Jr.

JHE:ftm

DMA Files

500

FILE COPY
SURNAME:

Moulds

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

D. M. E. A.

D. E. Moulds
5369 4070

1480137 Salaries & Expenses
Defense Production Activities, Interior 1952. *100.0000 (400)
1-14-52

Mr. J. H. East, Jr., Exec. Officer, Reg. IV, 224 New Customhouse Bldg.
Denver, Colorado.
DMEA 2124, Sunrise Mining Company

ADVISE STATUS OF SUNRISE MINING COMPANY, ARIZONA DOCKET 2124, REFERRED TO YOUR OFFICE FOR FIELD EXAMINATION IN OCTOBER.

Signed (mch)
D. E. MOULDS, ACTING CHIEF
BASE METALS DIVISION

DEMoulds/hmj
1-14-52

cc to: Adm. R. File
Docket File Copy
Mr. Moulds

SENT
JAN 14 1952
Clerical Service Section

NS in RQ

Sa

CHEMICAL ENGINEERING

PETROLEUM ENGINEERING

FRANK W. JESSEN
CONSULTING ENGINEER
3111 TOM GREEN STREET
AUSTIN 5, TEXAS

Files code 503

2124

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 14 1952

2124

January 11, 1952

Mr. Frank E. Johnson
Acting Administrator
Defense Minerals Administration
Washington, D. C.

Dear Mr. Johnson:

You will recall that during a recent trip I made to Chicago in December I had an occasion to call you to inquire of you the latest status of the Exploration Loan application of Sunrise Mining Company with the Defense Minerals Administration for development of the said company's properties in the Santa Cruze mountain near Amado, Arizona.

At that time you advised me that you felt certain that the field report from the Denver office should be in your hands during the latter part of December and possibly even before Christmas, and that you would expedite any action on this loan when the field report came in to your office.

We would appreciate very much hearing from you concerning any action on this loan application. We are progressing quite well with the development of the properties and feel that the properties have merit and therefore justify the type of loan applied for.

Your kind attention to this matter will be appreciated.

Yours very sincerely,

Frank W. Jessen

FWJ/md

FILE COPY
SURNAME:

F.E. Johnson

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

DEC 14 1951

Re: DMEA No. 2124
Sunrise Mining Company

My dear Mr. Thornberry:

This will acknowledge receipt of your letter of December 4, 1951 requesting to be advised as to the current status of the application of Sunrise Mining Company (DMA No. 2124) for an Exploration Project.

Under date of December 7th we were advised over the telephone that the report of the Region IV, Field Team, Denver, Colorado was being prepared and would be forwarded to Washington shortly.

Please be assured that as soon as the Field Team's report is received in this office it will be given prompt attention.

Sincerely yours,

(signed) FRANK E. JOHNSON (for)
Acting Administrator
Defense Minerals Exploration
Administration

B.H.
12-14

Hon. Homer Thornberry
House of Representatives
Washington 25, D. C.

FEJohnson/bih
12/11/51
cc to: Reports & Records
Admr's Reading File
Mr. Mittendorf
Mr. Johnson
Docket

HOMER THORNBERRY
10TH DISTRICT OF TEXAS

WASHINGTON ADDRESS:
504 HOUSE OFFICE BUILDING

COUNTIES:

BASTROP	HAYS
BLANCO	LEE
BURLESON	TRAVIS
BURNET	WASHINGTON
CALDWELL	WILLIAMSON

Congress of the United States
House of Representatives
Washington, D. C.

COMMITTEE:
INTERSTATE AND
FOREIGN COMMERCE

BOARD OF DIRECTORS
COLUMBIA INSTITUTION
FOR THE DEAF

December 4, 1951

DMA-2124
Sunrise Mining Company
of Tucson, Arizona

Administrator
Defense Minerals Administration
Department of the Interior
Washington, D.C.

Dear Sir:

Will you be kind enough to advise me of the current status of the above named case.

Sincerely yours,

Homer Thornberry

Homer Thornberry

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC 21 1951
5

DEC 5 12 05 PM '51
BUREAU OF MINES
MAIL ROOM
WASHINGTON, D.C.

HOMER THORNBERRY
19TH DISTRICT OF TEXAS

WASHINGTON ADDRESS:
504 HOUSE OFFICE BUILDING

COUNTIES:
BASTROP, BLANCO, BURLESON, BURNET, CALDWELL, HAYS, LEE, TRAVIS, WASHINGTON, WILLIAMSON

Congress of the United States
House of Representatives
Washington, D. C.

COMMITTEES:
INTERSTATE AND FOREIGN COMMERCE

BOARD OF DIRECTORS
COLUMBIA INSTITUTION FOR THE DEAF

[illegible]

[illegible]
[illegible], Ariz.

Administrator
Defense Minerals Administration
Department of the Interior
Washington, D.C.

F.E. Johnson
12-5-51

Dear Sir:

Will you be kind enough to advise me of the current status of the above mentioned case.

Sincerely yours,

Homer Thornberry

Homer Thornberry

FILE COPY
SURNAME:

F.E. Johnson

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

DEC 14 1951

My dear Senator Johnson:

We have your letter of December 6, 1951 and enclosed letter of December 4, 1951 addressed to you and signed by Mr. Frank W. Jessen of Austin, Texas concerning the status of the application of the Sunrise Mining Company for an Exploration Project.

Please be advised that we discussed this project with the Executive Officer, Region IV, Field Team, Denver, Colorado over the telephone Friday, December 7th, and were advised that the Field Team's report is being prepared and would be forwarded to Washington shortly.

As soon as the Field Team's report is received in this office it will be given our prompt attention.

The enclosures in your letter are returned herewith.

Sincerely yours,

(signed) FRANK E. JOHNSON

Acting Administrator
Defense Minerals Exploration
Administration

F.W.
12-14

Hon. Lyndon B. Johnson
United States Senate
Washington 25, D. C.

FEJohnson/bih
12/11/51
cc to: Reports & Records
Admr's Reading File
Mr. Mittendorf
Mr. Johnson
Docket

Enclosures (2)

REPORTS AND RECORDS

RICHARD B. RUSSELL, GA., CHAIRMAN
HARRY FLOOD BYRD, VA.
LYNDON B. JOHNSON, TEX.
ESTES KEFAUVER, TENN.
LESTER C. HUNT, WYO.
JOHN C. STENNIS, MISS.
RUSSELL B. LONG, LA.
STYLES BRIDGES, N. H.
LEVERETT SALTONSTALL, MASS.
WAYNE MORSE, OREG.
WILLIAM F. KNOWLAND, CALIF.
HARRY P. CAIN, WASH.
RALPH E. FLANDERS, VT.
WILLIAM H. DARDEN, CHIEF CLERK

United States Senate

COMMITTEE ON ARMED SERVICES

December 6, 1951

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC 7 1951

Dear Sir:

I am enclosing a communication which I have received from one of my constituents. I will appreciate your giving serious consideration to this problem, based on its merits.

Please let me have as prompt a reply as possible, returning the enclosure, in order that I can inform the writer.

Sincerely,

Lyndon B. Johnson

Office of the Administrator
Defense Minerals Administration
DEPARTMENT OF THE INTERIOR
Washington 25, D. C.

C O P Y

Chemical Engineering | Petroleum Engineering

FRANK W. JESSEN
Consulting Engineer
311 Tom Green Street
Austin 5, Texas

December 4, 1951

[Dated Dec. 4, 1951]

Hon. Lyndon Johnson
Senate Office Building
Washington, D. C.

Dear Lyndon,

The attached letter of the Sunrise Mining Company to the Defense Minerals Administration is self-explanatory.

We believe the field team has completed its report and believe that this report is now in Washington.

We would appreciate your checking into this matter at your convenience and determining what length of time may be required before definite action is taken on the original Exploration Loan application.

Kindest personal regards and best wishes.

Yours very sincerely,

/s/ Frank

Frank W. Jessen

FWJ/md

RICHARD B. RUSSELL, GA., CHAIRMAN
HARRY FLOOD BYRD, VA.
LYNDON B. JOHNSON, TEX.
ESTES KEFAUVER, TENN.
LESTER C. HUNT, WYO.
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WILLIAM F. KNOWLAND, CALIF.
HARRY P. CAIN, WASH.
RALPH E. FLANDERS, VT.
WILLIAM H. DARDEN, CHIEF CLERK

PORTS AND

United States Senate

COMMITTEE ON ARMED SERVICES

7 January
12/10

RECEIVED
1951

Dear Sir:

I am enclosing a communication which I have received from one of my constituents. I will appreciate your giving serious consideration to this problem, based on its merits.

Please let me have as prompt a reply as possible, returning the enclosure, in order that I can inform the writer.

Sincerely,

Lyndon B. Johnson

Lyndon B. Johnson

Office of the Administrator
Defense Minerals Administration
DEPARTMENT OF THE INTERIOR
Washington 25, D. C.

CHEMICAL ENGINEERING

PETROLEUM ENGINEERING

FRANK W. JESSEN
CONSULTING ENGINEER
3111 TOM GREEN STREET
AUSTIN 5 TEXAS

December 4, 1951

Hon. Lyndon Johnson
Senate Office Building
Washington, D. C.

Dear Lyndon,

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We would appreciate your checking into this matter at your convenience and determining what length of time may be required before definite action is taken on the original Exploration Loan application.

Kindest personal regards and best wishes.

Yours very sincerely,

Frank W. Jessen

FWJ/md

FILE COPY
SURNAME:

FE Johnson

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

S.A.

DEC 14 1951

Mr. Frank W. Jessen
3111 Tom Green Street
Austin 5, Texas

Re: DMEA No. 2124
(Lead-Zinc)
Sunrise Mining Company

Dear Mr. Jessen:

This is with reference to your letter of December 4, 1951 concerning the application of Sunrise Mining Company for an Exploration Project.

We discussed your project with the Executive Officer, Region IV, Field Team, Denver, Colorado on Friday, December 7th and were advised that their report on examination was being prepared and would be forwarded to Washington in the near future.

As soon as this report is received we will proceed with the processing of your application.

Sincerely yours,

(signed) FRANK E. JOHNSON (RW)

Acting Administrator
Defense Minerals Exploration
Administration

S.H.
12-14

FEJohnson/bih
12/11/51
cc to: Reports & Records
Admr's Reading File
Mr. Mittendorf
Mr. Johnson
Docket

My dear Senator Johnson:

We have your letter of December 6, 1951 and enclosed letter of December 4, 1951 addressed to you and signed by Mr. Frank W. Jesson of Austin, Texas concerning the status of the application of the Sunrise Mining Company for an Exploration Project.

Please be advised that we discussed this project with the Executive Officer, Region IV, Field Team, Denver, Colorado over the telephone Friday, December 7th, and were advised that the Field Team's report is being prepared and would be forwarded to Washington shortly.

As soon as the Field Team's report is received in this office it will be given our prompt attention.

The enclosures in your letter are returned herewith.

Sincerely yours,

(signed) FRANK E. JOHNSON

Acting Administrator
Defense Minerals Exploration
Administration

Hon. Lyndon B. Johnson
United States Senate
Washington 25, D. C.

Enclosures (2)

FEJohnson/bih
12/11/51
cc to: Reports & Records
Admr's Reading File
Mr. Mittendorf
Mr. Johnson
Docket

Re: DMEA No. 2124
Sunrise Mining Company

My dear Mr. Thornberry:

This will acknowledge receipt of your letter of December 4, 1951 requesting to be advised as to the current status of the application of Sunrise Mining Company (DMA No. 2124) for an Exploration Project.

Under date of December 7th we were advised over the telephone that the report of the Region IV, Field Team, Denver, Colorado was being prepared and would be forwarded to Washington shortly.

Please be assured that as soon as the Field Team's report is received in this office it will be given prompt attention.

Sincerely yours,

(signed) FRANK E. JOHNSON
Acting Administrator
Defense Minerals Exploration
Administration

Hon. Homer Thornberry
House of Representatives
Washington 25, D. C.

FEJohnson/bih
12/11/51
cc to: Reports & Records
Admr's Reading File
Mr. Mittendorf
Mr. Johnson
Docket

CHEMICAL ENGINEERING

PETROLEUM ENGINEERING

FRANK W. JESSEN
CONSULTING ENGINEER
3111 TOM GREEN STREET
AUSTIN 5, TEXAS

December 4, 1951

Mr. Frank E. Johnson,
Acting Administrator
Defense Minerals Administration
Washington, D. C.

Dear Mr. Johnson:

I have just returned from a trip to Arizona and a visit to the Sunrise Mining Company properties near Amado, Arizona. We were informed that, as you will recall, the field team of the U. S. Bureau of Mines had made inspections and investigations of the Glove Mining Properties of the Sunrise Mining Company and that reports by the field team were expected to be completed very shortly.

We trust that by this time you may have received such reports and that they may now be under consideration by the Washington office.

We would appreciate very much any expediting that you may be able to give us in the handling of the Exploration Loan for developing the property. Should we be able to be of any help to you in any way in furnishing additional information, or should you feel it advisable to have us make a trip to Washington to confer with you regarding same, kindly advise.

DEFENSE MINERALS
ADMINISTRATION
WASHINGTON, D.C.
DEC 5 1 00 PM '51

Yours very sincerely,

Frank W. Jessen

Frank W. Jessen

FWJ/md

Frank -
Sunrise 2124X
Denver Office is writing
a report and recommending denial. Phoned
Page
7 Dec 1951 2:35 PM

CHEMICAL ENGINEERING

PETROLEUM ENGINEERING

Sunrise Mining Co

FRANK W. JESSEN
CONSULTING ENGINEER
3111 TOM GREEN STREET
AUSTIN 5, TEXAS

DEPARTMENT OF THE INTERIOR
RECEIVED
NOV 16 1951
Defense Minerals Administration,
Production Expansion Division.

DMA-
212 Ext.

November 14, 1951

Mr. Frank E. Johnson
Acting Administrator,
Defense Minerals Administration,
Department of the Interior,
Washington, D. C.

Dear Mr. Johnson:

I should like to take this opportunity to thank you for the courtesy shown me in Washington. It was a pleasure to meet you and I was very pleased to learn of our mutual friendship with Mr. Bob Lenon of Patagonia, Arizona.

Bob Lenon advised me, as I told you on the Friday, November 9th, when I was in your office that the Bureau of Mines team from Tucson had been at the Glove mine location of Sunrise Mining Company and had inspected the properties on Wednesday and Thursday, November 7th and 8th.

We hope that the field office will submit a favorable report to you concerning the present operations of Sunrise Mining Company and that you may find everything in order in the manner presented by the report submitted with the application for an Exploration Loan.

We trust that you may find that you can expedite this matter for us when it reaches your office. Should there be any additional information that you may require, or any other way in which we can be of help, kindly advise us.

Again, thanking you for your courtesies, I remain,

Very sincerely yours,

Frank W. Jessen

Frank W. Jessen

DEFENSE MINERALS ADMINISTRATION WASHINGTON, D.C.
NOV 16 10 33 AM '51

FWJ/md

No reply nec. 11/19/51
File

FILE COPY
SURNAME:

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

Johnson
McKnight
Bishop
Lyon
McJenson

NOV 2 1951

DMA-2124
Sunrise Mining Company
of Tucson, Arizona

Hon. Lyndon B. Johnson
United States Senate
Washington 25, D. C.

My dear Senator Johnson:

This is to acknowledge receipt of your letter of October 30, 1951 with attached letter from Mr. Frank E. Jensen, consulting engineer, Austin, Texas relative to the status of the Sunrise Mining Company application DMA-2124. Mr. Jensen's letter is returned herewith.

This application is a recent one and as noted in Mr. Jensen's letter was sent to the DMA-field office at Denver, Colorado on October 9, 1951. It was sent to the field team to get the benefit of more detailed information available at the Denver office. It is also desirable to obtain their recommendations on this project.

At the moment there is nothing further we require in the processing of this application. However, questions may develop at a later date in which case either the field team or this office will contact the applicant.

If I can be of further assistance to you at any time, please do not hesitate to call upon me.

Sincerely yours,

(signed) FRANK E. JOHNSON (fw)

Acting Administrator

cc 11/2

Enclosure

GG:JOHNSON:ks
10/25/51

cc: Administrator
DMA Docket File 2124
T. Lyon
2 copies to Mr. J. E. East, Jr. Region IV
Bishop
McKnight
G. JOHNSON

CHEMICAL ENGINEERING

REC'D OCT 20 1951

PETROLEUM ENGINEERING

FRANK W. JESSEN
CONSULTING ENGINEER
3111 Tom Green St.
AUSTIN, TEXAS

October 17, 1951

Hon. Homer Thornberry
House Office Building
Washington, D. C.

Dear Homer:

I should like very much to acknowledge receipt of a letter you recently sent to me and also a letter of October 9 addressed to Taylor Glass. All of these concerned the application of Sunrise Mining Company of Tucson, Arizona for an exploration loan.

As previously advised you the Sunrise Mining Company has been advised that the exploration application has been given a docket no--DMA-2124 by the Defense Minerals Administration. I am sending you herewith copies of letters received by us both dated October 9, 1951. One of these letters as you will note was from Mr. Tom Lyon, Director, Supply Division of the Defense Minerals Administration and the other from Mr. C. O. Mittendorf, Acting Administrator of the Defense Minerals Administration.

You will note from the letter from Mr. Lyon's office that the application has been referred to the Denver office of the Defense Minerals Administration. You will note further that we are not told what additional information is required and we would be most appreciative of learning what additional information should be furnished. It is our feeling that if the general plan of the Defense Minerals Administration is to secure direct recommendations and observations on applications from the field office having jurisdiction over the particular area in which the property may be located, that we should be advised of the same, whereas, if the company itself can expedite the processing of the application, it is our opinion that some time might be saved by having the Washington office advise specifically of any other information required.

Since the company already has an active operation going forward on the property and a miner with complete rigging, etc., employed, I would certainly like to get underway on the proposed exploration program as soon as possible.

CHEMICAL ENGINEERING

PETROLEUM ENGINEERING

FRANK W. JESSEN
CONSULTING ENGINEER
1706 WESTOVER ROAD
AUSTIN, TEXAS

For your information may I say that a Landlord's Subordination Agreement which I understand is also to be completed by the Lessor is now being secured by Sunrise Mining Company and will be forwarded to the Defense Minerals Administration immediately upon receipt. This, however, we felt should not substantially affect any commitment by the Defense Minerals Administration in approving the application for the exploration loan.

Your kind attention to this matter will be deeply appreciated.

With kindest personal regards and best wishes, I remain

Very sincerely yours,

Frank W. Jessen

FWJ:HMT

CC: Mrs A. N. McCallum
702 Scarbrough Bldg.

Hon. Lyndon B. Johnson
Washington, D. C.

RICHARD B. RUSSELL, GA., CHAIRMAN
HARRY FLOOD BYRD, VA.
LYNDON B. JOHNSON, TEX.
ESTES KEFAUVER, TENN.
LESTER C. HUNT, WYO.
JOHN C. STENNIS, MISS.
RUSSELL B. LONG, LA.
STYLES BRIDGES, N. H.
LEVERETT SALTONSTALL, MASS.
WAYNE MORSE, OREG.
WILLIAM F. KNOWLAND, CALIF.
HARRY P. CAIN, WASH.
RALPH E. FLANDERS, VT.
WILLIAM H. DARDEN, CHIEF CLERK

REPORTS AND RECORDS

United States Senate

COMMITTEE ON ARMED SERVICES

October 20, 1951

OFFICIAL FILE COPY

To	Init.	Date
350	10/22	ce
210		

Dear Sir:

I am enclosing a communication which I have received from one of my constituents. I will appreciate your giving serious consideration to this problem, based on its merits.

Please let me have as prompt a reply as possible, returning the enclosure, in order that I can inform the writer.

Sincerely,

Lyndon B. Johnson

DEFENSE MINERALS
ADMINISTRATION
WASHINGTON, D.C.
OCT 22 9 01 AM '51

Office of the Administrator
Defense Minerals Administration
DEPARTMENT OF THE INTERIOR
Washington 25, D. C.

OCT 22 11 40 AM '51

BUREAU OF MINES
MAIL ROOM
WASHINGTON, D. C.

RECEIVED AND RECORDED

RICHARD B. RUSSELL, GA., CHAIRMAN
[illegible] BRIDGES, N.H.
[illegible] SALTONSTALL, MASS.
WALTER [illegible] GEORGE
[illegible] KNOWLAND, CALIF.
[illegible] WASH.
[illegible] HILL, VT.
[illegible] YORK

United States Senate

COMMITTEE ON ARMED SERVICES

October 20, 1951

[illegible] a communication which I have [illegible] I will appreciate [illegible] this problem, based

[illegible] a reply as possible [illegible] that I can inform

[illegible],

[illegible]

Bellenger
10/22/51

PETROLEUM ENGINEERING

FRANK W. JESSEN
CONSULTING ENGINEER
1736 WESTOVER ROAD
AUSTIN, TEXAS

Hon. Homer Thornberry

For your information may I say that a Landlord's Subordination Agreement which I understand is also to be completed by the Lessor in new being secured by Sunrize Mining Company and will be forwarded to the Defense Minerals Administration immediately upon receipt. This, however, we felt should not substantially affect the commitment by the Defense Minerals Administration in approving application for the exploration loan.

Your kind attention to this matter will be deeply appreciated.

With kindest personal regards and best wishes, I remain

Very sincerely yours,

Frank W. Jessen

FILE COPY
SURNAME:

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

OCT 31 1951

[illegible]
[illegible] Mining Co.
at Tucson, Arizona

McKnight
Bishop
Johnson
Fr
F E Johnson

Hon. Lewis Murdock
House of Representatives
Washington 25, D. C.

My dear Mr. Murdock:

This is to acknowledge receipt of your letter of October 22, 1951 with attached letter from Mr. Frank W. Jackson, consulting engineer, Austin, Texas, and a copy of letter to Mr. [illegible] Williams, Jr. from Tom Lyon, Director, Supply Division Defense Minerals Administration, relative to the status of the Marion Mining Company application [illegible]-2124. Mr. Jackson's letter and copy of Tom Lyon's letter are returned herewith.

This application is a recent one case as noted in Mr. Jackson's letter was sent to the DMA field office at Denver, Colorado on October 9, 1951. It was sent to the field team to get the benefit of some detailed information available at the Denver office. It is also desirable to obtain their recommendation on this project.

At the moment there is nothing further to require in the processing of this application. However, questions may develop at a later date in which case either the field team or this office will contact the applicant.

Hope this information will be sufficient for your reply to Mr. Jackson's letter; if not, please advise me.

Sincerely yours,

(signed) FRANK E. JOHNSON (for)

Acting Administrator

F.J. 10-31

FJohnson:Nike
10/29/51

cc: Administrator
Docket File [illegible]-2124
T. Lyon
2 copies to Mr. J. H. East, Jr.
Bishop
McKnight
F. E. Johnson

C O P Y

C O P Y

FRANK W. JESSEN

Consulting Engineer

AUSTIN, TEXAS

October 17, 1951

Hon. Homer Thornberry
House Office Building
Washington, D. C.

Dear Homer:

I should like very much to acknowledge receipt of a letter you recently sent to me and also a letter of October 9 addressed to Taylor Glass. All of these concerned the application of Sunrise Mining Company of Tucson, Arizona for an exploration loan.

As previously advised you the Sunrise Mining Company has been advised that the exploration application has been given a docket no---DMA--2124 by the Defense Minerals Administration. I am sending you herewith copies of letters received by us both dated October 9, 1951. One of these letters as you will note was from Mr. Tom Lyon, Director, Supply Division of the Defense Minerals Administration and the other from Mr. C. O. Mittendorf, Acting Administrator of the Defense Minerals Administration.

You will note from the letter from Mr. Lyon's office that the application has been referred to the Denver office of the Defense Minerals Administration. You will note further that we are not told what additional information is required and we would be most appreciative of learning what additional information should be furnished. It is our feeling that if the general plan of the Defense Minerals Administration is to secure direct recommendations and observations on applications from the field office having jurisdiction over the particular area in which the property may be located, that we should be advised of the same, whereas, if the company itself can expedite the processing of the application, it is our opinion that some time might be saved by having the Washington office advise specifically of any other information required.

Since the company already has an active operation going forward on the property and a miner with complete rigging, etc., employed, I would certainly like to get underway on the proposed exploration program as soon as possible.

For your information may I say that a Landlord's Subordination Agreement which I understand is also to be completed by the Lessor is now being secured by Sunrise Mining Company and will be forwarded to the Defense Minerals Administration immediately upon receipt. This, however, we felt should not substantially effect any commitment by the Defense Minerals Administration in approving the application for the exploration loan.

Your kind attention to this matter will be deeply appreciated.

With kindest personal regards and best wishes, I remain

Very sincerely yours,

s/ Frank

t/ FRANK W. JESSEE

FWJ:HMY
Enclosure

C O P Y

C O P Y

UNITED STATES DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS ADMINISTRATION

Washington 25, D. C.

Re: Docket DMA 2124

Mr. A . N. McCallum, Jr., Secretary
Sunrise Mining Company
702 Searbrough Building
Austin, Texas

Dear Mr. McCallum:

The application of the Sunrise Mining Company for a loan to explore the Glove mine, Santa Cruz County, Arizona, has been reviewed by the Lead-Zinc Branch. Because more information is required before further action can be taken on the application, it has been referred to Mr. J. H. East, Jr., Executive Officer, DMA Field Team, 224 New Customhouse, Denver 2, Colorado.

Very truly yours,

S/
Tom Lyon, Director
Supply Division

1

Congress of the United States

House of Representatives

Washington, D. C.

October 23, 195

Mr. [illegible] Wittenberg
Acting Administrator
Defense Materials Administration
Washington, D. C.

Dear

The attached communication is sent for your consideration. Please investigate the statements contained therein and forward me the necessary information for reply, returning the original correspondence with your answer.

Yours truly,

Homer Thornberry

Homer Thornberry

enc. in answer

Dr. Frank W. Jessen

350
10/24/51

FRANK W. JESSEN

OCT 24 9 15 AM '51

--DMA-

October [illegible], 1951.

with [illegible] from Mr. [illegible], Director, [illegible] Defense Minerals Administration and [illegible] [illegible], Acting [illegible] of the Defense Min-

[illegible] Minerals Administration [illegible] observations or [illegible] over the [illegible] located, that we [illegible] [illegible], the company itself can expedite [illegible] that some time [illegible] specifically of any other information required.

Since the company already has an active [illegible] mining forward on the property and a miner with complete [illegible], etc., employed, I would certainly like to get underway on the proposed exploration program as soon as possible.

Stark.

FILE COPY
SURNAME:

350

Lyons (E.T.M.)
McKnight
Johnson
Bishop
Johnson

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

OCT 24 1951

Hon. Lyndon B. Johnson
United States Senate
Washington 25, D. C.

My dear Senator Johnson:

In reply to your letter of October 13, 1951, inquiring about the status of the application for an exploration loan submitted by the Sunrise Mining Company:

The application, after being reviewed in Washington, was transmitted to the field team for more information and advice. Mr. A. N. McCallum, Secretary-Treasurer of the Sunrise Mining Company, was informed of this action.

As soon as the field team report is received in Washington, action will be completed on the application and the applicant informed of our decision.

We are returning Mr. Jessen's letter.

Sincerely yours,

(signed) FRANK E. JOHNSON (for)

Acting Administrator

Attachment
EJLyons:emp
G 10-19-51
Copies to: Administrator
Deputy Administrator
Chief, Lead-Zinc Br.
E. T. McKnight 4204 GSA
O. M. Bishop
Administrators r. file
Directors r. files 4214 GSA
Br. r. files 4214 GSA
DMA docket files

C
O
P
Y

FRANK W. JESSEN
Consulting Engineer
Austin, Texas

3111 Tom Green St.

October 11, 1951

Hon. Lyndon Johnson
Senate Office Building
Washington, D. C.

Dear Lyndon:

This is to advise you that the Sunrise Mining Company, which has submitted an application for an Exploration Loan on its mining properties in Santa Cruze County, Arizona, has received a notification from the Defense Minerals Administration that this application has been assigned Docket No. DMA 2124. This application, furthermore, was referred to the Lead-Zinc Branch since these are the two principal resources to be mined.

Each of the Austin people, including Taylor Glass, A. N. McCallum, Jr., C. B. Smith, Hobart A. Owens, F. W. O'Brien, Joe Bland, John Simpson, and myself will be particularly appreciative of anything you may do in following up this application for us and seeing that it is expedited as soon as possible.

Should there be any questions concerning the same at any time, please advise me or A. N. McCallum, Secretary of the Sunrise Mining Company.

Kindest personal regards and best wishes.

Yours very sincerely,

/s/ Frank W. Jessen

FWJ/md
CC: Hon. Homer Thornberry

RECORDS AND REPORTS

RICHARD B. RUSSELL, GA., CHAIRMAN
HARRY FLOOD BYRD, VA.
LYNDON B. JOHNSON, TEX.
ESTES KEFAUVER, TENN.
LESTER C. HUNT, WYO.
JOHN C. STENNIS, MISS.
RUSSELL B. LONG, LA.
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WILLIAM F. KNOWLAND, CALIF.
HARRY P. CAIN, WASH.
RALPH E. FLANDERS, VT.
WILLIAM H. DARDEN, CHIEF CLERK

DEFENSE MINERALS ADMINISTRATION
WASHINGTON, D. C.
OCT 16 9 01 AM '51

United States Senate

COMMITTEE ON ARMED SERVICES

October 13, 1951

OFFICIAL FILE COPY

To	Init.	Date
350	CC	10/17
210		

Dear Sir:

I am enclosing a communication which I have received from one of my constituents. I will appreciate your giving serious consideration to this problem, based on its merits.

Please let me have as prompt a reply as possible, returning the enclosure, in order that I can inform the writer.

Sincerely,

Lyndon B. Johnson

Office of the Administrator
Defense Minerals Administration
Department of the Interor
Washington, D.C.

OCT 16 4 06 PM '51
BUREAU OF MINES
MAIL ROOM
WASHINGTON, D. C.

RICHARD B. RUSSELL, GA., CHAIRMAN
HARRY FLOOD BYRD, VA.
LYNDON B. JOHNSON, TEX.
RICHARD B. RUSSELL, GA.
STUART SYMINGTON, MO.
LEVERETT SALTONSTALL, MASS.
WAYNE MORSE, OREG.
WILLIAM FULBRIGHT, ARK.
WILLIAM E. KNOWLAND, CALIF.
STYLES BRIDGES, N.H.
ALEXANDER WILEY, WIS.
RUSSELL B. LONG, LA.
WILLIAM H. DARRIGAN, STAFF DIRECTOR
OCT 16 9 01 AM '51

United States Senate

COMMITTEE ON ARMED SERVICES

October 13, 1951

Billing
10/17/51

[illegible]

[illegible]

Office of [illegible]
Defense Mine[illegible]
Department of the Interior
Washington, D.C.

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

OCT 9 1951

REGIONAL DIRECTOR'S OFFICE
REGION IV
OCT 12 1951
BUREAU OF MINES
DENVER, COLORADO

Mr. J. H. East, Jr.
Executive Officer, DMA Field Office
Region IV
224 New Customhouse
Denver 2, Colorado

Dear Sir:

We attach "Review of Application for Exploration Assistance" on:

Docket No. 2124

Commodity Lead, zinc

Applicant Sunrise Mining Co. c/o A.N. McCallum, Jr. Secy-Treas., Chiles, McCallum and Nagel, Scarbrough Bldg., Austin, Texas

Please expedite the consideration of this application with particular reference to the points raised in the attached "Review."

Very truly yours,

for Chairman
Coordinating Committee

Lowell B. Moon
For Bureau of Mines

Olg Z. Ross
For Geological Survey

JAN 21 10 35 PM '52
DEFENSE MINERALS
ADMINISTRATION
WASHINGTON, D.C.

6/5/51

Defense Minerals Administration

Review of Application for Exploration Assistance

Docket No. DMA-2124

Commodity Lead, zinc

Total Amount $68,000

Govt. Participation 50% ($34,000)

1. Name and Address of Applicant Sunrise Mining Company, c/o A. N. McCallum, Jr Secy-Treasurer, Chiles, McCallum and Nagel, Scarbrough Building, Austin, Texas.

2. Location of Property Glove (Sheehy- O'Donnel) group of claims. Sec. 30, T. 20 S., R. 14 E., Santa Cruz County, Arizona

3. Mineral or metal Lead-zinc Is it listed in Section 9 of MO-5? Yes

If not, application will be rejected.

4. Geologic probability of discovery—based on data in application (question #16, 17, 18, 20 and 22)*

Mines or Survey reports, etc., do you rate chances:

a) Good

b) Poor

c) None

d) Don't know—needs field examination X

e) Is there an alternative and favorable project?
(If so, attach an explanation)

5. Is the applicant's right to the property clearly stated? No
(question 5, 6, 7)*

6. If applicant is a lessee, is a copy of the lease attached? Purchase agreement

Does the lease have sufficient time to run to cover a future productive period? Yes

*question numbers are those of MF-103

7. Are subordination agreements necessary? Yes

a) MF-201? _____

b) MF-202 Should be obtained from applicant

8. From the data presented, does the proposed project appear feasible from the point of view of:

a) Available manpower Don't know

b) Equipment and supplies Don't know
(Question 14 plus general knowledge of availability)*

c) Accessibility (question 12)* Yes, but some repair work required

d) Water (question 13)* Well will have to be drilled

e) Power (question 13)* Yes

Is a field check needed on any of these points? Yes

9. Does the experience of the applicant appear to be adequate to assure that he can properly conduct the proposed project? (question 4)* Don't know

Is a field check needed on this point? Yes

10. Exhibit A. (questions 21 and 22)*

a) Is the project adequately described? No, estimated footage of drifting, etc not given.
If not, are there sufficient data given so that you can describe the project? _____ If so, attach a draft.

b) Is there an adequate map or sketch of the proposed work? Proposed work not shown on map

c) Is the proposed work "exploration" under the definition of Section 8, MO-5? Yes

If not, what part of it is? _____

Is this part a worthwhile exploration project? _____

d) Are the cost estimates detailed? Yes

Can they be summarized, as on page 2 of Procedural Instruction 5-A, from the available data? No If so, attach a draft.

e) Are the cost estimates reasonable? Don't know

f) Should more information be requested from applicant? Yes

g) Is a field examination necessary to complete Exhibit A? Yes

11. Exhibit B (question 23-d)*

a) Is it applicable? Yes

b) If so, are sufficient data furnished? Yes If so, attach a draft.

c) Is a field check needed? No

12. Exhibit C (question 23-e, f and g)*

a) Is it applicable? Yes

b) Sufficient data? Yes If so, attach a draft.

c) Are rents and charges reasonable? Yes

d) Is a field check needed? No

13. Exhibit D (question 23-a, b)*

a) Are there sufficient data? Yes

b) Is the schedule adequate for the work proposed? Don't know

c) Is the schedule excessive for the work proposed? " "

d) Are the proposed wages and salaries reasonable? No. Overstaffed on supervisors.

e) Is a field check needed? Yes

14. Exhibit E (question 23-c)*

a) Is it applicable? Yes

b) Sufficient data? Yes

c) Reasonable? Yes

d) Field check needed? No

15. In your judgment, can the proposed work be done in the proposed time? Don't know

(All exploration must be completed within two years)

16. If field examination is not needed, attach your recommendation.

17. If field examination is needed, do you have any special instructions for the field team not indicated by your answers to the foregoing question? Lenon infers milling of ores might be difficult.

Reviewed by: Erwin J. Lyons - GS

Date 10-5-51

INT.-DUP. SEC., WASH., D.C. 99009

OCT 9 1951

Re: Docket DMA-2124

Mr. A. W. McCallum, Jr., Secretary
Sunrise Mining Company
702 Searbrough Building
Austin, Texas

Dear Mr. McCallum:

The application of the Sunrise Mining Company for a loan to explore the Glove mine, Santa Cruz County, Arizona, has been reviewed by the Lead-Zinc Branch. Because more information is required before further action can be taken on the application, it has been referred to Mr. J. H. East, Jr., Executive Officer, DMA Field Team, 224 New Customhouse, Denver 2, Colorado.

Very truly yours,

SIGNED

Tom Lyon, Director
Supply Division

EJLyons:emp
G 10-5-51
Copies to: J. H. East, Jr. Region IV (2)
Chief, Lead-Zinc Branch
E. T. McKnight 4204 GSA
O. M. Bishop
Directors r. files 4214 GSA
Br. r. files 4214 GSA
Administrators r. files
DMA docket files

OCT 9 1951

Re: Docket DMA-2124

Mr. A. R. McCallum, Jr., Secretary
Sunrise Mining Company
702 Scarbrough Building
Austin, Texas

Dear Mr. McCallum:

The application of the Sunrise Mining Company for a loan to explore the Clove mine, Santa Cruz County, Arizona, has been reviewed by the Lead-Zinc Branch. Because more information is required before further action can be taken on the application, it has been referred to Mr. J. H. East, Jr., Executive Officer, DMA Field Team, 224 New Customhouse, Denver 2, Colorado.

Very truly yours,

SIGNED

Tom Lyon, Director
Supply Division

EJLyons:emp
G 10-5-51
Copies to: J. H. East, Jr. Region IV (2)
Chief, Lead-Zinc Branch
E. T. McKnight 4204 GSA
O. M. Bishop
Directors r. files 4214 GSA
Br. r. files 4214 GSA
Administrators r. files
DMA docket files

Defense ... RECEIVED OCT 1 1951

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

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

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

DO NOT FILL IN THIS BLOCK

Docket No. Amend 21224

Date received 10-1-51

Participation

Sunrise Mining Company
c/o A. N. McCallum, Jr., Secy-Treas.
Chiles, McCallum & Nagle
Scarbrough Building
Austin, Texas

Name and address of applicant

Date Sept. 21, 1951

FILL IN THIS BLOCK

Date of application September 21, 1951

Estimated cost $68,000.00

Mineral or metal Lead & Zinc

Percentage of Government participation 50%

Location of mine Santa Cruz County, Arizona

Date of filing MF-100

DMA Docket Number, if available

INSTRUCTIONS

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

THE APPLICANT

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

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

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

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

16—64067-1

THE PROPERTY

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

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

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

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

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

THE EXPLORATION

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

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

THE REQUIREMENTS AND COSTS

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

CERTIFICATION

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

Sunrise Mining Company
(Name of company)

By Taylor Delasse
(Signature of authorized official)

September 21, 1951
(Date)

President
(Title)

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

*Same as footnote on page 1.

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

CHEMICAL ENGINEERING

PETROLEUM ENGINEERING

FRANK W. JESSEN
CONSULTING ENGINEER
1706 WESTOVER ROAD
AUSTIN, TEXAS

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

EXPLORATION PROJECT

1. The applicant referred to herein is a corporation, Sunrise Mining Company, with headquarters in Tucson, Arizona.

2. Not applicable.

3. The names of the principal officers, directors and five largest stockholders are given below:

Name & Address	Official Title	Estimated Net Worth Outside of Applicant	Number of Shares Held in Applicant	
			Common	Preferred
Taylor Glass	President	$250,000	25	None
John Simpson	Vice-Pres.	100,000	25	None
A.N.McCallum,Jr.	Sec.-Treas.	100,000	25	None
C. B. Smith	Director	250,000	50	None
F. W. O'Brien	Director	10,000	25	None
C. W. Owens	Director	75,000	25	None
Emmett Bauknight	Director	60,000	25	None
Joe Bland	Director	200,000	25	None
P. C. Anderson, Temple	Director	250,000	25	None

4. There follows a brief description of the general business experience of the applicant and the experience of various members of the firm of Sunrise Mining Company together with information concerning the individuals who will manage the project.

Taylor Glass - President

Taylor Glass, of Austin, Texas, is 40 years of age, and is the President and a director of Sunrise Mining Company. Mr. Glass is the owner and operator of the Polar Ice Cream Company, a business in which he has been associated for the past 15 years. He is a former Mayor of the City of Austin, serving the city from 1949 to 1951.

FRANK W. JESSEN
CONSULTING ENGINEER
1706 WESTOVER ROAD
AUSTIN, TEXAS

John Simpson - Vice President

Mr. Simpson was born in Waco, Texas. He is 45 years of age. He graduated from Rice Institute in Houston, Texas, and his present business association is Superior Dairies of Austin, of which he is President. Mr. Simpson is also Vice President of Armo Mills of Austin, Texas. He is Vice President and a director of Sunrise Mining Company.

A. N. McCallum, Jr. - Secretary-Treasurer

Mr. McCallum is a native of Austin, and is 49 years of age. He attended the Austin schools and graduated from the University of Texas. He is a partner of the insurance firm of Chiles, McCallum & Nagle. He is Secretary-Treasurer of Sunrise Mining Company and a director of the company.

C. B. Smith - Director

Mr. Smith was born in Comanche, Texas, and is 48 years of age. He is a graduate of the University of Texas. He is a director of the Sunrise Mining Company. Mr. Smith is owner and Manager of C. B. Smith Motors, Dodge and Plymouth dealer in Austin. Mr. Smith is the past President of the of the former Austin Area Economic Development Foundation, a position he has held for the past 3 years.

F. W. O'Brien - Director

Mr. O'Brien is 65 years of age and is a director of the Sunrise Mining Company. His home is in Austin, but he was born in Oakfield, New York. Mr. O'Brien has had much experience in oil and gas production and in mining operations. He was President of the Gulf Stream Oil Company, Inc., of Houston from 1934 to 1941. He is at present associated with the Duplex Advertising Company of Austin as its Sales Manager.

C. H. Owens - Director

Mr. Owens is a native of Indiana and is 54 years of age. He is a director of the Sunrise Mining Company. He is a resident of Austin, Texas, and is owner of the C. H. Owens Company, dealing in building materials of all kinds. He is a director of the West Texas Stone Company of Albany, Texas. From 1929 to 1943 he was Vice-President and General Manager of Texas Quarries, one of the largest building stone producers in Texas. He has had vast experience in production methods in the mining of stone materials.

Emmett Bauknight - Director

Mr. Bauknight is 43 years of age, and is a resident of Austin, Texas. He is an attorney and partner in the firm of Critz, Kuykendall, Bauknight & Stevenson. He is a director of Sunrise Mining Company.

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Paul Anderson - Director

Mr. Anderson is from Temple, Texas, and is 46 years of age. He is a director of Sunrise Mining Company. Mr. Anderson is President and owner of the Anderson Ice Cream Company of Temple. He has varied business experience and is a successful business and civic leader of Temple.

Joe Bland - Director

Mr. Bland is 42 years of age, and is a resident of Austin, Texas. He is a director of Sunrise Mining Company, and is the owner of the Joe Bland Construction Company of Austin. His construction company is one of the major contracting firms of this city. Mr. Bland has had much experience in the handling of heavy equipment and the construction of a variety of projects including large earth-moving operations.

5. The Sunrise Mining Company is the present owner of the Glove group of mines located in Santa Cruz County, Arizona, approximately 9 miles east of Amado, Arizona. A full description of the properties is included in the report submitted with this application. Present ownership is through assignment of an option and purchase contract to Sunrise Mining Company by Mr. F. W. O'Brien, Director of Sunrise Mining Company. This assignment is of an original option and purchase contract secured by Mr. F. W. O'Brien from Mr. E. T. Sheehy of Nogales, Arizona, former owner of the property. Copies of the original option and purchase contract and assignment of Mr. F. W. O'Brien to Suhrise Mining Company are included herewith and are designated as Exhibits 1 and 2 respectively. Exhibit 2-A shows the certificate of incorporation of Sunrise Mining Company issued by the State of Arizona, June 25, 1951.

6. Property held by Sunrise Mining Company carries provisions for payment to Mr. Sheehy of $135,000 cash as a total purchase price, the same being payable as follows:

$16,000 in cash on or before August 8, 1951 and the remaining $119,000 payable in five years ending August 8, 1956. Under the terms of the

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contract Mr. Sheehy is to be paid out of production of ore mined from the property. All such payments are to be credited to Sunrise Mining Company as part payment of the balance due and thus retire the remaining $119,000 according to the terms of the contract.

Reference is made to Exhibit 1 for details of the existing agreement of purchase assigned to Sunrise Mining Company.

7. Not applicable to the present applicant.

8. The current financial statement of the Sunrise Mining Company is attached. Since operations have been in progress for only about 30 days, no profit and loss statement is available, the preliminary work being confined to making minor repairs to existing facilities, building roads, carrying out some exploration work, and putting the mine in first class condition.

9. Sunrise Mining Company is prepared to invest the sum of in the proposed project. This amount is deemed sufficient to pay the Company's part of the cost of the project as detailed in Question 23 of this application form, and is believed to be in accordance with the regulations on government participation.

10. The Glove group of claims, also called the Sheehy-O'Donnell group, consists of 15 unpatented claims. The property is situated mainly in Sec. 30, Township 20 South, Range 14 East in Santa Cruz County, Arizona. Total acreage involved includes approximately 350 acres. The average elevation of the property is 4200 feet. The attached map, shown in Exhibit 3, gives the location of each unpatented claim and the location of the area as a whole in the Santa Cruz Mountains some 7 miles east of Amado, Arizona.

11. The property has been known in the past as the Sheehy-O'Donnell Glove group of mines. The name of the mine is to be retained and will be referred to as the Glove Mine of Sunrise Mining Company.

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12. The claims described lie about 6 miles east of the Chavez siding on the Tuscon-Nogales branch of the Southern-Pacific Railroad and may be reached by driving up a long mesa from that point with but little road work necessary for excellent accessability. Access may also be obtained by road from the town of Amado, also on the Southern-Pacific Railroad, a distance of approximately 9 miles. The road from Amado is readily traversed by truck or passenger car.

13. No water is available at the present time for operations at the mine, however operations are now under way to provide adequate quantities of water for all purposes. A well is to be drilled in Cottonwood Canyon which lies about ½ mile to the south of the principal workings. From all indications and from the depth of a well located just west of this property, water is expected to be encountered at a depth of approximately 200 feet. As far as is known, such a well would supply sufficient water throughout the year for the mining operations contemplated.
All power to be used for the mining operation will be developed by gasoline or diesel engine.

14. There are at present no existing buildings on the property, however there are adequate tunnels, shafts, and drifts, all completely developed. These are described in a report of Robert Lenon, Registered Professional Mining Engineer, furnished to Sunrise Mining Company in May, 1951, see Exhibit 6. The workings are exceptionally clean and require very little clean-out work. There are some 1500 feet of lateral tunnels and drifts, and 4 major shafts. Tunnel operations are particularly adaptable to the development of this property because of the steepness of the topography. The maps accompanying the report of Lenon, shown in Exhibit 6, are referred to herewith. In Exhibit 6-A the main tunnels and shafts thus far developed on the property are presented. It is noted that two main tunnel operations are in evidence, (No. 1-the main workings) arbitrarily referred to as the "0" foot

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level, extending some 500 feet into the mountain side, has traversed numerous ore showings. Of these, several have been explored by drifting along the ore bodies, however it is to be pointed out that in no case has any single drift been carried more than 96 feet.

Section A-A, which portrays the section through the main shaft and tunnel workings and herein referred to as Exhibit 6-B, shows the relative position of the tunnel levels and ore bodies thus far explored. The other major shaft and tunnel operation thus far developed on the property lies to the east of the main workings, a distance of approximately 600 feet. This tunnel (Rover) begins at an elevation of approximately 70 feet and extends some 300 feet into the mountain and is referred to as Exhibit 6-C.

A separate shaft designated as "Upper Shaft" has also been developed on the 200 ft. level. This shaft is approximately 60 feet in depth and the resulting tunnel operation at elevations of 143 feet and 134 feet has encountered extremely rich, high grade lead and zinc ore. The development in this tunnel has been limited to approximately 75 feet while the major drift along any ore body encountered is not in excess of 45 feet.

As stated previously, all these operations were carried out in first-class order and excellent conditions exist. In addition to the developed portions of the mine briefly described above, there are in place mine rail and ore hoppers which may be utilized in further development and exploration work. Furthermore, 5 or 6 mine cars are available for use.

5. The produced ore is to be hauled by truck either to the Chavez siding, approximately six (6) miles from the mine site or to Amado, a distance of 9 miles from the mine.

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Ore is then to be loaded on cars and shipped by rail to the mill at Sahuarita. The distance of shipments from either Chavez or Amado is less than 25 miles.

It is believed the ore, containing lead and zinc sulfides with some silver, could be handled by the Eagle-Pitcher mill at Sahuarita. Investigations carried out by the Arizona Bureau of Mines indicate the possibility of processing the ores from the Glove Group of Mines to be quite good. Results of milling tests now being carried out are not available at the time of preparation of this report.

16. GEOLOGY AND TOPOGRAPHY

The geology of the area has been well investigated and described by numerous geologists and mining experts and by old prospectors dating back to the early turn of the century. Most recent geological information concerning the area is by John R. Anthony in a dessertation presented to the University of Arizona in June, 1951, as a partial fulfillment of a Master of Arts degree in geology. Anthony's report, cited in Exhibit 3 above, and the complete portion of his report dealing with the economic geology of the Glove group of claims, is included as a part of this report and is referred to for further details.

The salient feature of the geology of the Glove group of mines area is the existence of a large section of limestones and shales which have been intruded by porphyry dikes. The cross-sections, as worked out by Anthony, show this large limestone block area to be most probably thrust in place due to a large displacement from the south, the belief being that the whole limestone section was thrust into its present position and then intruded by the igneous dike material. For a more complete description, reference is made to the previous reports on the property, including the recent report of Anthony (Exhibit 3) and complimented by report of

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Courtnay De Kalb, Mining Engineer of Tucson, Arizona, made on November 12, 1913 and presented in the present report as Exhibit 4. Exhibit 5, which is a report by Hugo W. Miller on the Glove group, was made in August, 1918 and confirms the earlier findings of De Kalb concerning the general geology while also presenting information on the mining operations and ore extracted from the then developed portions of the properties. No further report on the property was made after 1918 until the report prepared for Sunrise Mining Company on the present status of these claims. This report was submitted in April, 1951, by Robert Lenon, registered Mining Engineer of Arizona, residing in Patagonia, Arizona. A copy of his report is included and made a part of this report and is presented as Exhibit 6.

Mineralization occurs along the contacts of porphyry and the limestone, particularly in zones of weakness and along the faulted contact points. For further descriptions, reference is made to Exhibits 3, 4, 5 and 6 where thorough discussions are presented on the geology, mineralization, ore findings, condition of existing mining installations, etc.

A most significant point in considering the present status of the mining properties is the fact that practically no development has taken place since the time of the Miller report in 1918. Comparison of the mine tunnels and shafts described by Miller (Exhibit 5) with those found in the much later reports of Anthony (Exhibit 3) and Lenon (Exhibit 6) shows clearly that the work by the Sheehy interests was limited to the minimum required by law to hold the properties. Hence, the opportunity for enhancing the value of the mine properties by further exploration and development of existing known ore veins appears particularly bright.

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Attention once more is directed to Exhibit 6, the report of Robert Lenon, together with the maps included as part of that exhibit. Exhibit 6-A presents the present development in the principla workings of the Glove Group of mines, while Wxhibit 6-B and Exhibit 6-C present sectionalized drawings of the same workings, section A-A being that of the main working (Exhibit 6-B) while section B-b is that of the Rover Tunnel and shafts (Exhibit 6-C). In Lenon's report 14 samples of ore were taken in the presently developed mine shafts, drifts, and tunnels. These locations of samples, together with descriptions of the type of ore, width of veins sampled, and assay of the ore from each sample taken are included in the descriptive matter of Exhibit 6.

Referring to Exhibit 6-A it is noted that ore of commercial grade is found in all except one of the locations sampled, namely location No. 2. This location, on the east wall of the 23 ft. level in the main tunnel and crosscut, shows 1.2% lead and 2% zinc, while the silver content is only 0.3 ounces per ton, however the area in which sample 2 was taken represents a highly mineralized zone and the character of the ore might well change rather abruptly and hence some further exploration work is indicated. In each of the other instances, it is to be noted that lead contents vary from 1.2% to a maximum of 35%, while zinc contents vary from 2.2% to as high as 31.5%. The overall average of all samples, excluding #2, showed 13.6% lead, 15.0% zinc and an average of 2.7 ounces of silver per ton. The assay work for each of these samples was performed by the Hugo W. Miller assay office of Nogales, Arizona, photographic copies of the assay being a part of the report of Lenon and all are presented in Exhibit 6.

The type of mine operation involved is by both tunnel and shaft, the topography of the area lending itself particularly well to tunnel operation. As may be discerned

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from an examination of Exhibit 6-A, the maximum length of drift on any of the ore bodies has been 96 feet, and in many instances in following ore showings very short drifts were initiated and stopped for no apparent reasons, thus leaving a tremendous amount of development work to be accomplished in the main workings and in the two major tunnel levels best illustrated by Exhibit 6-B, which shows the section through the main tunnel working. The main entrance to the tunnel is taken as elevation zero; the more important workings of the mine have been carried out on the 23 ft. elevation. In addition, there has been one major shaft operation in this working, the top of the shaft being at an elevation of 110 feet. Further stoping has been carried out, however, in this working and some drifting has been done at the 65 ft. level.

In the Rover shaft and tunnel operation, reference is made to Exhibit 6-C which shows a cross-section of this position of the mining operations. Here a tunnel has been carried forward at an elevation of 70 feet, while the upper shaft exploration was begun at an elevation of 200 feet. Depth of the shaft thus far explored is to an elevation of 143 feet, or a depth of 57 feet below the surface. A deviation in the tunnel eminating from this shaft is indicated in that a 9 foot drop from elevation 143 feet to elevation 134 feet developed in tracing the ore body along the porphyry-limestone contact. Here the two major drifts have been carried out to the extent of only 15 feet. As evidenced by samples 12, 13 and 14, these workings are in ore bodies particularly rich in character. The lead content is 17-35%, zinc 10-26% while 2-9% oz. of silver are present. Further mining of this rich ore is imperative and the manner of future development is described under the next section (The Exploration) of this report. Sample 8, a 54" mineralized area in the Rover shaft also represents a very good possibility for further development since drifting here has progressed only 18 feet.

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The mine operations in the past have been well done and the very nature of the rock and the ore bodies themselves is such that no caving has occurred in any part ofthe mine. The workings are in excellent condition and it is necessary to undertake only minor clean-up operations.

To support this statement, it is recorded that Mr. Sheehy suspended operations of a previous contractor in the shaft operation just described (from which samples 12, 13, and 14 were taken) in 1949 because of "poor" mining practices. In this connection, it is of further interest to examine the ore settlement date received from American Smelting and Refining Company's El Paso smelter dated May 26, 1949. This is presented as Exhibit 7 and presents the information on the last ore commercially produced from the Glove group of mines. This settlement data shows 29.5% lead, 14.8% zinc, and 5 oz. of silver per ton, the ore having a net value to the operators of $52.07 per ton.

Value of ore, having an average lead content of 20%, with 10% zinc and approximately 3 oz. of silver per ton, based on current prices amounts to $72.50 per ton.

As a comparison between the last ore commercially produced and shipped from the mines in 1949, the average of all samples presented by the Lenon report, together with information carried in Exhibit 5 showing a summary of ores shipped to the American Smelting and Refining Company at El Paso during the early operation of the mines (1918), Exhibit 8 shows the smelter returns on ore produced by the Sheehy interests in August, 1925. This latter ore showed much the same characteristics of high lead and zinc content (32.8% and 10.9% respectively) and carried 7.8 ounces of silver, returning $35.79 per ton at that time.

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17. PRODUCTION:

The mine described herein is not produced at the present writing, all work being confined to exploration in the two major cross-cut tunnels. This procedure is in accord with the recommendations of Robert Lenon, Registered Mining Engineer of the State of Arizona and is furthermore in agreement with our own views of this matter, insofar as it follows a plan for delineating more ore before beginning operations on an expanded scale.

Production of ore, however, may be obtained immediately from the numerous ore bodies described in Exhibit 6. Actual shipments of ore could be made within seven to ten days.

18. The ores present in the Glove Group of mines have been described elsewhere (see Exhibits 3, 4, 5, and 6). Generally speaking, sulfides of lead and zinc occur together as the major mineral deposits, though carbonates of both metals also occur. Some mixed sulfides and carbonates are found. Little oxidized ore is encountered at depth, though, as expected, some exists at and near the surface outcrops.

All available maps and assays are included in this report and have been referred to previously.

An estimate of the tonnage and grade of each class of ore reserve is difficult though in conformity with the earlier Miller report it is believed to be substantial. Based solely on the ore showings already discovered (and fully described) it is estimated that some 7,000 tons of lead and zinc sulfides (20% lead and 10% zinc) may be recovered while reserves of 6,000 tons of carbonate and/or mixed ores (18% lead, 15% zinc) are delineated.

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19. All conditions and circumstances regarding property fully described.

THE EXPLORATION

20. The exploration described below will be conducted to establish the presence of and recovery of lead and zinc ores, principally lead sulfide (galena) and zinc sulfide (sphalerite) while carbonate ores of both lead and zinc are also present in substantial quantities in many of the veins thus far developed. For a more detailed discussion of the mineralization found in the Glove group of mines reference is made to Exhibits 3, 4, 5, and 6, wherein considerable discussion is directed to this phase of the geological investigations.

21. ANTICIPATED EXPLORATION AND DEVELOPMENT OF MINE

The proposed work is detailed herewith. It is proposed that the Rover tunnel be extended on the 70 ft. level until it has penetrated both sides of the "Birdseye" porphyry dike, considered to be an ore-maker. Since extremely rich ore has been found at the upper levels (at elevation of 134 feet and 143 feet) on one side of this dike and since ore was encountered all the way from the surface by the 60 ft. shaft, this particular exploration work seems highly attractive. It is also felt that mineralization may have increased with depth and that commercial ore production might be expected on the other (northern or hillside) side of the porphyry. In like manner, the existing tunnel of the 23 ft. level in the main workings is to be extended until this encounters the same "Birdseye" porphyry dike. Here again this exploration is deemed highly desirable because of the showings encountered on the surface and at shallow depths by ore showings indicated by sample #7 of the report of Robert Lenon, referred to herein as Exhibit 6. This ore showing is at the far western side of the out-crop of the porphyry dike and has been explored to a slight extent by a shaft approximately 25 feet in depth. This working is also

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indicated on the map of Lenon's report and is referred to under Exhibit 6-A.

In addition to the two extensions in existing cross-cuts mentioned, the tunnel of the main workings found on the zero foot level need, no doubt, be extended to encounter the main ore showings found in the workings of the 23 ft. level tunnel. Furthermore, sufficient ore is in evidence in the drifts from which samples 3, 4, 6, 1, and 8 were taken (described in Exhibit 6) to warrant further mining along the same. Further exploration is also warranted at location No. 5.

Referring once again to the extension of the tunnel on the 70 ft. level (Rover tunnel), should ore be encountered at the limestone-"Birdseye" porphyry contact, drifting along this contact to the west to establish width of vein and grade of ore is a necessity. This work will delineate much ore because of the already known occurrences on the upper shaft level previously referred to and exhibited by samples 12, 13 and 14, referred to in Exhibit 6.

The proposed work is sketched on the maps submitted as Exhibits 6-A, 6-B, and 6-C. The cost estimates for developing the mine in the manner indicated are as follows:

1. Extension of tunnel on the 70 ft. level, (the Rover workings)	$ 3,500.00 in progress
2. Extension of tunnel on the 23 ft. level of the main workings	3,000.00
3. Extension of the "0" ft. level in the main workings	9,000.00 ?
4. Development of drifts along each indicated area corresponding to the location number	8,000.00
5. Extension of drifts at "Birdseye" porphyry contact in the Rover workings	13,000.00 in progress
6. Development of drift western out-crop of "Birdseye" porphyry	2,000.00
7. Extension of 23' cross-cut tunnel 400' into hillside	20,000.00
TOTAL	$58,500.00

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The estimated time required for completion of the proposed work of exploration and development of some of the inadequately developed ore bodies already known to exist in the present workings is 234 working days or approximately one year, considering 20 working days per month.

22. Completed - See maps, assays, etc. already assembled.

THE REQUIREMENTS AND COSTS

23.

	12 Months Operations
(a) Labor (direct):	
3 Miners @ $16.00/day, 960/mo.	$10,520.00
3 Muckers @ $12.00/day, 720/mo.	8,640.00
1 Driver @ $10.00/day, 200/mo.	2,400.00
(b) Supervisors:	
1 Superintendent @ 800/mo.	9,600.00
1 Foreman @ 400/mo.	4,800.00
1 Engineer @ 360/mo.	4,320.00
	$40,280.00
(c) Cost of Necessary Repairs to Existing Facilities:	
Repair of mine warehouse building	$ 500.00
(d) Cost of Necessary New Buildings, Facilities, etc.:	
Construction of miners' quarters	$ 2,000.00
Construction of small office at mine site	750.00
	$ 2,750.00
(e) Cost of Items of Equipment to be Purchased:	
1 - 210 Cfm Compressor	$ 2,500.00
Drills and Accessories	1,500.00
Pick-up Truck with Compound Drive	2,500.00
6 - Mine cars (used)	600.00
Mine rail, 12#, 1200' (used)	250.00
Pipe and Fittings, 5,000' of 2", 1" and 3/4"	3,500.00
Track Ties and Chute Timber	1,000.00
	$11,850.00
(f) Cost of Rental for Equipment Proposed to be Rented:	
Blower and Ventilating Pipe	$ 300.00

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(g) Rental Value of Equipment Now Owned by Operator:

None	None

(h) Cost of Materials and Supplies, including Items of Equipment Costing Less than $50.00 each:

Hand Tools	$ 1,500.00
Gasoline, oil, carbide, etc.	2,000.00
Dynamite, caps, fuses, etc.	4,000.00
	$ 7,500.00

(i) Cost of Power, Water, or Other Items not Listed Above:

Drilling water well, approximately 200' deep, and equipping with pump and tank	$ 2,500.00
Purchase of 1,000' of 2" line, and laying to mine area and camp	1,000.00
Build and grade 1½-2 miles of road to Amado Mine	1,500.00
	$ 5,000.00

GRAND TOTAL $68,180.00

24. A proposed time schedule for the work projected under 21 and 23 above, together with an estimate of progress expected and the expenditures involved follows:

Date After Approval of Project	Work Initiated	Expenditures
1st Month	Repair and grade road	$ 1,000.00
	Drill and equip water well	2,500.00
	Lay water lines to camp	1,000.00
	Repair existing warehouse	500.00
	Begin construction of camp facilities	1,000.00
	Total	$ 6,000.00
2nd Month	Purchase equipment, Supplies and materials:	
	Equipment - see permanent equipment list, Item 23	$11,850.00
	Supplies and materials, including 1/2 of amount allocated to "Hand Tools"	750.00
	1/4 of amount allocated to expendable items such as gasoline, oils, dynamite, fuses, caps, etc.	1,000.00
	[illegible]	$13,600.00
	Complete construction of camp facilities	1,750.00

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2nd Month (Continued)	Begin extension of cross-cut tunnel on 23' level - Main Workings (30 ft.)	$ 1,200.00
	Total	$16,550.00
3rd Month	Complete purchase of equipment and supplies	$ 3,750.00
	Continue extension of 23 foot level cross-cut - Main Workings (50 feet)	2,000.00
	Begin extension of 70 foot level cross-cut, Rover Workings (30 feet)	1,200.00
	Begin extension of "0" foot level cross-cut - Main Workings (30 feet)	1,200.00
	Total	$ 8,150.00
4th Month	Continue extension of 23 foot level cross-cut, Main Workings (50 feet)	$ 2,000.00
	Develop drifts at positions 3 and 4, Main Workings (20 feet)	800.00
	Continue development "0" foot level cross-cut, Main Workings (30 feet)	1,200.00
	Total	$4,000.00
5th Month	Continue extension of 23 foot level cross cut, Main Workings (50 feet)	$ 2,000.00
	Complete 70 foot extension of the 70 foot level, Rober Workings (50 feet)	2,000.00
	Begin drift (to westward) along Limestone-"Birdseye" Porphyry dike contact on 70 foot level, Rover Workings (10 feet)	400.00
	Develop drifts at positions 5 and 6, Main Workings (20 feet)	800.00
	Total	$ 5,200.00
6th Month	Continue extension of 23 foot level cross-cut, Main Workings (50 feet)	$ 2,000.00
	Continue westward drift, Rover Workings, described above (50 feet)	2,000.00
	Begin drifts extending both east and west at position No. 1, Main Workings (10 feet)	400.00
	Total	$ 4,400.00

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7th Month	Continue extension of 23 foot level cross-cut, Main Workings (70 feet)	$ 2,800.00
	Develop drifts at positions 5 and 6, Main Workings (20 feet)	800.00
	Continue westward drift in Rover Workings, 70' level . . . (40 feet)	1,600.00
	Total . .	$ 5,200.00
8th Month	Continue extension of 23 foot level cross-cut, Main Workings (50 feet)	$ 2,000.00
	Continue development of "0" foot level cross-cut, Main Workings (50 feet)	2,000.00
	Continue westward drift, 70 foot level, Rover Workings .(20.feet).	800.00
	Total	$ 4,800.00
9th Month	Continue extension, 23 foot level, Main Workings (50 feet)	$ 2,000.00
	Develop drift at position No. 1 on 23 foot level, Main Workings, or corresponding vein if encountered by cross-cut on "0" foot level (10 feet). . .	400.00
	Continue extension of westward drift, 70' level, Rover Workings (30 feet)	1,200.00
	Begin clean up of shaft at position 7 and development of drifts at 25 foot depth (20 feet)	800.00
	Total . .	$4,400.00
10th Month	Begin drifting along showings of ore at position 8, Rover Workings (10 feet) . . .	$ 400.00
	Continue extension of drift, 70 foot level, Rover Workings (10 feet)	400.00
	Finish extension of "0" foot level cross-cut (100 feet)	4,000.00
	Continue drift, if in ore, at position 7 (10 feet)	400.00
	Total. . .	$5,200.00
11th Month	Complete drift on 70 foot level, Rover Workings (90 feet)	$3,600.00
	Complete drifting on ore at position 7 (10 feet)	400.00
	Complete drifting at position 8, Rover Workings (10 feet)	400.00
	Complete drifting at position 1, 23 foot level, or corresponding ore vein on "0" foot level (15 feet)	600.00
	Total. . .	$5,000.00

12th Month	Utilize time for making plans and developing any ore veins encountered in course of exploration program, including surveying, engineering plans, and geological investigation, etc. (accountable from funds dedicated previously)	None
	Complete any unfinished part of exploration program outlined due to unavoidable delays, breakdowns, labor shortages, etc. (not accountable in previously estimated work)	$ 1,600.00
	TOTAL	$68,350.00

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

Lyons
McCollum (Lyons)
Bishop
Bishop
Ron
Moon

OCT 9 1951

Re: Docket DMA-2124

a. E. e.

Mr. A. N. McCallum, Jr., Secretary
Sunrise Mining Company
702 Scarbrough Building
Austin, Texas

Dear Mr. McCallum:

The application of the Sunrise Mining Company for a loan to explore the Glove mine, Santa Cruz County, Arizona, has been reviewed by the Lead-Zinc Branch. Because more information is required before further action can be taken on the application, it has been referred to Mr. J. H. East, Jr., Executive Officer, DMA Field Team, 224 New Customhouse, Denver 2, Colorado.

Very truly yours,

SIGNED

Tom Lyon, Director
Supply Division

EJLyons:emp
G 10-5-51
Copies to: J. H. East, Jr. Region IV (2)
Chief, Lead-Zinc Branch
E. T. McKnight 4204 GSA
O. M. Bishop
Directors r. files 4214 GSA
Br. r. files 4214 GSA
Administrators r. files
DMA docket files

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

Mr. J. H. East, Jr.
Executive Officer, DMA Field Office
Region IV
224 New Customhouse
Denver 2, Colorado

Dear Sir:

We attach "Review of Application for Exploration Assistance"

on:

Docket No. 2124

Commodity Lead, zinc

Applicant Sunrise Mining Co. c/o A.N. McCallum, Jr. Secy-Treas.,
Chiles, McCallum and Nagel, Scarbrough Bldg., Austin, Texas

Please expedite the consideration of this application with particular reference to the points raised in the attached "Review."

Very truly yours,

for Chairman
Coordinating Committee

For Bureau of Mines

For Geological Survey

6/5/51

Defense Minerals Administration

Review of Application for Exploration Assistance

Docket No. DMA-2124

Commodity Lead, zinc

Total Amount $68,000

Govt. Participation 50% ($34,000)

1. Name and Address of Applicant Sunrise Mining Company, c/o A. N. Mc°Callum, Jr Secy-Treasurer, Chiles, McCallum and Nagel, Scarbrough Building, Austin, Texas.

2. Location of Property Glove (Sheehy- O'Donnel) group of claims. Sec. 30, T. 20 S., R. 14 E., Santa Cruz County, Arizona

3. Mineral or metal Lead-zinc Is it listed in Section 9 of MO-5? Yes

If not, application will be rejected.

4. Geologic probability of discovery—based on data in application (question #16, 17, 18, 20 and 22)*

Mines or Survey reports, etc., do you rate chances:

a) Good

b) Poor

c) None

d) Don't know—needs field examination X

e) Is there an alternative and favorable project?
(If so, attach an explanation)

5. Is the applicant's right to the property clearly stated? No
(question 5, 6, 7)*

6. If applicant is a lessee, is a copy of the lease attached? Purchase agreement

Does the lease have sufficient time to run to cover a future productive period? Yes

*question numbers are those of MF-103

7. Are subordination agreements necessary? Yes

a) MF-201? _____

b) MF-202 Should be obtained from applicant

8. From the data presented, does the proposed project appear feasible from the point of view of:

a) Available manpower Don't know

b) Equipment and supplies Don't know
(Question 14 plus general knowledge of availability)*

c) Accessibility (question 12)* Yes, but some repair work required

d) Water (question 13)* Well will have to be drilled

e) Power (question 13)* Yes

Is a field check needed on any of these points? Yes

9. Does the experience of the applicant appear to be adequate to assure that he can properly conduct the proposed project? (question 4)* Don't know

_____

Is a field check needed on this point? Yes

10. Exhibit A. (questions 21 and 22)*

a) Is the project adequately described? No, estimated footage of drifting, etc, not given.

If not, are there sufficient data given so that you can describe the project? _____ If so, attach a draft.

b) Is there an adequate map or sketch of the proposed work? Proposed work not shown on map

c) Is the proposed work "exploration" under the definition of Section 8, MO-5? Yes

If not, what part of it is? _____

_____

_____

_____

Is this part a worthwhile exploration project?_____

d) Are the cost estimates detailed? Yes

Can they be summarized, as on page 2 of Procedural Instruction 5-A, from the available data? No If so, attach a draft.

e) Are the cost estimates reasonable? Don't know

f) Should more information be requested from applicant? Yes

g) Is a field examination necessary to complete Exhibit A? Yes

11. Exhibit B (question 23-d)*

a) Is it applicable? Yes

b) If so, are sufficient data furnished? Yes If so, attach a draft.

c) Is a field check needed? No

12. Exhibit C (question 23-e, f and g)*

a) Is it applicable? Yes

b) Sufficient data? Yes If so, attach a draft.

c) Are rents and charges reasonable? Yes

d) Is a field check needed? No

13. Exhibit D (question 23-a, b)*

a) Are there sufficient data? Yes

b) Is the schedule adequate for the work proposed? Don't know

c) Is the schedule excessive for the work proposed? " "

d) Are the proposed wages and salaries reasonable? No. Overstaffed on supervisors.

e) Is a field check needed? Yes

14. Exhibit E (question 23-c)*

a) Is it applicable? Yes

b) Sufficient data? Yes

c) Reasonable? Yes

d) Field check needed? No

15. In your judgment, can the proposed work be done in the proposed time? Don't know

(All exploration must be completed within two years)

16. If field examination is not needed, attach your recommendation.

17. If field examination is needed, do you have any special instructions for the field team not indicated by your answers to the foregoing question? Lenon infers milling of ores might be difficult.

Reviewed by: Erwin J. Lyons - GS

Date 10-5-51

INT.-DUP. SEC., WASH., D.C. 99009

CHEMICAL ENGINEERING

REC'D OCT 20 1951

PETROLEUM ENGINEERING

FRANK W. JESSEN
CONSULTING ENGINEER
3111 Tom Green St.
AUSTIN, TEXAS

October 17, 1951

Hon. Homer Thornberry
House Office Building
Washington, D. C.

Dear Homer:

I should like very much to acknowledge receipt of a letter you recently sent to me and also a letter of October 9 addressed to Taylor Glass. All of these concerned the application of Sunrise Mining Company of Tucson, Arizona for an exploration loan.

As previously advised you the Sunrise Mining Company has been advised that the exploration application has been given a docket no--DMA-2124 by the Defense Minerals Administration. I am sending you herewith copies of letters received by us both dated October 9, 1951. One of these letters as you will note was from Mr. Tom Lyon, Director, Supply Division of the Defense Minerals Administration and the other from Mr. C. O. Mittendorf, Acting Administrator of the Defense Minerals Administration.

You will note from the letter from Mr. Lyon's office that the application has been referred to the Denver office of the Defense Minerals Administration. You will note further that we are not told what additional information is required and we would be most appreciative of learning what additional information should be furnished. It is our feeling that if the general plan of the Defense Minerals Administration is to secure direct recommendations and observations on applications from the field office having jurisdiction over the particular area in which the property may be located, that we should be advised of the same, whereas, if the company itself can expedite the processing of the application, it is our opinion that some time might be saved by having the Washington office advise specifically of any other information required.

Since the company already has an active operation going forward on the property and a miner with complete rigging, etc., employed, I would certainly like to get underway on the proposed exploration program as soon as possible.

CHEMICAL ENGINEERING

PETROLEUM ENGINEERING

FRANK W. JESSEN
CONSULTING ENGINEER
1706 WESTOVER ROAD
AUSTIN, TEXAS

For your information may I say that a Landlord's Subordination Agreement which I understand is also to be completed by the Lessor is now being secured by Sunrise Mining Company and will be forwarded to the Defense Minerals Administration immediately upon receipt. This, however, we felt should not substantially affect any commitment by the Defense Minerals Administration in approving the application for the exploration loan.

Your kind attention to this matter will be deeply appreciated.

With kindest personal regards and best wishes, I remain

Very sincerely yours,

Frank W. Jessen

FWJ:HMY

CC: Mr. A. N. McCallum
702 Scarbrough Bldg.

Hon. Lyndon B. Johnson
Washington, D. C.

October 2, 1951

Sunrise Mining Company
C/O A. N. McCallum, Jr. Secy-Treas.
Chiles, McCallum & Nagle
Scarbrough Building
Austin, Texas

Subject Exploration
Re: DMA-2124

My dear Mr. McCallum, Jr.:

This will acknowledge receipt of your application dated September 21, 1951 for a loan under the Defense Production Act of 1950.

Your application was assigned Docket Number DMA-2124 and referred to the Lead-Zinc Branch.

Kindly refer to DMA-2124 in any future correspondence relating to your application.

Sincerely yours,

Robert E. Adams

Robert E. Adams, Chief
Reports and Records Unit

2463

CHEMICAL ENGINEERING

PETROLEUM ENGINEERING

FRANK W. JESSEN
CONSULTING ENGINEER
AUSTIN, TEXAS
3111 Tom Green St.

September 24, 1951

U. S. Dept. of the Interior,
Defense Minerals Administration
Washington 25, D. C.

Gentlemen:

Submitted herewith are four (4) copies of a report covering the application for aid for an exploration project pursuant to Mineral Order 5 under the Defense Production Act of 1950. This application is made in the name of Sunrise Mining Company of Tucson, Arizona.

Offices of the company are presently located in Austin, Texas, and it is requested that all correspondence pertaining to the report be directed to Mr. A. N. McCallum, Jr., Secretary, Sunrise Mining Company, 702 Scarbrough Building, Austin, Texas.

We trust the application will be found complete in all details and that it may receive your early attention. We trust this application will meet with your approval, and that the company may have an opportunity of proving the existance of additional quantities of critical materials - lead and zinc.

Respectfully submitted,

Frank W. Jessen

Encl.
FWJ/md

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
OCT 1 1951

APPLICATION

OF

SUNRISE MINING COMPANY

TUCSON, ARIZONA

FOR

LOAN ON AN EXPLORATION PROJECT

PURSUANT TO MINERAL ORDER 5

UNDER

DEFENSE PRODUCTION ACT OF 1950

September 21, 1951

F. W. Jessen

CHEMICAL ENGINEERING

PETROLEUM ENGINEERING

FRANK W. JESSEN
CONSULTING ENGINEER
AUSTIN, TEXAS
3111 Tom Green St.

September 24, 1951

U. S. Dept. of the Interior,
Defense Minerals Administration
Washington 25, D. C.

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We trust the application will be found complete in all details and that it may receive your early attention. We trust this application will meet with your approval, and that the company may have an opportunity of proving the existance of additional quantities of critical materials - lead and zinc.

Respectfully submitted,

Frank W. Jessen

Encl.
FWJ/md

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
OCT 1 1951

APPLICATION

OF

SUNRISE MINING COMPANY

TUCSON, ARIZONA

FOR

LOAN ON AN EXPLORATION PROJECT

PURSUANT TO MINERAL ORDER 5

UNDER

DEFENSE PRODUCTION ACT OF 1950

September 21, 1951

F. W. Jessen

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

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

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

RECEIVED OCT 1 1951 Defense Minerals Administration Department of the Interior

DO NOT FILL IN THIS BLOCK

Docket No. DMA 21224

Date received 10-1-51

Participation

Sunrise Mining Company
c/o A. N. McCallum, Jr., Secy-Treas.
Chiles, McCallum & Nagle
Scarbrough Building
Austin, Texas

Name and address of applicant

Date Sept. 21, 1951

FILL IN THIS BLOCK

Date of application September 21, 1951

Estimated cost $68,000.00

Mineral or metal Lead & Zinc

Percentage of Government participation 50%

Location of mine Santa Cruz County, Arizona

Date of filing MF-100

DMA Docket Number, if available

INSTRUCTIONS

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

THE APPLICANT

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

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

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

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

16—64067-1

THE PROPERTY

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

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

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

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

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

THE EXPLORATION

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

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

THE REQUIREMENTS AND COSTS

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

CERTIFICATION

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

Sunrise Mining Company
(Name of company)

By Taylor Black
(Signature of authorized official)

September 21, 1951
(Date)

President
(Title)

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

*Same as footnote on page 1.

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

CHEMICAL ENGINEERING PETROLEUM ENGINEERING

FRANK W. JESSEN
CONSULTING ENGINEER
1706 WESTOVER ROAD
AUSTIN, TEXAS

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

EXPLORATION PROJECT

1. The applicant referred to herein is a corporation, Sunrise Mining Company, with headquarters in Tucson, Arizona.

2. Not applicable.

3. The names of the principal officers, directors and five largest stockholders are given below:

Name & Address	Official Title	Estimated Net Worth Outside of Applicant	Number of Shares Held in Applicant	
			Common	Preferred
Taylor Glass	President	$250,000	25	None
John Simpson	Vice-Pres.	100,000	25	None
A.N.McCallum,Jr.	Sec.-Treas.	100,000	25	None
C. B. Smith	Director	250,000	50	None
F. W. O'Brien	Director	10,000	25	None
C. W. Owens	Director	75,000	25	None
Emmett Bauknight	Director	60,000	25	None
Joe Bland	Director	200,000	25	None
P. C. Anderson, Temple	Director	250,000	25	None

4. There follows a brief description of the general business experience of the applicant and the experience of various members of the firm of Sunrise Mining Company together with information concerning the individuals who will manage the project.

Taylor Glass - President

Taylor Glass, of Austin, Texas, is 40 years of age, and is the President and a director of Sunrise Mining Company. Mr. Glass is the owner and operator of the Polar Ice Cream Company, a business in which he has been associated for the past 15 years. He is a former Mayor of the City of Austin, serving the city from 1949 to 1951.

FRANK W. JESSEN
CONSULTING ENGINEER
1706 WESTOVER ROAD
AUSTIN, TEXAS

John Simpson - Vice President

Mr. Simpson was born in Waco, Texas. He is 45 years of age. He graduated from Rice Institute in Houston, Texas, and his present business association is Superior Dairies of Austin, of which he is President. Mr. Simpson is also Vice President of Armo Mills of Austin, Texas. He is Vice President and a director of Sunrise Mining Company.

A. N. McCallum, Jr. - Secretary-Treasurer

Mr. McCallum is a native of Austin, and is 49 years of age. He attended the Austin schools and graduated from the University of Texas. He is a partner of the insurance firm of Chiles, McCallum & Nagle. He is Secretary-Treasurer of Sunrise Mining Company and a director of the company.

C. B. Smith - Director

Mr. Smith was born in Comanche, Texas, and is 48 years of age. He is a graduate of the University of Texas. He is a director of the Sunrise Mining Company. Mr. Smith is owner and Manager of C. B. Smith Motors, Dodge and Plymouth dealer in Austin. Mr. Smith is the past President of the of the former Austin Area Economic Development Foundation, a position he has held for the past 3 years.

F. W. O'Brien - Director

Mr. O'Brien is 65 years of age and is a director of the Sunrise Mining Company. His home is in Austin, but he was born in Oakfield, New York. Mr. O'Brien has had much experience in oil and gas production and in mining operations. He was President of the Gulf Stream Oil Company, Inc., of Houston from 1934 to 1941. He is at present associated with the Duplex Advertising Company of Austin as its Sales Manager.

C. H. Owens - Director

Mr. Owens is a native of Indiana and is 54 years of age. He is a director of the Sunrise Mining Company. He is a resident of Austin, Texas, and is owner of the C. H. Owens Company, dealing in building materials of all kinds. He is a director of the West Texas Stone Company of Albany, Texas. From 1929 to 1943 he was Vice-President and General Manager of Texas Quarries, one of the largest building stone producers in Texas. He has had vast experience in production methods in the mining of stone materials.

Emmett Bauknight - Director

Mr. Bauknight is 43 years of age, and is a resident of Austin, Texas. He is an attorney and partner in the firm of Critz, Kuykendall, Bauknight & Stevenson. He is a director of Sunrise Mining Company.

FRANK W. JESSEN
CONSULTING ENGINEER
1706 WESTOVER ROAD
AUSTIN, TEXAS

Paul Anderson - Director

Mr. Anderson is from Temple, Texas, and is 46 years of age. He is a director of Sunrise Mining Company. Mr. Anderson is President and owner of the Anderson Ice Cream Company of Temple. He has varied business experience and is a successful business and civic leader of Temple.

Joe Bland - Director

Mr. Bland is 42 years of age, and is a resident of Austin, Texas. He is a director of Sunrise Mining Company, and is the owner of the Joe Bland Construction Company of Austin. His construction company is one of the major contracting firms of this city. Mr. Bland has had much experience in the handling of heavy equipment and the construction of a variety of projects including large earth-moving operations.

5. The Sunrise Mining Company is the present owner of the Glove group of mines located in Santa Cruz County, Arizona, approximately 9 miles east of Amado, Arizona. A full description of the properties is included in the report submitted with this application. Present ownership is through assignment of an option and purchase contract to Sunrise Mining Company by Mr. F. W. O'Brien, Director of Sunrise Mining Company. This assignment is of an original option and purchase contract secured by Mr. F. W. O'Brien from Mr. E. T. Sheehy of Nogales, Arizona, former owner of the property. Copies of the original option and purchase contract and assignment of Mr. F. W. O'Brien to Sunrise Mining Company are included herewith and are designated as Exhibits 1 and 2 respectively. Exhibit 2-A shows the certificate of incorporation of Sunrise Mining Company issued by the State of Arizona, June 25, 1951.

6. Property held by Sunrise Mining Company carries provisions for payment to Mr. Sheehy of $135,000 cash as a total purchase price, the same being payable as follows:

$16,000 in cash on or before August 8, 1951 and the remaining $119,000 payable in five years ending August 8, 1956. Under the terms of the

FRANK W. JESSEN
CONSULTING ENGINEER
1706 WESTOVER ROAD
AUSTIN, TEXAS

contract Mr. Sheehy is to be paid out of production of ore mined from the property. All such payments are to be credited to Sunrise Mining Company as part payment of the balance due and thus retire the remaining $119,000 according to the terms of the contract.

Reference is made to Exhibit 1 for details of the existing agreement of purchase assigned to Sunrise Mining Company.

7. Not applicable to the present applicant.

8. The current financial statement of the Sunrise Mining Company is attached. Since operations have been in progress for only about 30 days, no profit and loss statement is available, the preliminary work being confined to making minor repairs to existing facilities, building roads, carrying out some exploration work, and putting the mine in first class condition.

9. Sunrise Mining Company is prepared to invest the sum of in the proposed project. This amount is deemed sufficient to pay the Company's part of the cost of the project as detailed in Question 23 of this application form, and is believed to be in accordance with the regulations on government participation.

10. The Glove group of claims, also called the Sheehy-O'Donnell group, consists of 15 unpatented claims. The property is situated mainly in Sec. 30, Township 20 South, Range 14 East in Santa Cruz County, Arizona. Total acreage involved includes approximately 350 acres. The average elevation of the property is 4200 feet. The attached map, shown in Exhibit 3, gives the location of each unpatented claim and the location of the area as a whole in the Santa Cruz Mountains some 7 miles east of Amado, Arizona.

11. The property has been known in the past as the Sheehy-O'Donnell Glove group of mines. The name of the mine is to be retained and will be referred to as the Glove Mine of Sunrise Mining Company.

12. The claims described lie about 6 miles east of the Chaves siding on the Tuscon-Nogales branch of the Southern-Pacific Railroad and may be reached by driving up a long mesa from that point with but little road work necessary for excellent accessability. Access may also be obtained by road from the town of Amado, also on the Southern-Pacific Railroad, a distance of approximately 9 miles. The road from Amado is readily traversed by truck or passenger car.

13. No water is available at the present time for operations at the mine, however operations are now under way to provide adequate quantities of water for all purposes. A well is to be drilled in Cottonwood Canyon which lies about ½ mile to the south of the principal workings. From all indications and from the depth of a well located just west of this property, water is expected to be encountered at a depth of approximately 200 feet. As far as is known, such a well would supply sufficient water throughout the year for the mining operations contemplated.
All power to be used for the mining operation will be developed by gasoline or diesel engine.

14. There are at present no existing buildings on the property, however there are adequate tunnels, shafts, and drifts, all completely developed. These are described in a report of Robert Lenon, Registered Professional Mining Engineer, furnished to Sunrise Mining Company in May, 1951, see Exhibit 6. The workings are exceptionally clean and require very little clean-out work. There are some 1500 feet of lateral tunnels and drifts, and 4 major shafts. Tunnel operations are particularly adaptable to the development of this property because of the steepness of the topography. The maps accompanying the report of Lenon, shown in Exhibit 6, are referred to herewith. In Exhibit 6-A the main tunnels and shafts thus far developed on the property are presented. It is noted that two main tunnel operations are in evidence, (No.1-the main workings) arbitrarily referred to as the "0" foot

FRANK W. JESSEN
CONSULTING ENGINEER
1706 WESTOVER ROAD
AUSTIN, TEXAS

level, extending some 500 feet into the mountain side, has traversed numerous ore showings. Of these, several have been explored by drifting along the ore bodies, however it is to be pointed out that in no case has any single drift been carried more than 96 feet.

Section A-A, which portrays the section through the main shaft and tunnel workings and herein referred to as Exhibit 6-B, shows the relative position of the tunnel levels and ore bodies thus far explored. The other major shaft and tunnel operation thus far developed on the property lies to the east of the main workings, a distance of approximately 600 feet. This tunnel (Rover) begins at an elevation of approximately 70 feet and extends some 300 feet into the mountain and is referred to as Exhibit 6-C.

A separate shaft designated as "Upper Shaft" has also been developed on the 200 ft. level. This shaft is approximately 60 feet in depth and the resulting tunnel operation at elevations of 143 feet and 134 feet has encountered extremely rich, high grade lead and zinc ore. The development in this tunnel has been limited to approximately 75 feet while the major drift along any ore body encountered is not in excess of 45 feet.

As stated previously, all these operations were carried out in first-class order and excellent conditions exist. In addition to the developed portions of the mine briefly described above, there are in place mine rail and ore hoppers which may be utilized in further development and exploration work. Furthermore, 5 or 6 mine cars are available for use.

5. The produced ore is to be hauled by truck either to the Chavez siding, approximately six (6) miles from the mine site or to Amado, a distance of 9 miles from the mine.

FRANK W. JESSEN
CONSULTING ENGINEER
1706 WESTOVER ROAD
AUSTIN, TEXAS

Ore is then to be loaded on cars and shipped by rail to the mill at Sahuarita. The distance of shipments from either Chavez or Amado is less than 25 miles.

It is believed the ore, containing lead and zinc sulfides with some silver, could be handled by the Eagle-Pitcher mill at Sahuarita. Investigations carried out by the Arizona Bureau of Mines indicate the possibility of processing the ores from the Glove Group of Mines to be quite good. Results of milling tests now being carried out are not available at the time of preparation of this report.

16. GEOLOGY AND TOPOGRAPHY

The geology of the area has been well investigated and described by numerous geologists and mining experts and by old prospectors dating back to the early turn of the century. Most recent geological information concerning the area is by John R. Anthony in a dessertation presented to the University of Arizona in June, 1951, as a partial fulfillment of a Master of Arts degree in geology. Anthony's report, cited in Exhibit 3 above, and the complete portion of his report dealing with the economic geology of the Glove group of claims, is included as a part of this report and is referred to for further details.

The salient feature of the geology of the Glove group of mines area is the existence of a large section of limestones and shales which have been intruded by porphyry dikes. The cross-sections, as worked out by Anthony, show this large limestone block area to be most probably thrust in place due to a large displacement from the south, the belief being that the whole limestone section was thrust into its present position and then intruded by the igneous dike material. For a more complete description, reference is made to the previous reports on the property, including the recent report of Anthony (Exhibit 3) and complimented by report of

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Courtnay De Kalb, Mining Engineer of Tucson, Arizona, made on November 12, 1913 and presented in the present report as Exhibit 4. Exhibit 5, which is a report by Hugo W. Miller on the Glove group, was made in August, 1918 and confirms the earlier findings of De Kalb concerning the general geology while also presenting information on the mining operations and ore extracted from the then developed portions of the properties. No further report on the property was made after 1918 until the report prepared for Sunrise Mining Company on the present status of these claims. This report was submitted in April, 1951, by Robert Lenon, registered Mining Engineer of Arizona, residing in Patagonia, Arizona. A copy of his report is included and made a part of this report and is presented as Exhibit 6.

Mineralization occurs along the contacts of porphyry and the limestone, particularly in zones of weakness and along the faulted contact points. For further descriptions, reference is made to Exhibits 3, 4, 5 and 6 where thorough discussions are presented on the geology, mineralization, ore findings, condition of existing mining installations, etc.

A most significant point in considering the present status of the mining properties is the fact that practically no development has taken place since the time of the Miller report in 1918. Comparison of the mine tunnels and shafts described by Miller (Exhibit 5) with those found in the much later reports of Anthony (Exhibit 3) and Lenon (Exhibit 6) shows clearly that the work by the Sheehy interests was limited to the minimum required by law to hold the properties. Hence, the opportunity for enhancing the value of the mine properties by further exploration and development of existing known ore veins appears particularly bright.

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Attention once more is directed to Exhibit 6, the report of Robert Lenon, together with the maps included as part of that exhibit. Exhibit 6-A presents the present development in the principla workings of the Glowe Group of mines, while Wxhibit 6-B and Exhibit 6-C present sectionalized drawings of the same workings, section A-A being that of the main working (Exhibit 6-B) while section B-b is that of the Rover Tunnel and shafts (Exhibit 6-C). In Lenon's report 14 samples of ore were taken in the presently developed mine shafts, drifts, and tunnels. These locations of samples, together with descriptions of the type of ore, width of veins sampled, and assay of the ore from each sample taken are included in the descriptive matter of Exhibit 6.

Referring to Exhibit 6-A it is noted that ore of commercial grade is found in all except one of the locations sampled, namely location No. 2. This location, on the east wall of the 23 ft. level in the main tunnel and crosscut, shows 1.2% lead and 2% zinc, while the silver content is only 0.3 ounces per ton, however the area in which sample 2 was taken represents a highly mineralized zone and the character of the ore might well change rather abruptly and hence some further exploration work is indicated. In each of the other instances, it is to be noted that lead contents vary from 1.2% to a maximum of 35%, while zinc contents vary from 2.2% to as high as 31.5%. The overall average of all samples, excluding #2, showed 13.6% lead, 15.0% zinc and an average of 2.7 ounces of silver per ton. The assay work for each of these samples was performed by the Hugo W. Miller assay office of Nogales, Arizona, photographic copies of the assay being a part of the report of Lenon and all are presented in Exhibit 6.

The type of mine operation involved is by both tunnel and shaft, the topography of the area lending itself particularly well to tunnel operation. As may be discerned

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from an examination of Exhibit 6-A, the maximum length of drift on any of the ore bodies has been 96 feet, and in many instances in following ore showings very short drifts were initiated and stopped for no apparent reasons, thus leaving a tremendous amount of development work to be accomplished in the main workings and in the two major tunnel levels best illustrated by Exhibit 6-B, which shows the section through the main tunnel working. The main entrance to the tunnel is taken as elevation zero; the more important workings of the mine have been carried out on the 23 ft. elevation. In addition, there has been one major shaft operation in this working, the top of the shaft being at an elevation of 110 feet. Further stoping has been carried out, however, in this working and some drifting has been done at the 65 ft. level.

In the Rover shaft and tunnel operation, reference is made to Exhibit 6-C which shows a cross-section of this position of the mining operations. Here a tunnel has been carried forward at an elevation of 70 feet, while the upper shaft exploration was begun at an elevation of 200 feet. Depth of the shaft thus far explored is to an elevation of 143 feet, or a depth of 57 feet below the surface. A deviation in the tunnel eminating from this shaft is indicated in that a 9 foot drop from elevation 143 feet to elevation 134 feet developed in tracing the ore body along the porphyry-limestone contact. Here the two major drifts have been carried out to the extent of only 15 feet. As evidenced by samples 12, 13 and 14, these workings are in ore bodies particularly rich in character. The lead content is 17-35%, zinc 10-26% while 2-9% oz. of silver are present. Further mining of this rich ore is imperative and the manner of future development is described under the next section (The Exploration) of this report. Sample 8, a 54" mineralized area in the Rover shaft also represents a very good possibility for further development since drifting here has progressed only 18 feet.

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The mine operations in the past have been well done and the very nature of the rock and the ore bodies themselves is such that no caving has occurred in any part ofthe mine. The workings are in excellent condition and it is necessary to undertake only minor clean-up operations.

To support this statement, it is recorded that Mr. Sheehy suspended operations of a previous contractor in the shaft operation just described (from which samples 12, 13, and 14 were taken) in 1949 because of "poor" mining practices. In this connection, it is of further interest to examine the ore settlement date received from American Smelting and Refining Company's El Paso smelter dated May 26, 1949. This is presented as Exhibit 7 and presents the information on the last ore commercially produced from the Glove group of mines. This settlement data shows 29.5% lead, 14.8% zinc, and 5 oz. of silver per ton, the ore having a net value to the operators of $52.07 per ton.

Value of ore, having an average lead content of 20%, with 10% zinc and approximately 3 oz. of silver per ton, based on current prices amounts to $72.50 per ton.

As a comparison between the last ore commercially produced and shipped from the mines in 1949, the average of all samples presented by the Lenon report, together with information carried in Exhibit 5 showing a summary of ores shipped to the American Smelting and Refining Company at El Paso during the early operation of the mines (1918), Exhibit 8 shows the smelter returns on ore produced by the Sheehy interests in August, 1925. This latter ore showed much the same characteristics of high lead and zinc content (32.8% and 10.9% respectively) and carried 7.8 ounces of silver, returning $35.79 per ton at that time.

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17. PRODUCTION:

The mine described herein is not produced at the present writing, all work being confined to exploration in the two major cross-cut tunnels. This procedure is in accord with the recommendations of Robert Lenon, Registered Mining Engineer of the State of Arizona and is furthermore in agreement with our own views of this matter, insofar as it follows a plan for delineating more ore before beginning operations on an expanded scale.

Production of ore, however, may be obtained immediately from the numerous ore bodies described in Exhibit 6. Actual shipments of ore could be made within seven to ten days.

18. The ores present in the Glove Group of mines have been described elsewhere (see Exhibits 3, 4, 5, and 6). Generally speaking, sulfides of lead and zinc occur together as the major mineral deposits, though carbonates of both metals also occur. Some mixed sulfides and carbonates are found. Little oxidized ore is encountered at depth, though, as expected, some exists at and near the surface outcrops.

All available maps and assays are included in this report and have been referred to previously.

An estimate of the tonnage and grade of each class of ore reserve is difficult though in conformity with the earlier Miller report it is believed to be substantial. Based solely on the ore showings already discovered (and fully described) it is estimated that some 7,000 tons of lead and zinc sulfides (20% lead and 10% zinc) may be recovered while reserves of 6,000 tons of carbonate and/or mixed ores (18% lead, 15% zinc) are delineated.

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19. All conditions and circumstances regarding property fully described.

THE EXPLORATION

20. The exploration described below will be conducted to establish the presence of and recovery of lead and zinc ores, principally lead sulfide (galena) and zinc sulfide (sphalerite) while carbonate ores of both lead and zinc are also present in substantial quantities in many of the veins thus far developed. For a more detailed discussion of the mineralization found in the Glove group of mines reference is made to Exhibits 3, 4, 5, and 6, wherein considerable discussion is directed to this phase of the geological investigations.

21. ANTICIPATED EXPLORATION AND DEVELOPMENT OF MINE

The proposed work is detailed herewith. It is proposed that the Rover tunnel be extended on the 70 ft. level until it has penetrated both sides of the "Birdseye" porphyry dike, considered to be an ore-maker. Since extremely rich ore has been found at the upper levels (at elevation of 134 feet and 143 feet) on one side of this dike and since ore was encountered all the way from the surface by the 60 ft. shaft, this particular exploration work seems highly attractive. It is also felt that mineralization may have increased with depth and that commercial ore production might be expected on the other (northern or hillside) side of the porphyry. In like manner, the existing tunnel of the 23 ft. level in the main workings is to be extended until this encounters the same "Birdseye" porphyry dike. Here again this exploration is deemed highly desirable because of the showings encountered on the surface and at shallow depths by ore showings indicated by sample #7 of the report of Robert Lenon, referred to herein as Exhibit 6. This ore showing is at the far western side of the out-crop of the porphyry dike and has been explored to a slight extent by a shaft approximately 25 feet in depth. This working is also

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indicated on the map of Lenon's report and is referred to under Exhibit 6-A.

In addition to the two extensions in existing cross-cuts mentioned, the tunnel of the main workings found on the zero foot level need, no doubt, be extended to encounter the main ore showings found in the workings of the 23 ft. level tunnel. Furthermore, sufficient ore is in evidence in the drifts from which samples 3, 4, 6, 1, and 8 were taken (described in Exhibit 6) to warrant further mining along the same. Further exploration is also warranted at location No. 5.

Referring once again to the extension of the tunnel on the 70 ft. level (Rover tunnel), should ore be encountered at the limestone-"Birdseye" porphyry contact, drifting along this contact to the west to establish width of vein and grade of ore is a necessity. This work will delineate much ore because of the already known occurrences on the upper shaft level previously referred to and exhibited by samples 12, 13 and 14, referred to in Exhibit 6.

The proposed work is sketched on the maps submitted as Exhibits 6-A, 6-B, and 6-C. The cost estimates for developing the mine in the manner indicated are as follows:

1. Extension of tunnel on the 70 ft. level, (the Rover workings)	$ 3,500.00
2. Extension of tunnel on the 23 ft. level of the main workings	3,000.00
3. Extension of the "0" ft. level in the main workings	9,000.00
4. Development of drifts along each indicated area corresponding to the location number	8,000.00
5. Extension of drifts at "Birdseye" porphyry contact in the Rover workings	13,000.00
6. Development of drift western out-crop of "Birdseye" porphyry	2,000.00
7. Extension of 23' cross-cut tunnel 400' into hillside	20,000.00
TOTAL	$58,500.00

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The estimated time required for completion of the proposed work of exploration and development of some of the inadequately developed ore bodies already known to exist in the present workings is 234 working days or approximately one year, considering 20 working days per month.

22. Completed - See maps, assays, etc. already assembled.

THE REQUIREMENTS AND COSTS

23.

	12 Months Operations
(a) Labor (direct):	
3 Miners @ $16.00/day, 960/mo.	$10,520.00
3 Muckers @ $12.00/day, 720/mo.	8,640.00
1 Driver @ $10.00/day, 200/mo.	2,400.00
(b) Supervisors:	
1 Superintendent @ 800/mo.	9,600.00
1 Foreman @ 400/mo.	4,800.00
1 Engineer @ 360/mo.	4,320.00
	$40,280.00
(c) Cost of Necessary Repairs to Existing Facilities:	
Repair of mine warehouse building	$ 500.00
(d) Cost of Necessary New Buildings, Facilities, etc.:	
Construction of miners' quarters	$ 2,000.00
Construction of small office at mine site	750.00
	$ 2,750.00
(e) Cost of Items of Equipment to be Purchased:	
1 - 210 Cfm Compressor	$ 2,500.00
Drills and Accessories	1,500.00
Pick-up Truck with Compound Drive	2,500.00
6 - Mine cars (used)	600.00
Mine rail, 12#, 1200' (used)	250.00
Pipe and Fittings, 5,000' of 2", 1" and 3/4"	3,500.00
Track Ties and Chute Timber	1,000.00
	$11,850.00
(f) Cost of Rental for Equipment Proposed to be Rented:	
Blower and Ventilating Pipe	$ 300.00

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(g) Rental Value of Equipment Now Owned by Operator:
None . . . . . None

(h) Cost of Materials and Supplies, including Items of Equipment Costing Less than $50.00 each:

Hand Tools	$ 1,500.00
Gasoline, oil, carbide, etc.	2,000.00
Dynamite, caps, fuses, etc.	4,000.00
	$ 7,500.00

(i) Cost of Power, Water, or Other Items not Listed Above:

Drilling water well, approximately 200' deep, and equipping with pump and tank	$ 2,500.00
Purchase of 1,000' of 2" line, and laying to mine area and camp	1,000.00
Build and grade 1½-2 miles of road to Amado Mine	1,500.00
	$ 5,000.00

GRAND TOTAL $68,180.00

24. A proposed time schedule for the work projected under 21 and 23 above, together with an estimate of progress expected and the expenditures involved follows:

Date After Approval of Project	Work Initiated	Expenditures
1st Month	Repair and grade road	$ 1,000.00
	Drill and equip water well	2,500.00
	Lay water lines to camp	1,000.00
	Repair existing warehouse	500.00
	Begin construction of camp facilities	1,000.00
	Total	$ 6,000.00
2nd Month	Purchase equipment, Supplies and materials:	
	Equipment - see permanent equipment list, Item 23	$11,850.00
	Supplies and materials, including 1/2 of amount allocated to "Hand Tools"	750.00
	1/4 of amount allocated to expendable items such as gasoline, oils, dynamite, fuses, caps, etc.	1,000.00
		$13,600.00
	Complete construction of camp facilities	1,750.00

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2nd Month (Continued)	Begin extension of cross-cut tunnel on 23' level - Main Workings (30 ft.)	$ 1,200.00
	Total	$16,550.00
3rd Month	Complete purchase of equipment and supplies	$ 3,750.00
	Continue extension of 23 foot level cross-cut - Main Workings (50 feet)	2,000.00
	Begin extension of 70 foot level cross-cut, Rover Workings (30 feet)	1,200.00
	Begin extension of "0" foot level cross-cut - Main Workings (30 feet)	1,200.00
	Total	$ 8,150.00
4th Month	Continue extension of 23 foot level cross-cut, Main Workings (50 feet)	$ 2,000.00
	Develop drifts at positions 3 and 4, Main Workings (20 feet)	800.00
	Continue development "0" foot level cross-cut, Main Workings (30 feet)	1,200.00
	Total	$4,000.00
5th Month	Continue extension of 23 foot level cross cut, Main Workings (50 feet)	$ 2,000.00
	Complete 70 foot extension of the 70 foot level, Rober Workings (50 feet)	2,000.00
	Begin drift (to westward) along Limestone-"Birdseye" Porphyry dike contact on 70 foot level, Rover Workings (10 feet)	400.00
	Develop drifts at positions 5 and 6, Main Workings (20 feet)	800.00
	Total	$ 5,200.00
6th Month	Continue extension of 23 foot level cross-cut, Main Workings (50 feet)	$ 2,000.00
	Continue westward drift, Rover Workings, described above (50 feet)	2,000.00
	Begin drifts extending both east and west at position No. 1, Main Workings (10 feet)	400.00
	Total	$ 4,400.00

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7th Month	Continue extension of 23 foot level cross-cut, Main Workings (70 feet)	$ 2,800.00
	Develop drifts at positions 5 and 6, Main Workings (20 feet)	800.00
	Continue westward drift in Rover Workings, 70' level . . . (40 feet)	1,600.00
	Total . .	$ 5,200.00
8th Month	Continue extension of 23 foot level cross-cut, Main Workings (50 feet)	$ 2,000.00
	Continue development of "0" foot level cross-cut, Main Workings (50 feet)	2,000.00
	Continue westward drift, 70 foot level, Rover Workings .(20 feet).	800.00
	Total	$ 4,800.00
9th Month	Continue extension, 23 foot level, Main Workings (50 feet)	$ 2,000.00
	Develop drift at position No. 1 on 23 foot level, Main Workings, or corresponding vein if encountered by cross-cut on "0" foot level (10 feet). . .	400.00
	Continue extension of westward drift, 70' level, Rover Workings (30 feet)	1,200.00
	Begin clean up of shaft at position 7 and development of drifts at 25 foot depth (20 feet)	800.00
	Total . .	$4,400.00
10th Month	Begin drifting along showings of ore at position 8, Rover Workings (10 feet) . . .	$ 400.00
	Continue extension of drift, 70 foot level, Rover Workings (10 feet)	400.00
	Finish extension of "0" foot level cross-cut (100 feet)	4,000.00
	Continue drift, if in ore, at position 7 (10 feet)	400.00
	Total. . .	$5,200.00
11th Month	Complete drift on 70 foot level, Rover Workings (90 feet)	$3,600.00
	Complete drifting on ore at position 7 (10 feet)	400.00
	Complete drifting at position 8, Rover Workings (10 feet)	400.00
	Complete drifting at position 1, 23 foot level, or corresponding ore vein on "0" foot level (15 feet)	600.00
	Total. . .	$5,000.00

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12th Month	Utilize time for making plans and developing any ore veins encountered in course of exploration program, including surveying, engineering plans, and geological investigation, etc. (accountable from funds dedicated previously)	None
	Complete any unfinished part of exploration program outlined due to unavoidable delays, breakdowns, labor shortages, etc. (not accountable in previously estimated work)	$ 1,600.00
	TOTAL	$68,350.00

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AUSTIN, TEXAS
3111 Tom Green St.

September 24, 1951

U. S. Dept. of the Interior,
Defense Minerals dministration
Washington 25, D. C.

Gentlemen:

Submitted herewith are four (4) copies of a report covering the application for aid for an exploration project pursuant to Mineral Order 5 under the Defense Production Act of 1950. This application is made in the name of Sunrise Mining Company of Tucson, Arizona.

Offices of the company are presently located in Austin, Texas, and it is requested that all correspondence pertaining to the report be directed to Mr. A. N. McCallum, Jr., Secretary, Sunrise Mining Company, 702 Scarbrough Building, Austin, Texas.

We trust the application will be found complete in all details and that it may receive your early attention. We trust this application will meet with your approval, and that the company may have an opportunity of proving the existance of additional quantities of critical materials - lead and zinc.

Respectfully submitted,

Frank W. Jessen

Encl.
FWJ/md

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
OCT 1 1951

APPLICATION

OF

SUNRISE MINING COMPANY

TUCSON, ARIZONA

FOR

LOAN ON AN EXPLORATION PROJECT

PURSUANT TO MINERAL ORDER 5

UNDER

DEFENSE PRODUCTION ACT OF 1950

September 21, 1951

F. W. Jessen

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
OCT 1 1951

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

DO NOT FILL IN THIS BLOCK

Docket No. Dmma 21224

Date received 10-1-51

Participation

Sunrise Mining Company
c/o A. N. McCallum, Jr., Secy-Treas.
Chiles, McCallum & Nagle
Scarbrough Building
Austin, Texas

Name and address of applicant

Date Sept. 21, 1951

FILL IN THIS BLOCK

Date of application September 21, 1951

Estimated cost $68,000.00

Mineral or metal Lead & Zinc

Percentage of Government participation 50%

Location of mine Santa Cruz County, Arizona

Date of filing MF-100

DMA Docket Number, if available

INSTRUCTIONS

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

THE APPLICANT

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

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

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

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

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THE PROPERTY

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

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

*11. State the present and former names of the property, if any.

*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.

*13. State source and quantity of water available for operations and its sufficiency at all seasons.
State amount of power to be used, rate per hour or other cost, and source.

*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.

15. State in detail how the ore could be shipped and how and where milled.

*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

*17. Production:
    (*a*) If mine is in production, furnish the following information:

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

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.

19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?

21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.

22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

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

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

CERTIFICATION

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

Sunrise Mining Company
(Name of company)

By Taylor Baker
(Signature of authorized official)

September 21, 1951
(Date)

President
(Title)

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

*Same as footnote on page 1.

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CHEMICAL ENGINEERING PETROLEUM ENGINEERING

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

EXPLORATION PROJECT

1. The applicant referred to herein is a corporation, Sunrise Mining Company, with headquarters in Tucson, Arizona.

2. Not applicable.

3. The names of the principal officers, directors and five largest stockholders are given below:

Name & Address	Official Title	Estimated Net Worth Outside of Applicant	Number of Shares Held in Applicant	
			Common	Preferred
Taylor Glass	President	$250,000	25	None
John Simpson	Vice-Pres.	100,000	25	None
A.N.McCallum,Jr.	Sec.-Treas.	100,000	25	None
C. B. Smith	Director	250,000	50	None
F. W. O'Brien	Director	10,000	25	None
C. W. Owens	Director	75,000	25	None
Emmett Bauknight	Director	60,000	25	None
Joe Bland	Director	200,000	25	None
P. C. Anderson, Temple	Director	250,000	25	None

4. There follows a brief description of the general business experience of the applicant and the experience of various members of the firm of Sunrise Mining Company together with information concerning the individuals who will manage the project.

Taylor Glass - President

Taylor Glass, of Austin, Texas, is 40 years of age, and is the President and a director of Sunrise Mining Company. Mr. Glass is the owner and operator of the Polar Ice Cream Company, a business in which he has been associated for the past 15 years. He is a former Mayor of the City of Austin, serving the city from 1949 to 1951.

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John Simpson - Vice President

Mr. Simpson was born in Waco, Texas. He is 45 years of age. He graduated from Rice Institute in Houston, Texas, and his present business association is Superior Dairies of Austin, of which he is President. Mr. Simpson is also Vice President of Armo Mills of Austin, Texas. He is Vice President and a director of Sunrise Mining Company.

A. N. McCallum, Jr. - Secretary-Treasurer

Mr. McCallum is a native of Austin, and is 49 years of age. He attended the Austin schools and graduated from the University of Texas. He is a partner of the insurance firm of Chiles, McCallum & Nagle. He is Secretary-Treasurer of Sunrise Mining Company and a director of the company.

C. B. Smith - Director

Mr. Smith was born in Comanche, Texas, and is 48 years of age. He is a graduate of the University of Texas. He is a director of the Sunrise Mining Company. Mr. Smith is owner and Manager of C. B. Smith Motors, Dodge and Plymouth dealer in Austin. Mr. Smith is the past President of the of the former Austin Area Economic Development Foundation, a position he has held for the past 3 years.

F. W. O'Brien - Director

Mr. O'Brien is 65 years of age and is a director of the Sunrise Mining Company. His home is in Austin, but he was born in Oakfield, New York. Mr. O'Brien has had much experience in oil and gas production and in mining operations. He was President of the Gulf Stream Oil Company, Inc., of Houston from 1934 to 1941. He is at present associated with the Duplex Advertising Company of Austin as its Sales Manager.

C. H. Owens - Director

Mr. Owens is a native of Indiana and is 54 years of age. He is a director of the Sunrise Mining Company. He is a resident of Austin, Texas, and is owner of the C. H. Owens Company, dealing in building materials of all kinds. He is a director of the West Texas Stone Company of Albany, Texas. From 1929 to 1943 he was Vice-President and General Manager of Texas Quarries, one of the largest building stone producers in Texas. He has had vast experience in production methods in the mining of stone materials.

Emmett Bauknight - Director

Mr. Bauknight is 43 years of age, and is a resident of Austin, Texas. He is an attorney and partner in the firm of Critz, Kuykendall, Bauknight & Stevenson. He is a director of Sunrise Mining Company.

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Paul Anderson - Director

Mr. Anderson is from Temple, Texas, and is 46 years of age. He is a director of Sunrise Mining Company. Mr. Anderson is President and owner of the Anderson Ice Cream Company of Temple. He has varied business experience and is a successful business and civic leader of Temple.

Joe Bland - Director

Mr. Bland is 42 years of age, and is a resident of Austin, Texas. He is a director of Sunrise Mining Company, and is the owner of the Joe Bland Construction Company of Austin. His construction company is one of the major contracting firms of this city. Mr. Bland has had much experience in the handling of heavy equipment and the construction of a variety of projects including large earth-moving operations.

5. The Sunrise Mining Company is the present owner of the Glove group of mines located in Santa Cruz County, Arizona, approximately 9 miles east of Amado, Arizona. A full description of the properties is included in the report submitted with this application. Present ownership is through assignment of an option and purchase contract to Sunrise Mining Company by Mr. F. W. O'Brien, Director of Sunrise Mining Company. This assignment is of an original option and purchase contract secured by Mr. F. W. O'Brien from Mr. E. T. Sheehy of Nogales, Arizona, former owner of the property. Copies of the original option and purchase contract and assignment of Mr. F. W. O'Brien to Sunrise Mining Company are included herewith and are designated as Exhibits 1 and 2 respectively. Exhibit 2-A shows the certificate of incorporation of Sunrise Mining Company issued by the State of Arizona, June 25, 1951.

6. Property held by Sunrise Mining Company carries provisions for payment to Mr. Sheehy of $135,000 cash as a total purchase price, the same being payable as follows:

$16,000 in cash on or before August 8, 1951 and the remaining $119,000 payable in five years ending August 8, 1956. Under the terms of the

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contract Mr. Sheehy is to be paid out of production of ore mined from the property. All such payments are to be credited to Sunrise Mining Company as part payment of the balance due and thus retire the remaining $119,000 according to the terms of the contract.

Reference is made to Exhibit 1 for details of the existing agreement of purchase assigned to Sunrise Mining Company.

7. Not applicable to the present applicant.

8. The current financial statement of the Sunrise Mining Company is attached. Since operations have been in progress for only about 30 days, no profit and loss statement is available, the preliminary work being confined to making minor repairs to existing facilities, building roads, carrying out some exploration work, and putting the mine in first class condition.

9. Sunrise Mining Company is prepared to invest the sum of in the proposed project. This amount is deemed sufficient to pay the Company's part of the cost of the project as detailed in Question 23 of this application form, and is believed to be in accordance with the regulations on government participation.

10. The Glove group of claims, also called the Sheehy-O'Donnell group, consists of 15 unpatented claims. The property is situated mainly in Sec. 30, Township 20 South, Range 14 East in Santa Cruz County, Arizona. Total acreage involved includes approximately 350 acres. The average elevation of the property is 4200 feet. The attached map, shown in Exhibit 3, gives the location of each unpatented claim and the location of the area as a whole in the Santa Cruz Mountains some 7 miles east of Amado, Arizona.

11. The property has been known in the past as the Sheehy-O'Donnell Glove group of mines. The name of the mine is to be retained and will be referred to as the Glove Mine of Sunrise Mining Company.

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12. The claims described lie about 6 miles east of the Chaves siding on the Tuscon-Nogales branch of the Southern-Pacific Railroad and may be reached by driving up a long mesa from that point with but little road work necessary for excellent accessability. Access may also be obtained by road from the town of Amado, also on the Southern-Pacific Railroad, a distance of approximately 9 miles. The road from Amado is readily traversed by truck or passenger car.

13. No water is available at the present time for operations at the mine, however operations are now under way to provide adequate quantities of water for all purposes. A well is to be drilled in Cottonwood Canyon which lies about ½ mile to the south of the principal workings. From all indications and from the depth of a well located just west of this property, water is expected to be encountered at a depth of approximately 200 feet. As far as is known, such a well would supply sufficient water throughout the year for the mining operations contemplated.
All power to be used for the mining operation will be developed by gasoline or diesel engine.

14. There are at present no existing buildings on the property, however there are adequate tunnels, shafts, and drifts, all completely developed. These are described in a report of Robert Lenon, Registered Professional Mining Engineer, furnished to Sunrise Mining Company in May, 1951, see Exhibit 6. The workings are exceptionally clean and require very little clean-out work. There are some 1500 feet of lateral tunnels and drifts, and 4 major shafts. Tunnel operations are particularly adaptable to the development of this property because of the steepness of the topography. The maps accompanying the report of Lenon, shown in exhibit 6, are referred to herewith. In Exhibit 6-A the main tunnels and shafts thus far developed on the property are presented. It is noted that two main tunnel operations are in evidence, (No.1-the main workings) arbitrarily referred to as the "0" foot

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level, extending some 500 feet into the mountain side, has traversed numerous ore showings. Of these, several have been explored by drifting along the ore bodies, however it is to be pointed out that in no case has any single drift been carried more than 96 feet.

Section A-A, which portrays the section through the main shaft and tunnel workings and herein referred to as Exhibit 6-B, shows the relative position of the tunnel levels and ore bodies thus far explored. The other major shaft and tunnel operation thus far developed on the property lies to the east of the main workings, a distance of approximately 600 feet. This tunnel (Rover) begins at an elevation of approximately 70 feet and extends some 300 feet into the mountain and is referred to as Exhibit 6-C.

A separate shaft designated as "Upper Shaft" has also been developed on the 200 ft. level. This shaft is approximately 60 feet in depth and the resulting tunnel operation at elevations of 143 feet and 134 feet has encountered extremely rich, high grade lead and zinc ore. The development in this tunnel has been limited to approximately 75 feet while the major drift along any ore body encountered is not in excess of 45 feet.

As stated previously, all these operations were carried out in first-class order and excellent conditions exist. In addition to the developed portions of the mine briefly described above, there are in place mine rail and ore hoppers which may be utilized in further development and exploration work. Furthermore, 5 or 6 mine cars are available for use.

5. The produced ore is to be hauled by truck either to the Chaves siding, approximately six (6) miles from the mine site or to Amado, a distance of 9 miles from the mine.

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Ore is then to be loaded on cars and shipped by rail to the mill at Sahuarita. The distance of shipments from either Chavez or Amado is less than 25 miles.

It is believed the ore, containing lead and zinc sulfides with some silver, could be handled by the Eagle-Pitcher mill at Sahuarita. Investigations carried out by the Arizona Bureau of Mines indicate the possibility of processing the ores from the Glove Group of Mines to be quite good. Results of milling tests now being carried out are not available at the time of preparation of this report.

16. GEOLOGY AND TOPOGRAPHY

The geology of the area has been well investigated and described by numerous geologists and mining experts and by old prospectors dating back to the early turn of the century. Most recent geological information concerning the area is by John R. Anthony in a dessertation presented to the University of Arizona in June, 1951, as a partial fulfillment of a Master of Arts degree in geology. Anthony's report, cited in Exhibit 3 above, and the complete portion of his report dealing with the economic geology of the Glove group of claims, is included as a part of this report and is referred to for further details.

The salient feature of the geology of the Glove group of mines area is the existence of a large section of limestones and shales which have been intruded by porphyry dikes. The cross-sections, as worked out by Anthony, show this large limestone block area to be most probably thrust in place due to a large displacement from the south, the belief being that the whole limestone section was thrust into its present position and then intruded by the igneous dike material. For a more complete description, reference is made to the previous reports on the property, including the recent report of Anthony (Exhibit 3) and complimented by report of

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Courtnay De Kalb, Mining Engineer of Tucson, Arizona, made on November 12, 1913 and presented in the present report as Exhibit 4. Exhibit 5, which is a report by Hugo W. Miller on the Glove group, was made in August, 1918 and confirms the earlier findings of De Kalb concerning the general geology while also presenting information on the mining operations and ore extracted from the then developed portions of the properties. No further report on the property was made after 1918 until the report prepared for Sunrise Mining Company on the present status of these claims. This report was submitted in April, 1951, by Robert Lenon, registered Mining Engineer of Arizona, residing in Patagonia, Arizona. A copy of his report is included and made a part of this report and is presented as Exhibit 6.

Mineralization occurs along the contacts of porphyry and the limestone, particularly in zones of weakness and along the faulted contact points. For further descriptions, reference is made to Exhibits 3, 4, 5 and 6 where thorough discussions are presented on the geology, mineralization, ore findings, condition of existing mining installations, etc.

A most significant point in considering the present status of the mining properties is the fact that practically no development has taken place since the time of the Miller report in 1918. Comparison of the mine tunnels and shafts described by Miller (Exhibit 5) with those found in the much later reports of Anthony (Exhibit 3) and Lenon (Exhibit 6) shows clearly that the work by the Sheehy interests was limited to the minimum required by law to hold the properties. Hence, the opportunity for enhancing the value of the mine properties by further exploration and development of existing known ore veins appears particularly bright.

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Attention once more is directed to Exhibit 6, the report of Robert Lenon, together with the maps included as part of that exhibit. Exhibit 6-A presents the present development in the principla workings of the Glove Group of mines, while Wxhibit 6-B and Exhibit 6-C present sectionalized drawings of the same workings, section A-A being that of the main working (Exhibit 6-B) while section B-b is that of the Rover Tunnel and shafts (Exhibit 6-C). In Lenon's report 14 samples of ore were taken in the presently developed mine shafts, drifts, and tunnels. These locations of samples, together with descriptions of the type of ore, width of veins sampled, and assay of the ore from each sample taken are included in the descriptive matter of Exhibit 6.

Referring to Exhibit 6-A it is noted that ore of commercial grade is found in all except one of the locations sampled, namely location No. 2. This location, on the east wall of the 23 ft. level in the main tunnel and crosscut, shows 1.2% lead and 2% zinc, while the silver content is only 0.3 ounces per ton, however the area in which sample 2 was taken represents a highly mineralized zone and the character of the ore might well change rather abruptly and hence some further exploration work is indicated. In each of the other instances, it is to be noted that lead contents vary from 1.2% to a maximum of 35%, while zinc contents vary from 2.2% to as high as 31.5%. The overall average of all samples, excluding #2, showed 13.6% lead, 15.0% zinc and an average of 2.7 ounces of silver per ton. The assay work for each of these samples was performed by the Hugo W. Miller assay office of Nogales, Arizona, photographic copies of the assay being a part of the report of Lenon and all are presented in Exhibit 6.

The type of mine operation involved is by both tunnel and shaft, the topography of the area lending itself particularly well to tunnel operation. As may be discerned

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from an examination of Exhibit 6-A, the maximum length of drift on any of the ore bodies has been 96 feet, and in many instances in following ore showings very short drifts were initiated and stopped for no apparent reasons, thus leaving a tremendous amount of development work to be accomplished in the main workings and in the two major tunnel levels best illustrated by Exhibit 6-B, which shows the section through the main tunnel working. The main entrance to the tunnel is taken as elevation zero; the more important workings of the mine have been carried out on the 23 ft. elevation. In addition, there has been one major shaft operation in this working, the top of the shaft being at an elevation of 110 feet. Further stoping has been carried out, however, in this working and some drifting has been done at the 65 ft. level.

In the Rover shaft and tunnel operation, reference is made to Exhibit 6-C which shows a cross-section of this position of the mining operations. Here a tunnel has been carried forward at an elevation of 70 feet, while the upper shaft exploration was begun at an elevation of 200 feet. Depth of the shaft thus far explored is to an elevation of 143 feet, or a depth of 57 feet below the surface. A deviation in the tunnel eminating from this shaft is indicated in that a 9 foot drop from elevation 143 feet to elevation 134 feet developed in tracing the ore body along the porphyry-limestone contact. Here the two major drifts have been carried out to the extent of only 15 feet. As evidenced by samples 12, 13 and 14, these workings are in ore bodies particularly rich in character. The lead content is 17-35%, zinc 10-26% while 2-9% oz. of silver are present. Further mining of this rich ore is imperative and the manner of future development is described under the next section (The Exploration) of this report. Sample 8, a 54" mineralized area in the Rover shaft also represents a very good possibility for further development since drifting here has progressed only 18 feet.

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The mine operations in the past have been well done and the very nature of the rock and the ore bodies themselves is such that no caving has occurred in any part ofthe mine. The workings are in excellent condition and it is necessary to undertake only minor clean-up operations.

To support this statement, it is recorded that Mr. Sheehy suspended operations of a previous contractor in the shaft operation just described (from which samples 12, 13, and 14 were taken) in 1949 because of "poor" mining practices. In this connection, it is of further interest to examine the ore settlement date received from American Smelting and Refining Company's El Paso smelter dated May 26, 1949. This is presented as Exhibit 7 and presents the information on the last ore commercially produced from the Glove group of mines. This settlement data shows 29.5% lead, 14.8% zinc, and 5 oz. of silver per ton, the ore having a net value to the operators of $52.07 per ton.

Value of ore, having an average lead content of 20%, with 10% zinc and approximately 3 oz. of silver per ton, based on current prices amounts to $72.50 per ton.

As a comparison between the last ore commercially produced and shipped from the mines in 1949, the average of all samples presented by the Lenon report, together with information carried in Exhibit 5 showing a summary of ores shipped to the American Smelting and Refining Company at El Paso during the early operation of the mines (1918), Exhibit 8 shows the smelter returns on ore produced by the Sheehy interests in August, 1925. This latter ore showed much the same characteristics of high lead and zinc content (32.8% and 10.9% respectively) and carried 7.8 ounces of silver, returning $35.79 per ton at that time.

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17. PRODUCTION:

The mine described herein is not produced at the present writing, all work being confined to exploration in the two major cross-cut tunnels. This procedure is in accord with the recommendations of Robert Lenon, Registered Mining Engineer of the State of Arizona and is furthermore in agreement with our own views of this matter, insofar as it follows a plan for delineating more ore before beginning operations on an expanded scale.

Production of ore, however, may be obtained immediately from the numerous ore bodies described in Exhibit 6. Actual shipments of ore could be made within seven to ten days.

18. The ores present in the Glove Group of mines have been described elsewhere (see Exhibits 3, 4, 5, and 6). Generally speaking, sulfides of lead and zinc occur together as the major mineral deposits, though carbonates of both metals also occur. Some mixed sulfides and carbonates are found. Little oxidized ore is encountered at depth, though, as expected, some exists at and near the surface outcrops.

All available maps and assays are included in this report and have been referred to previously.

An estimate of the tonnage and grade of each class of ore reserve is difficult though in conformity with the earlier Miller report it is believed to be substantial. Based solely on the ore showings already discovered (and fully described) it is estimated that some 7,000 tons of lead and zinc sulfides (20% lead and 10% zinc) may be recovered while reserves of 6,000 tons of carbonate and/or mixed ores (18% lead, 15% zinc) are delineated.

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19. All conditions and circumstances regarding property fully described.

THE EXPLORATION

20. The exploration described below will be conducted to establish the presence of and recovery of lead and zinc ores, principally lead sulfide (galena) and zinc sulfide (sphalerite) while carbonate ores of both lead and zinc are also present in substantial quantities in many of the veins thus far developed. For a more detailed discussion of the mineralization found in the Glove group of mines reference is made to Exhibits 3, 4, 5, and 6, wherein considerable discussion is directed to this phase of the geological investigations.

21. ANTICIPATED EXPLORATION AND DEVELOPMENT OF MINE

The proposed work is detailed herewith. It is proposed that the Rover tunnel be extended on the 70 ft. level until it has penetrated both sides of the "Birdseye" porphyry dike, considered to be an ore-maker. Since extremely rich ore has been found at the upper levels (at elevation of 134 feet and 143 feet) on one side of this dike and since ore was encountered all the way from the surface by the 60 ft. shaft, this particular exploration work seems highly attractive. It is also felt that mineralization may have increased with depth and that commercial ore production might be expected on the other (northern or hillside) side of the porphyry. In like manner, the existing tunnel of the 23 ft. level in the main workings is to be extended until this encounters the same "Birdseye" porphyry dike. Here again this exploration is deemed highly desirable because of the showings encountered on the surface and at shallow depths by ore showings indicated by sample #7 of the report of Robert Lenon, referred to herein as Exhibit 6. This ore showing is at the far western side of the out-crop of the porphyry dike and has been explored to a slight extent by a shaft approximately 25 feet in depth. This working is also

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indicated on the map of Lenon's report and is referred to under Exhibit 6-A.

In addition to the two extensions in existing cross-cuts mentioned, the tunnel of the main workings found on the zero foot level need, no doubt, be extended to encounter the main ore showings found in the workings of the 23 ft. level tunnel. Furthermore, sufficient ore is in evidence in the drifts from which samples 3, 4, 6, 1, and 8 were taken (described in Exhibit 6) to warrant further mining along the same. Further exploration is also warranted at location No. 5.

Referring once again to the extension of the tunnel on the 70 ft. level (Rover tunnel), should ore be encountered at the limestone-"Birdseye" porphyry contact, drifting along this contact to the west to establish width of vein and grade of ore is a necessity. This work will delineate much ore because of the already known occurrences on the upper shaft level previously referred to and exhibited by samples 12, 13 and 14, referred to in Exhibit 6.

The proposed work is sketched on the maps submitted as Exhibits 6-A, 6-B, and 6-C. The cost estimates for developing the mine in the manner indicated are as follows:

1. Extension of tunnel on the 70 ft. level, (the Rover workings)	$ 3,500.00
2. Extension of tunnel on the 23 ft. level of the main workings	3,000.00
3. Extension of the "0" ft. level in the main workings	9,000.00
4. Development of drifts along each indicated area corresponding to the location number.	8,000.00
5. Extension of drifts at "Birdseye" porphyry contact in the Rover workings	13,000.00
6. Development of drift western out-crop of "Birdseye" porphyry	2,000.00
7. Extension of 23' cross-cut tunnel 400' into hillside	20,000.00
TOTAL	$58,500.00

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The estimated time required for completion of the proposed work of exploration and development of some of the inadequately developed ore bodies already known to exist in the present workings is 234 working days or approximately one year, considering 20 working days per month.

22. Completed - See maps, assays, etc. already assembled.

THE REQUIREMENTS AND COSTS

23.

	12 Months Operations
(a) Labor (direct):	
3 Miners @ $16.00/day, 960/mo.	$10,520.00
3 Muckers @ $12.00/day, 720/mo.	8,640.00
1 Driver @ $10.00/day, 200/mo.	2,400.00
(b) Supervisors:	
1 Superintendent @ 800/mo.	9,600.00
1 Foreman @ 400/mo.	4,800.00
1 Engineer @ 360/mo.	4,320.00
	$40,280.00
(c) Cost of Necessary Repairs to Existing Facilities:	
Repair of mine warehouse building	$ 500.00
(d) Cost of Necessary New Buildings, Facilities, etc.:	
Construction of miners' quarters	$ 2,000.00
Construction of small office at mine site	750.00
	$ 2,750.00
(e) Cost of Items of Equipment to be Purchased:	
1 - 210 Cfm Compressor	$ 2,500.00
Drills and Accessories	1,500.00
Pick-up Truck with Compound Drive	2,500.00
6 - Mine cars (used)	600.00
Mine rail, 12#, 1200' (used)	250.00
Pipe and Fittings, 5,000' of 2", 1" and 3/4"	3,500.00
Track Ties and Chute Timber	1,000.00
	$11,850.00
(f) Cost of Rental for Equipment Proposed to be Rented:	
Blower and Ventilating Pipe	$ 300.00

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(g) Rental Value of Equipment Now Owned by Operator:

None . . . . . None

(h) Cost of Materials and Supplies, including Items of Equipment Costing Less than $50.00 each:

Hand Tools	$ 1,500.00
Gasoline, oil, carbide, etc.	2,000.00
Dynamite, caps, fuses, etc.	4,000.00
	$ 7,500.00

(i) Cost of Power, Water, or Other Items not Listed Above:

Drilling water well, approximately 200' deep, and equipping with pump and tank	$ 2,500.00
Purchase of 1,000' of 2" line, and laying to mine area and camp	1,000.00
Build and grade 1½-2 miles of road to Amado Mine	1,500.00
	$ 5,000.00

GRAND TOTAL $68,180.00

24. A proposed time schedule for the work projected under 21 and 23 above, together with an estimate of progress expected and the expenditures involved follows:

Date After Approval of Project	Work Initiated	Expenditures
1st Month	Repair and grade road	$ 1,000.00
	Drill and equip water well	2,500.00
	Lay water lines to camp	1,000.00
	Repair existing warehouse	500.00
	Begin construction of camp facilities	1,000.00
	Total	$ 5,000.00
2nd Month	Purchase equipment, Supplies and materials:	
	Equipment - see permanent equipment list, Item 23	$11,850.00
	Supplies and materials, including 1/2 of amount allocated to "Hand Tools"	750.00
	1/4 of amount allocated to expendable items such as gasoline, oils, dynamite, fuses, caps, etc.	1,000.00
		$13,600.00
	Complete construction of camp facilities	1,750.00

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2nd Month (Continued)	Begin extension of cross-cut tunnel on 23' level - Main Workings (30 ft.)	$ 1,200.00
	Total	$16,550.00
3rd Month	Complete purchase of equipment and supplies	$ 3,750.00
	Continue extension of 23 foot level cross-cut - Main Workings (50 feet)	2,000.00
	Begin extension of 70 foot level cross-cut, Rover Workings (30 feet)	1,200.00
	Begin extension of "0" foot level cross-cut - Main Workings (30 feet)	1,200.00
	Total	$ 8,150.00
4th Month	Continue extension of 23 foot level cross-cut, Main Workings (50 feet)	$ 2,000.00
	Develop drifts at positions 3 and 4, Main Workings (20 feet)	800.00
	Continue development "0" foot level cross-cut, Main Workings (30 feet)	1,200.00
	Total	$4,000.00
5th Month	Continue extension of 23 foot level cross cut, Main Workings (50 feet)	$ 2,000.00
	Complete 70 foot extension of the 70 foot level, Rober Workings (50 feet)	2,000.00
	Begin drift (to westward) along Limestone-"Birdseye" Porphyry dike contact on 70 foot level, Rover Workings (10 feet)	400.00
	Develop drifts at positions 5 and 6, Main Workings (20 feet)	800.00
	Total	$ 5,200.00
6th Month	Continue extension of 23 foot level cross-cut, Main Workings (50 feet)	$ 2,000.00
	Continue westward drift, Rover Workings, described above (50 feet)	2,000.00
	Begin drifts extending both east and west at position No. 1, Main Workings (10 feet)	400.00
	Total	$ 4,400.00

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7th Month	Continue extension of 23 foot level cross-cut, Main Workings (70 feet)	$ 2,800.00
	Develop drifts at positions 5 and 6, Main Workings (20 feet)	800.00
	Continue westward drift in Rover Workings, 70' level . . . (40 feet)	1,600.00
	Total . .	$ 5,200.00
8th Month	Continue extension of 23 foot level cross-cut, Main Workings (50 feet)	$ 2,000.00
	Continue development of "O" foot level cross-cut, Main Workings (50 feet)	2,000.00
	Continue westward drift, 70 foot level, Rover Workings .(20.feet).	800.00
	Total	$ 4,800.00
9th Month	Continue extension, 23 foot level, Main Workings (50 feet)	$ 2,000.00
	Develop drift at position No. 1 on 23 foot level, Main Workings, or corresponding vein if encountered by cross-cut on "O" foot level (10 feet). . .	400.00
	Continue extension of westward drift, 70' level, Rover Workings (30 feet)	1,200.00
	Begin clean up of shaft at position 7 and development of drifts at 25 foot depth (20 feet)	800.00
	Total . .	$4,400.00
10th Month	Begin drifting along showings of ore at position 8, Rover Workings (10 feet) . . .	$ 400.00
	Continue extension of drift, 70 foot level, Rover Workings (10 feet)	400.00
	Finish extension of "O" foot level cross-cut (100 feet)	4,000.00
	Continue drift, if in ore, at position 7 (10 feet)	400.00
	Total. . .	$5,200.00
11th Month	Complete drift on 70 foot level, Rover Workings (90 feet)	$3,600.00
	Complete drifting on ore at position 7 (10 feet)	400.00
	Complete drifting at position 8, Rover Workings (10 feet)	400.00
	Complete drifting at position 1, 23 foot level, or corresponding ore vein on "O" foot level (15 feet)	600.00
	Total. . .	$5,000.00

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12th Month	Utilize time for making plans and developing any ore veins encountered in course of exploration program, including surveying, engineering plans, and geological investigation, etc. (accountable from funds dedicated previously)	None
	Complete any unfinished part of exploration program outlined due to unavoidable delays, breakdowns, labor shortages, etc. (not accountable in previously estimated work)	$ 1,600.00
	TOTAL	$68,350.00

CHEMICAL ENGINEERING

PETROLEUM ENGINEERING

FRANK W. JESSEN
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AUSTIN, TEXAS
3111 Tom Green St.

DEFENSE MINERALS
ADMINISTRATION
WASHINGTON, D. C.
OCT 1 3 52 PM '51

September 24, 1951

U. S. Dept. of the Interior,
Defense Minerals Administration
Washington 25, D. C.

Gentlemen:

Submitted herewith are four (4) copies of a report covering the application for aid for an exploration project pursuant to Mineral Order 5 under the Defense Production Act of 1950. This application is made in the name of Sunrise Mining Company of Tucson, Arizona.

Offices of the company are presently located in Austin, Texas, and it is requested that all correspondence pertaining to the report be directed to Mr. A. N. McCallum, Jr., Secretary, Sunrise Mining Company, 702 Scarbrough Building, Austin, Texas.

We trust the application will be found complete in all details and that it may receive your early attention. We trust this application will meet with your approval, and that the company may have an opportunity of proving the existance of additional quantities of critical materials - lead and zinc.

Respectfully submitted,

Frank W. Jessen

Encl.
FWJ/md

APPLICATION

OF

[illegible] MINING COMPANY

[illegible], [illegible]

FOR

LEASE ON AN EXPLORATORY PROJECT

PURSUANT TO MINERAL SUBPART 5

UNDER

DEFENSE PRODUCTION ACT OF 1950

September 21, 1951

F. H. Jensen

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

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

DEFENSE MINERALS ADMINISTRATION
WASHINGTON D. C.
OCT 1 3 12 PM '51

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

DO NOT FILL IN THIS BLOCK

Docket No. DMA 21 24

Date received 10-1-51

Participation

Sunrise Mining Company
c/o A. L. McCallum, Jr., Secy-Treas.
Chiles, McCallum & Maple
Searbrough Building
Austin, Texas

Name and address of applicant

Date Sept. 21, 1951

FILL IN THIS BLOCK

Date of application September 21, 1951

Estimated cost 68,000.00

Mineral or metal Lead & Zinc

Percentage of Government participation 50%

Location of mine Santa Cruz County, Arizona

Date of filing MF-100

DMA Docket Number, if available

INSTRUCTIONS

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

THE APPLICANT

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

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

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

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

16—64067-1

THE PROPERTY

*10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.

(*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

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

*11. State the present and former names of the property, if any.

*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.

*13. State source and quantity of water available for operations and its sufficiency at all seasons. State amount of power to be used, rate per hour or other cost, and source.

*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.

15. State in detail how the ore could be shipped and how and where milled.

*16. History:

(*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property with reasons for any past suspensions of operations.

(*b*) State briefly the known history and production of adjoining and neighboring properties.

(*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

*17. Production:

(*a*) If mine is in production, furnish the following information:

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

*18. Ore or mineral reserves: (If property is or has been operating.)

(*a*) Describe the ore or mineral deposits briefly.

(*b*) Submit available maps and assay data.

(*c*) Give estimated tonnage and grade of each class of ore reserves.

19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?

21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

NOTE.—The Government will not participate in a project that will require more than 2 years to complete.

22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:

(*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.

(*b*) Supervisors, by numbers and positions, with salaries of each.

(*c*) Cost of necessary repairs to existing facilities, structures, and buildings.

(*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.

(*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.

(*f*) Cost of rental for equipment which the operator proposes to rent.

(*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.

(*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.

(*i*) Cost of power, water, utilities, and any other items not provided for above.

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

CERTIFICATION

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

Sunrise Mining Company (Name of company) By Taylor Blase (Signature of authorized official)

September 21, 1951 President (Title)

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

*Same as footnote on page 1.

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

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

EXPLORATION PROJECT

1. The applicant referred to herein is a corporation, Sunrise Mining Company, with headquarters in Tucson, Arizona.

2. Not applicable.

3. The names of the principal officers, directors and five largest stockholders are given below:

Name & Address	Official Title	Estimated Net Worth Outside of Applicant	Number of Shares Held in Applicant Common	Preferred
Taylor Glass	President	$250,000	25	None
John Simpson	Vice-Pres.	100,000	25	None
A.M.McCallum,Jr.	Sec.-Treas.	100,000	25	None
C. B. Smith	Director	250,000	50	None
F. W. O'Brien	Director	10,000	25	None
C. W. Owens	Director	75,000	25	None
Emmett Bauknight	Director	60,000	25	None
Joe Bland	Director	200,000	25	None
P. C. Anderson, Temple	Director	250,000	25	None

4. There follows a brief description of the general business experience of the applicant and the experience of various members of the firm of Sunrise Mining Company together with information concerning the individuals who will manage the project.

Taylor Glass - President

Taylor Glass, of Austin, Texas, is 40 years of age, and is the President and a director of Sunrise Mining Company. Mr. Glass is the owner and operator of the Polar Ice Cream Company, a business in which he has been associated for the past 15 years. He is a former Mayor of the City of Austin, serving the city from 1949 to 1951.

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John Simpson - Vice President

Mr. Simpson was born in Waco, Texas. He is 45 years of age. He graduated from Rice Institute in Houston, Texas, and his present business association is Superior Dairies of Austin, of which he is President. Mr. Simpson is also Vice President of Armo Mills of Austin, Texas. He is Vice President and a director of Sunrise Mining Company.

A. N. McCallum, Jr. - Secretary-Treasurer

Mr. McCallum is a native of Austin, and is 49 years of age. He attended the Austin schools and graduated from the University of Texas. He is a partner of the insurance firm of Chiles, McCallum & Nagle. He is Secretary-Treasurer of Sunrise Mining Company and a director of the company.

C. B. Smith - Director

Mr. Smith was born in Comanche, Texas, and is 48 years of age. He is a graduate of the University of Texas. He is a director of the Sunrise Mining Company. Mr. Smith is owner and Manager of C. B. Smith Motors, Dodge and Plymouth dealer in Austin. Mr. Smith is the past President of the of the former Austin Area Economic Development Foundation, a position he has held for the past 3 years.

F. M. O'Brien - Director

Mr. O'Brien is 65 years of age and is a director of the Sunrise Mining Company. His home is in Austin, but he was born in Oakfield, New York. Mr. O'Brien has had much experience in oil and gas production and in mining operations. He was President of the Gulf Stream Oil Company, Inc., of Houston from 1934 to 1941. He is at present associated with the Duplex Advertising Company of Austin as its Sales Manager.

C. H. Owens - Director

Mr. Owens is a native of Indiana and is 54 years of age. He is a director of the Sunrise Mining Company. He is a resident of Austin, Texas, and is owner of the C. H. Owens Company, dealing in building materials of all kinds. He is a director of the West Texas Stone Company of Albany, Texas. From 1929 to 1943 he was Vice-President and General Manager of Texas Quarries, one of the largest building stone producers in Texas. He has had vast experience in production methods in the mining of stone materials.

Emmett Bauknight - Director

Mr. Bauknight is 43 years of age, and is a resident of Austin, Texas. He is an attorney and partner in the firm of Critz, Kuykendall, Bauknight & Stevenson. He is a director of Sunrise Mining Company.

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Paul Anderson - Director

Mr. Anderson is from Temple, Texas, and is 46 years of age. He is a director of Sunrise Mining Company. Mr. Anderson is President and owner of the Anderson Ice Cream Company of Temple. He has varied business experience and is a successful business and civic leader of Temple.

Joe Bland - Director

Mr. Bland is 42 years of age, and is a resident of Austin, Texas. He is a director of Sunrise Mining Company, and is the owner of the Joe Bland Construction Company of Austin. His construction company is one of the major contracting firms of this city. Mr. Bland has had much experience in the handling of heavy equipment and the construction of a variety of projects including large earth-moving operations.

5. The Sunrise Mining Company is the present owner of the Glove group of mines located in Santa Cruz County, Arizona, approximately 9 miles east of Amado, Arizona. A full description of the properties is included in the report submitted with this application. Present ownership is through assignment of an option and purchase contract to Sunrise Mining Company by Mr. F. W. O'Brien, Director of Sunrise Mining Company. This assignment is of an original option and purchase contract secured by Mr. F. W. O'Brien from Mr. E. T. Sheehy of Nogales, Arizona, former owner of the property. Copies of the original option and purchase contract and assignment of Mr. F. W. O'Brien to Sunrise Mining Company are included herewith and are designated as Exhibits 1 and 2 respectively. Exhibit 2-A shows the certificate of incorporation of Sunrise Mining Company issued by the State of Arizona, June 25, 1951.

6. Property held by Sunrise Mining Company carries provisions for payment to Mr. Sheehy of $135,000 cash as a total purchase price, the same being payable as follows:

$16,000 in cash on or before August 8, 1951 and the remaining $119,000 payable in five years ending August 8, 1956. Under the terms of the

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contract Mr. Sheehy is to be paid out of production of ore mined from the property. All such payments are to be credited to Sunrise Mining Company as part payment of the balance due and thus retire the remaining $119,000 according to the terms of the contract.

Reference is made to Exhibit 1 for details of the existing agreement of purchase assigned to Sunrise Mining Company.

7. Not applicable to the present applicant.

8. The current financial statement of the Sunrise Mining Company is attached. Since operations have been in progress for only about 30 days, no profit and loss statement is available, the preliminary work being confined to making minor repairs to existing facilities, building roads, carrying out some exploration work, and putting the mine in first class condition.

9. Sunrise Mining Company is prepared to invest the sum of in the proposed project. This amount is deemed sufficient to pay the Company's part of the cost of the project as detailed in Question 23 of this application form, and is believed to be in accordance with the regulations on government participation.

10. The Glove group of claims, also called the Sheehy-O'Donnell group, consists of 15 unpatented claims. The property is situated mainly in Sec. 30, Township 20 South, Range 14 East in Santa Cruz County, Arizona. Total acreage involved includes approximately 350 acres. The average elevation of the property is 4200 feet. The attached map, shown in Exhibit 3, gives the location of each unpatented claim and the location of the area as a whole in the Santa Cruz Mountains some 7 miles east of Amado, Arizona.

11. The property has been known in the past as the Sheehy-O'Donnell Glove group of mines. The name of the mine is to be retained and will be referred to as the Glove Mine of Sunrise Mining Company.

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12. The claims described lie about 6 miles east of the Chaves siding on the Tuscon-Nogales branch of the Southern-Pacific Railroad and may be reached by driving up a long mesa from that point with but little road work necessary for excellent accessability. Access may also be obtained by road from the town of Amado, also on the Southern-Pacific Railroad, a distance of approximately 9 miles. The road from Amado is readily traversed by truck or passenger car.

13. No water is available at the present time for operations at the mine, however operations are now under way to provide adequate quantities of water for all purposes. A well is to be drilled in Cottonwood Canyon which lies about ½ mile to the south of the principal workings. From all indications and from the depth of a well located just west of this property, water is expected to be encountered at a depth of approximately 200 feet. As far as is known, such a well would supply sufficient water throughout the year for the mining operations contemplated.
All power to be used for the mining operation will be developed by gasoline or diesel engine.

14. There are at present no existing buildings on the property, however there are adequate tunnels, shafts, and drifts, all completely developed. These are described in a report of Robert Lenon, Registered Professional Mining Engineer, furnished to Sunrise Mining Company in May, 1951, see Exhibit 6. The workings are exceptionally clean and require very little clean-out work. There are some 1500 feet of lateral tunnels and drifts, and 4 major shafts. Tunnel operations are particularly adaptable to the development of this property because of the steepness of the topography. The maps accompanying the report of Lenon, shown in Exhibit 6, are referred to herewith. In Exhibit 6-A the main tunnels and shafts thus far developed on the property are presented. It is noted that two main tunnel operations are in evidence, (No.1-the main workings) arbitrarily referred to as the "0" foot

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level, extending some 500 feet into the mountain side, has traversed numerous ore showings. Of these, several have been explored by drifting along the ore bodies, however it is to be pointed out that in no case has any single drift been carried more than 96 feet.

Section A-A, which portrays the section through the main shaft and tunnel workings and herein referred to as Exhibit 6-B, shows the relative position of the tunnel levels and ore bodies thus far explored. The other major shaft and tunnel operation thus far developed on the property lies to the east of the main workings, a distance of approximately 600 feet. This tunnel (Rover) begins at an elevation of approximately 70 feet and extends some 300 feet into the mountain and is referred to as Exhibit 6-C.

A separate shaft designated as "Upper Shaft" has also been developed on the 200 ft. level. This shaft is approximately 60 feet in depth and the resulting tunnel operation at elevations of 143 feet and 134 feet has encountered extremely rich, high grade lead and zinc ore. The development in this tunnel has been limited to approximately 75 feet while the major drift along any ore body encountered is not in excess of 45 feet.

As stated previously, all these operations were carried out in first-class order and excellent conditions exist. In addition to the developed portions of the mine briefly described above, there are in place mine rail and ore hoppers which may be utilized in further development and exploration work. Furthermore, 5 or 6 mine cars are available for use.

15. The produced ore is to be hauled by truck either to the Chavez siding, approximately six (6) miles from the mine site or to Amado, a distance of 9 miles from the mine.

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Ore is then to be loaded on cars and shipped by rail to the mill at Sahuarita. The distance of shipments from either Chaves or Amado is less than 25 miles.

It is believed the ore, containing lead and zinc sulfides with some silver, could be handled by the Eagle-Picher mill at Sahuarita. Investigations carried out by the Arizona Bureau of Mines indicate the possibility of processing the ores from the Glove Group of Mines to be quite good. Results of milling tests now being carried out are not available at the time of preparation of this report.

16. GEOLOGY AND TOPOGRAPHY

The geology of the area has been well investigated and described by numerous geologists and mining experts and by old prospectors dating back to the early turn of the century. Most recent geological information concerning the area is by John R. Anthony in a dessertation presented to the University of Arizona in June, 1951, as a partial fulfillment of a Master of Arts degree in geology. Anthony's report, cited in Exhibit 3 above, and the complete portion of his report dealing with the economic geology of the Glove group of claims, is included as a part of this report and is referred to for further details.

The salient feature of the geology of the Glove group of mines area is the existence of a large section of limestones and shales which have been intruded by porphyry dikes. The cross-sections, as worked out by Anthony, show this large limestone block area to be most probably thrust in place due to a large displacement from the south, the belief being that the whole limestone section was thrust into its present position and then intruded by the igneous dike material. For a more complete description, reference is made to the previous reports on the property, including the recent report of Anthony (Exhibit 3) and complimented by report of

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Courtnay De Kalb, Mining Engineer of Tucson, Arizona, made on November 12, 1913 and presented in the present report as Exhibit 4. Exhibit 5, which is a report by Hugo W. Miller on the Glove group, was made in August, 1918 and confirms the earlier findings of De Kalb concerning the general geology while also presenting information on the mining operations and ore extracted from the then developed portions of the properties. No further report on the property was made after 1918 until the report prepared for Sunrise Mining Company on the present status of these claims. This report was submitted in April, 1951, by Robert Lenon, registered Mining Engineer of Arizona, residing in Patagonia, Arizona. A copy of his report is included and made a part of this report and is presented as Exhibit 6.

Mineralization occurs along the contacts of porphyry and the limestone, particularly in zones of weakness and along the faulted contact points. For further descriptions, reference is made to Exhibits 3, 4, 5 and 6 where thorough discussions are presented on the geology, mineralization, ore findings, condition of existing mining installations, etc.

A most significant point in considering the present status of the mining properties is the fact that practically no development has taken place since the time of the Miller report in 1918. Comparison of the mine tunnels and shafts described by Miller (Exhibit 5) with those found in the much later reports of Anthony (Exhibit 3) and Lenon (Exhibit 6) shows clearly that the work by the Sheehy interests was limited to the minimum required by law to hold the properties. Hence, the opportunity for enhancing the value of the mine properties by further exploration and development of existing known ore veins appears particularly bright.

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Attention once more is directed to Exhibit 6, the report of Robert Lenon, together with the maps included as part of that exhibit. Exhibit 6-A presents the present development in the principle workings of the Glove Group of mines, while Exhibit 6-B and Exhibit 6-C present sectionalized drawings of the same workings, section A-A being that of the main working (Exhibit 6-B) while section B-b is that of the Rover Tunnel and shafts (Exhibit 6-C). In Lenon's report 14 samples of ore were taken in the presently developed mine shafts, drifts, and tunnels. These locations of samples, together with descriptions of the type of ore, width of veins sampled, and assay of the ore from each sample taken are included in the descriptive matter of Exhibit 6.

Referring to Exhibit 6-A it is noted that ore of commercial grade is found in all except one of the locations sampled, namely location No. 2. This location, on the east wall of the 23 ft. level in the main tunnel and crosscut, shows 1.2% lead and 2% zinc, while the silver content is only 0.3 ounces per ton, however the area in which sample 2 was taken represents a highly mineralized zone and the character of the ore might well change rather abruptly and hence some further exploration work is indicated. In each of the other instances, it is to be noted that lead contents vary from 1.2% to a maximum of 35%, while zinc contents vary from 2.2% to as high as 31.5%. The overall average of all samples, excluding #2, showed 13.6% lead, 15.0% zinc and an average of 2.7 ounces of silver per ton. The assay work for each of these samples was performed by the Hugo W. Miller assay office of Nogales, Arizona, photographic copies of the assay being a part of the report of Lenon and all are presented in Exhibit 6.

The type of mine operation involved is by both tunnel and shaft, the topography of the area lending itself particularly well to tunnel operation. As may be discerned

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from an examination of Exhibit 6-A, the maximum length of drift on any of the ore bodies has been 96 feet, and in many instances in following ore showings very short drifts were initiated and stopped for no apparent reasons, thus leaving a tremendous amount of development work to be accomplished in the main workings and in the two major tunnel levels best illustrated by Exhibit 6-B, which shows the section through the main tunnel working. The main entrance to the tunnel is taken as elevation zero; the more important workings of the mine have been carried out on the 23 ft. elevation. In addition, there has been one major shaft operation in this working, the top of the shaft being at an elevation of 110 feet. Further stoping has been carried out, however, in this working and some drifting has been done at the 65 ft. level.

In the Rover shaft and tunnel operation, reference is made to Exhibit 6-C which shows a cross-section of this position of the mining operations. Here a tunnel has been carried forward at an elevation of 70 feet, while the upper shaft exploration was begun at an elevation of 200 feet. Depth of the shaft thus far explored is to an elevation of 143 feet, or a depth of 57 feet below the surface. A deviation in the tunnel eminating from this shaft is indicated in that a 9 foot drop from elevation 143 feet to elevation 134 feet developed in tracing the ore body along the porphyry-limestone contact. Here the two major drifts have been carried out to the extent of only 15 feet. As evidenced by samples 12, 13 and 14, these workings are in ore bodies particularly rich in character. The lead content is 17-35%, zinc 10-26% while 2-9% oz. of silver are present. Further mining of this rich ore is imperative and the manner of future development is described under the next section (The Exploration) of this report. Sample 8, a 54" mineralized area in the Rover shaft also represents a very good possibility for further development since drifting here has progressed only 18 feet.

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The mine operations in the past have been well done and the very nature of the rock and the ore bodies themselves is such that no caving has occurred in any part ofthe mine. The workings are in excellent condition and it is necessary to undertake only minor clean-up operations.

To support this statement, it is recorded that Mr. Sheehy suspended operations of a previous contractor in the shaft operation just described (from which samples 12, 13, and 14 were taken) in 1949 because of "poor" mining practices. In this connection, it is of further interest to examine the ore settlement date received from American Smelting and Refining Company's El Paso smelter dated May 26, 1949. This is presented as Exhibit 7 and presents the information on the last ore commercially produced from the Glove group of mines. This settlement data shows 29.5% lead, 14.8% zinc, and 5 oz. of silver per ton, the ore having a net value to the operators of $52.07 per ton.

Value of ore, having an average lead content of 20%, with 10% zinc and approximately 3 oz. of silver per ton, based on current prices amounts to $72.50 per ton.

As a comparison between the last ore commercially produced and shipped from the mines in 1949, the average of all samples presented by the Lenon report, together with information carried in Exhibit 5 showing a summary of ores shipped to the American Smelting and Refining Company at El Paso during the early operation of the mines (1918), Exhibit 8 shows the smelter returns on ore produced by the Sheehy interests in August, 1925. This latter ore showed much the same characteristics of high lead and zinc content (32.8% and 10.9% respectively) and carried 7.8 ounces of silver, returning $35.79 per ton at that time.

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17. PRODUCTION:

The mine described herein is not produced at the present writing, all work being confined to exploration in the two major cross-cut tunnels. This procedure is in accord with the recommendations of Robert Lenon, Registered Mining Engineer of the State of Arizona and is furthermore in agreement with our own views of this matter, insofar as it follows a plan for delineating more ore before beginning operations on an expanded scale.

Production of ore, however, may be obtained immediately from the numerous ore bodies described in Exhibit 6. Actual shipments of ore could be made within seven to ten days.

18. The ores present in the Glove Group of mines have been described elsewhere (see Exhibits 3, 4, 5, and 6). Generally speaking, sulfides of lead and zinc occur together as the major mineral deposits, though carbonates of both metals also occur. Some mixed sulfides and carbonates are found. Little oxidized ore is encountered at depth, though, as expected, some exists at and near the surface outcrops.

All available maps and assays are included in this report and have been referred to previously.

An estimate of the tonnage and grade of each class of ore reserve is difficult though in conformity with the earlier Miller report it is believed to be substantial. Based solely on the ore showings already discovered (and fully described) it is estimated that some 7000 tons of lead and zinc sulfides (20% lead and 10% zinc) may be recovered while reserves of 6,000 tons of carbonate and/or mixed ores (18% lead, 15% zinc) are delineated.

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19. All conditions and circumstances regarding property fully described.

THE EXPLORATION

20. The exploration described below will be conducted to establish the presence of and recovery of lead and zinc ores, principally lead sulfide (galena) and zinc sulfide (sphalerite) while carbonate ores of both lead and zinc are also present in substantial quantities in many of the veins thus far developed. For a more detailed discussion of the mineralization found in the Glove group of mines reference is made to Exhibits 3, 4, 5, and 6, wherein considerable discussion is directed to this phase of the geological investigations.

21. ANTICIPATED EXPLORATION AND DEVELOPMENT OF MINE

The proposed work is detailed herewith. It is proposed that the Rover tunnel be extended on the 70 ft. level until it has penetrated both sides of the "Birdseye" porphyry dike, considered to be an ore-maker. Since extremely rich ore has been found at the upper levels (at elevation of 134 feet and 143 feet) on one side of this dike and since ore was encountered all the way from the surface by the 60 ft. shaft, this particular exploration work seems highly attractive. It is also felt that mineralization may have increased with depth and that commercial ore production might be expected on the other (northern or hillside) side of the porphyry. In like manner, the existing tunnel of the 23 ft. level in the main workings is to be extended until this encounters the same "Birdseye" porphyry dike. Here again this exploration is deemed highly desirable because of the showings encountered on the surface and at shallow depths by ore showings indicated by sample #7 of the report of Robert Lenon, referred to herein as Exhibit 6. This ore showing is at the far western side of the out-crop of the porphyry dike and has been explored to a slight extent by a shaft approximately 25 feet in depth. This working is also

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indicated on the map of Lenon's report and is referred to under Exhibit 6-A.

In addition to the two extensions in existing cross-cuts mentioned, the tunnel of the main workings found on the zero foot level need, no doubt, be extended to encounter the main ore showings found in the workings of the 23 ft. level tunnel. Furthermore, sufficient ore is in evidence in the drifts from which samples 3, 4, 6, 1, and 8 were taken (described in Exhibit 6) to warrant further mining along the same. Further exploration is also warranted at location No. 5.

Referring once again to the extension of the tunnel on the 70 ft. level (Rover tunnel), should ore be encountered at the limestone-"Birdseye" porphyry contact, drifting along this contact to the west to establish width of vein and grade of ore is a necessity. This work will delineate much ore because of the already known occurrences on the upper shaft level previously referred to and exhibited by samples 12, 13 and 14, referred to in Exhibit 6.

The proposed work is sketched on the maps submitted as Exhibits 6-A, 6-B, and 6-C. The cost estimates for developing the mine in the manner indicated are as follows:

1. Extension of tunnel on the 70 ft. level, (the Rover workings)	$ 3,500.00
2. Extension of tunnel on the 23 ft. level of the main workings	3,000.00
3. Extension of the "0" ft. level in the main workings	9,000.00
4. Development of drifts along each indicated area corresponding to the location number.	8,000.00
5. Extension of drifts at "Birdseye" porphyry contact in the Rover workings	13,000.00
6. Development of drift western out-crop of "Birdseye" porphyry	2,000.00
7. Extension of 23' cross-cut tunnel 400' into hillside	20,000.00
TOTAL	$58,500.00

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The estimated time required for completion of the proposed work of exploration and development of some of the inadequately developed ore bodies already known to exist in the present workings is 234 working days or approximately one year, considering 20 working days per month.

22. Completed - See maps, assays, etc. already assembled.

THE REQUIREMENTS AND COSTS

23.

	12 Months Operations
(a) Labor (direct):	
3 Miners @ $16.00/day, 960/mo.	$10,520.00
3 Muckers @ $12.00/day, 720/mo.	8,640.00
1 Driver @ $10.00/day, 200/mo.	2,400.00
(b) Supervisors:	
1 Superintendent @ 800/mo.	9,600.00
1 Foreman @ 400/mo.	4,800.00
1 Engineer @ 360/mo.	4,320.00
	$40,280.00
(c) Cost of Necessary Repairs to Existing Facilities:	
Repair of mine warehouse building	$ 500.00
(d) Cost of Necessary New Buildings, Facilities, etc.:	
Construction of miners' quarters	$ 2,000.00
Construction of small office at mine site	750.00
	$ 2,750.00
(e) Cost of Items of Equipment to be Purchased:	
1 - 210 Cfm Compressor	$ 2,500.00
Drills and Accessories	1,500.00
Pick-up Truck with Compound Drive	2,500.00
6 - Mine cars (used)	600.00
Mine rail, 12#, 1200' (used)	250.00
Pipe and Fittings, 5,000' of 2", 1" and 3/4"	3,500.00
Track Ties and Chute Timber	1,000.00
	$11,850.00
(f) Cost of Rental for Equipment Proposed to be Rented:	
Blower and Ventilating Pipe	$ 300.00

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(g) Rental Value of Equipment Now Owned by Operator:

None	None

(h) Cost of Materials and Supplies, including Items of Equipment Costing Less than $50.00 each:

Hand Tools	$ 1,500.00
Gasoline, oil, carbide, etc.	2,000.00
Dynamite, caps, fuses, etc.	4,000.00
	$ 7,500.00

(i) Cost of Power, Water, or Other Items not Listed Above:

Drilling water well, approximately 200' deep, and equipping with pump and tank	$ 2,500.00
Purchase of 1,000' of 2" line, and laying to mine area and camp	1,000.00
Build and grade 1½-2 miles of road to Amado Mine	1,500.00
	$ 5,000.00

GRAND TOTAL $68,180.00

24. A proposed time schedule for the work projected under 21 and 23 above, together with an estimate of progress expected and the expenditures involved follows:

Date After Approval of Project	Work Initiated	Expenditures
1st Month	Repair and grade road	$ 1,000.00
	Drill and equip water well.	2,500.00
	Lay water lines to camp	1,000.00
	Repair existing warehouse	500.00
	Begin construction of camp facilities	1,000.00
	Total	$ 6,000.00
2nd Month	Purchase equipment, Supplies and materials:	
	Equipment - see permanent equipment list, Item 23	$11,850.00
	Supplies and materials, including 1/2 of amount allocated to "Hand Tools"	750.00
	1/4 of amount allocated to expendable items such as gasoline, oils, dynamite, fuses, caps, etc.	1,000.00
		$13,600.00
	Complete construction of camp facilities	1,750.00

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2nd Month (Continued)	Begin extension of cross-cut tunnel on 23' level - Main Workings (30 ft.)	1,200.00
	Total	$16,550.00
3rd Month	Complete purchase of equipment and supplies	$ 3,750.00
	Continue extension of 23 foot level cross-cut - Main Workings (50 feet)	2,000.00
	Begin extension of 70 foot level cross-cut, Rover Workings (30 feet)	1,200.00
	Begin extension of "0" foot level cross-cut - Main Workings (30 feet)	1,200.00
	Total.	$ 8,150.00
4th Month	Continue extension of 23 foot level cross-cut, Main Workings (50 feet)	$ 2,000.00
	Develop drifts at positions 3 and 4, Main Workings (20 feet)	800.00
	Continue development "0" foot level cross-cut, Main Workings (30 feet)	1,200.00
	Total.	$4,000.00
5th Month	Continue extension of 23 foot level cross cut, Main Workings (50 feet).	$ 2,000.00
	Complete 70 foot extension of the 70 foot level, Rover Workings (50 feet)	2,000.00
	Begin drift (to westward) along Limestone-"Birdseye" Porphyry dike contact on 70 foot level, Rover Workings (10 feet)	400.00
	Develop drifts at positions 5 and 6, Main Workings (20 feet)	800.00
	Total	$ 5,200.00
6th Month	Continue extension of 23 foot level cross-cut, Main Workings (50 feet)	$ 2,000.00
	Continue westward drift, Rover Workings, described above (50 feet)	2,000.00
	Begin drifts extending both east and west at position No. 1, Main Workings (10 feet) . . .	400.00
	Total	$ 4,400.00

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7th Month	Continue extension of 23 foot level cross-cut, Main Workings (70 feet)	$ 2,800.00
	Develop drifts at positions 5 and 6, Main Workings (20 feet)	800.00
	Continue westward drift in Rover Workings, 70' level . . . (40 feet)	1,600.00
	Total . .	$ 5,200.00
8th Month	Continue extension of 23 foot level cross-cut, Main Workings (50 feet)	$ 2,000.00
	Continue development of "0" foot level cross-cut, Main Workings (50 feet)	2,000.00
	Continue westward drift, 70 foot level, Rover Workings .(20.feet).	800.00
	Total	$ 4,800.00
9th Month	Continue extension, 23 foot level, Main Workings (50 feet)	$ 2,000.00
	Develop drift at position No. 1 on 23 foot level, Main Workings, or corresponding vein if encountered by cross-cut on "0" foot level (10 feet). . .	400.00
	Continue extension of westward drift, 70' level, Rover Workings (30 feet)	1,200.00
	Begin clean up of shaft at position 7 and development of drifts at 25 foot depth (20 feet)	800.00
	Total . .	$4,400.00
10th Month	Begin drifting along showings of ore at position 8, Rover Workings (10 feet) . . .	$ 400.00
	Continue extension of drift, 70 foot level, Rover Workings (10 feet)	400.00
	Finish extension of "0" foot level cross-cut (100 feet)	4,000.00
	Continue drift, if in ore, at position 7 (10 feet)	400.00
	Total. . .	$5,200.00
11th Month	Complete drift on 70 foot level, Rover Workings (90 feet)	$3,600.00
	Complete drifting on ore at position 7 (10 feet)	400.00
	Complete drifting at position 8, Rover Workings (10 feet)	400.00
	Complete drifting at position 1, 23 foot level, or corresponding ore vein on "0" foot level (15 feet)	600.00
	Total. . .	$5,000.00

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12th Month	Utilize time for making plans and developing any ore veins encountered in course of exploration program, including surveying, engineering plans, and geological investigation, etc. (accountable from funds dedicated previously)	None
	Complete any unfinished part of exploration program outlined due to unavoidable delays, breakdowns, labor shortages, etc. (not accountable in previously estimated work)	$ 1,600.00
	TOTAL	$68,350.00