DMA Form 1

DEFENSE MINERALS ADMINISTRATION
Control Slip

CONTROLLED DOCUMENT

DMA Docket No. 1671 X

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 LOAN

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:	SUPPLY DIVISION	Date	AUG 30 1951
To:	REPORTS AND RECORDS	Date	AUG 31 1951
To:	Coordinating Comm.	Date	OCT 11 1951
To:	R & R	Date	10-17-51
To:		Date	
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DO NOT DETACH

CONTROLLED DOCUMENT

BASE METALS BR.

COMBINED METALS REDUCTION COMPANY

218 FELT BUILDING
SALT LAKE CITY, UTAH

E. H. SNYDER, GENERAL MANAGER

OFFICIAL FILE COPY

To	Init.	Date
210		

November 5, 1951

Mr. Tom Lyon, Director
Supply Division, DMA
Department of Interior
Washington 25, D.C.

DMA-1671X
Comet Mine

Dear Mr. Lyon:

Thanks for your letter of October 16. We shall be pleased to have the field team examine the Comet project. If an alternate project can be agreed upon by Mr. Arentz and the field examiners, we shall submit a new application on Form MF-103 with amended costs.

I note you desire a map showing the property in relation to the Comet Coalition property and the location of the principal shafts of the two properties. Your letter has been forwarded to Mr. Arentz, who will provide the maps required.

The project application will be made in the name of the Comet Mines, Inc., and not the Combined Metals Reduction Company.

Yours very truly,

Edward H. Snyder

EHS: m

cc - Mr. S. S. Arentz

NOV 8 8 56 AM '51
DEFENSE MINERALS ADMINISTRATION
WASHINGTON, D.C.

FILE COPY
SURNAME:

350

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

OCT 16 1951

Billings
Brattop
McKnight
Ron

Re: DMA-1671X
Combined Metals Reduction Co.
Comet Mine
Lincoln County, Nevada
Exploration loan $212,965
Tungsten, lead, zinc

Mr. Harold C. Miller
Executive Officer, DMA Field Team
Region III
1012 Flood Building
870 Market Street
San Francisco 2, California

Dear Mr. Miller:

Reference is made to the application of the Combined Metals Reduction Company for an exploration loan at their Comet Mine, Lincoln County, Nevada.

Their original application asking the Government aid to the extent of 75% participation on the basis that the mine would produce tungsten has been previously denied on the grounds that (a) the tungsten content of the ore is small; (b) there is no substantial evidence given to demonstrate metallurgical feasibility of processing the ore for tungsten recovery and (c) the work of shaft raising above the 575 foot level is development work rather than exploration.

In denying their application, it was suggested that we would gladly consider an alternate exploration proposal for lead-zinc ores on a 50% participation basis, but that we could not allow the proposed shaft work.

Mr. Snyder, General Manager of Combined Metals, replied on September 15th enclosing the letter from Mr. S. S. Arentz with reasons to support the shaft work as being essential to the exploration drifts on the 385 and 640 foot levels. If these reasons (see copy of Arentz' letter attached) are valid he makes part of his point.

The Lead-Zinc Branch recommends that a geologic examination be made of the property and if, on the basis of this examination, further exploration is warranted, an appraisal be made of the mining methods and costs with specific attention being given to the items and suggestions set forth in the following paragraph.

We need to know whether the State Mine Inspector will permit any less expensive shaft than the new two and one-half compartment one proposed; and whether the present one could be made economically usable for exploration if the State Mine Inspector would permit its use. This

last involves consideration of whether a mucking machine with bucket removed could pass through the shaft or whether a small tramming motor could be put through. The 1100 feet of drifting now embraced in their plan on the 385 foot level and the 2000 feet of drifting plan for the 640 foot level when plotted on a map look very much like blocking out ore. This feature is objectionable. We would be much more favorably inclined to approving some 2000 feet of exploration drift on the 465 foot level with no workings below this level other than a shaft sump.

If the amended project offered by the applicant meets with the approval of the field team, he should be requested to submit four (4) copies of Form MF-103 in which the amended project, together with detailed costs, etc., are given as it will be necessary to assign a new docket number to the application.

The following material is included:

1 Form MF-103 with letter of transmittal and supporting data.
Memorandum dated June 19, 1951, from D. M. Lemon to Tungsten Branch.
Memorandum to Reports and Records from Chief, Lead-Zinc Branch.
Letter to applicant from Tom Lyon.
" " Tom Lyon from applicant dated Sept. 15, 1951.

S.H. 10-17

Tom Lyon

Tom Lyon, Chairman
Coordinating Committee

Orel M. Bishop

For Bureau of Mines

For Geological Survey

OMBishop:emp/pf
10-11-51
Copy to: Chief, Lead-Zinc Branch
E. T. McKnight 4204 GSA
O. M. Bishop
Director's Reading File 4214 GSA
Branch Reading File 4214 GSA
Administrator's Reading File
DMA Docket File

OCT 16 1951

Mr. Gerald C. Miller
Executive Officer, OPS Field Team
Region III
1017 Flood Building
870 Market Street
San Francisco 2, California

Re: [illegible]-10/11
Combined Metals Reduction Co.
Comet Mine
Lincoln County, Nevada
Exploration Loan [illegible], [illegible]
Tungsten, lead, zinc

Dear Mr. Miller:

Reference is made to the application of the Combined Metals Reduction Company for an exploration loan at their Comet Mine, Lincoln County, Nevada.

Their original application asking the Government to the extent of 75% participation on the basis that the mine would produce tungsten has been previously denied on the grounds that (a) the tungsten content of the ore is small; (b) there is no substantial evidence given to demonstrate metallurgical feasibility of processing the ore for tungsten recovery; and (c) the work of shaft raising above the 545 foot level is development work rather than exploration.

In denying their application, it was suggested that we would gladly consider an alternate exploration proposal for lead-zinc ores on a 50% participation basis, but that we could not allow the proposed shaft work.

Mr. Snyder, General Manager of Combined Metals, replied on September 18th enclosing the letter from Mr. [illegible] Arents with reasons to support the shaft work as being essential to the exploration drifts on the 545 and 640 foot levels. If these reasons (see copy of Arents' letter attached) are valid they make part of his point.

The lead-zinc ores represents that a geologic examination by one of the property and, on the basis of this examination, further exploration is warranted, an appraisal be made of the mining methods and costs with specific attention being given to the items and suggestions set forth in the following paragraph.

We need to know whether the state line inspector will permit any less expensive shaft than the one the lessee-owner has proposed; and whether the present one would be more economically usable for exploration if the state line inspector would permit its use. This

last involves consideration of whether a muking machine with bucket removed could pass through the shaft or whether a small trenching motor could be put through. The 1100 feet of drifting now contained in their plan on the 385 feet level and the 2000 feet of drifting plan for the 640 feet level when plotted on a map look very much like blocking out ore. This feature is objectionable. We would be much more favorably inclined to approving some 2000 feet of exploration drift on the 465 feet level with no workings below this level other than a shaft sump.

If the amended project offered by the applicant meets with the approval of the field team, he should be requested to submit four (4) copies of Form WF-103 in which the amended project, together with detailed costs, etc., are given as it will be necessary to assign a new docket number to the application.

The following material is included:

1 Form WF-103 with letter of transmittal and supporting data.
Memorandum dated June 19, 1951, from D. M. Lemon to Tungsten Branch.
Memorandum to Reports and Records from Chief, Lead-Zinc Branch.
Letter to applicant from Tom Lyon.
" " Tom Lyon from applicant dated Sept. 15, 1951.

Tom Lyon

Tom Lyon, Chairman
Coordinating Committee

Lowell Pickrell

For Bureau of Mines

Hal N. Rove

For Geological Survey

OMBishop:emp/pf
10-11-51
Copy to: Chief, Lead-Zinc Branch
E. T. McKnight 420A GSA
O. M. Bishop
Director's Reading File 421A GSA
Branch Reading File 421A GSA
Administrator's Reading File
DMA Docket File

COMBINED METALS REDUCTION COMPANY

218 FELT BUILDING
SALT LAKE CITY, UTAH

E. H. SNYDER, GENERAL MANAGER

September 15, 1951

OFFICIAL FILE COPY

To	Init.	Date
BVC	A.E.C	9-19
210		

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

Attention: Mr. Tom Lyon

Comet Mine Exploration
Lincoln County, Nevada
DMA-1671X

Gentlemen:

Referring to your letter of August 31, DMA-1671X, we respectfully request reconsideration of your ruling that phases "a", "b", "c", "d" and "e" of the Comet Mines, Inc. project, which we proposed to finance, relating to shaft improvement and sinking to the 550 level, cannot be considered as exploration. This request is based upon data contained in the attached letter dated September 5 from our General Superintendent, Mr. S. S. Arentz.

We shall be pleased to have your decision after analysis of the facts presented in said letter.

An amended lead-zinc project in the name of the Comet Mines, Inc. will be submitted in the event your decision is favorable on the shaft work.

Yours very truly,

General Manager

EHS: m

cc: Mr. S. S. Arentz
Mr. O. F. Burton

DEFENSE MINERALS ADMINISTRATION WASHINGTON, D.C.
SEP 17 1 48 PM '51

SEP 19 1951

Comet Mine Exploration

September 5, 1951

E. H. Snyder, General Manager

S. S. Arentz

Dear Mr. Snyder:

I received a copy of a letter from Mr. Tom Lyon, Director, Supply Division, Defense Minerals Administration, regarding our application for an exploration project at the Comet Mine. I note that the application was dissapproved on the basis of 75%-25% on the grounds that the tungsten prospects are minor compared with lead-zinc-silver prospects. While we still believe that substantial quantities of tungsten will be developed by the proposed exploration, we will agree that the prospects are more favorable for lead-zinc and silver.

Mr. Lyon goes on to state that the phases of the project concerned with shaft sinking and repair would not be allowable as exploration. I assume that this ruling is based on Section 8 (a) of mineral order 5 in which an exploration project is limited to, "The work shall not go beyond a reasonable delineation and sampling of the ore and shall not include work prosecuted primarily for mining or preparation for mining." Mr. Lyon goes on to state that DMA will consider an alternative project on a 50-50% basis for lead-zinc exploration leaving out the shaft work.

We would like to have this ruling reconsidered for the following reasons:

(1) The present winze below the 168 level of the Comet Mine is of insufficient crossection to allow passage of a mucking machine, a trammer locomotive or any but the smallest mine cars. This would require driving the drifts by hand mucking and hand tramming which with present day labor conditions would either make it impossible to obtain a crew or if a crew were obtained, would increase costs to an extent that the drifting cost alone would nearly equal the estimated cost of combined shaft sinking and drifting under our proposal.

(2) The exploration projects are for the purpose of locating ore and getting new production of metal. Even if ore were located by the drifting, without the shaft improvement, it would be impossible to mine the ore at a profit due to the limited capacity of the present winze.

(3) The cost of sinking the present winze from the 550 level to the 650 level in order to place the proposed lower level below the oxide zone would be appreciable and would be wasted when it became necessary to sink the shaft in order to obtain production from the level.

(4) The cost of maintaining a hoistman on the winze and of transferring rock on the 168 level while driving the proposed exploration drifts will offset a substantial part of the cost of repairing the shaft.

(5) The Nevada State Mine Inspector has given written instructions that he will not permit operations to be continued through the present crooked winze beyond the operations required to put the shaft in shape as proposed in the application for an exploration project.

For the above reasons it is apparent that the proposed shaft work is essential to the proposed exploration project. It is true that the shaft will be of later aid in mining any ore developed by the proposed exploration, but the shaft is part of the exploration and offers the only feasible approach to carrying out the project. It cannot be considered as "work prosecuted primarily for mining or preparation for mining."

If DMA will reconsider its ruling with regard to the shaft phases of our proposed project we recommend carrying out the proposed exploration on the basis of 50-50% participation by the government and the company.

Very truly yours,

S. S. Arentz,
General Superintendent

SSA:jm

FILE COPY
SURNAME: 350

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

OCT 16 1951

Re: DMA-1671X
Comet Mine

Billings
Bishop
McKnight
Lyons
Moon

a.e.c.

Mr. Edward Snyder, General Manager
Combined Metals Reduction Company
218 Felt Building
Salt Lake City, Utah

Dear Mr. Snyder:

Reference is made to your letter of September 15th in which you urge renewed consideration of your shaft program as outlined in your application for aid on the Comet Mine, Lincoln County, Nevada. You urge reconsideration on the basis of a letter written by Mr. S. S. Arents in which information is given to show the shaft essential to the exploration.

Mr. Arents makes a strong case. I am therefore recommending that our field team examine the property and the records relating to it so that we may have further information for our consideration.

We are instructing the field team to investigate the Comet's winze situation to see if it qualifies in their opinion as necessary to exploration. If so, they will go over the matter of an alternate proposal with Mr. Arents on the basis of 50% Government participation.

If the alternative proposal meets with the approval of the field team, it will be necessary for you to submit a new application on Form PF-103, together with amended costs, maps showing the proposed work, etc. We also would like a map showing the property held under lease from the Comet Mines, Incorporated, in relation to the Comet Coalition property with the location of the principal shafts on the two properties shown.

Very truly yours,

SIGNED

Tom Lyon, Director
Supply Division

OMBishop:EJLyons:emp G 10-10-51

Copies to: H. C. Miller Region III (2)
Chief, Lead-Zinc Br.
E. T. McKnight 4204 GSA
O. M. Bishop
Directors r. files 4214 GSA
Br. r. files 4214 GSA
Administrators r. file
DMA docket files

UNITED STATES
DEPARTMENT OF THE INTERIOR AUG 31 1951
DEFENSE MINERALS ADMINISTRATION
WASHINGTON 25, D. C.

Memorandum

To: Reports and Records Unit
Administrative Management Div.

From: Chief, Lead-Zinc Branch

Subject: Denial of loan

Re: DMA-1671X
Combined Metals Reduction Co.
Comet Mine
Lincoln County, Nevada
Exploration loan $212,963.00
Tungsten-lead-zinc

The subject docket has been reviewed by the Tungsten Branch and the Lead-Zinc Branch, Defense Minerals Administration.

The proposed project is summarized in the attached memorandum from D. M. Lemmon to the Tungsten Branch, DMA.

The Lead-Zinc Branch concurs with the opinion of the Tungsten Branch that the proposed shaft work is not exploration, but is for development.

It is recommended by the Lead-Zinc Branch that the application be denied and that the attached letter be sent to the applicant suggesting an exploration project for lead and zinc on a 50-50 per cent basis would be considered by DMA.

Returned herewith are:

3 bound copies of the subject docket.

T. P. Billings by W.B.J.
T. P. Billings, Chief
Lead-Zinc Branch

Approved: Sam Lyon
Director, Supply Division

FILE COPY
SURNAME: 350

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

AUG 31 1951

Gildersleeve (ETM)
McKnight
Mote (RHM)
Johnson

Memorandum

To: Reports and Records Unit
Administrative Management Div.

From: Chief, Lead-Zinc Branch

Subject: Denial of loan

Re: DMA-1671X
Combined Metals Reduction Co.
Comet Mine
Lincoln County, Nevada
Exploration loan $212,963.00
Tungsten-lead-zinc

a. E.C -

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The proposed project is summarized in the attached memorandum from D. M. Lemmon to the Tungsten Branch, DMA.

The Lead-Zinc Branch concurs with the opinion of the Tungsten Branch that the proposed shaft work is not exploration, but is for development.

It is recommended by the Lead-Zinc Branch that the application be denied and that the attached letter be sent to the applicant suggesting an exploration project for lead and zinc on a 50-50 per cent basis would be considered by DMA.

Returned herewith are:

3 bound copies of the subject docket.

Gunnard Johnson

T. P. Billings, Chief
Lead-Zinc Branch

Approved:
Tom Lyon

Director, Supply Division

J f 8/31

BGildersleeve:emp
G 8-29-51
Copies to: H. C. Miller (2)
Chief, Lead-Zinc Br.
E. T. McKnight 4204 GSA
R. H. Mote
Reports and Records
Directors r. file 5214 GSA
Br. r. file 4214 GSA
Files

FILE COPY
SURNAME: 350

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

AUG 31 1951

Gildersleeve (Etc)
McKnight
M. Mote (Mote)
Lyon

Re: DMA-1671X

G.E.C

Combined Metals Reduction Company
218 Felt Building
Salt Lake City, Utah

Gentlemen:

The Defense Minerals Administration has reviewed your application (DMA-1671X) for exploration assistance at the Comet mine.

The review of your application indicates that phases "a", "b", "c", "d", and "e" of your proposed project (concerned with a new 2 1/2 compartment shaft from the surface to the 550 level) cannot be considered exploration as defined in Section 8 of Defense Minerals Administration's Mineral Order No. 5. We believe the ore is more valuable for silver-lead-zinc than it is for tungsten, and that the chances are not promising enough for significant discovery of tungsten to justify an expenditure of public funds on a 75-25 per cent basis for the project you propose. I regret, therefore, that your application must be denied. We shall be glad to consider an alternative project on a 50-50 per cent basis for lead-zinc exploration. However, the shaft work, as indicated above, would not be allowable as exploration.

Very truly yours,

Tom Lyon
Tom Lyon, Director
Supply Division

JF 8/31

BGildersleeve:emp
G 8-29-51
Copies to: H. C. Miller (2)
Chief, Lead-Zinc Br.
E. T. McKnight 4204 GSA
R. H. Mote
Reports & Records
Directors r. file 4214 GSA
Br. r. file 4214 GSA
Files

FILE COPY
SURNAME:

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

June 21, 1951

Mr. W. H. Kelsey
Vice President
Combined Metals Reduction Co.
218 Felt Building
Salt Lake City, Utah

Subject: DMA-1671X
Re: Exploration Loan
Comet Mine

My dear Mr. Kelsey:

Receipt is acknowledged of your application and attachments of May 29, 1951 for an exploration loan under the Defense Production Act of 1950.

The application was assigned Docket Number DMA-1671X and was referred to Mr. Otto Herres, Chief, Lead-Zinc Branch on June 14, 1951.

In any future correspondence relating to your application, kindly refer to DMA-1671X.

Sincerely yours,

LANDON F. STROBEL

Landon F. Strobel
Executive Secretary

LFSTROBEL:js
cc: Strobel-2
Files
Herres
Lyon

DMA 1671

856

June 19, 1951

Memorandum

Received from Jo. Holloran June 25, 1951. O.H.

To: Tungsten Branch, DMA

From: D. M. Lemmon

for consideration on Lead and Zinc

Subject: Exploration application
Combined Metals Reduction Co.
Pioche, Nevada

DMA 1671-X
Tungsten

Proposal: $212, 963.00 project, Government share $159,722.25, for development of the Comet mine, Pioche district. Work involves the following:

Raise 2½ compartment vertical shaft 550 level to 160 level, distance of 390 feet, with 120 feet of crosscuts from old workings to 3 shaft stations.
Ream shaft surface to 160 feet from 1 to 2½ compartments
Sink shaft 110 feet from 550 level to below 640 level.
Install ore pockets at 385 and 640 levels.
Drive 1,100 feet on vein on 385 level
Drive 2,000 feet on vein on 640 level

Objective: It is hoped to uncover 5,000 tons of oxide ore and 34,000 tons of sulfide ore having a settlement value of $1,000,000 at present metal prices and custom mill schedules. The metal content of this ore is estimated as follows:

Au	2,300 ounces
Ag	289,250 ounces
Pb	933 tons
Zn	3,352 tons
WO_3	10,200 units

Conclusions:

1. The new shaft is not exploration, but is for production.
2. The ore is more valuable for silver-lead- zinc than it is for tungsten. The estimated tungsten content of 0.3 percent is probably optimistic, for the material from the deeper workings assays only 0.1 percent according to applicant.
3. Only one third of the Government's outlay would be recovered from royalties if the applicant's ore objective were achieved.
4. The applicant has not stated results of metallurgical testing for tungsten, which has not previously been recovered from the ore on any scale. It is doubtful if a high recovery can be made on ore of 0.3 percent grade.

Recommendation:

It is recommended that this application should be denied as an exploration project for tungsten. Possibly the lead-zinc branch of DMA might wish to consider the proposal as exploration for lead and zinc, with the exception of the shaft project between the surface and the 550 level.

Dwight M. Lemmon

JUN 25 1951

COMBINED METALS REDUCTION COMPANY

CASELTON PLANT **PIOCHE, NEVADA**

June 5, 1951

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
Postponed June 7-1951
JUN 11 1951
LANDON F. STROBEL
Executive Secretary

Dr. James Boyd, Administrator
Defense Minerals Administration
Department of Interior
Washington 25, D. C.

Re: D M A Application Comet Mine Exploration

Dear Dr. Boyd:

Submitted herewith are four copies of MF-103, Application for Aid for an Exploration Project Pursuant to Mineral Order 5, under Defense Production Act of 1951, together with supplementary reports, exhibits, and maps covering the proposed Comet Mine exploration project.

The Comet Mine has produced an appreciable tonnage of ore containing tungsten, lead, zinc, gold and silver, with relatively little development. Although Comet Mines Inc. has operated the mine continously since 1945, a shortage of working capital has prevented that company from completing sufficient development ahead of mining to permit the mine to be operated at a profitable rate of production.

Combined Metals Reduction Company took the property over on May 15, 1951, under a 10 year lease and option agreement. The Combined Metals Company is already operating the Comet Coalition property which adjoins the Comet Mines property on three sides and for this reason the proposed Comet Mine exploration can be carried out without all of the overhead that usually applies to an isolated operation.

The proposed exploration project is designed to put the Comet Mine in shape for sustained operation by providing an adequate working shaft, and by finding the extension of present ore shoots on the lower levels. The proposed project will also search for new ore shoots to the east of present mine workings.

The project has an excellent chance of developing the ore tonnage estimated in the attached report and should lead to the development of substantially greater ore reserves, as the proposed workings will make a large area of fissure accessible for development.

Since the project will be on leased property, an agreement subordinating lessor's interest to the interest of the government is attached.

There are outstanding unmatured corporate bonds of the Combined Metals Reduction Company totalling $990,000, the remnant

of a $3,000,000 bond issue. It is impractical for us to request or obtain a subordination agreement of the type contemplated by form MF-202. We believe an analysis of the facts will warrant your waiving such an agreement in this case.

Very truly yours,

COMBINED METALS REDUCTION COMPANY

By _____
General Superintendent

Defense Mineral Administration
Postmarked June 7-1951
JUN 11 1951
Executive Secretary

June 5, 1951

Dr. James Boyd, Administrator
Defense Minerals Administration
Department of Interior
Washington 25, D. C.

Re: D M A Application Comet Mine Exploration

Dear Dr. Boyd:

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Very truly yours,

COMBINED METALS REDUCTION COMPANY

By _____
General Superintendent

June 5, 1951

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
Postmarked June 7 1951
JUN 11 1951
LANDON F. STANDEL
Executive Secretary

Dr. James Boyd, Administrator
Defense Minerals Administration
Department of Interior
Washington 25, D. C.

Re: D M A Application Comet Mine Exploration

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Combined Metals Reduction Company took the property over on May 15, 1951, under a 10 year lease and option agreement. The Combined Metals Company is already operating the Comet Coalition property which adjoins the Comet Mines property on three sides and for this reason the proposed Comet Mine exploration can be carried out without all of the overhead that usually applies to an isolated operation.

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The project has an excellent chance of developing the ore tonnage estimated in the attached report and should lead to the development of substantially greater ore reserves, as the proposed workings will make a large area of fissure accessible for development.

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Very truly yours,

COMBINED METALS REDUCTION COMPANY

By _____
General Superintendent

June 5, 1951

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
Postmarked June 7-1951
JUN 11 1951
LANDON F. STROBEL
Executive Secretary

Dr. James Boyd, Administrator
Defense Minerals Administration
Department of Interior
Washington 25, D. C.

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Combined Metals Reduction Company took the property over on May 15, 1951, under a 10 year lease and option agreement. The Combined Metals Company is already operating the Comet Coalition property which adjoins the Comet Mines property on three sides and for this reason the proposed Comet Mine exploration can be carried out without all of the overhead that usually applies to an isolated operation.

The proposed exploration project is designed to put the Comet Mine in shape for sustained operation by providing an adequate working shaft, and by finding the extension of present ore shoots on the lower levels. The proposed project will also search for new ore shoots to the east of present mine workings.

The project has an excellent chance of developing the ore tonnage estimated in the attached report and should lead to the development of substantially greater ore reserves, as the proposed workings will make a large area of fissure accessible for development.

Since the project will be on leased property, an agreement subordinating lessor's interest to the interest of the government is attached.

There are outstanding unmatured corporate bonds of the Combined Metals Reduction Company totalling $990,000, the remnant

of a $3,000,000 bond issue. It is impractical for us to request or obtain a subordination agreement of the type contemplated by form MF-202. We believe an analysis of the facts will warrant your waiving such an agreement in this case.

Very truly yours,

COMBINED METALS REDUCTION COMPANY

By _____
General Superintendent

COMBINED METALS REDUCTION COMPANY
Pioche, Nevada

APPLICATION FOR AID

COMET MINE EXPLORATION PROJECT FOR TUNGSTEN, LEAD AND ZINC

The following pages answer the questions listed in MF-103, Application for Aid for an Exploration Project, Pursuant to Mineral Order 5, Under Defense Production Act of 1950, as they apply to a proposed exploration project for Tungsten, Lead and Zinc ore in the Comet Mine located in the Comet Mining District, Lincoln County, Nevada.

Detailed supporting data are given in the attached report by Paul Gemmill, Geologist, Combined Metals Reduction Company, and on the accompanying maps.

THE APPLICANT

1. The Combined Metals Reduction Company is a Utah corporation licensed to do business in the State of Nevada.

2. Question does not apply.

3. E. H. Snyder - 218 Felt Building, Salt Lake City, Utah
President and General Manager
Otto Herres - 218 Felt Building, Salt Lake City, Utah
Vice President
W. H. Kelsey - 218 Felt Building, Salt Lake City, Utah
Vice President
C. M. Christensen - 218 Felt Building, Salt Lake City, Utah
Secretary
O. F. Burton - 218 Felt Building, Salt Lake City, Utah
Treasurer
Allar Hoover - 865 Orlando Road, Pasadena, California
Director
Jermiah Milbank, Jr. - 44 Wall Street, New York, New York
Director
George W. Snyder - 218 Felt Building, Salt Lake City, Utah
Director
S. S. Arentz - Pioche, Nevada
General Superintendent - Nevada Operations

4. The Combined Metals Reduction Company has been continously engaged in conducting large scale mining and milling operations for the production of lead and zinc for a period of approximately 30 years.

E. H. Snyder, President and General Manager, is a technical graduate with approximately forty years experience in the successful development and operation of mining and metallurgical operations.

S. S. Arentz, General Superintendent, Nevada Operations, is a technical graduate with approximately twenty years experience in mining and metallurgical engineering and operation, ten years of which has been gained in the Pioche Area.

E. S. McIntyre, Mine Superintendent, Comet Operations, is a technical graduate with approximately ten years experience in mining, engineering and mine operating.

The Combined Metals Reduction Company has a large staff of trained technical and supervisory employees with long experience in mining and metallurgical plants generally, and particularly qualified with reference to problems peculiar to the Pioche area.

5. The Combined Metals Reduction Company holds the Comet Mine property under lease with option to purchase from the Comet Mines Inc., Owner.

6.

7. The property was taken over by the Combined Metals Reduction Company on May 15, 1951 under a lease and option agreement which runs until May 15, 1961 and calls for the payment of a royalty of 10 to 12½% of mill and smelter settlements on all ore shipped from the property. The lease agreement is in good standing. Attached is an agreement subordinating lesser's interest to the interest of the government.

8. See attached financial statement of Combined Metals Reduction Company.

9. The Combined Metals Reduction Company is prepared to invest $53,240.75 in the project which covers the Company's share in the cost of the project based on 75% participation by the government.

THE PROPERTY

10. a) The following unpatented mining claims are included in the property held under lease from the Comet Mines Inc.,:

Jackson	Greenback #1	Tungsten
Jackson #1	Greenback #2	Sparton
Jackson #2	Greenback #3	Viking
Jackson #3	Greenback #4	Gladiator
Minerva	Greenback #5	Trojan
Burnitt	Elmer #1	

The Comet Mine workings are located on the Elmer #1 claim. The workings consist of a vertical shaft to the 160 level and a prospect winze to 575 level. There are several hundred feet of drifts on the Comet fissure and stopes extend to the surface from the 160 level. The mine has been in limited production for the past six years. It is equipped with hoists, compressors and tools. A small mill on the property has been worked from time to time, but the bulk of the production in recent years has been shipped to the Caselton mill of the Combined Metals Reduction Company.

b) The proposed exploration project will be limited to the Elmer #1 and

the Greenback #1 unpatented mining claims located in the Comet Mining District, Lincoln County, Nevada.

11. The property is known as the Comet Mine. It has formerly been known as the Silver Comet and the Tungsten Comet.

12. The property is located about nine miles west and slightly south of Pioche, Nevada, on the west slope of the Highland Range in Section 5-T1SR66E Mt. Diablo Base and Meridian. Its precise location is shown on the Geologic Map of the Pioche District which accompanies Geological Survey Professional Papers #171 and on the accompanying sketch map.

    The property is seventeen miles by road from the Caselton Mill of the Combined Metals Reduction Company and from the shipping point on the Caselton Branch of the Union Pacific Railroad. Eleven miles of this total road distance is over newly constructed State and Federal highway, The remaining five miles is over improved county road. The State highway is scheduled for completion to the Comet Mine during the fiscal year beginning July 1, 1951. This will provide highway connection with the Caselton mill and with the main north-south highway 93 to Ely and Las Vegas, Nevada.

13. Water is supplied from a spring located about one mile north of the property through a pipeline to storage tanks on the property. About 10 GPM is available in all seasons. This is sufficient for mine and camp use, but is not sufficient to operate a mill of large enough capacity to be profitable.

    Estimated power required will be 30,000 KWH per month. This power is available from the Lincoln County Power District whose distribution lines already serve the property, at rates averaging 3/4 cents per KWH.

14. Useable facilities and equipment now on the property and which will be devoted to the proposed exploration project include the following:

    a) Bunkhouse and boarding house.
    b) Power distribution lines and sub-station.
    c) Water distribution lines and storage tanks.
    d) Electric driven compressors, compressor house and receivers.
    e) Hoist house and small repair shop.
    f) Ore bins, cars, and surface track.
    g) Miscellaneous tools and equipment.

    It appears that it will be necessary to replace the present hoist and headframe and to augment the mine equipment by the addition of a mucking machine, skips, and a trammer, and extra drilling machines. All of this equipment is available from the other Company properties and can be furnished for the project on equitable basis.

15. The ore can be trucked from the property to the Caselton Plant of the Combined Metals Reduction Company. Present trucking rates are less than $1.50 per ton, and with scheduled road improvements to be completed this

year, it is anticipated that trucking rates will be reduced to approximately $1.00 per ton.

Sulphide lead-zinc ore can be milled at the Caselton Mill. During the past six years over 13,000 tons of ore from the Comet Mine have been milled at Caselton with good results. The Caselton mill has ample capacity to handle any reasonable tonnage that may be anticipated from Comet Mine operation.

The Combined Metals Reduction Company is planning on the construction of a mill at Caselton to treat tungsten ores from Comet and other properties controlled by the Company, in addition to custom ores from the eastern Nevada area. The Company has already purchased much of the equipment required for the proposed tungsten mill, including all of the milling equipment now at the Comet property.

16. a) The Elmer #1 claim was located in 1906 and the Greenback #1 claim was located in 1913. They were originally owned by the Frudenthal brothers, who were early Pioche mine operators. In 1913 E. D. Smiley purchased the claims and organized the Tungsten Comet Mining Company. In excess of $150,000.00 was spent on developing the property and on constructing a small mill designed to treat the tungsten ores exposed by surface workings.

Lack of water and metallurgical difficulties forced a shut-down of operations.

In 1924 the property was sold to Squires and Gemmill, operators of the Prince Mine at Pioche. They organized the Comet Mines Company. Development was continued and the mill was revised to make recoveries of the lead, silver and gold in the oxide ores. Lack of water and metallurgical difficulties incident to treating oxide ores, plus a drop in the price of metals, again forced a shut-down of operations.

In 1930 the property was taken over by the Prince Consolidated Mining Company and the Comet Mines Company was reorganized as Comet Mines Inc. Some production was had from both company and lease operations during the following years.

In 1941, Mr. D. L. Gemmill acquired the major interest in Comet Mines Inc. from the Prince Company, and proceeded to develop the mine and to revamp the mill. Development on the 160 level to the east was successful in opening up a sulphide ore-body having a strike length of nearly 300' and a width of up to 12 feet. This ore-body was stoped for over 100' below the level and produced about 13,000 tons of good sulphide lead-zinc ore containing an average of 0.5% WO_3. During the past year development has consisted of retimbering the winze, from the 160 level to the bottom at the 480 level, and sinking the shaft on down to the approximate 575 level. A good showing of sulphide ore is now exposed on the 550 level, but the difficulties of mining or developing the lower levels of the mine through the crooked winze are too great to warrant further work until the present vertical shaft to the 160 level is continued to the lower levels.

The following is a summary of past production from the property. No information is available as to production prior to 1924 although it is known that several tungsten shipments were made from the property and some oxide ore was put through the mill.

CONDENSED SUMMARY OF PRODUCTION:

Date	Remarks	Dry Tons	oz Au.	oz Ag.	Settlement Assay % Pb	% Zn	% WO_3
1925-44	Concentrates	113.0	1.74	45.00	9.22	4.02	-
1928-50	Concentrates	31.2					18.0
1927-50	Crude Oxide Ore	1,497.1	0.257	10.35	5.33	-	-
1945-51	Crude Sulphide Ore	13,664.0	0.064	7.00	1.96	9.86	0.5

16. b) The adjoining property extending several miles north and south and about one mile east has been consolidated under the ownership of the Comet Coalition Mines Company. This property is under lease to the Combined Metals Reduction Company. The consolidated property includes the Pan American and Schodde mines to the south and the Log Cabin and Forlorn Hope properties to the north. Early day production of high grade ore was obtained from the Schodde mine and from the Stella fissure workings at the Pan American mine. Exact production figures are not available.

During the period 1929 through 1935 activity in the Comet district resulted in the sinking of a 2300 foot incline shaft at the Pan American Mine, an 800 foot incline shaft at the Log Cabin Mine and a 600 foot vertical shaft at the Forlorn Hope Mine. This development was designes to prospect the Combined Metals limestone horizon at each of these properties. The exploration was successful in developing large tonnages of low grade lead, zinc, silver, and manganese ore, but did not develop ore of sufficiently high grade to warrant mining under the prevailing conditions at that time.

In 1947 the Combined Metals Reduction Company took the Comet Coalition property under lease. Since early 1947 this company has spent approximately $200,000.00 on development, including unwatering the Pan American shaft, driving several thousand feet of development drifts, churn drilling, diamond drilling, road constructions, etc. About 6,000 tons of ore was shipped to the Caselton mill and an estimated 3,000,000 tons of ore has been developed. A crew is currently at work completing necessary preliminary work preparatory to starting large scale mining operations at the Pan American Mine.

The U. S. Bureau of Mines conducted a drilling program on the east extension of the Pan American ore-body and beneath the surface workings of the Schodde Mine during 1947. This program consisted of three deep diamond drill holes. All three holes were successfull in finding ore of a grade similar to that developed by the Pan American mine workings.

At the Caselton Plant of the Combined Metals Reduction Company, about 5 miles east of the Comet Mine, the company operates the Caselton mine

having a daily production of about 700 tons of lead, zinc, silver ore. A modern selective flotation mill having a daily capacity of approximately 1100 tons is operated in conjunction with the mine. The mill treats custom ores from other properties in the area in addition to ores from the Caselton mine. The Caselton Plant is fully equipped with shops, warehouses, and camp facilities and the use of the facilities will be available as required by the proposed Comet exploration project.

16. c) See attached report by Paul Gemmill, geologist, Combined Metals Reduction Company.

17. Comet Mines Inc. has operated the Comet Mine for the production of sulphide lead - zinc ore from early 1945 to May 15, 1951. The Company lacked adequate financing to carry out necessary exploration and development, or to correct the operating difficulties resulting from the crooked winze below the 160 level.

The total mine production during this period has been appreciable both as to tonnage and value, but lack of development has made it impossible to attain a daily production rate that would permit sustained profitable operation.

The average mine value of the sulphide ore produced during the past six years, based on present metal prices and mill schedules, is approximately $22.00 per ton. This does not include any payment for the tungsten content of the ore, as no provision has heretofore been made for its recovery at the Caselton mill.

With the improvements contemplated by the proposed exploration project, it is anticipated that a production rate of 75 tons of ore per day can be obtained and that mining and trucking costs will not exceed $11.00 per ton. Assuming a grade equal to the average of past production, and additional mine earnings from recovered tungsten, the ore will yield a sufficient operating margin to permit continued exploration and development out of mine earnings and a fair return of invested capital. Geologic conditions indicate that such a mining program could continue for many years as long as the existing relation between costs and metal prices continues.

18. a) The mineral deposit consists of a quartz fissure containing galena, sphalerite, wolframite, pyrite, argentite and gold. The fissure is enclosed in Cambrian sediments (Prospect Mountain Quartzite and Pioche Shale), and can be traced on the surface for over 2,000 feet. In the brittle quartzite the fissure is well defined and varies in width from a few inches to over twelve feet. In the overlying shale the fissure contains only a few inches of quartz and is not visible except in prospect pits along the trace of the outcrop. The mine workings are confined to the fissure in the quartzite. The shale and quartzite dip into the mountain range to the east with no major faulting, and it is probable that the fissure will warrant exploration in the quartzite in this direction for some distance beyond the limits of the present exploration project.

The orebodies within the fissure appear to occur in ore shoots raking to the east along the dip of the fissure. On accompanying map #C-1087, longitudinal section A-A shows present and proposed mine workings. The 160 level extends over 1300 feet along the strike of the fissure and crosses four ore shoots having a combined length of 728 feet, or over half the distance developed along the fissure. The ore shoots have been stoped to the surface or to the contact with the overlying shale, and there is good evidence that they continue below the level.

Most of the present mine workings are in the oxide zone with all of the zinc and part of the lead and silver leached out. As the fissure extends into the mountain range to the east, the overlying shale will afford a protective cover for sulphide orebodies, and the winze below the 160 level is entering the sulphide zone in that area of the mine. It is probable that the proposed 640 level will be entirely within the sulphide zone, as is indicated on map #C-1087.

The length of the surface outcrop of the fissure; the type of mineralization and the strength of mineralization; the similarity of the deposit to other deposits within the area which have been followed to depth, all indicate that the Comet Mine overbodies will continue at depth. The favorable quartzite horizon has a known thickness in this area of over 2,000 feet without exposing the bottom of the formation.

A prospect pit has been sunk on the oxidized outcrop of a roughly parallel fissure several hundred feet north of the Comet fissure. A grab sample of the dump from this pit assays 1.4% WO_3, indicating mineralization similar to that found in sections of the Comet fissure outcrop. The topography adjacent to the mine surface workings suggest the possibilities of another parallel fissure a few hundred feet south of the Comet fissure, but surface wash covers any possible outcrops. While this has no direct bearing on the proposed exploration project, it does indicate that the orebodies mined to date are not isolated occurrences, and that the property offers possibilities for the extension of mining to parallel fissures.

18. b) See accompanying maps.

The best available assay data are the records of past production. These records indicate that with further development the mine will yield ore assaying as follows:

	Au	Ag	Pb	Zn	WO_3
Oxide Ore	0.26	10.0	5.3	-	0.3
Sulphide Ore	0.06	7.0	1.9	9.8	0.3

Face samples of ore exposures in present mine workings tend to confirm the estimated averages stated above, which are based on past production records. It should be noted, however, that ore of substantially better grade has been mined from the property, and should metal prices or other factors make it necessary to restrict mining to higher grade ore, it would be possible to do so, although only at a sacrifice of tonnage. The 1946 production averaged .059-Au, 7.42-Ag, 2.59-Pb, 20.71-Zn, 0.5-WO_3, and it is probable that ore of similar grade could be selectively mined in limited amounts.

18. c) Fully developed ore reserves are limited to ore exposures in the faces of underhand stopes below the 160 level and in the face of the 550 level. While it is reasonable to assume that the continuation of present ore shoots will be found on lower levels, such possible ore tonnage would hardly be classed as reserves. As has been mentioned earlier, the property has been operated for a period of six years prior to May 16, 1951, on limited working capital. As a result mining has kept up with development leaving no developed ore reserves.

Possible ore resulting from the proposed development and exploration as estimated by Mr. Gemmill in his accompanying report is as follows:

Oxide Ore	5,000 tons, - Assays as given above
Sulphide Ore	34,000btons, - Assays as given above

It appears probable that the preposed work will develop the tonnage estimated by Mr. Gemmill, and that a considerably greater tonnage will be indicated by the proposed work.

19. The Comet Mine offers attractive possibilities for successful exploration. The mine has an excellent production record considering the limited development work done on the property to date, particularly as most of the development has been done in the oxide zone, where most of the metal content of the ore has been leached out. Practically all of the production has come from stopes above the 160 level and most of the work has been handicapped by lack of adequate transportation or milling facilities. These handicaps are largely removed as the property is now readily accessible by good roads to the excellent milling facilities at Caselton, and the proposed exploration will make two new mine levels available for development and mining.

The fissure is of a type that may reasonably be expected to have both vertical and lateral extension. Geologic conditions at the property are favorable for such extension of present ore bodies and for the development of new ore bodies.

In view of the present shortage of tungsten, lead and zinc, and the favorable prices that now apply on these metals, the property is particularly attractive at this time.

THE EXPLORATION

20. The proposed exploration project is for the purpose of developing orebodies containing tungsten, lead and zinc in the Comet fissure. The project is primarily designed to develop sulphide lead-zinc ore containing tungsten, but will also develop some oxide ores containing tungsten and lead. It is estimated that the project will develop ore having the following metal content:

Gold	2,300 ounces
Silver	289,250 ounces
Lead	933 tons
Zinc	3,352 tons
WO_3	10,200 units

Based on present metal prices and custom mill schedules, this ore would have a settlement value of approximately one million dollars, and a net mine value before royalty, taxes, depletion and depreciation, or over five hundred thousand dollars.

21. The proposed exploration project consists of the following steps listed more-or-less in chronological order:

(a) Drive three forty foot crosscuts from the present winze below the 160 level, at intervals of about 130' along the winze, to points vertically under the present vertical shaft from the surface to the 160 level.

(b) Drive vertical raises connecting the crosscuts with the bottom of the vertical shaft. The raises will total approximately 390 feet in length and will be excavated and timbered to provide a $2\frac{1}{2}$ compartment vertical shaft.

(c) Ream out and retimber the present single compartment vertical shaft from the surface to the 160 level to provide a $2\frac{1}{2}$ compartment shaft. This coupled with the raises, will provide a $2\frac{1}{2}$ compartment shaft to the 550 level, and will make the lower levels of the mine accessible.

(d) Sink the completed $2\frac{1}{2}$ compartment shaft from the 550 level 110 feet to provide sump room below the proposed 640 level.

(e) Excavate and construct loading pockets in the shaft at the 385 and 640 levels.

(f) Drive 500 feet west and 600 feet east along the fissure on the 385 level.

(g) Drive 500 feet west and 1500 feet east along the fissure on the 640 level.

(h) Move steel headframe from the Golden Eagle shaft of the Combined Metals Reduction Company, and set it up at the Comet shaft complete with a surface ore bin. Repair spare Prince hoist and set it on the Comet shaft. Make minor repairs to camp buildings and electrical and mechanical equipment.

Several of the above listed steps can proceed simultaneously. The drifting on the 385 level can be carried out while the shaft is being extended to the 640 level, and the surface repair and hoist and headframe jobs can be carried out with a minimum of delay to underground operations, particularly as the present hoist and headframe can be used for at least the preliminary steps of the work.

Underground equipment including machine drills, mucking machine, cars, mancha trammer, etc., can probably be furnished from equipment now on hand at the company's Caselton or Prince operations at a rental value equivalent to the amortization cost of the equipment.

Total time required to complete the project is estimated at twenty-two months, as outlined in the time and cost schedule set out in answer to question # 24 below. If men are available the schedule may be speeded up by carrying more of the work on a two shift basis.

20. The general geological conditions applying to the property are discessed in the accompanying report by Mr. Gemmill. The factors that lead us to the belief that the project will develop commercial orebodies are outlined in our answer to question # 18 and # 19 above. They may be summarized as follows:

1. The Comet fissure is a strong, well defined fissure carrying appreciable quantities of tungsten, lead and zinc.

2. A substantial production has been obtained from the property with comparatively little development.

3. The ore shoots show strong mineralization in mineable widths. Stopes have been mined for an average of over six feet in width and the east stope shows ore widths of over 12 feet.

4. The type of mineralization and the geologic conditions at the property indicate mineralization continuing in the vein to depth.

5. Most recent work on the property, on the 550 level and in the bottom of the winze at the 575 level, expose good showings of sulphide ore below any previous stopes.

6. The project is designed to explore the fissure below the productive stopes on the 160 level and should find the continuation of these old shoots on two lower levels.

The Requirements and Costs

23. a) A standard wage schedule is attached showing base wage rates in effect for each labor classification under the terms of our union contract. These wage rates are subject to change after July 1, 1951, following pending negotiations with the union, and of course subject to the approval of the Wage Stabilization Board.

To the standard wage scale must be added fringe payments including shift differentials, overtime pay on a standard work week of 48 hours, industrial insurance, payroll taxes, vacation and holiday benefits, health benefits, group life insurance, etc. In the aggregate, these added payments increase labor costs about 25%.

In addition to the above, we have found it desireable to place drifting, raising and shaft sinking on a bonus contract basis which allows men to earn a bonus over base wage rates for over standard production. Such a system has been in successful application at our Caselton operations for over ten years.

The crew contemplated for the proposed project will vary from a starting

minimum of five men consisting of two hoistmen, two miners and one mucker to a maximum of eighteen consisting of two hoistmen, eight miners, five muckers, two motormen, and one topman. Mechanical and electrical maintenance will be provided from the Caselton shop crew and a service truck and crew will be available from Caselton as needed. Timber framing for shaft and raise timber will be handled at the Caselton timber framing shop, and the Caselton construction crew will set up the hoist and headframe and make the minor repairs to surface facilities. This service from the Caselton plant will have the effect of adding an average of two men to the average crew working on the Comet exploration.

On the basis outlined above, project operating labor is estimated to total $92,550.00.

b) At the beginning of the project, one superintendent will be charged half time to the project and half time to company operations now in progress at the neighboring Pan American Mine. After the project is well underway, it will be necessary to add a full time foreman to supervise work on the project.

Salaries including insurance, payroll taxes, vacations, etc., will be as follows:

Superintendent	half time	$280.00 per month-22 months	$ 6,160.00
Foreman	full time	510.00 per month-18 months	9,180.00
			$15,340.00

c) Cost of necessary repairs to existing facilities, structures and buildings are estimated as follows:

1. Repairs to electrical equipment	$ 600.00	
2. Repairs to mechanical equipment	1,000.00	
3. Repairs to buildings	500.00	
Total estimated repairs		$2,100.00

d) Cost of necessary installation or construction of additional facilities, structures, and buildings is estimated as follows:

1. Moving and setting up steel headframe	$ 800.00	
2. Constructing bin at cellar of shaft	780.00	
3. Setting double drum hoist	2,500.00	
Total estimated construction		$4,080.00

e) Cost of items of equipment which must be purchased for operations at a cost of $50.00 or more each, are estimated as follows:

1. Golden Eagle headframe, purchase at Junk velve plus modification	$2,000.00
2. Prince hoist (spare) purchase at Junk valve, plus motor, controller and repairs	3,000.00

3. Two skips for vertical shaft @ $750.00 $1,500.00
4. Two hoist ropes @ 1,000' 900.00

Total estimated cost of equipment - - - - - - - - - - - - $7,400.00

f) None

g) Rental value of items of equipment now owned and which will be devoted to the work are estimated as follows:

1. 4 Machine drills
   22 months - per month - - - @ $ 15.00 $1,320.00
2. 7 Mine cars
   15 months - per month - - - @ 5.00 525.00
3. 1 Mucking machine
   15 months - per month - - - @ 70.00 1,050.00
4. 1 Battery trammer
   15 months - per month - - - @ 100.00 1,500.00
5. 2 Compressors
   22 months - per month - - - @ 50.00 2,200.00

Total estimated rental value of equipment furnished - - $6,595.00

h) Cost of materials and supplies including items of equipment costing less than $50.00 is estimated as follows: - - - - - - - - - $60,140.00

i) Cost of power, transportation and haulage not provided for above is estimated as follows:

1. Average monthly power consumption is estimated at 20,000KWH 22 months - - - - - - - - - - - - @ 3/4¢ $3,300.00
2. Operation, repairs and maintenance of a pickup truck to service operations per month - 22 months - - - - - - - - - - - - @ $150.00 3,300.00
3. Service and supply truck estimated requirements will average three round trips per week from Caselton to Comet 22 months - per month- @ 150.00 3,300.00

Total estimated cost of service and utilities $9,900.00

j) General expense including engineering, assaying, accounting, warehouse, boarding house, bunkhouse, safety, shop expense, watchman, general supervision, but not including Salt Lake office or corporate expense. Estimated on basis of present cost distribution at Caselton plant at 7½% of direct cost - - - - - - - - - - - - - - - - - $14,858.00
Total estimated cost of proposed project - - - - - - - - - -$212,963.00

24. The tabulation shown on the attached sheet is a time schedule of the project, stated in terms of months after the project is approved, showing progress expected to be accomplished and money expected to be spent.

Tabulation Showing Estimated Progress and Expense by Monthly Based on 1 Shift Operation

Months	Estimated Progress				Estimated Expense as detailed in Question # 23										
After Approval	Raise Footage	Drifts Crosscuts	Shaft Reaming	Shaft Sinking	A	B	C	D	E	F	G	H	I	J	Total
1	16	40			$ 1,360	$ 280	$ 800	$	$		$ 160	$ 960	$ 450	$ 358	$ 4,368
2	78				2,556	280	500				160	2,340	450	500	6,786
3	56		35		2,556	280	500		2,000		160	2,555	450	700	9,2[illegible]
4			125		2,556	280	300		3,000		160	3,225	450	700	10,571
5	37	40			2,556	790		2,500	2,400		160	1,590	450	700	11,146
6	78				2,560	790		1,580			160	2,340	450	700	8,580
7	75				2,556	790					160	2,250	450	700	6,906
8	50	140			4,845	790					365	3,150	450	700	10,300
9	35	140		8	4,841	790					365	3,200	450	700	10,346
10		130		34	4,841	790					365	2,580	450	700	9,726
11		130		34	4,841	790					365	2,580	450	700	9,726
12		130		34	4,841	790					365	2,580	450	700	9,726
13		130			4,841	790					365	2,810	450	700	9,956
14		260			5,200	790					365	3,120	450	700	10,625
15		260			5,200	790					365	3,120	450	700	10,625
16		260			5,200	790					365	3,120	450	700	10,625
17		260			5,200	790					365	3,120	450	700	10,625
18		260			5,200	790					365	3,120	450	700	10,625
19		260			5,200	790					365	3,120	450	700	10,6[illegible]
20		260			5,200	790					365	3,120	450	700	10,625
21		260			5,200	790					365	3,120	450	700	10,625
22		260			5,200	790					365	3,120	450	700	10,625
Total	460	3,220	160	110	$92,550	$15,340	$2,100	$4,080	$7,400		$6,595	$60,140	$9,900	$14,848	$212,963

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.

_____
(Name of company)

By W. H. Kelley
(Signature of authorized official)

_____
(Date)

_____
(Title)

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

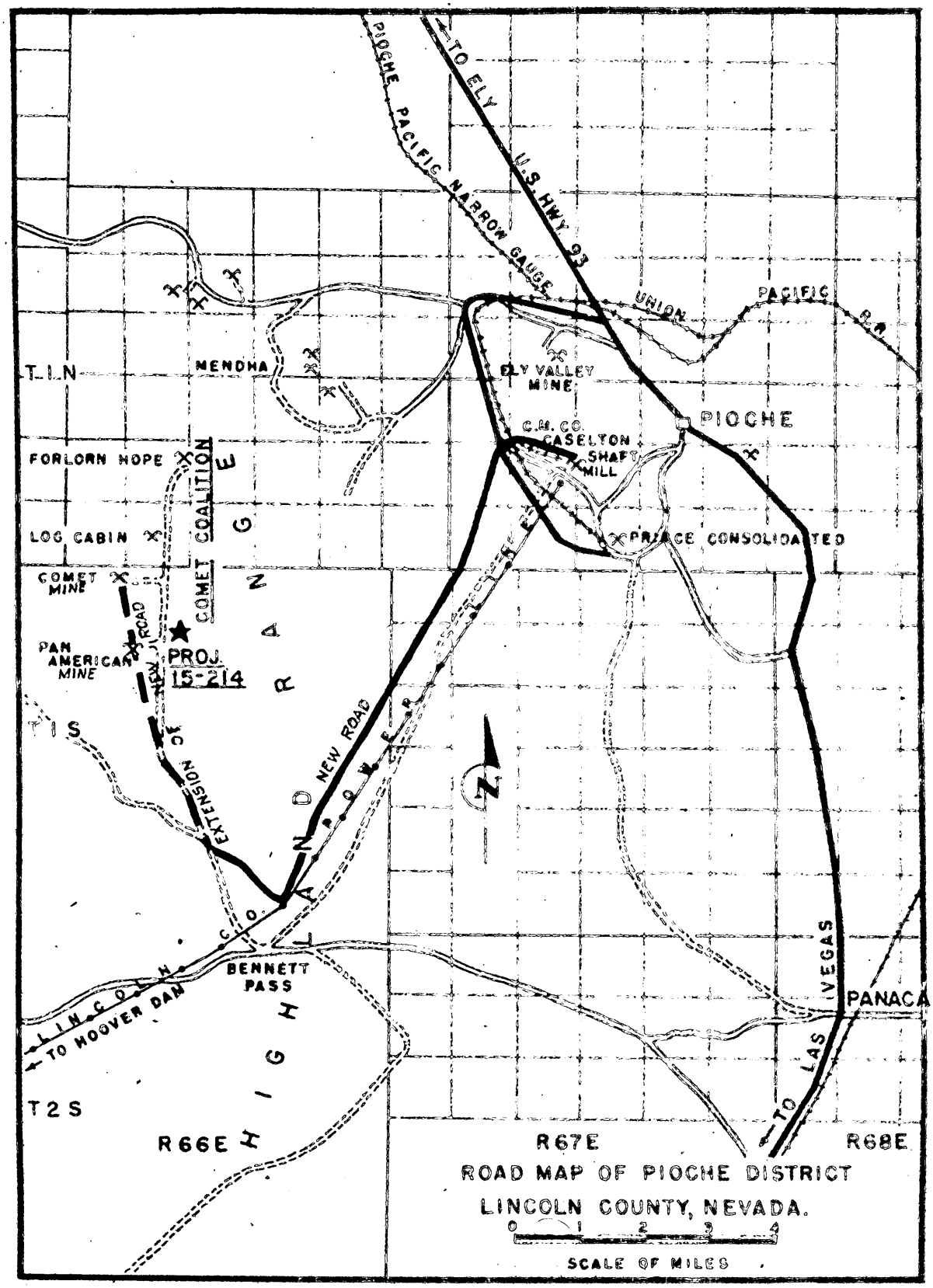

Figure 1. - Road map of Pioche district, Lincoln County, Nev.

Comet Mine Exploration

May 29, 1951

Mr. S. S. Arents, General Superintendent

Paul Gemmill

Dear Sam,

Herewith is my "Report on Proposed Exploration for the Comet Mine."

During 1933 I shipped some of the oxidized ore from this mine and became familiar with the nature of ore occurrence. Since that time I have followed operations by occasional visits to the property.

Until sulphide ore was located it would have been difficult to make a reliable forecast as to the future of the property but operations in the east stope and in the bottom levels of the winze give us a sort of "yardstick" for estimating exploration possibilities.

The calculated risk shows that this project is thoroughly justified and I particularly draw your attention to the heading at the end of the report entitled "Future of the Mine" showing the healthy exploration outlook if this project is successful.

Sincerely,

Paul Gemmill

Paul Gemmill
Geologist

PG:JEM

REPORT ON PROPOSED EXPLORATION OF THE COMET MINE
Combined Metals Reduction Co.
Pioche, Nevada

Summary

Exploration work is proposed for the Comet mine to find ore bodies in both the oxidized and the sulphide zones of the Comet fissure. The tonnage and grade of possible ore that may be developed by this exploration work has been estimated on the basis of past production and is summarized as follows:

Objectives	Dry Tons	Oz Au	Oz Ag	% Pb	% Zn	% WO_3
Oxidized Ore	5,000	.0257	10.25	5.33		0.3
Sulphide Ore	34,000	.064	7.00	1.96	9.86	0.3
Total	39,000	(Ores do not mix.)				

Metal contained in this ore would be as follows:

Gold	2,299.5 Oz
Silver	289,250. Oz
Lead	932.9 Tons
Zinc	3,352.4 Tons
Tungsten Trioxide	10,200. Units

Gross mine value of this ore is estimated at $976,000, or an average of $25.03 per ton on current market prices of 17 cents/lb. for lead, 17.5 cents/lb. for zinc and $63.00 per short ton unit of tungsten trioxide, and on current custom mill schedules at the Caselton mill.

Operating costs, based on production rate of 75 tons per day, are estimated at $10.00 per ton, leaving an operating margin of $15.03 per ton or $586,000 operating margin on the estimated possible ore.

The proposed exploration work is shown on the accompanying map C-1087 and is summarized as follows:

1. Drive 390' of 2½ compartment, timbered, vertical raise.
2. Drive 3,220' of drifts and crosscuts.
3. Ream out 160' of present single compartment vertical shaft and retimber for 2½ compartments.
4. Sink 110' of 2½ compartment shaft.
5. Raise two shaft pockets.
6. Make necessary repairs to existing facilities and purchase or construct a headframe and shaft hoist.

The total estimated cost of the proposed project is $212,963.00.

From the results of previous exploration on the Comet fissure, it appears probable that the proposed project has at least one chance in two of achieving the estimated results. Should the project be successful, it will result in a self-sustaining mining operation that will ultimately produce several times the ore tonnage forecast for the project

Description and Geology of the Comet Mine

The Comet mine is briefly described in U. S. G. S. Professional Paper #171 to which referrence is made for the geology of the district. The attached print from a Bureau of Mines road map shows the location of the mine with respect to highways towns and other mines in the area. Drawing C-1087, in the map pocket, shows the surface plan and section of mine workings on the Comet Vein.

The surface cropping of the Comet Vein bears N65°E and dips steeply to the north. On downward extension, the dip reverses for some distance and becomes almost vertical. The vein is a quartz-filled fissure outcropping in Prospect Mountain (Cambrian) quartzite for about 700 feet. The eastward extension of the fissure in Pioche Shale, which overlies the quartzite, can be traced over 1500 feet but contains only a few inches of vein filling and is not visible except in prospect pits. To the west, the fissure-vein is covered by alluvium and is probably cut within 500 feet west of the No. 1 shaft by a major north-south fault dipping west which can be traced several miles along the base of the Highland Range.

The vein varies in width from a mere stringer to over 12 feet. The best ore has occurred where the vein is widest and the average width of sulphide ore stopes is 6.25 feet.

The fissure was caused by nearly horizontal fault movement. This is demonstrated by striations on the fissure walls and by transverse movement along bedding planes. This type movement has caused abrupt steps in the fissure walls with consequent widening or narrowing of the vein. Evidence accumulated here and elsewhere in the Pioche district demonstrates quite conclusively that this type movement was common before the principal periods of normal faulting and took place before the Cambrian sediments had been tilted.

Weakness of the fissure in Pioche shale is due to the change in wall rock from brittle quartzite to more plastic shale. The vein should maintain its strength east of the mine workings farther than it can be traced on surface as long as exploration is confined to the quartzite.

Some angular fragments of quartzite and shale are noted in the vein filling and show that brecciation accompanied fault movement. All stages of replacement of the breccia fragments may be noted. Shale fragments have been observed to be less amenable to replacement than the glassy quartzite fragments.

A few feet of vertical displacement is noted across the fissure which is interpreted to represent normal faulting that probably occurred during the vein formation, opening the fissure in preparation for quartz filling and replacement.

Introduction of the heavy sulphide mineralization was preceeded by brecciation of the earlier vein quartz. This fact, together with other

evidence, demonstrates that there have been at least two stages of fissure filling; the first stage being low grade to almost barren quartz; and the second stage being quartz with relatively abundant lead and zinc sulphides. Tungsten and gold-silver values without the heavy sulphide mineralization, as mined in the central stopes above the 160 ft. level, probably occurred as part of the earlier stage vein filling. This type mineralization overlaps into the areas later filled and replaced by the heavier sulphides.

Frequently the vein is "frozen" to the walls and shows replacement of the wall rock by quartz and sulphides. No appreciable brecciation or fracturing, either on the vein or on the minor cross fractures appears to be post mineral.

Primary ore minerals are sphalerite, galena, pyrite, wolframite, argentite and gold in a gangue of quartz. Minor copper valves probably occur as chaleopyrite.

In the process of oxidation, zinc has almost wholly dissappeared because of the lack of limestone or other suitable precipitant. Galena remains with oxidized lead minerals anglesite and cerussite in some places where all the sphalerite has been oxidized and leached away. Plumbojarosite (basic sulphate or iron and lead) is common in the oxidized ore, and usually carries good silver valves.

The silver has migrated to some extent in the oxidized portion of the vein and some enrichment is usually found where the change from oxidized ore to sulphide ore takes place. Better than average silver assays are common in the upper 5' to 10' of sulphide ore just under the zone of oxidation in the east part of the mine where sulphide ore has been stoped above the 160' level. In the central portion of the mine, sulphide ore first shows just above the 465 ft. level.

The estimated division of oxidized and sulphide ore areas in the vein is shown on the accompanying map.

Production

Prior to the time sulphide ore production started, the mine was started several times and closed down. There is no record of production by E. D. Smiley prior to 1925, but it is known that some lead-silver ore was shipped and the mill was operated for a short while producing tungsten concentrates.

Since 1925 fairly complete records have been kept and the following tabulation shows a summary of the record of production:

Summary of Production

Date	Remarks	Dry Tons	OZ Au	OZ Ag	% Pb	% Zn	% WO_3
1925-44	Concentrates	113.0	1.74	45.0	9.22	4.02	
1928-50	Concentrates	31.2					18.0
1927	Crude Ore (Oxide)	29.6	0.47	21.4	14.7	0.5	

		tons	Au	Ag	Pb	Zn
1933-34	Crude Ore (Oxide)	285.4	0.247	13.2	12.9	0.5
1940-41	Crude Ore ()xide)	971.2	0.251	7.3	1.8	
1944-50	Crude Ore (Oxide)	211.0	0.268	19.1	9.8	
1945	Crude Ore (Sulphide)	269.5	0.04	7.01	3.53	15.92
1946	Crude Ore (Sulphide)	1,671.0	0.059	7.42	2.59	20.71
1947	Crude Ore (Sulphide)	1,986.3	0.111	10.01	2.95	6.01
1948	Crude Ore (Sulphide)	5,040.0	0.052	7.48	1.87	9.79
1949	Crude Ore (Sulphide)	3,595.5	0.058	5.72	1.10	7.00
1950	Crude Ore (Sulphide)	608.4	0.075	3.45	2.43	10.02
1951 Thru March	Crude Ore(Sulphide)	492.4	0.050	2.26	1.60	6.33

Lead concentrates carried between 5% and 10% WO_3 but were not assayed for tungsten, as at the time these concentrates were made there was no attempt to save tungsten. Likewise the tungsten concentrates were high in lead-silver values. The crude ore shipments also carried tungsten but were not assayed for tungsten except that occasional pulps of sulphide shipments to the Caselton mill were assayed and found to average about 0.5% WO_3.

Since concentrates, oxide ore and sulphide ore would not average together to show a typical type of ore, the following condensed summary is presented:

Condensed Summary of Production

Date	Remarks	Oz Au	Oz Ag	% Pb	% Zn	% WO_3	
1925-44	Concentrates	113.0	1.74	45.0	9.22	4.02	
1928-50	Concentrates	31.2					18.0
1927-50	Crude Oxide Ore	1,497.1	0.257	10.35	5.33		
1945-51	Crude Sulphide Ore*	13,664.0	0.064	7.00	1.96	9.86	0.5

*Settlement assay on lead and zinc does not include non-sulphide lead and zinc contained. Tungsten values estimated from occasional pulp assays but tungsten was not paid for.

In addition to the above production, several truck loads of 2% to 4% tungsten ore were hauled to the Minerals Research Co., Glendale, California of which we have no record. This was during 1941.

Exploration Objective and Anticipated Ore

On section B-B' of drawing C 1087, it will be noted that the vertical shaft extends only to the 160 ft. level and the winze below that point is crooked. This winze is small and inadequate for economic operation. Therefore, the first work proposed involves raising from the winze levels, enlarging the present vertical shaft and sinking the shaft thus provided another 110 feet.

On the longitudinal section it will be noted that exploration is proposed to develop both oxide and sulphide ore. On the average, oxide ore should run higher in tungsten than sulphide ore due to oxidation and removal of zinc sulphide, however, reports of smapling in the oxidized areas gave an average of 0.3% WO_3 and pulps assayed on sulphide ore from the east stope ran 0.5% WO_3. More recent

sulphide ore shipments from the 550 level show about 0.1%. Therefore, the average grade used for both oxide and sulphide ore is 0.3% WO_3.

It should be noted that the west oxide stope area was originally the same type ore, heavy in sulphide zinc and lead, as the east stope. On oxidation, the areas assaying highest in zinc leave a porous silica boxwork that may be likened to corn flakes. Commonly this material weighs less than 25 lbs. per cubic foot.

In estimating the amount of ore that proposed exploration should encounter, it is simply assumed that past production will be repeated for equivalent areas of the fissure. No structural or mineralogical changes are known to indicate a change in the proportion of total fissure area that will be commercial ore.

Estimated Oxidized Ore and Operating Margin:

Production of oxidized ore since 1924 amounted to 1497 tons of crude ore shipments plus 144.2 tons of concentrates. Recoveries in concentrate were poor compared to what present day milling could do and we have no records showing what the mill heads assayed. For estimating purposes, it is assumed that each ton of concentrate represented ten tons of ore. Total production of oxidized ore would include a considerable amount of material that was sorted out from crude ore production before shipping to the smelter. The major part of oxide ore tonnage shipped (1940-41 production) was not sorted. For estimating purposes, it is assumed that the material sorted out would be milled but would break even on costs. Pre-1924 production is estimated at 2500 tons from the size of openings. It is further estimated that this 2500 tons would have yielded 2,000 tons of ore after partial sorting to the average grade crude oxide ore.

From the above data, total past production of oxidized ore with assay values equivalent to crude oxide ore production from 1927 to 1950 is estimated as follows:

Indicated from concentrates	
10 x 144.2 tons	1442 tons
Crude Oxide Ore, 1927-1950	1497 tons
Pre-1924 production	2000 tons
Total	4939 tons

In the area to be developed below the 160 ft. level, there remains slightly more than the area from which the above estimated production was mined. Therefore, total oxide ore to be developed is assumed to be 5,000 tons with the 1927-1950 weighted assay and 0.3% WO_3, or:

	% Au	% Ag	% Pb	% Zn	% WO_3
5,000 tons	0.257	10.25	5.33		0.3

Mine value of this ore on 17¢ lead, $63.00 WO_3 prices is calculated on the following approximate basis:

Metal Payment:

Gold	@ 0.16/oz	$ 4.11
Silver	@ 0.63/oz	6.52
Lead	@ $ 1.80/Unit	9.59
Tungsten	@ 35.00/Unit	10.50
		$30.72

Treatment:

This is estimated at $5.00/Ton for flotation of gold, silver, and lead. Tailings will go to the Tungsten plant and treatment is estimated at $5.00 per ton on tailings from the first float, or $4.25 per ton of crude ore.

Total treatment $5.00 plus $4.25	$ 9.25
Mill Payment	21.47
Transportation	1.00
Mine Value	20.47
Estimated Mining Cost	10.00
Operating Margin	$10.47

Total operating margin on 5,000 tons of oxide ore at $10.47 - $52,350

Estimated Sulphide Ore and Operating Margin:

Ore faces now exposed on the 550 level are expected to continue some distance. A face of ore shows in the east half of the 550 level stope going up and all the bottom of this stope is mill ore going down with widths up to 8 feet. The last round in the winze was taken for ore and the face is reported to be in good ore.

In both the east stope on and below the 160' level and in the 550 level stope, bands and channels of oxidation extended into and through the sulphide ore. This oxidation removed probably 20% or more of the original volume of good zinc ore. Therefore the vein should be at least 20% more productive in sulphide ore as development progresses east under greater thickness of the protective shale capping.

By comparison of areas and disregarding the probable benefit from decrease in amount of oxidation, the sulphide area to be developed by the 385 level east drive and the 640 level work should expose for development and mining at least 2½ times the total past production of sulphide ore. The total sulphide ore to be developed is therefore assumed to be as follows:

	Settlement Assay				
	Oz Au	Oz Ag	% Pb	% Zn	% WO_3
34,000 Tons	.064	7.00	1.96	9.86	0.3*

*Average of past production from pulp samples was 0.5% WO_3, but latest shipments from the 550 level assayed 0.1% so assumed future average is taken as 0.3% WO_3.

The mine value of this ore on 17¢ lead, 17½¢ zinc and $63.00 WO_3

prices is calculated on the following approximate basis:

Metal Payment:

Gold	@	0.16/oz	$ 1.02
Silver	@	0.63/oz	4.40
Lead	@	$ 1.69/Unit	3.31
Zinc	@	1.56/Unit	15.38
Tungsten	@	35.00/Unit	10.50
			$34.61

Treatment:

Based on $3.90 rate for sulphide ore flotation of gold, silver, lead and zinc. Tailings will go to the tungsten plant where treatment is estimated at $5.00 per ton ore tails from the first float, or $4.00 per ton of crude ore.

Total treatment $3.90 plus $4.00	$ 7.90
Mill Payment	26.71
Transportation	1.00
Mine Value	25.71
Estimated Mining Cost	10.00
Operating Margin	$15.71

Total operating margin on 34,000 tons of Sulphide ore at $15.71 - $534,140

Cost Estimate:

A cost estimate has been prepared by Mr. S. S. Arentz, general superintendent of Pioche operation, covering the proposed work involved in this project. The details of his estimate are presented in "Application for Aid for an Exploration Project Persuant to Mineral Order 5, Under Defense Production Act of 1950." The summary for computation of the risk involved in this project is presented above under "Summary."

Future of the Mine:

Assuming that the anticipated results are obtained from this exploration project, it is almost a certainty that the mine will be in position to continue profitable operation for many years, even on much lower metal prices. The sulphide ore zone is, of course, much more productive that the oxidized zone and additional depth should be all in the unoxidized zone below the 2,000 feet of strike length to be explored on the 640 ft. level.

By applying the same ratio of ore production to fissure area used in estimating possible ore above the 640 ft. level, the next 250 feet of depth below that level for a strike length of 2,000 feet would produce 38,600 tons of ore with an operating margin of over $600,000. on present metal prices. With the mine in operation, Mr. Arentz estimates that the 250 feet of shaft sinking and 2,000 feet of drifting would cost not to exceed $100,000. On this basis, the ratio of exploration cost to operating margin would be in the order of six to one.

Respectifully submitted,

Paul Gemmill

Paul Gemmill
Geologist

COMBINED METALS REDUCTION COMPANY
CONDENSED BALANCE SHEET
MARCH 31, 1951

ASSETS

	Total	Compared with Previous Month Increase	Decrease
CURRENT ASSETS			
111 Cash	1,149,151.03	232,263.62	
112 Notes Receivable	204,444.59	248.03	
113 Accounts Receivable	1,020,643.84		82,968.46
115 Crude Ore & Concts.	710,739.64		18,806.14
116 Material & Supplies	632,652.47	15,762.24	
117 Advances & Deposits	12,935.50		
118 Working Funds	897.70	72.70	
119 Contract Bonus	(225.44)		764.67
Total Current Assets	3,731,239.33	145,807.32	
OTHER ASSETS			
123 Long Term Investments	142,458.57		2,608.52
170 Accounts Rec. Deferred	33,102.37		
Total Other Assets	175,560.94		2,608.52
FIXED ASSETS			
131 Mining Property	3,858,208.01	810.00	
132 Buildings	1,084,534.75	2,761.37	
133 Machinery & Equipment	3,072,546.35		
134 Autos and Trucks	49,030.59		
135 Furniture and Fixtures	28,616.46	259.98	
136 Real Estate	19,114.79		
Total	8,112,050.95	3,831.35	
Less Reserves (see details)	5,983,416.46	856.50	
Net Fixed Assets	2,128,634.49	2,974.85	
INTANGIBLE ASSETS			
140 Patents & Process Development	962,039.18		
Less Reserves	940,590.13		
Net Intangible Assets	21,449.05		
DEFERRED CHARGES			
150 Prepaid Royalty	27,425.93		339.86
160 Deferred Charges	283,469.41	75,854.69	
161 Prepaid Insurance	48,938.37		1,280.62
Total Deferred Charges	359,833.71	74,234.21	
TOTAL ASSETS	6,416,717.52	220,407.86	

LIABILITIES

	Total	Compared with Previous Month Increase	Decrease
CURRENT LIABILITIES			
212 Accounts Payable	580,552.53	221,569.05	
213 Accrued Liabilities	466,563.19		97,031.79
Total Current Liab.	1,047,115.72	124,537.26	
OTHER LIABILITIES AND CAPITAL			
214 Lease Accounts	13,642.67		75.64
220 Wage Reserve	62,064.36	3,435.09	
250 Long Term Options	66,717.94		1.38
260 Bonds Unmatured	990,000.00		
262 Provision for metal price Variations	397,149.89		64,273.01
280 Capital Stock	436,955.88		
293 Surplus - Capital	1,800.00		
294 Surplus - Earned	2,919,872.43	27,901.95	
291 Current P. & L.	481,398.63	128,883.59	
TOTAL LIABILITIES & CAPITAL	6,416,717.52	220,407.86	

MF-202

LANDLORD'S SUBORDINATION AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned is the owner in fee simple of that certain parcel of ground in the county of Lincoln, State of Nevada, described in a certain Exploration Project Contract dated May 29, 1951, between Combined Metals Reduction Company, a corporation of Utah, the Lessee of said property, and the United States of America;

NOW, THEREFORE, the undersigned, as Lessor of said property under lease dated May 15, 1951 ....., does by these presents subordinate all of his right, title, and interest under the provisions of said lease to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and agrees that the lien and claim of the United States of America under the provisions of said contract shall be prior to the undersigned's rights to rentals or royalties under the terms of said lease; and

The undersigned further agrees that if said leasehold interest should be surrendered or if said lease should terminate at any time prior to the expiration of the rights of the United States of America under said Exploration Project Contract, the undersigned shall assume and does hereby assume all of the obligations of the Lessee under said Exploration Project Contract to make repayment to the United States of America according to the terms of said contract; and

The undersigned agrees to commit no act, nor assert any claim under judicial process or otherwise that may contravene or conflict with the prior lien and claim of the United States of America under the provisions of said Exploration Project Contract.

This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 29 day of May, 1951, by its officers thereunto duly authorized by resolution this day adopted unanimously bu its Board of Directors.

COMET MINES, INCORPORATED,

President

ATTEST:

Secretary

U. S. GOVERNMENT PRINTING OFFICE 940768

WAGE SCALE

NEW STANDARD WAGE SCHEDULE EFFECTIVE NOVEMBER 20, 1950 UNDER

CONTRACT WITH LOCAL UNION C.I.O. NO. 4262,

UNITED STEEL WORKERS OF AMERICA.

JOB CLASS	JOB TITLE	WAGE RATE PER HOUR	WAGE RATE PER SHIFT
2	Surface Labor (Mine)	$ 1.345	$10.76
2	Engineering Labor	1.345	10.76
2	Laborer (Shop)	1.345	10.76
2	Labor (Construction)	1.345	10.76
2	Crusher Laborer	1.345	10.76
2	Mill Laborer	1.345	10.76
3	Compressor Operator	1.3725	10.98
4	Car Dumper	1.40	11.20
4	Tool Keeper	1.40	11.20
5	Raise Coger	1.4275	11.42
6	Sawer Helper	1.4550	11.64
6	Churn Drill Helper	1.455	11.64
6	Car Loader	1.455	11.64
6	Conveyor Feeder	1.455	11.64
6	Bulkheader	1.455	11.64
6	Helper (Maintenance)	1.455	11.64
6	oiler (Surface	1.455	11.64
6	Picker	1.455	11.64
6	Filter Operator	1.455	11.64
7	Mucker	1.4825	11.86
7	Swamper	1.4825	11.86
7	Sanitation	1.4825	11.86
7	Topman	1.4825	11.86
7	Diamond Drill Helper	1.4825	11.86
7	Light Truck Driver	1.4825	11.86
7	Oiler (Underground)	1.4825	11.86
7	Carpenter Helper	1.4825	11.86
7	Flotation Helper	1.4825	11.86
7	Sampler	1.4825	11.86
8	Slusherman	1.51	12.08
8	Pumpman	1.51	12.08
8	Ore Pusher	1.51	12.08
9	Powderman	1.5375	12.30
9	Hoistman (Underground)	1.5375	12.30
9	Truck-Grader Operator	1.5375	12.30
10	Sub-Level Motorman	1.565	12.52
10	Crushing Plant Operator	1.565	12.52
11	Motorman	1.5925	12.74
11	Pipe Track Man	1.5925	12.74
12	Maintenance Mechanic (Starter)	1.620	12.96

JOB CLASS	JOB TITLE	WAGE RATE PER HOUR	WAGE RATE PER SHIFT
12	Machinist (Starter)	1.620	12.96
12	Electrician Repairman (Starter)	1.620	12.96
12	Mine Blacksmith	1.620	12.96
12	Drill Doctor	1.620	12.96
12	Carpenter Mill (Starter)	1.620	12.96
12	Cat-Bulldozer	1.620	12.96
13	Sawyer	1.6475	13.18
13	Cager-Skipteender	1.6475	13.18
13	Flotation Operator	1.6475	13.18
14	Miner	1.675	13.40
14	Diamond Driller	1.675	13.40
14	Churn Driller	1.675	13.40
14	Maint. Mechanic - Intermediate	1.675	13.40
14	Auto Mechanic	1.675	13.40
14	Machinist - Intermediate	1.675	13.40
14	Electrician Repairman - Intermediate	1.675	13.40
14	Hoistman - Double Drum	1.675	13.40
14	Trouble Shooter	1.675	13.40
14	Carpenter - Mill Intermediate	1.675	13.40
14	Reagent Plant Operator	1.675	13.40
15	Timberman	1.7025	13.62
15	Maintenance Repairman	1.7025	13.62
16	Maintenance Mechanic	1.73	13.84
16	Machinist	1.73	13.84
16	Electrician - Repairman	1.73	13.84
16	Carpenter Millwright	1.73	13.84

In addition to the above wage rates, the following costs are included in the calculations of labor costs on these reports:

(a) Shift Differential (b) Shaft Money (If Applicable)

(c) Overtime Average (d) Holiday Pay

(e) Payroll Taxes

COMET MINES, INC.

Sulphide Ore Shipped to Combined Metals Reduction Co.

Lot. No.	Dry Tons Sulphide Ore	Net Mill Returns	ASSAYS: Ounces Au.	Ounces Ag.	% Pb.	% Zn.	% Cu.
No. 3 East Stope Shipments:							
1 - 2	99.199	1,327.62	.0325	6.635	3.275	21.58	.05
3	59.296	840.39	.035	6.95	4.25	13.91	.255
4	57.419	506.44	.0625	7.615	4.67	11.755	.27
5	55.682	394.56	.045	7.1	2.	12.17	.55
6	56.895	836.89	.0375	7.455	3.15	21.17	.715
7	57.748	303.11	.045	4.175	2.1	10.07	.45
8	49.841	243.97	.026	6.115	2.05	9.305	.4
9	55.516	556.06	.0850	5.875	2.2	10.9	.385
10	58.054	1,106.82	.058	10.935	3.3	26.52	.575
11-12	126.561	2,608.59	.0505	10.42	1.75	31.43	.655
13	61.789	1,249.53	.041	7.845	2.775	34.52	.515
14-15	123.476	2,282.72	.041	8.25	2.05	31.17	.56
16	59.989	900.74	.065	7.72	2.8	23.815	.45
Correction of Freight		183.86					
17-18	117.161	1,900.96	.055	9.52	3.325	23.775	.425
19	62.369	1,113.40	.09	7.56	4.5	18.75	.38
20	56.776	847.88	.08	7.85	4.05	19.3	.405
21	60.208	801.51	.045	7.675	3.05	18.505	.4
22	55.838	729.18	.0625	6.015	2.87	19.55	.325
23-24	118.739	1,232.22	.05	4.78	1.6	17.85	.365
25-26	115.998	1,407.12	.05	5.855	2.	19.535	.48
27-28	124.319	1,500.62	.0375	4.265	2.6	20.895	.39
29	65.426	816.94	.045	4.415	2.17	19.575	.41
30	59.127	690.89	.05	4.745	2.5	16.51	.385
Correction on Freight		229.72					
31-32	118.448	1,902.39	.14	9.985	2.475	13.01	.43
33	66.352	949.11	.095	10.035	2.775	11.385	.265

COMET MINES, INCORPORATED
Sulphide Ore Shipped to Combined Metals Reduction Co.

Lot No.	Dry Tons Sulphide Ore	Net Mill Returns	ASSAYS: Oz. Au.	Oz. Ag.	% Pb.	% Zn.	% Cu.
34-35	106.314	1,197.23	.06	5.915	3.575	10.6	.35
36-37	119.957	1,812.52	.11	10.84	5.2	7.85	.375
38	61.783	1,017.51	.12	10.985	5.275	9.35	.455
39-40	107.758	2,194.35	.18	16.25	5.75	9.59	.56
41-42	122.278	1,325.56	.096	9.605	2.975	5.67	.34
43	51.213	552.86	.1635	11.91	3.15	1.575	.55
44	52.419	464.66	.16	11.075	2.35	1.25	.4
45 - 48	215.18	2,998.11	.172	13.53	4.	3.14	.455
49	63.053	962.13	.22	14.38	3.05	4.515	.58
50	278.759	2,101.42	.085	7.395	1.35	5.235	.3
51	108.993	1,504.69	.11	9.47	2.935	9.22	.325
52	103.552	1,252.87	.0875	7.245	3.365	8.385	.375
53	178.168	2,009.26	.0825	9.17	2.5	7.185	.275
54	155.05	1,810.72	.116	11.425	2.2	4.95	.525
55	148.675	909.84	.0675	7.695	1.3	3.55	.3
56	202.192	1,637.21	.065	8.72	1.65	4.91	.36
57	423.495	5,033.59	.051	10.299	1.85	7.57	.53
58	286.121.	3,167.08	.046	8.895	1.7	8.37	.31
59	299.93	4,157.33	.055	9.25	1.85	10.85	.625
60	207.809	2,255.55	.05	6.195	1.35	10.75	.38
61	179.853	2,307.45	.065	6.42	2.35	11.7	.36
62	282.773	2,942.31	.046	7.09	2.	8.64	.43
63	129.318	925.35	.036	4.655	1.325	7.105	.3
64	534.86	3,505.68	.0625	7.01	1.3	8.7	.45
Decrease in Treatment Charge		501.58					
65	406.369	6,360.58	.0575	9.165	2.51	11.4	.475
66	455.181	8,039.43	.0625	7.775	2.4	11.3	.46
67	592.671	9,333.31	.0585	5.525	1.825	11.05	.44

COMET MINES, INCORPORATED
Sulphide ore shipped to Combined Metals Reduction Co.

Lot No.	Dry Tons Sulphide Ore	Net Mill Returns	ASSAYS: Oz. Au	Oz. Ag.	% Pb	%Zn	% Cu
68	384.593	5,133.32	.0525	5.4	1.63	9.875	.43
69	378.474	6,261.31	.05	8.375	2.05	9.86	.52
70	231.604	4,060.50	.046	7.63	1.9	10.05	.405
71	387.001	5,276.18	.03	6.995	1.6	7.705	.38
72	698.669	8,007.03	.035	5.905	1.09	7.185	.45
73	764.375	6,728.14	.046	7.99	.895	6.625	.51
74	719.125	2,809.37	.076	5.56	.9	5.34	.3
75	428.271	4,042.45	.75	7.745	2.05	7.915	.475
76	391.206	1,426.42	.0485	3.635	.75	5.23	.275
Total	11,978.457	$ 143,114.74					

480 and 550 Foot Level Shipments:

76-A	350.187	2,954.85	.08	3.485	1.15	13.38	.3
77	243.631	1,277.83	.06	1.58	1.175	10.575	.275
78	194.662	1,124.68	.05	2.105	1.475	10.79	.27
79	325.571	1,787.90	.066	2.82	2.47	7.745	.2
80	19.644	751.17	.372	18.25	3.8	22.73	1.5
81	15.012	358.32	.2485	10.7	6.825	23.125	1.285
82	55.5	1,054.10	.065	4.705	3.9	12.68	.355
	1,202.207	$ 9,308.83					

Grand Total:

13,180.664	$152,423.57

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. DMA-1671X

Date received 6/11/51

Participation

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 2 - 1952

Combined Metals Reduction Company
218 Felt Building
Salt Lake City, Utah
Nevada Operations - Pioche, Nevada

Name and address of applicant

Date May 29, 1951

FILL IN THIS BLOCK

Date of application May 29, 1951

Estimated cost $212,963.00

Mineral or metal Tungsten, Lead, Zinc

Percentage of Government participation 75%

Location of mine Comet Mining District

Pioche, Nevada

Date of filing MF-100

DMA Docket Number, if available

See attached report for answers to the following questions.

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)?

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16—64067-1

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*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.

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

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

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    (*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.

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THE EXPLORATION

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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.

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

See certification on page 14 of following report.

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.

(Name of company)	By W. H. Kelsey (Signature of authorized official)
(Date)	(Title)

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

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. dma-1671X

Date received 6/11/51

Participation

Combined Metals Reduction Company
218 Felt Building
Salt Lake City, Utah
Nevada Operations - Pioche, Nevada

Name and address of applicant

Date May 29, 1951

FILL IN THIS BLOCK

Date of application May 29, 1951

Estimated cost $212,963.00

Mineral or metal Tungsten, Lead, Zinc

Percentage of Government participation 75%

Location of mine Comet Mining District

Pioche, Nevada

Date of filing MF-100

DMA Docket Number, if available

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(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

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

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Docket No. Dma-1671X

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Combined Metals Reduction Company
218 Felt Building
Salt Lake City, Utah
Nevada Operations - Pioche, Nevada

Name and address of applicant

Date May 29, 1951

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Date of application May 29, 1951

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Pioche, Nevada

Date of filing MF-100

DMA Docket Number, if available

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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. DMA-1671X

Date received 6/11/51

Participation

Combined Metals Reduction Company
218 Felt Building
Salt Lake City, Utah
Nevada Operations - Pioche, Nevada

Name and address of applicant

Date May 29, 1951

FILL IN THIS BLOCK

Date of application May 29, 1951

Estimated cost $212,963.00

Mineral or metal Tungsten, Lead, Zinc

Percentage of Government participation 75%

Location of mine Comet Mining District

Pioche, Nevada

Date of filing MF-100

DMA Docket Number, if available

See attached report for answers to the following questions.

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 of 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.

See certification on page 14 of following report.

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.

(Name of company)	By W. H. Kelley (Signature of authorized official)
(Date)	(Title)

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

*Same as footnote on page 1.

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

Comet Mine Exploration

May 29, 1951

Mr. S. S. French, General Superintendent

Paul Cornell

Dear Sam,

Herewith is my "Report on Proposed Exploration for the Comet Mine."

During 1933 I shipped some of the oxidized ore from this mine and became familiar with the nature of ore occurrence. Since that time I have followed operations by occasional visits to the property.

Until sulphide ore was located it would have been difficult to make a reliable forecast as to the future of the property but operations in the east stope and in the bottom levels of the mine give us a sort of "yardstick" for estimating exploration possibilities.

The calculated risk shows that this project is thoroughly justified and I particularly draw your attention to the heading at the end of the report entitled "Future of the Mine" showing the healthy exploration outlook if this project is successful.

Sincerely,

Paul Cornell
Geologist

PC:jbc

REPORT ON PROPOSED EXPLORATION OF THE COMET MINE

Combined Metals Reduction Company

Pioche, Nevada

Summary

Exploration work is proposed for the Comet Mine to find ore bodies in both the oxidized and the sulphide zones of the Comet fissure. The tonnage and grade of possible ore that may be developed by this exploration work has been estimated on the basis of past production and is summarized as follows:

Objectives	Dry Tons	Oz Au	Oz Ag	% Pb	% Zn	% WO_3
Oxidized Ore	5,000	.0257	10.25	5.33		0.3
Sulphide Ore	34,000	.064	7.00	1.96	9.86	0.3
Total	39,000		(Ores do not mix.)			

Metal contained in this ore would be as follows:

Gold	2,299.5 Oz
Silver	289,250. Oz
Lead	932.9 Tons
Zinc	3,352.4 Tons
Tungsten Trioxide	10,200. Units

Gross mine value of this ore is estimated at $976,000, or an average of $25.03 per ton on current market prices of 17 cents/lb. for lead, 17.5 cents/lb. for zinc and $63.00 per short ton unit of tungsten trioxide, and on current custom mill schedules at the Caselton mill.

Operating costs, based on production rate of 75 tons per day, are estimated at $10.00 per ton, leaving an operating margin of $15.03 per ton or $586,000 operating margin on the estimated possible ore.

The proposed exploration work is shown on the accompanying map C-1087 and is summarized as follows:

1. Drive 390' of 2 compartment, timbered, vertical raise.
2. Drive 2,220' of drifts and crosscuts.
3. Ream out 160' of present single compartment vertical shaft and retimber for 2 compartments.
4. Sink 110' of 2 compartment shaft.
5. Raise two shaft pockets.
6. Make necessary repairs to existing facilities and purchase or construct a headframe and shaft hoist.

The total estimated cost of the proposed project is $221,334.00.

From the results of previous exploration on the Comet fissure, it appears probable that the proposed project has at least one chance in two of achieving the estimated results. Should the project be successful, it will result in a self-sustaining mining operation that will ultimately produce several times the ore tonnage forecast for the project.

Description and Geology of the Comet Mine

The Comet mine is briefly described in U. S. G. S. Professional Paper #171 to which reference is made for the geology of the district. The attached print from a Bureau of Mines road map shows the location of the mine with respect to highways towns and other mines in the area. Drawing C-1087, in the map pocket, shows the surface plan and section of mine workings on the Comet Vein.

The surface cropping of the Comet Vein bears N65°E and dips steeply to the north. On downward extension, the dip reverses for some distance and becomes almost vertical. The vein is a quartz-filled fissure outcropping in Prospect Mountain (Cambrian) quartzite for about 700 feet. The eastward extension of the fissure in Pioche Shale, which overlies the quartzite, can be traced over 1500 feet but contains only a few inches of vein filling and is not visible except in prospect pits. To the west, the fissure-vein is covered by alluvium and is probably cut within 400 feet west of the No. 1 shaft by a major north-south fault dipping west which can be traced several miles along the base of the Highland Range.

The vein varies in width from a mere stringer to over 12 feet. The best ore has occurred where the vein is widest and the average width of sulphide ore stopes is 6.25 feet.

The fissure was caused by nearly horizontal fault movement. This is demonstrated by striations on the fissure walls and by transverse movement along bedding planes. This type movement has caused abrupt steps in the fissure walls with consequent widening or narrowing of the vein. Evidence accumulated here and elsewhere in the Pioche district demonstrates quite conclusively that this type movement was common before the principal periods of normal faulting and took place before the Cambrian sediments had been tilted.

Weakness of the fissure in Pioche shale is due to the change in wall rock from brittle quartzite to more plastic shale. The vein should maintain its strength east of the mine workings farther than it can be traced on surface as long as exploration is confined to the quartzite.

Some angular fragments of quartzite and shale are noted in the vein filling and show that brecciation accompanied fault movement. All stages of replacement of the breccia fragments may be noted. Shale fragments have been observed to be less amenable to replacement than the glassy quartzite fragments.

A few feet of vertical displacement is noted across the fissure which is interpreted to represent normal faulting that probably occurred during the vein formation, opening the fissure in preparation for quartz filling and replacement.

Introduction of the heavy sulphide mineralization was preceded by brecciation of the earlier vein quartz. This fact, together with other

evidence, demonstrates that there have been at least two stages of fissure filling; the first stage being low grade to almost barren quartz; and the second stage being quartz with relatively abundant lead and zinc sulphides. Tungsten and gold-silver values without the heavy sulphide mineralization, as mined in the central stopes above the 160 ft. level, probably occurred as part of the earlier stage vein filling. This type mineralization overlaps into the areas later filled and replaced by the heavier sulphides.

Frequently the vein is "frozen" to the walls and shows replacement of the wall rock by quartz and sulphides. No appreciable brecciation or fracturing, either on the vein or on the minor cross fractures appears to be post mineral.

Primary ore minerals are sphalerite, galena, pyrite, wolframite, argentite and gold in a gangue of quartz. Minor copper values probably occur as chalcopyrite.

In the process of oxidation, zinc has almost wholly disappeared because of the lack of limestone or other suitable precipitant. Galena remains with oxidized lead minerals anglesite and cerussite in some places where all the sphalerite has been oxidized and leached away. Plumbojarosite (basic sulphate or iron and lead) is common in the oxidized ore, and usually carries good silver values.

The silver has migrated to some extent in the oxidized portion of the vein and some enrichment is usually found where the change from oxidized ore to sulphide ore takes place. Better than average silver assays are common in the upper 5' to 10' of sulphide ore just under the zone of oxidation in the east part of the mine where sulphide ore has been stoped above the 160' level. In the central portion of the mine, sulphide ore first shows just above the 465 ft. level.

The estimated division of oxidized and sulphide ore areas in the vein is shown on the accompanying map.

Productions

Prior to the time sulphide ore production started, the mine was started several times and closed down. There is no record of production by E. D. Bailey prior to 1925, but it is known that some lead-silver ore was shipped and the mill was operated for a short while producing tungsten concentrates.

Since 1925 fairly complete records have been kept and the following tabulation shows a summary of the record of production:

Summary of Production

Date	Remarks	Dry Tons	OZ Au	OZ Ag	% Pb	% Zn	% WO_3
1925-44	Concentrates	113.0	1.74	45.0	9.22	4.02	
1928-30	Concentrates	31.2					18.0
1927	Crude Ore (Oxide)	29.6	0.47	21.4	14.7	0.5	

1933-34	Crude Ore (Oxide)	285.4	0.247	13.2	12.9	0.5
1940-41	Crude Ore (Oxide)	971.2	0.251	7.3	1.8	
1944-45	Crude Ore (Oxide)	211.0	0.268	19.1	9.8	
1945	Crude Ore (Sulphide)	269.5	0.04	7.01	3.53	15.92
1946	Crude Ore (Sulphide)	1,671.0	0.059	7.42	2.69	20.71
1947	Crude Ore (Sulphide)	1,986.3	0.111	10.01	2.95	6.01
1948	Crude Ore (Sulphide)	5,040.0	0.052	7.48	1.87	9.79
1949	Crude Ore (Sulphide)	3,595.5	0.058	5.72	1.10	7.00
1950	Crude Ore (Sulphide)	608.4	0.075	3.45	2.43	10.02
1951 Thru March	Crude Ore (Sulphide)	492.4	0.060	2.26	1.60	6.33

Lead concentrates carried between 5% and 10% WO_3 but were not assayed for tungsten, as at the time concentrates were made there was no attempt to save tungsten. Likewise the tungsten concentrates were high in lead-silver values. The crude ore shipments also carried tungsten but were not assayed for tungsten except that occasional pulps of sulphide shipments to the Caselton mill were assayed and found to average about 0.5% WO_3.

Since concentrates, oxide ore and sulphide ore would not average together to show a typical type of ore, the following condensed summary is presented:

Condensed Summary of Production

Date	Remarks	Tons	Oz Au	Oz Ag	% Pb	% Zn	% WO_3
1925-44	Concentrates	113.0	1.74	45.0	9.22	4.02	
1928-50	Concentrates	31.2					18.0
1927-50	Crude Oxide Ore	1,497.1	0.257	10.35	5.33		
1945-51	Crude Sulphide Ore*	13,664.0	0.064	7.00	1.96	9.86	0.5

* Settlement assay on lead and zinc does not include non-sulphide lead and zinc contained. Tungsten values estimated from occasional pulp assays but tungsten was not paid for.

In addition to the above production, several truck loads of 2% to 4% tungsten ore were hauled to the Minerals Research Co., Glendale, California of which we have no record. This was during 1941.

Exploration Objective and Anticipated Ore

On section B-B' of drawing C 1087, it will be noted that the vertical shaft extends only to the 160 ft. level and the winze below that point is crooked. This winze is small and inadequate for economic operation. Therefore, the first work proposed involves raising from the winze levels, enlarging the present vertical shaft and sinking the shaft thus provided another 110 feet.

On the longitudinal section it will be noted that exploration is proposed to develop both oxide and sulphide ore. On the average, oxide ore should run higher in tungsten than sulphide ore due to oxidation and removal of zinc sulphide; however, reports of sampling in the oxidized areas gave an average of 0.3% WO_3 and pulps assayed on sulphide ore from the east stope ran 0.5% WO_3. More recent

sulphide ore shipments from the 350 level show about 0.1%. Therefore, the average grade used for both oxide and sulphide ore is 0.3% WO_3.

[illegible] that the west oxide stope area was originally the [illegible] sulphide zinc and lead, as the east stope. On oxidation, the areas assaying highest in zinc leave a porous silica boxwork that may be likened to corn flakes. Commonly this material weighs less than 25 lbs. per cubic foot.

In estimating the amount of ore that proposed exploration should encounter, it is simply assumed that past production will be repeated for equivalent areas of the fissure. No structural or mineralogical changes are known to indicate a change in the proportion of total fissure area that will be commercial ore.

Estimated Oxidized Ore and Operating Margin:

Production of oxidized ore since 1924 amounted to 1497 tons of crude ore shipments plus 144.2 tons of concentrates. Recoveries in concentrate were poor compared to what present day milling could do and we have no records showing what the mill heads assayed. For estimating purposes, it is assumed that each ton of concentrate represented ten tons of ore. Total production of oxidized ore would include a considerable amount of material that was sorted out from crude ore production before shipping to the smelter. The major part of oxide ore tonnage shipped (1940-41 production) was not sorted. For estimating purposes, it is assumed that the material sorted out would be milled but would break even on costs. Pre-1924 production is estimated at 2500 tons from the size of openings. It is further estimated that this 2500 tons would have yielded 2,000 tons of ore after partial sorting to the average grade crude oxide ore.

From the above data, total past production of oxidized ore with assay values equivalent to crude oxide ore production from 1927 to 1950 is estimated as follows:

Indicated from concentrates	
10 x 144.2 tons	1442 tons
Crude Oxide Ore, 1927-1950	1497 tons
Pre-1924 production	2000 tons
Total	4939 tons

In the area to be developed below the 160 ft. level, there remains slightly more than the area from which the above estimated production was mined. Therefore, total oxide ore to be developed is assumed to be 5,000 tons with the 1927-1950 weighted assay and 0.3% WO_3, or:

	% Au	% Ag	% Pb	% Zn	% WO_3
5,000 tons	0.237	10.23	5.33		0.3

Mine value of this ore on 17¢ lead, $63.00 WO_3 prices is calculated on the following approximate basis:

Metal Payments

Gold	@	0.16/Oz (16.0)	$ 4.11
Silver	@	0.63/oz	6.52
Lead	@	$ 1.80/Unit	9.59
Tungsten	@	35.00/Unit	10.50 - ?
			$30.12

Treatment.

This is estimated at $5.00/Ton for flotation of gold, silver, and lead. Tailings will go to the tungsten plant and treatment is estimated at $5.00 per ton on tailings from the first float, or $4.25 per ton of crude ore.

Total treatment $5.00 plus $4.25	$ 9.25
Mill Payment	21.47
Transportation	1.00
Mine Value	20.47
Estimated Mining Cost	10.00
Operating Margin	$10.47

Total operating margin on 5,000 tons of oxide ore at $10.47 - - - $52,350.00

Estimated Sulphide Ore and Operating Margin:

Ore faces now exposed on the 550 level are expected to continue some distance. A face of ore shows in the east half of the 550 level stope going up and all the bottom of this stope is mill ore going down with widths up to 8 feet. The last round in the winze was taken for ore and the face is reported to be in good ore.

In both the east stope on and below the 160' level and in the 550 level stope, bands and channels of oxidation estended into and through the sulphide ore. This oxidation removed probably 20% or more of the original volume of good zinc ore. Therefore the vein should be at least 20% more productive in sulphide ore as development progresses east under greater thickness of the protective shale capping.

By comparison of areas and disregarding the probable benefit from decrease in amount of oxidation, the sulphide area to be developed by the 385 level east drive and the 640 level work should expose for development and mining at least 2½ times the total past production of sulphide ore. The total sulphide ore to be developed is therefore assumed to be as follows:

		Settlement	Assay		
	Oz Au	Oz Ag	% Pb	% Zn	% WO_3
34,000 Tons	.064	7.00	1.96	9.86	0.3 *

* Average of past production from pulp samples was 0.5% WO_3, but latest shipments from the 550 level assayed 0.1% so assumed future average is taken as 0.3% WO_3.

The mine value of this ore on 17¢ lead, 17½¢ zinc and $63.00 WO_3

prices is calculated on the following approximate basis:

Metal Payment:

Gold	@	0.16/oz	$ 1.02
Silver	@	0.63/oz	4.40
Lead	@	$ 1.69/Unit	3.31
Zinc	@	1.56/Unit	15.38
Tungsten	@	35.00/Unit	10.50
			$34.61

Treatment:

Based on $3.90 rate for sulphide ore flotation of gold, silver, lead and zinc. Tailings will go to the tungsten plant where treatment is estimated at $5.00 per ton ore tails from the first float, or $4.00 per ton of crude ore.

Total treatment $3.90 plus $4.00	$ 7.90
Mill Payment	26.71
Transportation	1.00
Mine Value	25.71
Estimated Mining Cost	10.00
Operating Margin	$15.71

Total operating margin on 34,000 tons of sulphide ore at $15.71 - $534,140

Cost Estimate:

A cost estimate has been prepared by Mr. S. S. Arents, general superintendent of Pioche operation, covering the proposed work involved in this project. The details of his estimate are presented in "Application for Aid for an Exploration Project Persuant to Mineral Order 5, Under Defense Production Act of 1950." The summary for computation of the risk involved in this project is presented above under "Summary."

Future of the Mine:

Assuming that the anticipated results are obtained from this exploration project, it is almost a certainty that the mine will be in position to continue profitable operation for many years, even on much lower metal prices. The sulphide ore zone is, of course, much more productive that the oxidized zone and additional depth should be all in the unoxidized zone below the 2,000 feet of strike length to be explored on the 640 ft. level.

By applying the same ratio of ore production to fissure area used in estimating possible ore above the 640 ft. level, the next 250 feet of depth below that level for a strike length of 2,000 feet would produce 38,600 tons of ore with an operating margin of over $600,000. on present metal prices. With the mine in operation, Mr. Arents estimates that the 250 feet of shaft sinking and 2,000 feet of drifting would cost not to exceed $100,000. On this basis, the ratio of exploration cost to operating margin would be in the order of six to one.

Respectifully submitted,

Paul Gemmill
Geologist

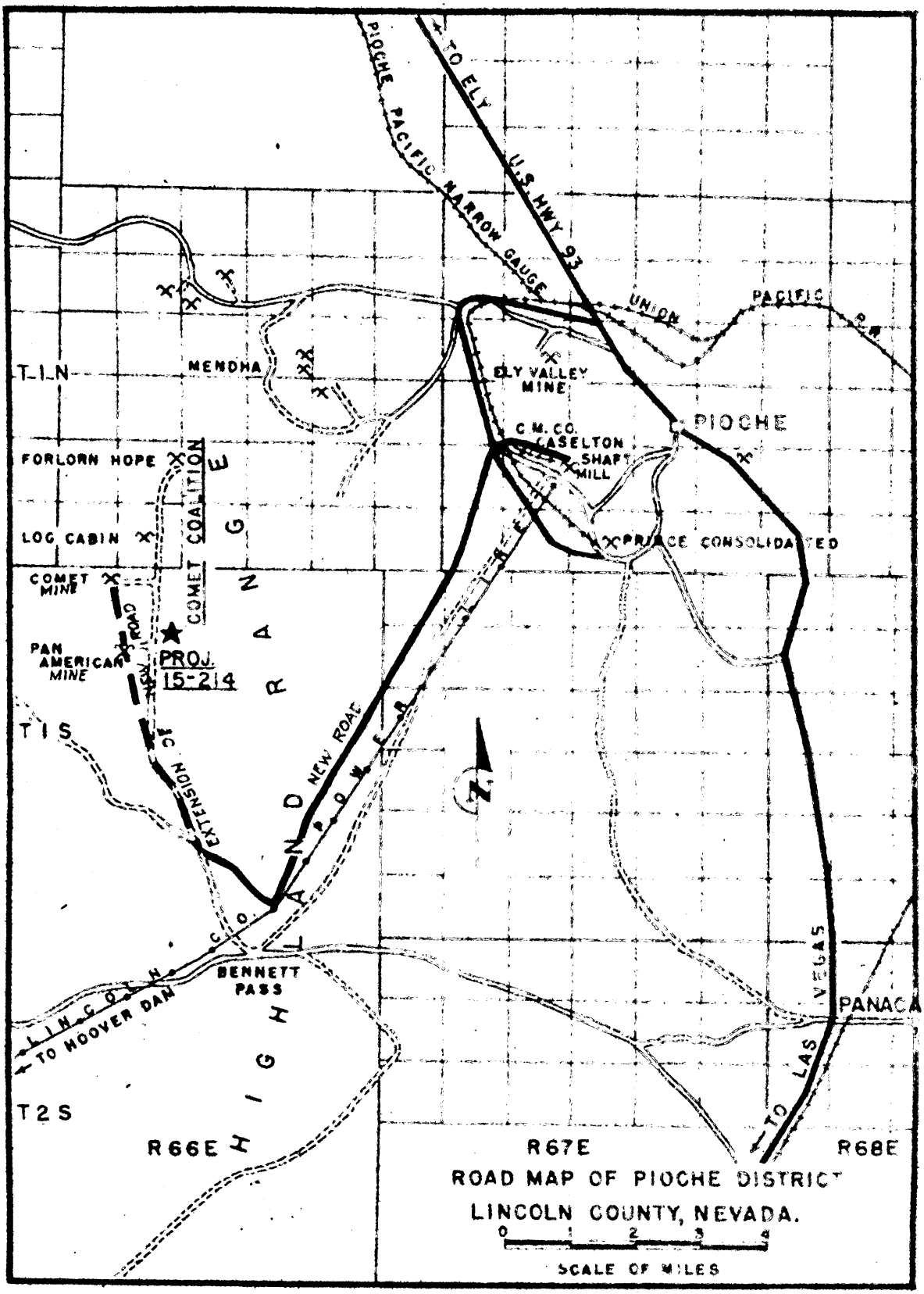


Figure 1. - Road map of Pioche district, Lincoln County, Nev.

COMET MINES, LTD.

Sulphide Ore Shipped to Combined Metals Reduction Co.

Lot. No.	Dry Tons Sulphide Ore	Net Mill Returns	ASSAYS: Ounces Au.	Ounces Ag.	% Pb.	% Zn.	% Cu.
No. 8 Boat Bins Shipments:							
1 - 2	99.139	1,527.62	.0625	6.665	3.375	21.58	.35
3	55.396	540.79	.035	2.95	4.35	13.91	.255
4	47.119	501.44	.0625	7.515	4.07	11.755	.37
5	50.022	347.58	.045	7.1	2.	12.17	.55
6	53.295	833.69	.0375	7.455	3.15	21.17	.715
7	57.745	375.11	.045	4.175	2.1	10.57	.45
8	49.541	243.07	.026	7.115	1.35	9.365	.4
9	50.10	598.36	.0650	6.375	2.2	10.0	.325
10	51.374	1,106.52	.058	10.245	3.3	28.52	.375
11-12	120.261	2,286.39	.0555	10.46	1.75	31.43	.335
13	61.[illegible]	1,349.33	.041	7.645	2.775	34.52	.515
14-15	120.475	2,262.72	.041	8.25	2.35	31.17	.56
16	54.369	900.74	.066	7.72	2.8	26.315	.45
Correction of Freight		134.16					
17-18	117.131	1,900.36	.035	9.52	3.325	32.775	.435
19	61.336	1,113.40	.09	7.58	4.5	18.75	.38
20	58.776	347.38	.08	7.35	4.35	19.5	.405
21	51.308	301.51	.045	7.175	3.35	17.395	.4
22	59.326	728.16	.0625	6.015	2.17	19.35	.385
23-24	111.759	1,932.38	.05	4.78	1.5	17.[illegible]	.365
25-26	11[illegible]	1,407.12	.05	5.635	[illegible]	19.335	.32
27-28	124.319	1,500.02	.0375	4.835	2.6	20.635	.39
29	65.420	811.94	.045	4.415	3.17	13.375	.41
30	5[illegible].127	650.[illegible]9	.05	4.745	2.5	1[illegible].761	.4[illegible]6
Correction on Freight		229.72					
31-32	.448	1,902.32	.14	9.985	2.475	13.01	.43
33	.[illegible]2	949.11	.095	10.[illegible]35	2.775	11.[illegible]35	.285

COPPER MINES, INCORPORATED

Sulphide Ore Shipped to Combined Metals Reduction Co.

Lot No.	Dry Tons Sulphide Ore	Net Mill Returns	ASSAYS: Oz. Au.	Oz. Ag.	%Pb.	% Zn.	% Cu.
34-35	[illegible].514	1,[illegible]	[illegible]	[illegible].915	[illegible].875	10.5	.35
36-37	[illegible].837	1,[illegible].62	.11	10.54	[illegible].2	7.55	.375
38	[illegible].746	1,[illegible].61	.12	10.385	[illegible].275	9.55	.455
39-40	[illegible]7.758	2,184.35	.19	16.25	5.75	9.59	.55
41-42	[illegible].[illegible]72	1,[illegible]	.[illegible]33	[illegible].605	2.075	3.67	.34
43	[illegible].513	[illegible]	.1085	11.51	[illegible].15	1.875	.[illegible]
44	[illegible].415	469.56	.33	11.375	2.35	1.25	.4
45 - 46	81[illegible].12	[illegible],[illegible].11	.172	1[illegible]	4.	3.14	.[illegible]
49	[illegible].136	2[illegible].13	.[illegible]8	14.28	5.[illegible]5	4.515	.5[illegible]
50	[illegible]73.759	8,10[illegible].42	.0[illegible]5	7.[illegible]	1.35	5.235	.3
51	[illegible]5.293	1,[illegible].39	.11	[illegible].47	2.255	9.[illegible]2	.325
52	[illegible]	1,[illegible]7	.0875	7.548	2.335	[illegible].295	.375
53	17[illegible].168	2,[illegible].20	.[illegible]55	9.17	2.5	7.135	.275
54	1[illegible].65	1,[illegible].72	.110	11.435	2.3	4.95	.325
55	12[illegible].476	[illegible]	.0675	7.[illegible]	1.3	3.55	.3
56	[illegible].1[illegible]	1,[illegible].31	.0[illegible]5	6.72	1.35	4.01	.36
57	433.496	5,[illegible].59	.[illegible]51	1[illegible].209	1.35	7.37	.53
58	[illegible].111	[illegible],107.[illegible]	.040	[illegible].[illegible]	1.7	[illegible].37	.51
59	[illegible]	4,157.[illegible]	.055	[illegible]	1.[illegible]	10.[illegible]	.325
60	[illegible]7.309	[illegible],[illegible].52	.[illegible]	8.19[illegible]	1.45	11.75	.38
61	1[illegible]	2,[illegible].45	.0[illegible]5	8.42	2.65	11.7	.35
62	[illegible].77	2,342.[illegible]1	.045	7.[illegible]	[illegible].	[illegible].64	.42
63	1[illegible].[illegible]13	[illegible]	.0[illegible]3	4.[illegible]55	1.[illegible]35	7.105	.3
64	884.[illegible]	[illegible],[illegible].[illegible]	.0[illegible]45	7.11	1.[illegible]	[illegible].7	.45
Decrease in Inventory Charge [illegible].[illegible]							
65	40[illegible].[illegible]	3,[illegible].[illegible]	.0875	9.1[illegible]5	2.[illegible]1	11.4	.475
66	4[illegible].131	3,[illegible].43	.[illegible]	7.[illegible]75	2.4	11.[illegible]3	.46
67	532.071	3,[illegible].[illegible]1	.0505	5.38[illegible]	1.325	11.85	.44

COMET MINES, INCORPORATED
Sulphide ore shipped to Combined Metals Reduction Co.

Lot No.	Dry Tons Sulphide Ore	Net Mill Returns	ASSAYS: Oz. Au	Oz. Ag.	% Pb.	%Zn	% Cu
68	384.690	5,133.48	.0505	5.4	1.65	9.075	.45
69	576.474	6,201.51	.05	8.575	2.05	9.56	.52
70	251.604	4,060.50	.045	7.65	1.9	10.05	.405
71	387.001	5,476.18	.03	6.995	1.5	7.705	.38
72	698.669	8,007.03	.035	5.905	1.99	7.165	.45
73	784.375	6,728.14	.040	7.19	.895	6.325	.51
74	719.125	2,639.37	.076	5.56	.9	5.64	.3
75	428.271	4,042.49	.75	7.745	2.05	7.115	.475
76	391.203	1,425.42	.0485	5.635	.75	5.23	.275
Total	11,978.457	$ 143,114.74					

480 and 550 Foot Level Shipments:

76-A	350.187	2,954.25	.06	5.485	1.15	13.58	.3
77	340.331	1,277.85	.06	1.58	1.175	10.575	.375
78	194.362	1,144.68	.05	2.105	1.475	10.79	.27
79	325.571	1,787.90	.035	2.32	2.47	7.745	.2
80	19.644	751.17	.075	13.25	3.8	22.75	1.3
81	16.012	358.02	.0285	10.7	6.825	20.125	1.[illegible]
82	55.5	1,054.10	.065	4.705	5.9	12.[illegible]	.355
	1,202.207	$ 9,308.85					

Grand Total:

13,180.664	$152,423.57

Supplemental Agreement D
by and between

Combined Metals Reduction Company
and
Local Union 4262 of United Steelworkers of America, CIO

This supplemental agreement dated August 8, 1951, between Combined Metals Reduction Company (hereafter called the Company) and its employees represented by Local Union 4262 of United Steelworkers of America CIO (hereinafter called the Union) is to be incorporated in and become a part of the basic contract between the parties hereto dated July 1, 1950.

Article I

The parties hereto having completed negotiations for a new standard wage schedule as provided in Section III of the basic contract dated July 1, 1950, and in supplemental agreement C dated July 10, 1951, do hereby adopt the following standard wage schedule as exhibit B of the basic contract dated July 1, 1950, subject to the approval of the Wage Stabilization Board.

(a) The job descriptions and classifications set out and approved by the Management and Union job classifications committees shall become part of this agreement subject to such changes as may from time to time be mutually agreed upon through the operation of the procedure established for this purpose.

(b) The standard wage schedule is established on a base of $1.4125 per hour, or $11.30 per shift for job class 2, and on a 3 3/8¢ per hour or 27¢ per shift differential between job classes.

(c) The standard wage schedule is as follows:

Job Class	Standard Hourly Rate	Standard Shift Rate (8 hours)
2	$ 1.4125	$ 11.30
3	1.44625	11.57
4	1.48	11.84
5	1.51375	12.11
6	1.5475	12.38
7	1.58125	12.65
8	1.615	12.92
9	1.64875	13.19
10	1.6825	13.46
11	1.71625	13.73
12	1.75	14.00
13	1.78375	14.27
14	1.8175	14.54
15	1,85125	14.81
16	1.885	15.08

(d) Starter rates in tradesmans job classifications shall be four (4) job classes below standard, or job class 12.

Article II

It is mutually agreed that employees now on red circle rates shall receive no pay increase unless the standard rate shall exceed the red circle rate, and then only in the amount that the standard rate exceeds the red circle rate.

Article III

The new standard wage schedule shall be made effective as of 8:00 AM July 1, 1951 subject to the approval of the Wage Stabilization Board for all employees on the Companys' payroll on the date of such approval. No retroactive wage adjustment will be made to men leaving the employ of the Company prior to the date of approval of the new wage schedule by the Wage Stabilization Board.

Article IV

This supplemental agreement shall become a part of the basic contract dated July 1, 1950, and the parties hereto shall be bound by all the terms and conditions of that agreement not in direct conflict herewith.

This agreement shall remain in full force effect until 8:00 AM July 1, 1952, and for a further period of twelve months from July 1, 1952, unless notice is given by either party to this agreement not less than sixty (60) days prior to the expiration date of a desire to terminate, amend, or supplement any or all of the provisions of this agreement.

IN WITNESS WHEREOF the parties hereto by their authorized representatives have signed these presents on August_____, 1951

Local Union 4262
United Steelworkers of America, CIO

_____

_____

_____

_____

_____

_____

_____

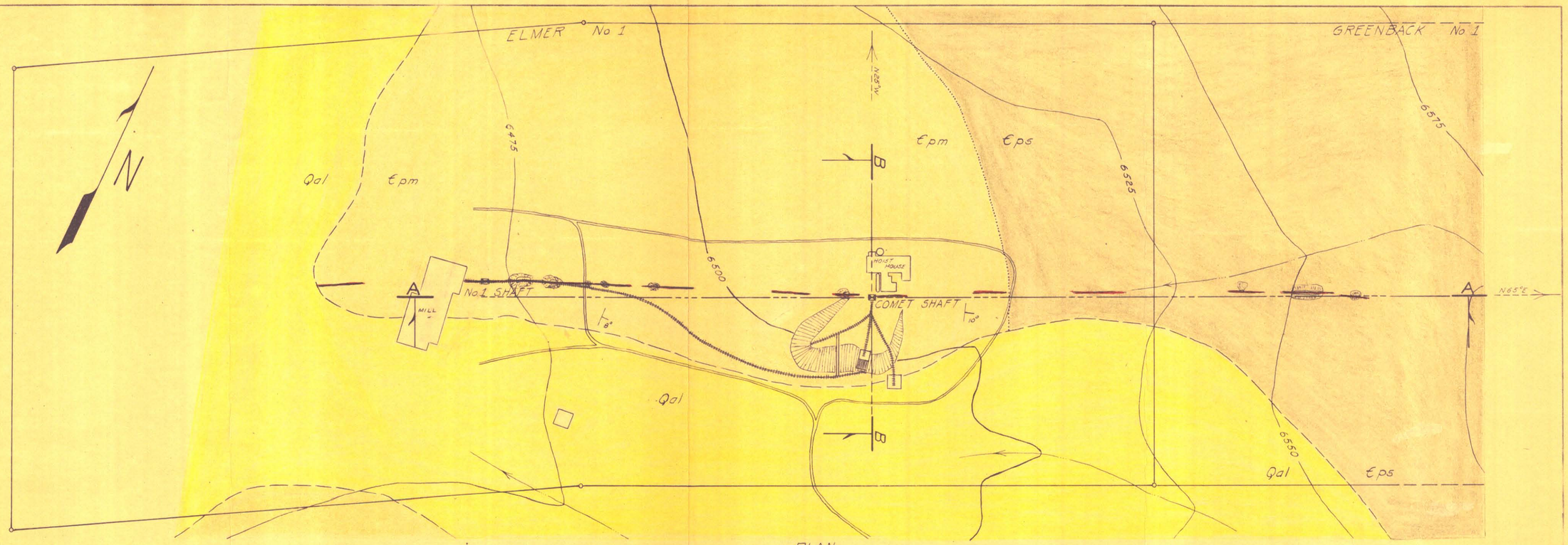
Combined Metals Reduction Co.

By

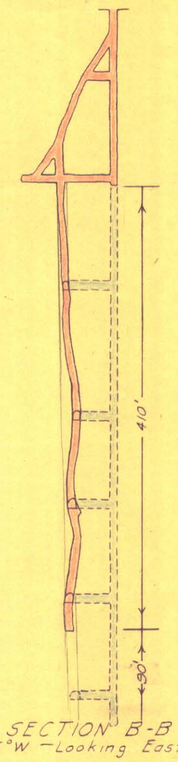
_____
General Superintendent

Approved:

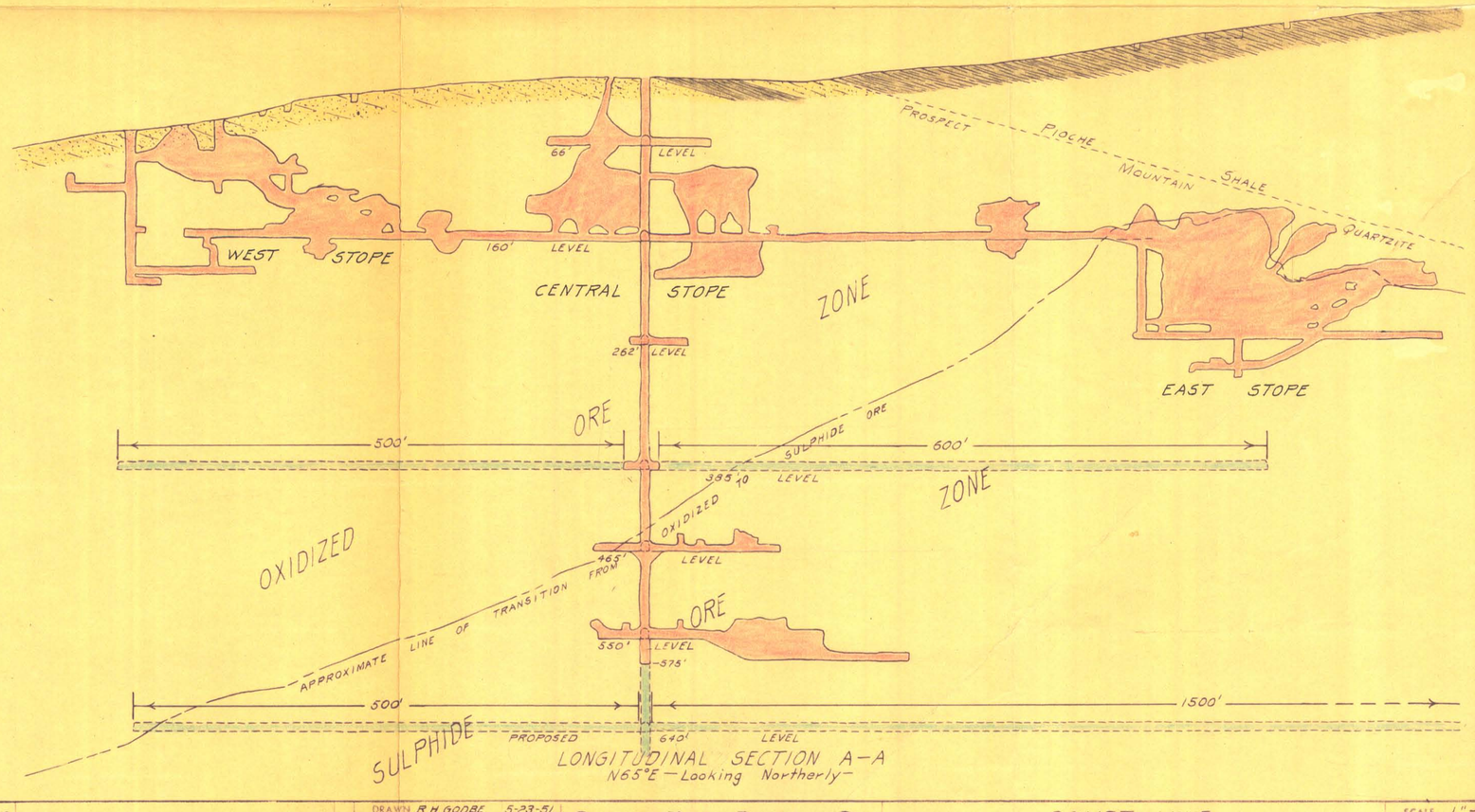
_____
President and General Manager



PLAN



SECTION B-B
N25°W —Looking Easterly—



LONGITUDINAL SECTION A-A
N65°E —Looking Northerly—

PRESENT WORKINGS
PROPOSED EXPLORATION

REVISIONS

REFERENCES

WORK		
DRAWN	R H GODBE	5-23-51
TRACED		
CHECKED		
APPROVED		

COMBINED METALS REDUCTION CO.
PIOCHE, NEVADA

COMET MINE
PLAN AND SECTIONS
SHOWING
PROPOSED EXPLORATION

SCALE 1" = 100'

C-1087

Salt Lake Blue