MME Form 9
Rev. Nov. 65

UNITED STATES
DEPARTMENT OF THE INTERIOR
Geological Survey

OFFICIAL DOCKET FILE Contract No. _____ Docket No. 6722

Application
- [x] Denied
- [ ] Withdrawn

Contract
- [ ] Terminated - Not Certified
- [ ] Terminated - Certified
- [ ] Cancelled
- [ ] Royalty Agreement

The records contained in this file are marked (x) and arranged in this order:

Folder No. 1:

Left Side

- [ ] Royalty Audits
- [ ] Certification of Discovery
- [ ] Closing Letter
- [ ] Cost Audits
- [ ] Termination Notice or Agreement
- [ ] Recision Notice
- [ ] Assignment of Contract
- [ ] Contract Amendments
- [ ] Contract with all exhibits and annexes
- [ ] Owner's Consent to Lien and Subordination Agreement
- [x] Application and Attachments

Right Side

- [ ] Project Summary (final)
- [ ] Work Completed Analysis (final)
- All other material filed in chronological order including the following reports if checked:
- [ ] Field Team Semiannual Report for Certified Project
- [ ] Final Field Team Report (Tab)
- [ ] Operator's Final Report (Tab)
- [ ] Interim Field Team Reports
- [ ] Operator's monthly reports and all attachments
- [x] On-site Exam. Report (Tab) 1/69
- [ ] Settlement Sheets
- [ ] Drill Logs

Additional Folders:

Left Side

Folders No. _____: Reports
- [ ] Analysis of Semiannual Inspection Reports
- [ ] Project Summary (Interim) by MME Engineers

Right Side

- [ ] Field Team Semiannual Report for Certified Project
- [ ] Field Team Interim Reports
- [ ] Operator's Monthly Reports with Transmittal, Narrative and Maps

Folders No. _____: Maps (Use pocket folder or envelope)

Folders No. _____: Settlement Sheets

Folders No. _____: Drill Logs

Folders No. _____: Royalty Material

72195-65

Tri-State Gold & Silver Mines, Inc.

P. O. BOX 958
BULLHEAD CITY, ARIZONA 86430

October 10, 1968

OFFICIAL COPY
O. M. E.
RECEIVED
OCT 25 1968
INITIALS | CODE

Mr. Frank E. Johnson
Chief, Office of Minerals Exploration
United States Department of the Interior
Geological Survey
Washington, D.C. 20242

Re: OME-6722 (Gold & Silver)
Tri-State Gold & Silver Mines, Inc.
Mohave Butte Claims
Mohave County, Arizona

Amended Proposal

Dear Mr. Johnson:

Since our original submittal of the referenced application, dated 19 April 1968, several changes have taken place. New information has been obtained as a result of completing an extensive rehabilitation program on the existing Mohave Butte shaft. This work allowed increased visability and additional accessibility for the exploration work presently envisioned. Also, a more extensive study of the surface outcroppings has been conducted which has also dictated certain changes.

As a result of the above work, a more efficient and economical exploration plan has been developed which dictates a major revision to the referenced application. Also, certain items have changed since the first submittal and, therefore, should be updated to show Tri-State's latest position.

The following are revisions to the referenced application paragraph by paragraph:

1. Financial Eligibility:
   (a) See attachment #1 - Tri-State Balance Sheet through 25 August 1968.
   (b) No change
   (c) No change

2. Applicant's Rights in Land:
   (a) No change
   (b) The following represents changes and additions to previous list of claims, all others remain unchanged:

NAME OF CLAIM	BOOK NO.	PAGE NO.
Mohave Butte	6K	159
Mohave Butte #1	6K	160
Mohave Butte #2	6K	161
Mohave Butte #3	6K	162
Mohave Butte #4	6K	163
Mohave Butte #5	6K	164
Merle	6K	165
Tri-State	6K	166
Tri-State #1	6K	406

3. Physical Description:
   (a) The Mohave Butte, at present, is completely cleared of water. The main shaft depth was found to be 250 feet rather than the 300 feet as estimated in the referenced application. See attachment #2 and #3 for details of present shaft and drifts. Also, the diamond core drill location is shown with the associated assays (samples 3 through 6). Attachment #4 shows detail pictures of the machinery, hoist, head frame, compressor and building which were necessary to complete the rehabilitation work previously mentioned.
   (b) No change
   (c) No change
   (d) No change
   (e) No change
   (f) The estimated 300 foot shaft was found to be 250 feet. No other change.
   (g) No change

4. Accessibility to Property:
   (a) No change
   (b) No change

5. Exploration Work:
   (a) The exploration work proposed consists of a three phase plan:

   PHASE A
   1. Acquire consultant services and complete surface and 250 foot detailed engineering survey.
   2. Continue drifting through vein in drift #1 until the foot wall is reached. (100 feet)
   3. Continue drifting southeast in drift #3. (250 feet) Surface outcropping dictated the continuation of this drift. See attachment #5.

   PHASE B
   Contingency drifting: Crossout existing drifts (1 and 3) at the locations dictated by the results of the mining engineers (consultant) survey conducted in Phase A. (150 feet for drift #1) (150 feet for drift #3)

   PHASE C - Diamond Core Drilling
   1. Sink diamond core drill holes from extended drifts #1 and #3. The core drill holes are to penetrate/explore the 500 foot level from each of the above mentioned drifts. Two core drill holes will be made from the appropriate location within each of drifts #1 and #3. Total core drill holes to 500 foot level - 4. Estimated footage: 1,200 feet.

2. Three diamond core drill holes will be made approximately perpendicular to the target veins from drifts #1 and #3. One diamond core drill hole will be made approximately perpendicular to the target vein from drift #2.

   Total core drilling from drifts #1 and #3, 3 x 2 x 300 feet: 1,800 feet.

   Total drilling from drift #2: 300 feet.

3. Two diamond core drill holes will be made from the surface to penetrate the 500 foot level on each side of the existing diamond core drill.

   Total surface drilling: 1,100 feet

4. Concurrent with the diamond core drilling at the 250 foot level and prior to surface drilling, an investigation will be made of the 40 foot shaft located between the main Mohave Butte shaft and the existing diamond core drill (see attachment #2). This effort will require approximately two weeks (two men) and could ultimately dictate the best location for the surface core drilling.

(b) No change

(c) The existing 250 foot shaft has been completely cleared and timbered and inspected by the OME representative.

6. Experience:
No change

7. Estimate of Costs:
Items (a), (b), (c) and (g) list the costs supporting the exploration program if the drifting and core drilling were to be performed by an independent contractor.

(a) Independent Contracts:
Independent contracts will be issued if it is deemed more economical and efficient to the exploration program. Using G. Haynes' bid figures (see attchment #6) as representative drill and drifting charges the following estimates ensue:

650 feet of drifting at $52.50/foot	$34,125.00
4,400 feet of diamond core drilling at $7.65/foot	33,660.00
	$67,785.00

(b) Personnel Services:
The minimum number of personnel required by Tri-State to support and supervise the efforts of an independent contractor are: one toplander, one hoist operator and one exploration manager. Drifting should advance at the rate of 4 feet/8 hours and diamond core drilling should advance at the rate of 20 feet/8 hours. Since 650 feet of drifting and 4,400 feet diamond

core drilling are proposed, the total exploration effort should take approximately 383 days. Assuming an additional 15 days for delays yields 398 eight-hour exploration days. Based on the above figures, the following personnel costs apply:

One hoist operator at $3.60 hr.	$11,462.00
One toplander at $3.60/hr.	11,462.00
One exploration manager at $600/mo.	7,800.00
Consultant services $200/day at 2 days/mo. for 13 months	5,200.00
Assays	500.00
	$36.424.00

(c) 1. Fuel Costs:

Compressor, 10 gal/shift at $.28/gal.	$1,114.00
10K VA generator, 8 gal/shift at $.40/gal	1,273.00
Water supply pump 1 gal/shift at $.40/gal	159.00
3/4 ton truck 2 gal/shift at $.40/gal	318.00
Oil consumption 2 qt/day at $.40/qt.	318.00
	$3,182.00

2. Water Costs:
Water is available at no cost.

3. Power Costs:
Electrical power will be supplied by a 10K VA generator. Commercial electrical power will not be available until March, 1969.

4. Units of tools and equipment less than $50.00 per unit

2 in. galvanized pipe (water), 750 ft. at $.70/ft.	$525.00
1 in. galvanized pipe (air), 750 ft. at $.40/ft.	300.00
6 in. ventilation pipe, 750 feet at $.30/ft.	225.00
4 air valves at $25.00 each	100.00
100 feet ventilating bags, 2 ea. at $50/bag	100.00
3,600 board feet #3 grade lumber for track	300.00
Spikes, nuts, bolts, fishplates for 750 feet track	200.00
4 mucking sheets at $20/sheet	80.00
600 feet of narrow guage track	400.00
	$2,230.00

(d) Operating Equipment:

1. The following operating equipment is owned by Tri-State and will be rented (amortized) on this contract at 1/60 total value per month.

Equipment:	Condition:	Fair Market Value:
Fairbanks-Morse Hoist 25 hp gasoline engine operational hoist	Good	$ 600.00
500 feet 3/4 in. twisted steel cable	Good	325.00
LeRoy 315 cfm compressor with UD18A International engine	Excellent	5,000.00

Grover air driven, 50 gpm water pump	Excellent	625.00
6 hp Fairbanks-Morse gasoline-operated engine	Good	45.00
6 in. Chicago Blower, 1500 cfm	Good	40.00
1952 Dodge 3/4 ton cargo carrier with 4x4 winze	Fair	900.00
1 Ingersoll Rand Jack Hammer w/jack leg	Good	400.00
1 Ingersoll Rand Air Receiver-250 gal.	Excellent	300.00
2000 gal. Circulating Tank	Excellent	200.00
Blacksmith Forge & Tools, 2 wheelbarrows, assorted hand tools, gauges, Acetylene Torch and accessories	Good	1,000.00
1 35' Skyline Trailer	Good	2,800.00
1 10KVA Firbanks-Morse Generator	Good	500.00
Total Fir Market Value		$12,735.00

1/60 x $12,735.00 = $212.25 x 13 mos. = $2,759.25

2. The following equipment will be bought, since rental costs for any of these items of equipment for 398 working days or more is uneconomical:

1 Buffalo 2000 cfm blower	150.00

(e) Initial Rehabilitation and Repairs:

None

(f) New Buildings, Fixtures, Installations:
All buildings, fixtures and installations (exclusive of mine workings) have been built and installed by Tri-State.

(g) Miscellaneous:
Assuming 3 percent for the cost of maintenance and repair of all operating equipment listed under 7(d), we have:

.03 x $12,885	$ 369.00
Estimated cost of analytical work and accounting	800.00
Workmen's compensation and liability insurance (14.86 percent)	2,685.00
	$3,854.00

Recap: Total cost of proposed exploration contract:

Item 7(a)	$ 67,785.00
7(b)	36,424.00
7(c)1	3,182.00
7(c)4	2,230.00
7(d) 1 and 2	2,909.25
7(g)	3,854.00
Total	$116,384.25

We hope that the information contained herein meets with your approval as we sincerely believe that the revised approach represents the most effective plan for exploring the Mohave Butte.

If additional information is required, please don't hesitate to contact us either by letter or phone.

Sincerely yours,

C. A. Buckley

C. A. Buckley
Vice President
Tri-State Gold & Silver Mines, Inc.

a) Telephone (call collect) (213) 887-4474

b) Attachments 6 and 7 are quotes that have been received to date. Two additional companies have seen the mine and are interested in submitting a quote. These quotes will be submitted as addendums when available (approximately two weeks).

ATTACHMENT #1

TRI-STATE GOLD AND SILVER MINES, INCORPORATED

Post Office Box 958

Bullhead City, Arizona 86430

BALANCE SHEET

25 August 1968

CURRENT ASSETS			
Cash on Hand	$ 2,277.77		
Notes Receivable	2,000.00		
Prepaid Insurance (1)	820.00		
		$ 5,097.77	
FIXED ASSETS			
Mining Equipment	$14,504.18		
Truck	500.00		
Trailer	3,300.00		
Buildings	500.00		
Headframe	1,000.00		
Lumber	1,985.00		
Organization Costs	1,125.44		
Land-Recordings, Survey, and Required Workings	2,500.00		
		$25,414.62	
EXPENDITURES (Paid through 25 August 1968)			
Labor (incl. Fed. Tax)	$14,868.09		
Misc. Services and Operating Costs	6,385.49		
Personal Expense	1,601.55		
State Ind. Commission Insurance	1,210.39		
Social Security	411.09		
		$24,476.61	
TOTAL ASSETS AND EXPENDITURES			$54,989.00
CURRENT LIABILITIES			
None			
CAPITAL			
Stock Outstanding (Total authorized 2500 shares)			
1,000 Shares issued to General Minerals, Inc. (2)		$10,389.00	
Tri-State Stockholders (1150 Shares issued)		$44,600.00	
TOTAL LIABILITIES			$54,989.00

(1) State Industrial Commission - Arizona

(2) Assets transferred into Tri-State Corp. from General Minerals Corp. including Mining claims plus $10,389.00 in exchange for 1000 shares of Tri-State Stock.

DIAMOND CORE DRILLING
DIAMOND DRILLING EQUIPMENT
GROUTING
FOUNDATION TESTING
MINING
QUARRYING
SHAFT SINKING
TUNNEL DRIVING
MINE PLANT DESIGN
AND FABRICATION

Boyles Bros. DRILLING COMPANY

CONTRACTORS - ENGINEERS - GEOLOGISTS
10801 North 21st Avenue
PHOENIX 21, ARIZONA
Phones: Office 944-1731
Home 947-0637

General Offices and Plant
1624 Pioneer Road P. O. Box 58
SALT LAKE CITY 10, UTAH
HUnter 7-7595

BRANCH OFFICES
PHOENIX
RENO
SPOKANE
DENVER
SACRAMENTO
ST. LOUIS

September 9, 1968

Mr. Merle C. Shearer
Tri-State Gold & Silver Mine
P.O. Box 958
Bullhead City, Arizona 86430

Dear Mr. Shearer:

For your drilling underground for a minimum of 2500 feet and a maximum of 300 feet in any one hole we submit the following prices.

1. Mobilization --- $ 500.00

2.

Drilling	BXWL	NX or Collar Pipe
0 to 300 ft.	7.60	8.00

3. Cementing, if necessary, $15.00 per hour plus cost of cement or cement substitutes including drilling mud and chemicals.

4. Ample air and water to be furnished to drill sites at no cost to us.

5. Delays through no fault of ours to be charged for at $12.50 per hour.

Thanks for calling on us.

Sincerely yours,

J. E. Roberts

J. E. Roberts
District Manager

JER/tk

ATTACHMENT 6

G. R. Haynes
1027 Grand View
Kingman, Ariz.

Tri-State Mining Co
P. O. Box 958
Bullhead City, Ariz.
Dear Sirs;

As per your request for a minimum of 500 feet of standard 5ft. by 7ft. drift extentions, (in two locations) on the 250 ft. level of your mine in the Thumb Butte area, we would like to submit a bid of $52.50 per foot. Plus the cost of the vent pipe, which I have not been able to get a price on as yet.

This price is for raw drift. tracked and piped, with us furnishing everything except hoisting equipment, blower, pressure tank, track, pipe, ect. , that is already in or at the mine.

In event that any timbering might be required, we will do it for our cost plus 20% .

For the diamond drill stations, as they do not require any additional track or pipe, we will cut them for $1.25 per cubic foot, for the excess over the 5 by 7 drift.

I understand there is a certain amount of repair, or dead work, to get to the working faces. We will take care of this for labor ($13.50 per hr.) and materials, plus 20%.

On the diamond drilling, we can quote a price of $7.65 for an E X hole. (This is about 1½ in O. D. , and pulls a seven eights in. core). This price is subject to the time and materials clause, in event we loose water circulation and have to cement and ream. I believe this will be quite unlikely in your formation.

We would expect to submit invoices for completed footage or work, on the 1st and 16th of each month, and recieve payment for each invoice within 5 days, to enable me to make my payrolls.

Thank you for your courtisy on my visit to your property and I hope we may be of some service to you.

Yours truly
G. R. Haynes
G. R. Haynes

ATTACHMENT 7

G. R. Haynes
1027 Grand View
Kingman, Ariz.

Tri-State Mining Co
P. O. Box 958
Bullhead City, Ariz.
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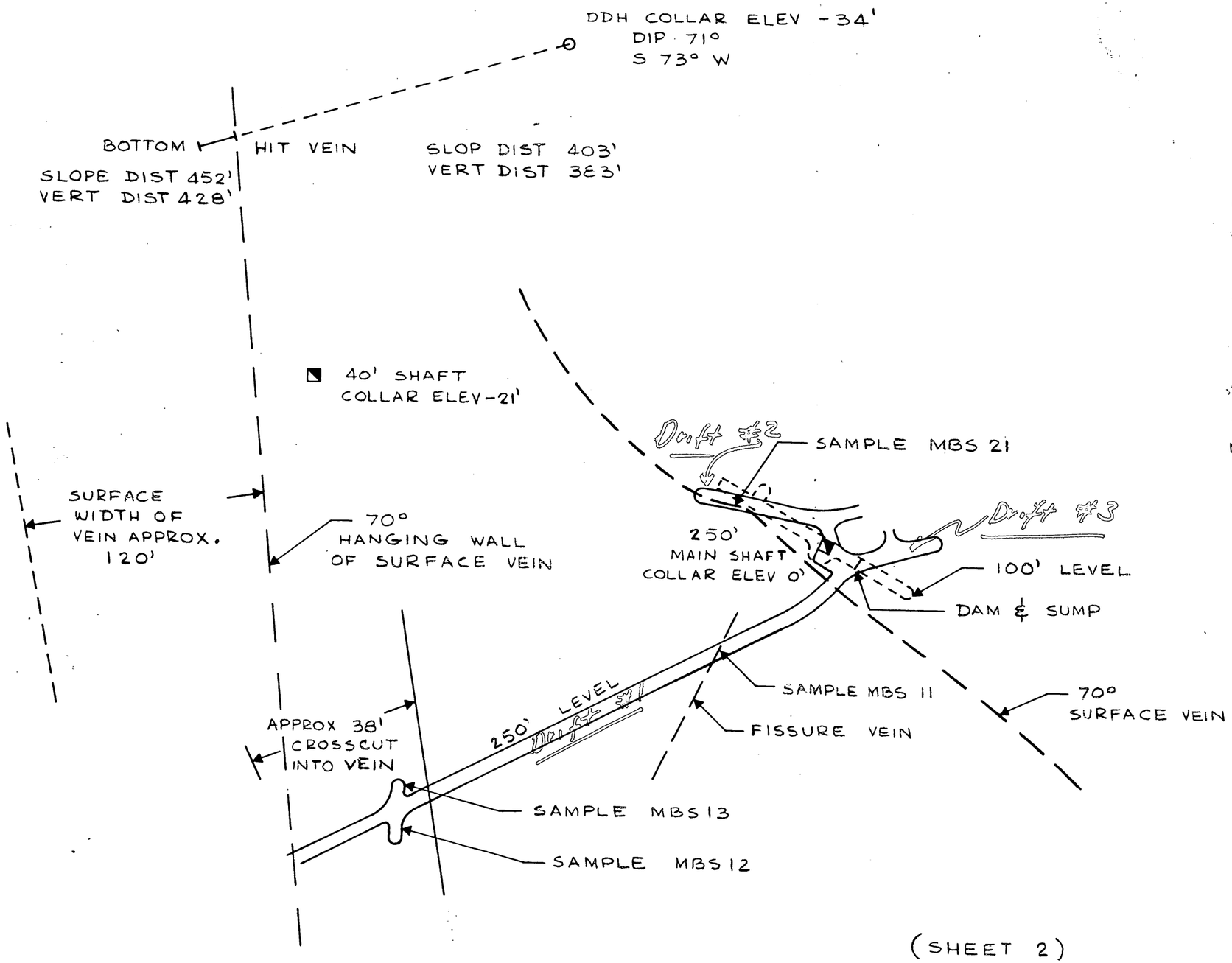
Thank you for your courtesy on my visit to your property and I hope we may be of some service to you.

Yours truly

G. R. Haynes

ATTACHEMENT # 2



MOJAVE BUTTE
SCALE 1" = 40'
BRONTON SURVEY
SURFACE BY F. SMITH 4-21-68
UNDERGROUND BY F. SMITH 8-13-68
C. BUCKLEY
COMPASS SET FOR 16° DECL
ALL ELEVATION RELATIVE TO
MAIN SHAFT COLLAR

(SHEET 2)

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
FEDERAL CENTER, DENVER, COLORADO 80225

Office of Minerals Exploration
Building 53 Room 203

May 3, 1968

OFFICIAL COPY
O. M. E.
RECEIVED
MAY 6 1968
INITIALS/COLE

Memorandum

To: Chief, Office of Minerals Exploration

From: Field Officer, Region III

Subject: Tri-State Gold and Silver Mines, Inc.
Mohave Butte Property
Mohave County, Arizona

Transmitted herewith is an application for financial assistance in minerals exploration on the above-subject property. A copy of the application has been retained for the Region III OME field office files.

J. William Hasler,
Field Officer, Region III
Office of Minerals Exploration

Enclosure

TRI-STATE GOLD & SILVER MINES, INC.

P. O. Box 958
BULLHEAD CITY, ARIZONA 86430

OME Region III
RECEIVED
APR 24 1968
Denver, Colorado

April 19, 1968

Mr. J. F. Robertson
U. S. Geological Survey
Denver, Colorado 80225

Dear Mr. Robertson:

Thank you for your letter of February 28, 1968, and your explanation of the services offered by the OME.

I hope you will find the enclosed application in order.

Please feel free to contact me for any additional information you may require.

Very truly yours,

TRI-STATE GOLD & SILVER MINES, INC.

Cornelius A. Buckley

Cornelius A. Buckley
Vice President

CAB/w
Enclosure

MME Form 40
Jan. 65

OME Region
RECEIVED
APR 24 1968
Denver, Colorado

Budget Bureau No. 42-R1508
Approval expires Dec. 31, 1968

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O. M. E.
RECEIVED
MAY 6 1968
INITIALS/CODE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

APPLICATION FOR FINANCIAL ASSISTANCE IN MINERALS EXPLORATION

Pursuant to Public Law 85-701 (72 Stat. 700; 30 U.S.C. 641)

NAME OF APPLICANT *(Full legal name and mailing address as they should appear on contract if one is executed.)*

Tri-State Gold & Silver Mines, Inc.
P.O. Box 958
Bullhead City, Arizona 86430

APPLICANT DO NOT USE THIS BLOCK

DOCKET NUMBER: 6722

DATE RECEIVED: 5-6-68

REGION: III

DIVISION CODE:

BUSINESS ORGANIZATION *(Check one)*

- INDIVIDUAL ☐
- CORPORATION ☑
- PARTNERSHIP ☐
- OTHER *(Specify)* ☐

STATE IN WHICH FIRM IS ORGANIZED: Nevada

LIST CORPORATE OFFICERS OR PARTNERS HERE, IF APPLICABLE

NAME	ADDRESS	TITLE
R. B. Terrell	24053 Bessemer Ave Woodland Hills, Calif. 91364	President/ Treasurer
C. A. Buckley	2994 Alice Drive Newbury Park, Calif. 91320	Vice President
Merle Shearer	Box 958 Bullhead City, Arizona 86430	Secretary
C. R. Shelnut	2942 Beaver Ave. Simi, Calif. 93065	Director
F. H. Smith	Box 55, Boron, Calif.	Director

MINERAL(S) FOR WHICH YOU WISH TO EXPLORE: Gold & Silver

ESTIMATED COST OF PROJECT: $ 91,598.00

PROPERTY NAME	LOCATION COUNTY	STATE
Mohave Butte	Mohave	Arizona

GENERAL INSTRUCTIONS

Before filling out this application, please read the *OME Regulations for Obtaining Federal Assistance in Financing Explorations for Mineral Reserves* (30 CFR Chap. III). To assure prompt action, your application must provide all applicable material and information specified on the back of this application form. Avoid unnecessary correspondence and delays by submitting complete and accurate information. *Please submit two copies of this application and all accompanying papers* except as otherwise noted. Place your name and address on each sheet. Each item of information, maps, and reports required as a part of this application is described on the back of this form. Identify each attached statement by the item number to which it applies. If an item does not apply to your application, show the item number on your statement and after it write "not applicable." Maps or sketches should be used to supplement narrative descriptions of the property location and boundaries in item 2, existing mine workings and geology in item 3, and the proposed exploration work in item 5. When this information is not too complex, all of it may be shown on one map or sketch. All documents and other attachments submitted as a part of this application, except those in item 3(g) which you mark to be returned, become the property of the Government and will not be returned to the applicant. Send true copies, *not originals*, of leases, contracts, and other documents which are an essential part of your business records. *File this application with the Office of Minerals Exploration, Department of the Interior,* ~~Washington 25, D. C., or with the OME Field Office.~~ Washington, D. C., 20242, or with the nearest OME Field Office.

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief, and that he would not ordinarily undertake the proposed exploration under current conditions and circumstances at his sole expense.

April 15, 1968
DATED

Cornelius A. Buckley
BY *(Signature)*

Vice President
TITLE

A wilfully false statement or certification to any Department or Agency of the United States Government is a criminal offense. U. S. Code, Title 18, Sec. 1001.

INFORMATION REQUIRED WITH THIS APPLICATION

1. Financial Eligibility:

(a) Submit evidence of efforts made within 90 days preceding the filing of this application to obtain credit from your bank of account and at least one other banking institution or other private source of credit. Such evidence shall include true copies of correspondence which show: (1) date of loan request, (2) amount and terms requested, (3) proposed use of loan funds, and (4) the replies from credit sources. If the loan was offered under terms which you consider unreasonable, state why you consider them so.

(b) List names and addresses of affiliated, parent, or controlling companies or organizations and state extent and nature of their interest.

(c) State how you propose to furnish your share of the cost of the exploration work.

2. Applicant's Rights in Land:

(a) State your interest in the land and mineral rights, whether owner, lessee, purchaser under contract, or other. If you are not the owner, submit one true copy of the lease, contract, or other document (with address of owner) under which you control the property. Describe all liens, mortgages, or other encumbrances on the land and state book and page number and official place where recorded.

(b) State the legal description (section, township, and range; metes and bounds; patent number of claims) of the land upon which you wish to explore and all adjacent land which you own or control. Describe any part of the land or workings which should not be subject to Government royalty and liens. If the land consists of unpatented claims, state book and page number for each recorded location notice, including amended locations, and official place where recorded. State all the names by which you know the property.

(c) For all land or mineral rights encumbered or not owned, submit five copies of Lien and Subordination Agreements on MME Form 52. If the agreements cannot be obtained, state reasons and provide copies of letters of refusal.

3. Physical Description:

(a) Describe in detail and illustrate with maps or sketches all mining or exploration operations which you know have been or are being conducted upon the land. Include existing mine workings and all production facilities.

(b) State your interest, if any, in operations described in (a).

(c) State, if you know, the past and current production, supporting your statement with copies of settlement sheets, mine records, or published data if available.

(d) Describe known ore reserves, giving quantities and grades and sampling methods used. Support your statement with copies of assay certificates and assay maps if available.

(e) Describe by narrative and maps or sketches the geologic features of the property, including ore minerals, geologic formations if known, and type of deposit (vein, bedded, etc.).

(f) State your reasons for expecting to find ore, and if you have sampled the area you propose to explore, show where the samples were taken, describe sampling methods used, and provide copies of assay certificates.

(g) Send with your application at least *two* copies of all geologic or engineering reports, assay maps, or technologic information which you have, indicating whether you require their return.

4. Accessibility of Property:

(a) To aid the OME representative who may examine the property, state name and address of person who will meet him; give directions for reaching the property; and describe accessibility of property and of any mine workings.

(b) Name the shipping and supply points and state the distances to the property.

5. Exploration Work:

(a) Describe fully the proposed exploration work giving individual footages and sizes of openings *for each item of work.* Use narrative, maps, plans, and sections as necessary. Show location of the proposed work as related to geologic features such as veins, ore-bearing beds, contacts of rock formations, etc. Show also the relation of the proposed work to any existing mine workings and to *land boundaries* or to the closest identifiable corner.

(b) If an access road must be built, show the proposed location on the property map and state the length, type and construction methods proposed.

(c) If an OME contract is executed, state how soon thereafter work would be started and finished. State your anticipated average daily or monthly rate of progress for each type of work.

6. Experience:

State your operating experience and background to conduct this exploration work and also that of the person who will supervise the work.

7. Estimate of Costs:

Furnish detailed estimates of the necessary costs *for each item of the work proposed in 5(a)* under the headings listed below with a total for each heading and the estimated total cost of the work. Costs for any work to be performed by an independent contractor should be listed separately under category (a) below. Costs for any work that is not to be performed by an independent contractor should be listed under categories (b) through (g).

(a) Independent contracts. State the total cost of any proposed independent contract for all or any part of the work, and the number of units and the unit cost for each type of work, such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, or per cubic yard of material moved. Cost estimates should be supported by bids from three contractors if possible. (*Note*—If none of the work is to be contracted, write "none" after this item.)

(b) Personal services. The cost of supervision, engineering and geological services, outside consultants, and labor should be itemized by numbers and classes of employees; rates of wages, salaries or fees; and periods of employment. State whether these services are available.

(c) Operating materials and supplies. List items of material and supplies giving quantity and cost of each. Include under this heading power, water, and fuel, and units of equipment and tools costing less than $50 each.

(d) Operating equipment. List items of equipment and tools costing $50 or more per unit. Give specifications and indicate how each item is to be acquired—i.e., rented, purchased or provided by the applicant. If rented or purchased, state the estimated rental or purchase price. If furnished by the applicant, state condition and present fair market value.

(e) Initial rehabilitation and repairs. Describe the type and the cost of *initial* rehabilitation or repair of existing buildings, fixtures, installations (exclusive of mine workings), and movable operating equipment now owned by the applicant which will be used in the exploration work.

(f) New buildings, fixtures, installations. Describe each building, fixed improvement, and installation to be purchased, constructed, or installed for the exploration work, stating specifications and cost including labor, materials, and supervision.

(g) Miscellaneous. Describe the type and estimate the cost of repairs and maintenance of the operating equipment listed in 7(d). Do not repeat initial repairs listed in 7(e). Show also the costs of analytical work, accounting, workmen's compensation and employees' liability insurance, payroll taxes, and other required costs that do not fall within the previous categories. [*Note*—The Government will not contribute to costs incurred before the date of the contract, or to costs of or incident to: (1) acquiring, using, or possessing land and any existing improvements, facilities, buildings, installations, and appurtenances, or the depreciation and depletion thereof; (2) general overhead, corporate management, interest and taxes (other than payroll and sales taxes); (3) insurance (other than employees' liability insurance); and (4) damages to persons or property (other than authorized repair to or replacement of equipment or other property used in the work).]

TRI-STATE GOLD & SILVER MINES, INC.

1. FINANCIAL ELIGIBILITY:

(a) Sheets A, B, E, and F are enclosed for your study. It should be noted that, in Sheets A and B, it is stated that Tri-State has invested $9,000.00 for this exploration. As of January 31, 1968, Tri-State had invested $16,337.44 for the exploration of the Mohave Butte.

(b) General Minerals, Inc.
Box 405
Oatman, Arizona

General Minerals owns 40% of Tri-State Gold & Silver Mines, Inc. stock.

(c) Our share of the costs for exploration will be obtained by assessing the shareholders in Tri-State an amount proportional to their individual interest in the corporation. Demand notes signed by all the shareholders of our corporation enable us to obtain $25,000.00 within one week of notification by the treasurer.

2. APPLICANT'S RIGHTS IN LAND:

(a) The land is government-owned land which we have claimed for mineral exploration.

(b) The land consists of unpatented claims. Reference is made to Sheet G. Tri-State's claims are recorded at: Mohave County Recorder's Office, Kingman, Arizona. Following is a list of Tri-State claims recorded at the above office:

Name of Claim:	Book #	Page #
Mohave Butte	6F	80-83
Mohave Butte #1	6F	80-83
Mohave Butte #3	6F	195
Silver Butte #6	6G	80-82
Silver Butte #7	6G	80-82
Silver Butte #8	6G	80-82
Silver Butte #9	6G	83-85
Silver Butte #10	6G	83-85
Silver Butte #11	6G	83-85
Silver Butte #12	6G	139
Silver Butte #13	6G	140
Silver Butte #14	6G	141
Silver Butte #15	6G	142
Silver Butte #19	6G	219
Tri-State	In process of being filed.	
Tri-State #1	" " " " "	
Mohave Butte #2	" " " " "	
Mohave Butte #4	" " " " "	

3. PHYSICAL DESCRIPTION:

(a) The work which has been done on the Mohave Butte is shown on Sheet H. The 300 foot shaft with a 200 foot crosscut into the andesite dyke was done by the Bald Eagle Mining Co. in 1959. Shortly after performing this work some surface machinery caught fire, the fire spread to the main shaft, and the upper 100 feet of support timber was destroyed. As a result of the accident, debris exists at the 100 foot level and the remainder of the shaft is filled with water.

3. PHYSICAL DESCRIPTION (Continued)

(b) I am Vice President of a corporation formed to explore the Mohave Butte and area and to determine the feasibility of setting up a profitable mining operation.

(c) There has never been any production from the Mohave Butte other than the 80 foot drift in the andesite dyke (see Sheet H). The drift was worked by an independent miner in the year 1927.

(d) There are no ore reserves.

(e) The Tri-State claims lie in the andesite flows which prevail on the west slope of the Black Ute Mountains. These flows to date have produced 2.75 million ounces of gold in free-milling and free-cyaniding ores. Associated minerals found in these ores are silver, hematite, siderite, manganese, fluorite, quartz, and calcite. These minerals are almost always found in fissure type veins, ledge, and dykes in this area.

Similarly enriched veins, which generally strike northwesterly throughout this district, are noted for citation in numerous stations throughout the area. It should be noted that these veins, at their intersections and junctions, have been enriched at those stations where the alterations caused by faulting are most prevalent.

The Mohave Butte claim contains the junction of a large, resilicified, andesite dyke adjoined by a large, altered, andesite fissure on the hanging wall side of the dyke. The fissure contains visible free gold, fluorite, hematite, siderite, manganese, quartz of the 4th stage deposition, and calcite. The pattern on the Mohave Butte is strikingly similar to that of the Oatman-Gold Road producers, namely: The United Eastern-Tom Reed mine, the Gold Road mine, the Gold Dust mine, and the Vivian mine. The major portion of the gold and silver produced in these mines came from the 400 feet to 500 feet beds.

(f) Tri-State expects to find ore for the same reason that the Bald Eagle Mining Company decided to sink a 300 foot exploratory shaft; that is, the results of the diamond drill core assay report (Sheets C and D) reveal the existence of gold in a high enough density to warrant a more detailed exploration of the vein. We feel that the only sure means for determining the extent and quality of this mineralized zone is by driving underground openings. Since the 300 foot shaft offers the most economic approach to drifting out on the andesite vein, Tri-State has decided to begin exploration where the Bald Eagle was forced to end exploration.

Tri-State has also opened up a 20 foot hole where the vein is impounded in the dyke on the eastern side of the wash (see Sheet H). Several rock samples were taken from this hole, as well as samples from the dump around the 300 foot shaft, and sent to Eisenhauser Laboratories for an assay report (see Sheet E).

(g) Package (J) contains all the latest geological and technological information we have been able to obtain.

4. ACCESSIBILITY TO PROPERTY:

(a) Tri-State's office is located at the following address: Grandview Landing Court, Trailer #39, Bullhead City, Arizona. The trailer court is situated 1.6 miles south of 3rd Street in Bullhead City. The following personnel will be on hand to meet the OME representative at the trailer and conduct him to the exploration site: James McCarthy, Francis Smith, Quincey Craine, and Merle Shearer. The phone number for Tri-State is (602) 754-8252.

4. ACCESSIBILITY TO PROPERTY (Continued)

(b) The exploration site is easily reached by automobile or truck. Bullhead City is 13 miles from the site. Needles, California, a railroad junction, is 39 miles from the site.

5. EXPLORATION WORK:

(a) Tri-State plans to deepen the existing 11'x8', 300 foot shaft to the 500 foot level. From this point we will drift along the vein to the intersection of the dyke and the vein. An exploration drift will also be extended to the junction of the vein and dyke (see Sheet H). At the junction we will raise to the surface. The drifts will be 3 feet across at the top, 5 feet at the bottom, and 7 feet in height. The raise will be 11'x8' and 400 feet to the surface.

(b) An access road already exists.

(c) If an OME contract is executed, work would begin immediately. The existing 300' shaft will be completely cleared and timbered by the end of 30 days and open to inspection by OME representatives.

6. EXPERIENCE:

I, Cornelius A. Buckley, am an electrical engineer employed by Litton Guidance and Control Systems Division in Woodland Hills, California. I have no professional mining experience other than placing for gold in California.

Mr. J. H. McCarthy, Jr., will supervise the exploration work and will be assisted by Mr. F. M. Smith, an investing shareholder in Tri-State. Brief resumes of Messrs. McCarthy and Smith follow:

James H. McCarthy, Jr., 58 years of age, was born in Goldfield, Nevada. McCarthy, Senior, was a mine operator his entire life, owning several mining properties in the San Francisco mining district. McCarthy, Jr., began obtaining mining and mineralogical experience with his father and has accumulated 50 years of mining experience to date. He organized the Great Basin Chemical Corporation in 1942 and was associated with numerous other mining corporations in a consultant capacity. He also organized and was president of the following mines:

1. Victoria Gold Mine
2. Triumph Gold Mine
3. Lead King Mines

Mr. McCarthy's ability as an established mining engineer with an excellent knowledge of the geology of the Oatman-Goldroads district can be attested to by Mr. Johnson of the Department of Mineral Resources, Phoenix, Arizona.

Francis M. Smith, 47 years of age, was born in Livingston, Montana. He graduated the Montana School of Mines in 1947 and received his B.S. in Mining Engineering. Mr. Smith is presently Mine Superintendent for the U. S. Borax and Chemical Corp. in Boron, California. He has worked for the following companies since 1947:

Pend Oreille M & M Company
Metaline, Washington
Business: Mining, milling lead and zinc ore.

Montana Lead & Zinc Company
Ketchikan, Alaska
Business: Mining, milling lead and zinc ore.

Montana Lease
Salt Chuck, Alaska
Business: Mining copper ore.

Mr. Smith also spent his free time during school working in the Cour D'Alene mines and Butte mines as a miner.

7. ESTIMATE OF COSTS:

(a) Independent contracts:

There will be no independent contracts.

(b) Personnel services:

With 4 miners (1 toplander, 1 hoist operator, 2 miners) per 8-hour shift, the following rates of advance should apply:

Drift rate	- 4 ft/shift
Raise rate	- 5 ft/shift
Shaft deepening rate	- 2 ft/shift

The amount of exploration work is as follows:

700 feet of drift
400 feet of raise
200 feet of shaft

With a two-shift per day operation, it will take 178 working days to complete the exploration. Allowing a differential of seven days for delays, the exploration can be completed within 185 days.

The exploration manager and two shift foremen each receive $550.00 per month. The present union scale for miners is $3.60/hr.

8 miners @ $3.60/hr. for 185 working days	$42,624.00	
3 supervisors @ $550/mo. for 9 months	14,850.00	
Consultant services	2,000.00	$59,474.00

The above services are readily available.

Note: All costs are estimated to the nearest dollar.

(c) Operating materials and supplies:

1. Fuel costs

The following fuel cost estimates are based on two-shift operation for 185 working days at the present cost of fuel per gallon.

Compressor - 4 hours' operation/shift @ 10 gallons/8 hours @ $0.28/gallon	$ 518.00	
20 KVA generator - 8 hrs. operation/shift @ 8 gallons/8 hours @ $0.28/gallon	829.00	
Water supply engine - 1 gallon/day @ $0.34/gal.	63.00	
Hoist - 4 hours operation/shift @ 8 gallons/8 hours @ $0.34/gal.	503.00	
Blower engine - 6 HP F.M. @ 5 gal/8 hrs @ $0.34/gal.	629.00	
Oil for hoist - 1 qt/8 hrs. @ $0.40/qt.	74.00	$ 2,616.00

2. Water costs

Water is available at no cost other than operating 2 HP B & S motor and pump.

7. ESTIMATE OF COSTS (Continued)

(c) Operating materials and supplies:

3. Power costs

Electrical power will be supplied by the 20 KVA generator. Electrical power will not be available commercially until March, 1969. The power line presently crossing Tri-State property is federally-owned and cannot be utilized by Tri-State.

4. Units of tools and equipment less than $50.00/unit

2 in. galvanized pipe (water), 1200 ft. @ .70/ft.	$ 840.00	
1 in. galvanized pipe (air), 1400 ft. @ .39/ft.	546.00	
6 in. ventilation pipe, 1400 ft. @ .30/ft.	420.00	
3/4 in. air hose, 150 ft. @ .50/ft.	75.00	
8 Air valves @ $25.00 each	200.00	
100 ft. ventilating bags, 2 ea. @ $50.00/bag	100.00	
3400 board-ft. No. 3 grade lumber for ties for 700 ft. track	300.00	
Spikes, bolts, nuts, fish plates for ties for 700 ft. track	200.00	
Fuses, 39,400 feet @ $40/1000 ft.	1,576.00	
Caps, 6,000 each @ $6/100	360.00	
Dynamite, 15,700 @ $27/100 lbs.	4,239.00	
4 Muck sheets @ $20/sheet	80.00	
1 30-foot chain ladder	50.00	
12 water needles with screens and gaskets	100.00	
4 2-foot lengths Swedish drill steel with bit @ $22.75/1 ft.	91.00	
16 4-foot lengths Swedish drill steel with bit @ $24.75/4 ft.	396.00	
8 6-foot lengths Swedish drill steel with bit @ $28.38/6 ft.	227.00	
17,600 b.f. of 6x6 for shaft and raise		
22,400 b.f. of 2x12 for lagging and landings		
1,000 b.f. of 2x4 for ladders		
300 b.f. of 1x4 for ladder steps		
2,000 b.f. of 4x6 for guides		
43,300 b.f. of Douglas #1 Fir @ $180.00/1000 b.f., including shipment	7,794.00	
100 8-in. lagging screws @ .20	20.00	
120 timber nuts @ .11	13.00	
120 timber washers @ .15	18.00	
1200 ft. hanging rods @ .12/lb.	100.00	
1 mine car	100.00	$17,845.00

7. ESTIMATE OF COSTS (Continued)

(d) Operating Equipment:

1. The following operating equipment is owned by Tri-State:

Equipment:	Condition:	Fair Market Value:
Fairbanks-Morse Hoist 25 hp gasoline engine operational hoist	Good	$ 600.00
500 ft. 3/4 in. twisted steel cable	Good	325.00
LeRoy 315 cfm compressor with UD18A International engine	Excellent	5,000.00
Grover air driven, 50 gpm water pump	Excellent	625.00
6 hp Fairbanks-Morse gasoline-operated engine	Good	45.00
6 in. Chicago Blower, 1500 cfm	Good	40.00
1952 Dodge 3/4 ton cargo carrier with 4x4 winze	Fair	900.00
1 Ingersoll Rand Jack Hammer w/jack leg	Good	400.00
1 Ingersoll Rand Air Receiver-250 gal.	Excellent	300.00
2000 gal. Circulating Tank	Excellent	200.00
Blacksmith Forge & Tools, 2 wheelbarrows, assorted hand tools, gauges, Acetylene Torch and accessories	Good	1,000.00
1 35' Skyline Trauler	Good	2,800.00
Total Fair Market Value ----------		$12,235.00

2. The following equipment will be bought, since rental costs for any of these items of equipment for 185 working days or more is uneconomical:

2 Atlas-Copco machines and jacklegs	$ 2,000.00	
1 Atlas-Copco, air operated, 1 ton tugger	1,200.00	
1 Atlas-Copco rotator	1,000.00	
1 Atlas-Copco sinker	650.00	
1 Buffalo 2000 cfm blower	150.00	
1 20 KVA generator with D4 Caterpillar engine	4,200.00	$ 9,200.00

(e) Initial Rehabilitation and Repairs:

None.

(f) New Building, Fixtures, Installations:

All buildings, fixtures, and installations (exclusive of mine workings) have been built and installed by Tri-State.

(g) Miscellaneous:

Assuming 3% for the cost of maintenance and repair of all operating equipment listed under 7 (d), we have:

.03 x $21,435 =	$ 643.00	
Estimated cost of analytical work and accounting	800.00	
Workmen's compensation and liability insurance	1,000.00	2,443.00

RECAP: Total cost of proposed exploration contract:

Item 7 (b)	$59,474.00	
Item 7 (c) 1	2,616.00	
Item 7 (c) 4	17,845.00	
Item 7 (d) 2	9,200.00	
Item 7 (e)	2,443.00	$91,578.00

Sheet A
(Sheet C follows)

DEAR SIRS:

I AM THE VICE PRESIDENT OF THE TRI-STATE GOLD AND SILVER MINING CORP. WE ARE A NEVADA CORPORATION WHICH HAS LEGAL CLAIM TO 260 ACRES OF GOLD AND SILVER BEARING PROPERTY. THESE CLAIMS ARE IN THE VICINITY OF BULLHEAD CITY, ARIZONA. WE ARE UNDERTAKING THE EXPLORATION OF THIS AREA TO DETERMINE THE FEASABILITY OF SETTING UP A PROFITABLE GOLD AND SILVER MINING OPERATION.

LOCATED ON ONE OF OUR CLAIMS IS A 300 FOOT SHAFT WHICH WAS SUNK TEN YEARS AGO BY A MINING COMPANY NAMED THE BALD EAGLE MINING CO. THE BALD EAGLE'S DECISION TO SINK THE SHAFT WAS BASED ON CORE DRILLINGS TAKEN DOWN TO THE 400 FOOT LEVEL. THE ASSAY REPORTS SHOWED THAT 9 OZ. OF GOLD PER TON OF ORE EXISTED AT THE 400 FOOT LEVEL. WHEN THE SHAFT WAS DOWN TO THE 300 FOOT LEVEL SOME SURFACE MACHINERY CAUGHT FIRE AND SPREAD INTO THE SHAFT DESTROYING THE UPPER 100 FEET OF TIMBERING AS WELL AS DESTROYING MOST OF THE SURFACE MACHINERY. SHORTLY THEREAFTER THE PRESIDENT OF THE BALD EAGLE DIED AND THE COMPANY WENT INTO ARREARS AND FINALLY BANKRUPTCY.

WE BELIEVE IN THE EXISTENCE OF PROFITABLE VEINS IN THE AREA. AT THE PRESENT TIME WE HAVE INVESTED $9000.00 IN EQUIPMENT. OUR PLAN IS TO CLEAR THE SHAFT OF DEBRIS, REPLACE THE DAMAGED TIMBERING AND EXPLORE FROM THE 300 FOOT LEVEL---- FANNING OUT FOR 500 FEET AND GOING DEEPER, IF NECESSARY. OUR PRESENT ESTIMATES FOR THE NEXT SIX MONTHS SHOW THAT WE WILL NEED $50,000 00 TO CARRY OUT THE ABOVE PLANS AND PROVE THE EXISTENCE OF AN ORE BODY LARGE ENOUGH TO WARRANT PROFITABLE MINING OPERATIONS. WE WILL APPRECIATE A REPLY FROM YOU ADVISING US OF THE POSSIBILITY OF BORROWING THE ABOVE SUM FROM YOUR INSTITUTION.

THANK YOU FOR THE ATTENTION YOU WILL GIVE THIS MATTER.

VERY TRULY YOURS,

C A. BUCKLEY
TRI-STATE G&S MINING CORP

Sheet C

Nov. 8, 1957

I, the undersigned diamond drilled the 452' hole on the Bald Eagle mining property. Samples #1 and #2 were taken on the hanging wall zone of the vein because they showed heavy sulphides. Between the 382' and the 403' depths we encountered considerable gauge and then went into the vein at about 405'. Vein material then began showing gold in the pannings in a green quartz and a black hemitite and also a lot of green sulphides. Then samples #3,#4,#5 and #6 were taken between the depths of 405' and 452' practically all of this drilling showed good gold pannings.

Dan B. Harper

Dan B. Harper

8

Sheet D

LABORATORY CERTIFICATE

Keldon

research corporation

MAIL: BOX 2555 TERMINAL ANNEX, LOS ANGELES 54, CALIF. o LABORATORY: 2565 BELGRAVE AVE., HUNTINGTON PARK, C

LUdlow 3

Date Dec. 5, 1957

Reference

Submitted By Name Mr. Quincy Crain

Address 701 - 3rd St.

City Needles, State Calif.

Lab. No.	Marking	Ozs. per Ton (10%)	Value per ton
19692-1	Sample #3	.07	$2.45
19692-2	Sample #4	4.12	$144.20
19692-3	Sample #5	9.40	$329.00
19692-4	Sample #6	2.44	$ 85.40

KELDON RESEARCH CORPORATION

Thomas J. Rollins

Thomas J. Rollins

L.S.

11

Sheet E

SECURITY FIRST NATIONAL BANK

WOODLAND HILLS BRANCH, 5440 TOPANGA CANYON BOULEVARD, WOODLAND HILLS
TELEPHONE (213) 347-7371
MAILING ADDRESS: POST OFFICE BOX 397, WOODLAND HILLS, CALIFORNIA 91364

March 1, 1968

Mr. C. A. Buckley
Vice President
Tri-State Gold & Silver Mining Corp.
2994 Alice Drive
Newbury Park, California

Dear Mr. Buckley:

Your application for a loan in connection with proposed mining activities in Arizona, has been given careful consideration by this bank, however, we regret that at the present time we are unable to be of any assistance.

Sincerely,

L. M. Harrigan
Assistant Manager

LMH:lmb

Sheet E

Sheet F

Cable Address — BANKAMERICA

Bank of America
NATIONAL TRUST AND SAVINGS ASSOCIATION

CANOGA PARK BRANCH • 22004 SHERMAN WAY • CANOGA PARK, CALIFORNIA 91305

February 20, 1968

Mr. C. A. Buckley
Vice President
Tri-State Gold & Silver Mining Corp.
2994 Alice Drive
Newbury Park, California 91320

Dear Mr. Buckley:

Thank you for your very interesting letter on your mining activity in Arizona. We appreciate your considering us as a possible lending institution to finance your company: but unfortunately at this time we would not be able to consider it.

With best wishes for your future success.

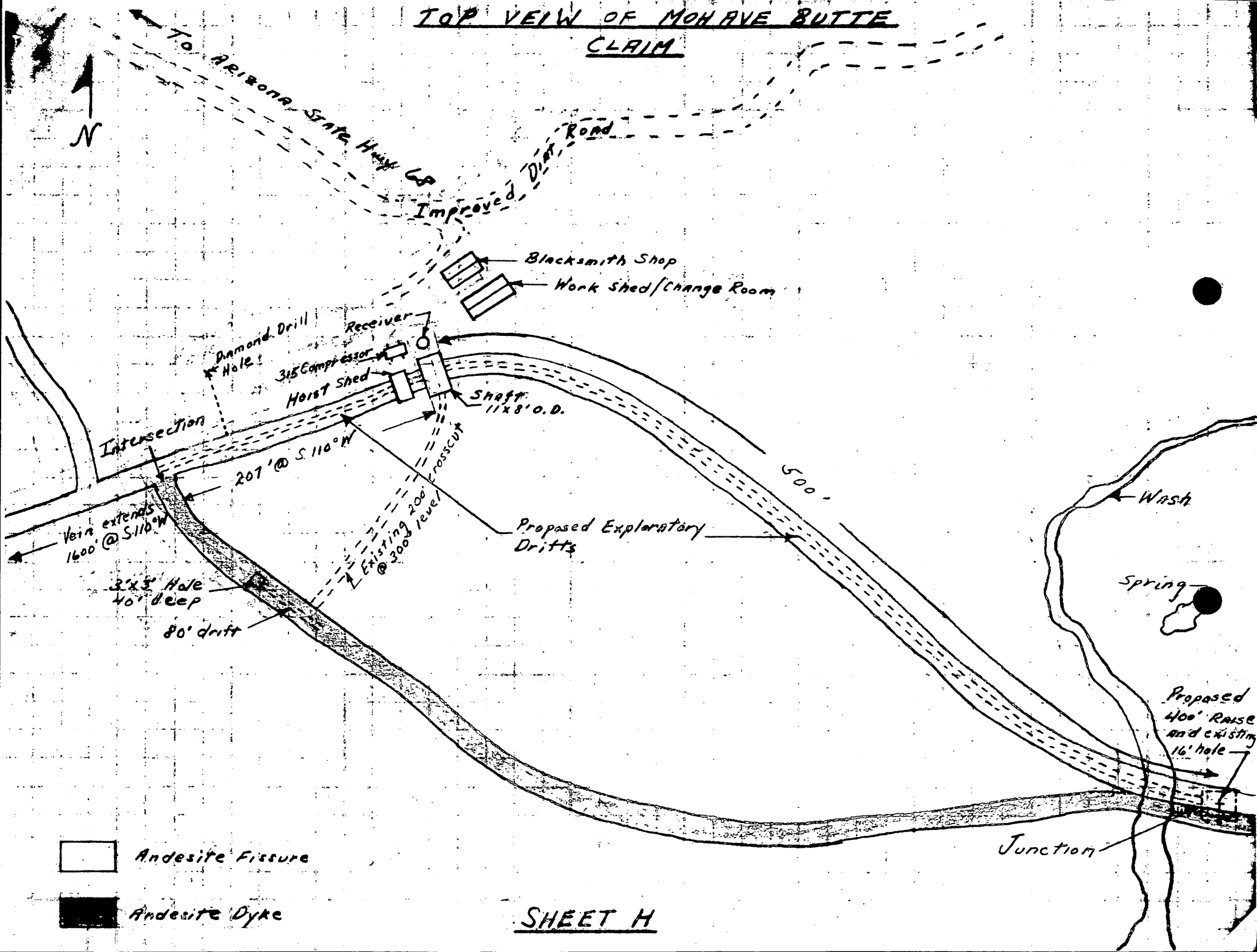
Yours truly,

S. J. Tomes
Assistant Manager

SJT:lt

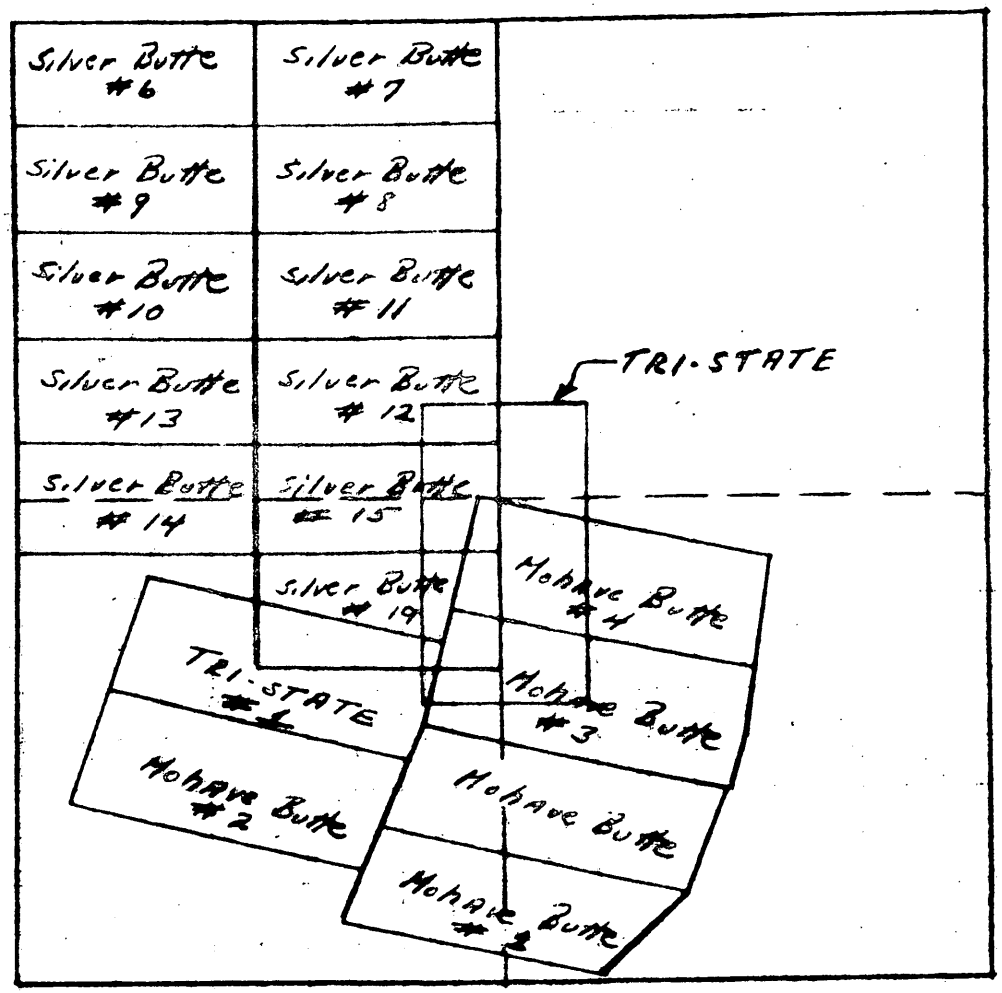
Sheet F

TOP VEIW OF MOHAVE BUTTE CLAIM



SHEET H

TOWNSHIP 21N RANGE 20W
SECTION 29
MOHAVE COUNTY, ARIZONA



N

21N-20W-29

TRI STATE Gold & Silver
C R Buckley
March 19, 1968

SHEET G

The water table occurs 40 feet below the collar of the shaft, and no ore was mined below the 350-foot level."

FRISCO MINE[135]

The Frisco Mine is in the eastern part of the area shown on Figure 6, about 9 miles east of the Colorado River.

This deposit, which was located about 1900, made an estimated production of 44,000 tons of ore prior to 1916. In 1932, according to E. Ross Householder,[136] it yielded a considerable tonnage of ore that was treated in the Katherine mill.

Here, granite, capped by rhyolite, forms a low hill. The principal vein strikes N. 55° E., dips 12° SE., and occurs as a stringer lode in the rhyolite at the granite contact. Its maximum width is 18 feet. Several faults, generally of small displacement, cut the vein. The quartz of these stringers is banded, vuggy, and chalcedonic in texture and creamy white to light brown in color. Most of the ore mined came from the heavily iron-stained lower portion of the vein. Some of the underlying iron-stained granite contained ore.

In the granite flat southeast of the hill is a lode that strikes northeastward, dips 65° NW., and is 59 feet in maximum width. As explored by a 300-foot shaft, with drifts on the 200 level, it was not of commercial grade.

BLACK DYKE GROUP[137]

"The Black Dyke group of claims is 3 miles to the east of the Katherine Mine. This large vein is composed principally of calcite, cut by a great number of small stringers of quartz. The vein takes a curved course, trending northwest, and with a length of one-half mile. About midway between the ends it swells to a width of 150 feet . . . The dark color is confined to a thin film at the surface, usually termed 'desert varnish.' The vein appears to occur in a shattered rhyolite which may have been replaced to a certain extent by both the calcite and quartz.

"This vein is said to have been thoroughly sampled and found to average $3 per ton, but the highest assay obtained by the writer was $2.40. A small inclined shaft has been put down at the west end, and numerous small tunnels have been run beneath the outcrop."

PYRAMID MINE[138]

"The Pyramid Mine is probably the oldest location in the district. It is situated near the Colorado River in some low hills of granite. The vein, which consists of a large number of small stringers in reddish granite, strikes N. 65° E. and the dip is ver-

[135] Largely abstracted from Lausen, work cited, pp. 121-22.
[136] Oral communication.
[137] Quoted from Lausen, work cited, p. 119.
[138] Quoted from Lausen, work cited, p. 118.

(J)

ABM #137

fied rhyolite. The gold occurs mainly in greenish-yellow quartz and also in streaks of chocolate-brown iron oxide. According to E. F. Niemann,[132] the ore shoot, where explored between the 100-foot level and the surface, averages from 0.25 to 0.30 ounces of gold to the ton.

ARABIAN MINE

The Arabian mine is in Sec. 20, T. 21 N., R. 20 W., about 3½ miles southeast of the Roadside property.

Intermittent work, which resulted in a small production, has been carried on at this property since before 1917. In late 1933 and in 1934, E. F. Niemann and associates worked the mine and milled several thousand tons of the ore in their Gold Standard plant. The 1933 production amounted to about 593 ounces of gold and 1,156 ounces of silver.

Lausen says: "At this mine, a rhyolite-porphyry dike intrudes granite, and, along the hanging wall of this dike, the rhyolite tuffs have been faulted against the dike. The vein occurs in the dike, close to the fault, and it strikes northeastward while the dip is 82° to the southeast.

"A mineralized zone, 30 feet wide and consisting of a number of quartz stringers, occurs in the rhyolite dike and, to a certain extent, in the granite footwall. The individual veinlets of this zone vary in width from a fraction of an inch up to 12 inches or more. The veinlets are chiefly quartz, but, in some places, consist of coarse-grained, gray calcite. A comb structure is common in the smaller stringers where the quartz crystals are large. The central portion may be vuggy, and the vugs often contain manganese dioxide; occasionally, however, the central part of the veinlet is filled with calcite. Near the hanging wall portion of the lode, a small stringer of fluorite was found. Near the portal of the tunnel is some waxy, yellow quartz, a part of which had replaced calcite. No adularia was found in this quartz, but the best values occur in this portion of the lode."

This mineralized zone forms an outcrop 100 feet high by more than 100 wide and more than 500 feet long. Preliminary sampling by Mr. Niemann indicates that much of it may carry more than 0.10 ounces of gold to the ton. Early in 1934, it was being mined by open cut methods and sent to the Gold Standard mill.

Near the northern end of the property, a vein about six feet in maximum width strikes northward, dips 33° E., and is separated from the big lode by faulting. This vein contains an ore shoot that, early in 1934, was being mined for a length of a few tens of feet between the 80-foot level and the surface. According to Mr. Niemann, this shoot averages about 0.50 ounces of gold and from 3 to 10 ounces of silver to the ton.

[132] Oral communication.

(J)

the second stage of deposition. This vein is a strong one, but the grade as a whole is low; locally, some small pockets of rich ore were found in association with iron and manganese oxides.

The shaft on the Tyro vein is down to a depth of 500 feet, and some drifting on the vein was done at the 200-foot level. The vein has not been found in the deeper levels, and Dimmick believes that it has been displaced by thrust faulting. This mine has had no production other than that from a few small pockets of ore found near the surface.

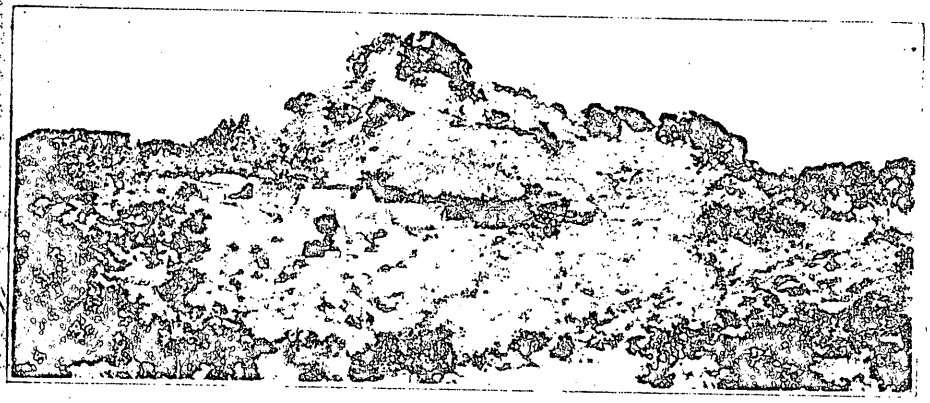


Fig. 29.—View of the Frisco Mine showing the vein at the contact of the rhyolite and granite.

FRISCO MINE

The Frisco Mine is situated in the eastern part of the Katherine District, about eight miles in an easterly direction from the Katherine Mine. The vein occurs in a low hill the base of which is granite, and above the granite is a flow of rhyolite and some rhyolitic tuff. The Frisco vein was located in 1894 and the mine closed in 1914.

The vein occurs at the contact of granite and rhyolite. It strikes N.55°E. and dips to the southeast at 12 A number of small faults cut the vein, and, in nearly all cases, the offset is only a few feet. At the south end, however, one fault displaces the vein about 100 feet. A fault with a northwest trend drops the west side of the mineralized zone about 35 feet. A vertical section through the mine is shown as Fig. 30. The outcrop of the vein is quite conspicuous because of the abundance of iron oxide which occurs at the contact of the granite and the rhyolite.

Banding is a characteristic feature of the quartz that occurs in this vein. The color is from creamy white to light brown, and

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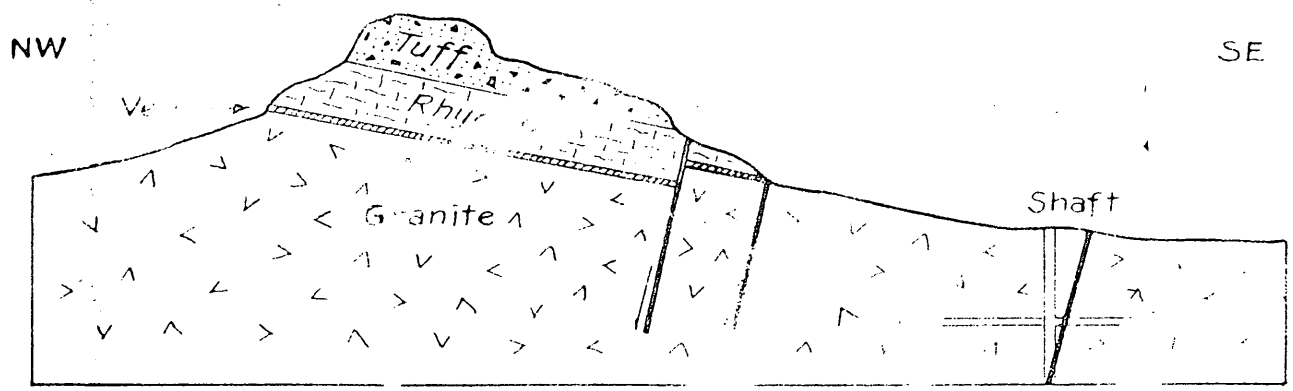

Fig. 30.—Vertical section through the Frisco vein. The vein [illegible] rs at the contact of rhyolite and granite. Not drawn to s[illegible]

the texture is chalcedonic. The vein consists of many small stringers which cut the rhyolite. The appearance of much of the ore suggests that the lower portion of the flow was shattered by faulting prior to the introduction of the quartz. Banding occurs around these fragments of rhyolite, and the space between them is not always entirely filled with quartz, but may be a vug lined with quartz crystals. In places, the vein was eighteen feet thick, but most of it was narrower. In the lower portion of the vein, some sections were heavily stained with iron oxides, and these portions of the vein constituted the ore shoots. Iron oxide also occurred in the granite, and some of the iron-stained granite was mined for ore. Frequently it carried high concentrations of gold. Some of this enriched ore, according to R. H. Dimmick, carried $3 per pound in gold.

A second vein, which strikes northeast and dips to the northwest at 65°, occurs in the flat to the southeast of the hill. A shaft was sunk to a depth of 300 feet to explore this vein. All the lateral work was done on the 200-foot level. The vein, which here consists of a mineralized lode with a width up to 59 feet, occurs in granite. The ore is, however, too low grade to mine.

Dimmick estimates the production of the Frisco Mine at 44,000 tons with an average value of $14 per ton.

ARABIAN MINE

The Arabian Mine is located about one mile to the southwest of the Frisco Mine. At this mine, a rhyolite-porphyry dike intrudes granite, and, along the hanging wall of this dike, the rhyolite tuffs have been faulted against the dike. The vein occurs in the dike, close to the fault, and it strikes northwest while the dip is 82° to the southeast.

A mineralized zone, thirty feet wide and consisting of a number of quartz stringers, occurs in the rhyolite dike and, to a certain extent, in the granite footwall. The individual veinlets of this zone vary in width from a fraction of an inch up to twelve inches or more. The veinlets are chiefly quartz, but, in some places, consists of coarse-grained gray calcite. A comb structure is common in the smaller stringers where the quartz crystals are large. The central portion may be vuggy, and the vugs often contain manganese dioxide; occasionally, however, the central part of a veinlet is filled with calcite. Near the hanging wall portion of the lode, a small stringer of fluorite was found. Near the portal of the tunnel is some waxy yellow quartz, a part of which had replaced calcite. No adularia was found in this quartz,

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Reconnaissance Geology Between Lake Mead and Davis Dam Arizona-Nevada

By CHESTER R. LONGWELL

SHORTER CONTRIBUTIONS TO GENERAL GEOLOGY

GEOLOGICAL SURVEY PROFESSIONAL PAPER 374-E

Bedrock and structural features in a belt along the Colorado River

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1963

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but, the best values occur in this portion of the lode. Assays of this tunnel indicate a grade averaging between $5 and $6 per ton, but some assays run as high as $14 per ton.

At the north end of the property, on the Rising Fawn claim, a shaft was sunk down and exploratory work was done by drifts and crosscuts. Some rich silver ore is said to have been found at this place. A small mill on the property was run on this ore, but no information as to the amount of the bullion produced is available.

FUTURE POSSIBILITIES

While examining a mining district many data are usually gathered which have an important bearing on future prospecting in the area. In fact, the chief aims of this study of the Oatman and Katherine districts have not been to describe the mines and prospects in great detail and to give a complete history of operations there, but (1) to disclose [illegible] facts which may be helpful to operators in the search for [illegible] ore shoots, (2) to indicate in which sections of the district [illegible] shoots should be sought, and (3) to determine the possibilities of these districts as future producers of gold and silver. The information that has been obtained, bearing on these points, may be summarized thus:

FACTS APPLICABLE TO THE SEARCH FOR ORE SHOOTS

Outcrops which consist only of stringers of chalcedony and calcite may be worth prospecting in the eastern part of the Oatman District where ore shoots which have not been exposed by erosion may exist.

Excepting that part of the Oatman District just mentioned, it is useless to prospect veins unless they contain quartz of the 4th or 5th stage of deposition, as described in this report, or unless they show evidence of having been subjected to leaching and supergene enrichment.

Mineralization has been connected with faulting, and veins which contain crushed zones through which run small stringers of 4th- or 5th-stage quartz and associated minerals offer particularly attractive possibilities.

Outcrops which show black manganese stains, no calcite, more or less iron stain in the veins or wall rocks, and occasional low gold values should be prospected in the hope of striking a supergene enrichment of gold.

There is apparently no reason why ore shoots should not be

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SHORTER CONTRIBUTIONS TO GENERAL GEOLOGY

RECONNAISSANCE GEOLOGY BETWEEN LAKE MEAD AND DAVIS DAM, ARIZONA-NEVADA

By Chester R. Longwell

ABSTRACT

Between Hoover and Davis dams the Colorado River valley, trending south-southeast, separates the Black Mountains on the east from the Eldorado and Newberry Mountains on the west. For more than 20 miles directly south of Lake Mead the river is deeply incised in Black Canyon; farther south the stream course is in large part between wide alluviated slopes. Maximum relief within the area is about 4,500 feet.

Thick Paleozoic and Mesozoic formations found in ranges north and west of Lake Mead are not present south of the lake except as fragmentary xenoliths within igneous bodies. The principal bedrock units in a wide area bordering the Colorado River consist of Precambrian gneiss, schist, and granitic rocks; volcanic rocks in four distinctive series, with intercalated clastic sediments; and numerous plutonic bodies, ranging in size from stocks to small dikes, diverse in composition and in texture. Some plutons, through which the oldest lavas in the area were erupted, may be contemporaneous with tuff beds in Cretaceous formations north of the lake. The Patsy Mine volcanics, oldest of the eruptive series, consist mainly of [illegible] andesitic lavas and agglomerates with maximum thicknesses of several thousand feet. The second episode produced the more siliceous Golden Door volcanics, equally thick and widespread, containing abundant glass and light colored tuff. A third series, the Mount Davis volcanics, consists largely of basalt and dark andesite but at several horizons includes conspicuous units of high-silica glass and pumiceous tuff. Thick beds of extremely coarse sedimentary debris, much of it derived from Precambrian bedrock, are interspersed through the upper part of this volcanic formation.

The three older volcanic assemblages have been strongly tilted, and commonly they are discordant one on another. All have been cut by intrusive bodies. In the northern part of the area the Muddy Creek formation, made up of clastic sediments, saline beds, and thick basaltic lavas, is unconformable on all older rock units. Still later igneous activity is recorded in local basaltic flows and dikes associated with weakly cemented slope gravels.

The area holds a network of faults, some of large displacement and at least two with important reverse movement. The Black Mountains block is a compound horst, west of which repetitive faulting has tilted some blocks eastward, others westward. Considerable movement was in progress during the Mount Davis volcanism, as indicated by abundant coarse debris mingled with lavas near large faults. In Muddy Creek time great landslide masses moved from the rising west margin of the Black Mountains. Colorado River gravel beds of Pleistocene age were strongly deformed near some faults.

Evidence now in hand establishes an order of events within the area but not an exact chronology. All the volcanic assemblages appear to be younger than the Horse Spring formation, which is tentatively dated as early Tertiary. A lead-alpha analysis on a sample of quartz monzonite from a pluton intrusive into Golden Door volcanics gave an age of about 50 million years, suggesting that these volcanics and the older Patsy Mine volcanics are at least as old as Eocene. Mount Davis volcanics grade upward into sediments mapped as part of the Muddy Creek formation, now dated tentatively as Pliocene. The Colorado River, as a through-flowing stream in its present course west of the Plateau, originated later than the interior-basin conditions of Muddy Creek time. The river was temporarily impounded late in the Pleistocene epoch, as indicated by numerous remnants of lake deposits that lie on and are capped by river gravels.

INTRODUCTION

PURPOSE AND METHOD OF PRESENT STUDY

The main body of Lake Mead, from Boulder Basin eastward, marks a general boundary between wide areas characterized by very different bedrock. Ranges directly north of this latitude reveal sedimentary formations that total many thousand feet in thickness; south of the lake, volcanic, plutonic, and metamorphic rocks are predominant at the surface, as has been known since Ives (1861) made his exploratory trip up the Colorado River in 1857–58. Published maps and reports dealing with the geology near the river south of the lake are based on rapid reconnaissance, and therefore this wide region offers prospects of new information that may be critical for deciphering the history of an important fraction of the Basin and Range province. The present study was undertaken to extend and supplement a mapping program covering several ranges north and northwest of Lake Mead (fig. 1).

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volcanics, form prominent mesas in a wide area between Nelson and Glass Plateau (fig. 10). A smaller but equally conspicuous residual makes the cap of Square Butte. East of Willow Beach an elongate remnant of basaltic lava rests on Precambrian rocks and extends from the summit of the Black Mountain block to U.S. Highway 93 (pl. 1). The largest residual, several miles south of Boulder Canyon, is closely associated with large basaltic dikes.

There is no positive proof that all these remnants represent one and the same sequence of lavas, but inference of this relation is very strong. All consist of vesicular or amygdaloidal olivine basalt, in individual flows that are thin or of moderate thickness. In all remnants the flows are nearly horizontal or dip gently; the steepest dip, about 10°, is in the large residual mass east of Willow Beach and is readily explained by some tilting of the Black Mountains block in post-Pliocene faulting. Altitudes at the bases of some remnants differ as much as a few hundreds of feet; but topographic relief in Muddy Creek time must have been considerable, and there has been later deformation by faulting and warping (p. E10). In a logical reconstruction the flows of the Fortification basalt member, as they appeared west of the Black Mountains before their dissection by the Colorado River drainage, would form a thick and continuous sheet extending at least 30 miles from north to south, 10 to 15 miles from east to west, overlapping both rims of the present river valley and with the top of the sheet at an average height at least 2,500 feet above the present river channel. Wide extension of the flows across older rocks bordering the basins of sedimentary deposition indicates that upland sources of sediments had been reduced to moderate relief.

The lavas of the Fortification member range in color from nearly black through gray brown to dark brown. Some flows have numerous small vesicles, irregular in form; others have rounded vesicles with diameters as much as three-quarters of an inch, many filled with white amygdales made of zeolites. Most of the rock is glassy olivine basalt, in which the olivine is considerably altered to serpentine and iddingsite. Some hand specimens show conspicuous aggregates, as much as half an inch long, made up wholly of olivine; others have large grains of plagioclase crowded with glass inclusions. In Fortification Hill a few layers of dark-brown slaggy tuff are included between flows. The only layers of sedimentary material seen in any section of the lavas are local lenses of conglomerate near the base of the section at the southeast corner of Fortification Hill.

Probably the lavas of the Fortification member were erupted in large part from fissures. Many dikes of dark basalt transect the Mount Davis and older rocks, and such dikes are conspicuous in a considerable area adjacent to Kingman Wash. But one central vent is marked by a plug, about 300 feet in diameter, etched into relief by erosion near the highest part of Fortification Hill. Near this plug are numerous brown slaggy bombs, which, with enclosing scoriaceous tuff, indicate some localized explosive activity in addition to widespread eruption of lavas.

COMPARISON WITH ADJACENT AREAS

Ransome (1907), Lee (1908), and Schrader (1909) gave brief and generalized descriptions of volcanic rocks in parts of the area here considered. All were limited to hasty and scattered field observations in rapid reconnaissance. In an area covering more than 6,000 square miles, Schrader recognized three general assembages which he designated from oldest to youngest: (1) chloritic andesite; (2) undifferentiated andesites trachytes, rhyolites, and latites; (3) basalt. Ransome (1923a) later studied in some detail the geology of the Oatman mining district, Arizona, in the Black Mountains about 10 miles south of Union Pass. His classification of volcanic rocks exposed within an area of about 75 square miles is shown in table 4. Lausen (1931), in a later study of the district, adopted Ransome's volcanic sequence with little change.

The geologic map of the limited area centering at Oatman is more detailed than any part of the map in the present report. Ransome (1923a) and Lausen (1931) recognized more lithologic units than does the present report, and they applied to each unit a precise petrologic designation. But Ransome noted that attempts to distinguish among andesite, trachyte, and latite present difficulties because these kinds of rock grade almost insensibly one into another. Moreover, widespread alteration, perhaps caused by ore-bearing solutions, has obscured the original nature of many flows in the Oatman section, making exact classification impossible. Finally, Ransome's succession at Oatman is incomplete; the upper part of the eastward-dipping section lies beyond the eastern boundary of his map. For several reasons, then, correlation of the volcanic rocks near Oatman with the sequences only a moderate distance to the north is more difficult than might be expected.

Probably the Oatman andesite and the two underlying units of trachyte correspond in a general way to the Patsy Mine volcanics. Largely on the basis of megascopic examination, brown andesite seems predominant in the latter unit, but detailed petrographic study may show that much of the rock is trachyte. Ransome's descriptions (1923a) indicate a wider variety of colors in his three lower units than

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TABLE 4.—*Volcanic rocks of Oatman district, Ariz.*

[Summarized from F. L. Ransome (1923a)]

Unit	General character	Thickness (feet)	Probable equivalence
Basalt	Basaltic lavas, rich in olivine	0–1,000	Fortification basalt member of the Muddy Creek formation.
	Angular discordance		
Cotton rhyolite	Glassy lavas, in part spherulitic	500–600	Golden Door volcanics.
Sitgreaves tuff	Pumiceous tuff, cream	200–300	
Meadow Creek and Flag Creek trachyte.	Lavas, reddish-brown with local development	250±	
Gold Road latite	Complex assemblage of lavas and tuffs. Lavas have abundant grains of biotite and feldspar. Considerable rhyolite included.	3,000–4,000	
	Conformable contact		
Oatman andesite	Lavas, greenish-gray, in part porphyritic; considerably altered	800–2,700	Patsy Mine volcanics.
Esperanza trachyte	Lavas, reddish-brown, with local distribution	0–1,000	
Alcyone trachyte	Flows of gray lava, in part porphyritic. Locally altered, greenish; some gray shale in upper part.	1,000–2,800	
Bedded breccia	Fragments derived from Precambrian and volcanic rocks. Has of shale and sandstone.	100–200	
	Unconformity		
Precambrian complex	Gneiss, schist, and granite.		

is evident in the Patsy Mine volcanics, but this difference may reflect more extensive chemical alteration in the Oatman district than farther north. In favor of the suggested correlation are (1) similar average composition of the two assemblages, near or identical with that of andesite; (2) location in the lower part of each section; (3) similar maximum thickness—5,000 to 6,500 feet.

Neither Ransome nor Lausen mentioned, as occurring below the top of the Oatman andesite, any lavas with high content of silica such as the spherulite-bearing rhyolite within the Patsy Mine section near Nelson (p. 19). A distinctive unit of this kind, if it were widely distributed, would be useful in attempts at correlation.

Ransome's (1923a) Gold Road latite, marking an abrupt and enduring change in composition of lavas, is similar in many ways to the latite section in the Golden Door sequence at Hoover Dam. At the latter locality the latite is strongly unconformable on the older andesite; but this is not the invariable relation between the Golden Door and Patsy Mine units (p. E20). Lausen (1931) described the colors of the latite near Oatman as dark to light gray, lavender, and light brown; he stated that the typical rock has well-developed phenocrysts of feldspar, sparkling flakes of biotite, and some pyroxene, and that in thin section the predominant feldspar is recognized as andesine, and orthoclase is conspicuous. These descriptions apply well to the Black Canyon latites. Although no complete chemical analyses of the typical latite near Hoover Dam are available, perlitic glass in the section east of the dam is strikingly like some of the latite near Oatman, as shown in the following table:

TABLE 5.—*Comparison of chemical composi[illegible] [illegible]canic rocks*

	(1)	(2)
SiO_2	65.86	62.96
Al_2O_3	15.18	15.36
Fe_2O_3	1.99	2.57
FeO	.80	2.09
MgO	1.12	2.50
CaO	2.86	4.26
Na_2O	3.52	3.84
K_2O	3.83	3.96
H_2O+	3.19	1.37
H_2O-	.49	.23
TiO_2	.42	.72
P_2O_5	.18	.28
MnO	.06	.04
Total	99.50	100.18

1. Perlitic glass beside highway, a quarter of a mile (in straight line) southeast of Hoover Dam. Analysis by Univ. of Minnesota Rock Analysis Laboratory.
2. Latite 1 mile southwest of Sunnyside mine, Oatman District, Arizona. Analysis by R. C. Wells, U.S. Geol. Survey.

Because of these similarities, Ransome's Gold Road latite may be correlated with the lower part of the Golden Door volcanics, which in the type section has a considerable thickness of flows resembling the latite of Black Canyon. The trachyte, tuff, and rhyolite above the Gold Road unit also are correlated with the Golden Door volcanics, and perhaps considerably more rhyolite higher in the section lies east of Ransome's (1923a) map area. Therefore the Oatman section as described by Ransome (1923a) and Lausen (1931) may omit much of a sequence

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equivalent to the Golden Door volcanics, and all the Mount Davis volcanics.

The highest volcanic unit recognized by Schrader, Ransome, and Lausen consists of olivine basalt in flows that are nearly horizontal and unconformable to older volcanic rocks. Schrader (1909), in his generalized map covering much more than a square degree, included in one category flows probably equivalent to the Fortification basalt member of the Muddy Creek formation and others, much younger, enclosed by Quaternary(?) gravels. The basalt mapped near Oatman occurs in remnants at a high altitude, and both in composition and in mode of occurrence it is strongly suggestive of the Fortification basalt member.

PLEISTOCENE(?) IGNEOUS ROCKS

Flows of basalt and several mafic dikes are associated with weakly cemented gravels in a limited area 6 to 8 miles southeast of Hoover Dam. The outcrops of basalt are erosion remnants of sheets, originally of small or moderate extent, that were erupted on the alluvial slope west of the Black Mountains and at least in part buried as the coarse fan debris continued to build up. In more recent dissection by washes tributary to the Colorado River, the sheets have been more or less laid bare and cut away. Steep cliffs at the edges of some remnants show well-developed columnar structure. The sheets, about 20 feet in greatest thickness, consist of slaggy rock at the top, vesicular rock extending downward through 3 or 4 feet, and a varied thickness of compact basalt grading into vesicular rock at the base. On fresh surfaces the rock is nearly black. Thin sections show a groundmass aphanitic to glassy, small laths of labradorite, and scattered grains of olivine, pyroxene, and magnetite. Composition is virtually uniform in all the flows.

Near the flows of basalt several camptonite dikes cut the deposits of weakly cemented slope gravels. Campbell and Schenk (1950, p. 672) mapped three general lines of the dike outcrops, all discontinuous and with some abrupt offsets in strike. The area including these outcrops extends about 2 miles from north to south and has maximum width of about 1,500 feet. The dikes have a northward trend, with a range in strike from N. 20° W. to N. 25° E.; the easternmost of the three lines has an average direction slightly east of north. Thickness of the dikes ranges from 2 to 6 feet; in dip the average is near vertical, with extreme variations from 65° E. to 75° W. Probably the best single exposure is in the east wall of a deep artificial cut along U.S. Highway 93, 8 miles southeast of the dam in a straight line or nearly 9 miles as measured along the road. The dike is essentially vertical, has a nearly uniform thickness of about 4 feet, and cuts rather evenly across the coarse fan deposit in which there is little suggestion of bedding. Numerous phenocrysts of black amphibole in the middle of the dike are 2 to 4 inches long, but the size decreases outward to small fractions of an inch, and no phenocrysts are present in the chilled margins. Many vesicles in the marginal parts of the dike, elongate parallel to the walls, suggest light overburden at the time of emplacement.

The groundmass of the dike is largely microaphanitic and encloses crystals of somewhat altered olivine, as much as half an inch in diameter, together with scattered small grains of calcic andesine, magnetite, and apatite. Sporadic grains of quartz are probably xenocrysts derived from the fan deposits or other rocks cut by the dike. According to Campbell and Schenk (1950, p. 683), the crystals of amphibole, which on fractured surfaces resemble obsidian, appear to be kaersutite or a near relative. One chemical analysis of the dike rock shows 42.26 percent SiO_2, slightly higher than the average of 40.70 percent for camptonites listed by Hatch, Wells, and Wells (1949, p. 353).

Near the southern limit of these dike exposures an old vent, irregularly circular in plan and about 400 feet in diameter, is filled with brown tuff-breccia and some extrusive camptonite. The breccia encloses breadcrust bombs 1 to 2 feet long and angular fragments of basalt as large as 2 feet in diameter. This material, indicating eruptive activity, is closely adjacent to and probably connected with one of the camptonite dikes and supplies additional strong evidence that the dikes as now exposed were emplaced at very shallow depth.

Campbell and Schenk (1950, p. 688) were impressed by the decrease in size of phenocrysts from the middle of the dike outward, and they concluded that the crystals formed between emplacement and solidification of the magma. They recognized the evidence for very shallow emplacement and estimated that the crystals of amphibole must have formed in a period no longer than 25 days. S. Warren Carey (oral communication, 1959), in an alternative hypothesis, supposed that a magma chamber at considerable depth was stationary long enough for growth of the large phenocrysts. Crystals that started forming in the upper part of the chamber slowly sank, and eventually there was gradation in size from incipient crystals near the upper boundary to large crystals at some depth. When magma was forced upward to form the dikes, the upper part of the fluid, wedging the walls aside, became the marginal parts of a dike; fluid containing crystals of small

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Canyon, widening sheets of alluvium hide much of the bedrock; but through a distance of 15 miles, outcrops in scattered ridges reveal that between the Black and Eldorado Mountains the Golden Door and Mount Davis volcanics make up several fault blocks that are tilted consistently to the west. Section *F–F′*, plate 1, illustrates this structure, some elements of which must be inferred. The Epperson fault dips west; the Big Blackstop fault dips east; and close similarity of exposed structure from Mount Davis westward suggests that the other faults also dip to the east. Outcrops of Golden Door volcanics along the river indicate an important fault east of them. Evidence supporting the two faults next in order to the west is obscured by alluvium; but they are suggested by changes in dip, probably caused by drag. The fault nearest the west end of the section is established by the dip of volcanic rocks toward the nearly straight border of the range.

The plug of andesite porphyry at the main border fault along the east side of the Eldorado Mountains, and several bodies of similar rocks alined to the south, indicate that intrusion was controlled in some degree by the fault zone. Northward branching of the fault and irregularity of the range front farther north imply that faulting at this border is complex, perhaps on a set of en echelon fractures. Large thicknesses of the exposed volcanics indicate very large displacement in the vicinity of the section *F–F′*.

In the large alluviated area south of Mount Davis, there are no outcrops of the older bedrock; but in the Black Mountains belt the westward dips persist, except in the zone of sharp flexure south of Eppersons Corral. The axis of downwarp south of the Portland mine, in line with the north end of the Newberry Mountains, is the logical southern limit of the structural unit with prevailing dips westward. Though outcrops are limited in this unit as a whole, apparently the structure is much simpler than in the wide belt north of Eldorado Wash.

STRUCTURE EAST OF NEWBERRY MOUNTAINS

The Newberry Mountains afford the widest continuous outcrop of Precambrian rocks within the map area. Generally the banding in these rocks trends west of north, and west of the river the average dip of the banding is steep toward the east. Persistence of Precambrian outcrops across the broad valley and eastward to Union Pass marks a broad belt of uplift along an axis trending somewhat north of west, parallel to the Portland mine downwarp.

Most of the faults in this part of the area are revealed by their effects on volcanic rocks, but excavations during the building of Davis Dam gave information on an exceptional fault zone that involves Precambrian bedrock exclusively (Lundgren, written communication, 1949). The only surface indication of this feature was a saddle floored with crushed rock and clay. Exploration by trenching and core drilling showed a continuous though irregular zone with average strike N. 60° to 65° E., dipping 15° to 25° SE.; it is continuous at least 1,000 feet along the strike, and extends underground at least 800 feet southeast of the power plant, which is east of the river channel (fig. 15). The full zone includes in its upper part an irregular layer of crushed gneiss, as thick as 30 feet, crossed by seams of clay 1 inch to 2 feet thick. Ten to 100 feet vertically below this layer is another with similar content. In many parts of the fault zone, the power shovels could excavate without blasting.

Nothing in available descriptions of this zone suggests the nature and measure of displacement. The low average dip and the extent of thorough crushing suggest thrust faulting. Because of the limited ob-

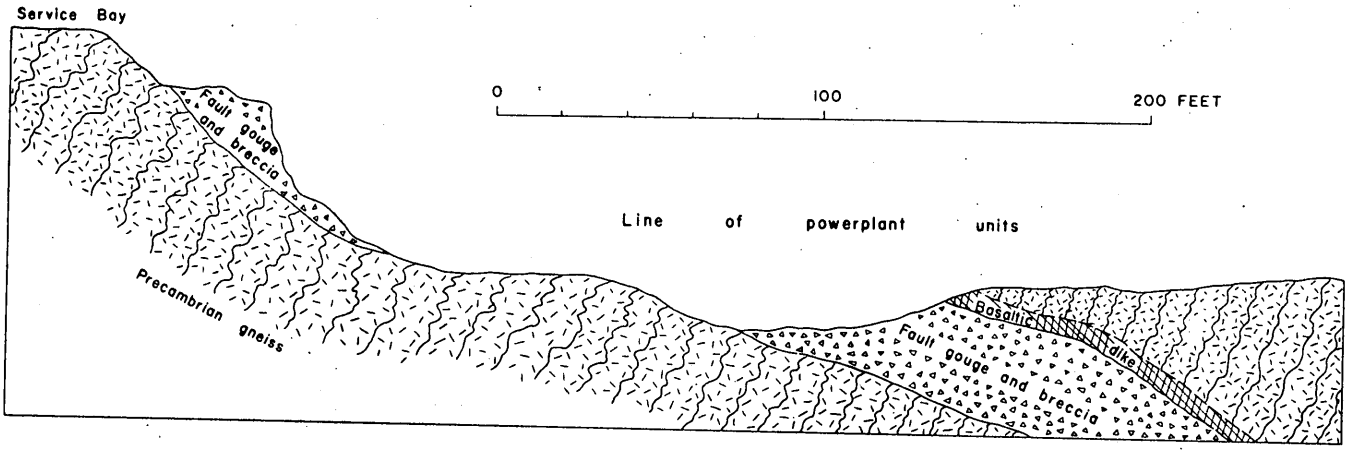

FIGURE 15.—Fault zone in Precambrian rocks at Davis Dam, exposed by excavation east of river. Zone strikes N. 60°–65° E., dips 15°–25° SE. (modified from W. K. Lundgren, U.S. Bureau of Reclamation written communication, 1949).

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servations the fault is not shown on the map, plate 1, but its position is indicated in section *G–G′*.

About 2 miles west and northwest of Davis Dam, volcanic rocks are downthrown on faults that make an irregular pattern. In one block with steep eastward tilt, basaltic lavas interspersed with beds of gravel appear to be part of the Mount Davis volcanics. An adjoining block tilted to the west has typical Golden Door volcanics, including basaltic sills and dikes. Several miles east of the dam, a set of normal faults with northwest strike repeats a section of Golden Door volcanics. The large outcrop of Precambrian rocks west of Union Pass appears to represent a much-faulted arch whose axis trends northwest. Some of the faults are clearly marked by remnants of lava and tuff, as at the old Frisco mine. The large fault at the Arabian mine, exceptional in direction of strike, has exposed in the hanging wall south of the mine a very coarse breccia that includes quantities of gray limestone. Conceivably the source was in Paleozoic beds that have been eroded from the footwall block.

DATING OF FAULTS

In the area south of Boulder Basin, none of the many faults can be assigned definitely to geologic epochs, and few can be bracketed closely in relation to lithologic units. For example, two faults about a mile west of Willow Beach cut only Precambrian rocks and Patsy Mine volcanics, but as no younger bedrock has survived erosion there, an upper limit for the date of faulting is indeterminate. Northeast of Nelson, the Welcome fault cuts a thick Mount Davis section that is strongly tilted; but flows of the Fortification basalt member of the Muddy Creek formation, covering a nearly even surface of erosion, cross the fault unbroken. The Rifle Range fault, and another 2 miles west of it, have lowered beds of the Muddy Creek with strong drag effects. Movements on many faults may have continued to a date as late as on the Mead Slope fault, which is favorably located to show involvement of the early Colorado River gravels.

No faulting of recent alluvium was detected with certainty anywhere in the area, although topographic features southwest of Railroad Pass suggest possible breaks in the fan slope that are not yet obliterated by erosion and deposition.

MINERAL DEPOSITS

The region south of Lake Mead has long been a prospectors' paradise, as evidenced by claim notices bearing a wide range in dates and by widely distributed prospecting pits. Some old mines whose records show large production lie within the area represented on plate 1. The Eldorado Canyon district, with its center near Nelson, boasted the Techatticup and Wall Street mines, credited with total yield of gold and silver valued at several millions of dollars (Ransome, 1907). Production was begun at the Techatticup in 1863 and continued with interruptions until 1942. Development of some properties within or near this district has been started or renewed recently, as at Knob Hill. The Searchlight district, once very active, has been the scene of only small operations in recent years. On the Arizona side of the river, the Katherine mine ended a varied record about 1930. Among other properties that prospered for a time were the Gold Bug and Mocking Bird (Schrader, 1909), and the Arabian and Frisco (Lausen, 1931). Gold and silver were the chief objectives in the older operations, though more recently some other metals, including lead, zinc, and copper, have received attention.

In the present study no attempt was made to locate and catalog the active prospects and mines within the area; but a few mines, most of them now inactive, are shown on plate 1 to serve as reference points.

Nearly all mineral deposits exploited within the area have been in igneous rocks, either plutonic or volcanic, or in closely associated metamorphic rocks. Exceptions are the manganese ore mined in the Three Kids district from sedimentary beds of the Muddy Creek formation, and gypsum quarried from several bedded formations northwest of Lake Mead.

GEOLOGIC HISTORY OF THE AREA

Evidence now in hand from a large area south of Lake Mead outlines a sequence of events but gives little basis for fixing definite dates. A large part of the history must be deduced indirectly from evidence in the thick stratigraphic sequence directly north and northwest of Lake Mead. Unfortunately the formations of most critical interest, representing the Cretaceous period and much of Tertiary time, have thus far yielded few diagnostic fossils. But at least the physical evidence given by the sediments has large value, and eventually we may have a more satisfactory basis for dating features and events. Conceivably some local deposits, particularly waterlaid ash-beds, that are interlayered with volcanic rocks south of the lake may hold fossils of value.

PALEOZOIC ERA

The section of Paleozoic formations totals about 8,000 feet in Frenchman Mountain, and somewhat less in the Muddy Mountains, only a few miles from Lake Mead. Ranges farther north and northwest

(J)

THE EISENHAUER LABORATORIES
316-322 South San Pedro Street
Los Angeles, California 90013

ED. EISENHAUER JR.
C. EISENHAUER RAYMOND
LAWRENCE EARL RAYMOND
All members of American Institute of Mining, Metallurgical, and Petroleum Engineers

ASSAY CERTIFICATE

PHONE 622-0820

Los Angeles, Calif. Sept. 25/67 19

I hereby Certify that the samples described below, received from

M.C. Shearer assay as follows:

Owner's Mark and Sample	GOLD OZS. PER TON	GOLD VALUE PER TON	SILVER OZS. PER TON	SILVER VALUE PER TON	TOTAL VALUE PER TON	PERCENTAGE OF COPPER	LEAD	ZINC
300 FOOT #1	.14	$ 4.90	.73	$ 1.24	$ 6.14			
20 FOOT #2	1.76	$ 61.60	1.68	$ 2.86	$64.46			

GOLD @ $ 35 PER OZ.
SILVER @ $ 1.70 PER OZ.
LEAD @ ____ C.
COPPER @ ____ C.

CHARGES Paid

E. Eisenhauer
ASSAYER

Established 1916

TWENTY FOOT HOLE DYNAMITED
AND DUG BY CRAIN & McCARTHY.
GOLD AND SILVER SAMPLES

THE EISENHAUER LABORATORIES
316-322 South San Pedro Street
Los Angeles, California 90013

ED. EISENHAUER JR.
C. EISENHAUER RAYMOND
LAWRENCE EARL RAYMOND
All members of American Institute of Mining, Metallurgical, and Petroleum Engineers

PHONE 622-0826

ASSAY CERTIFICATE

Los Angeles, Calif. Sept. 25/67 19

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M.C. Shearer assay as follows:

Owner's Mark and Sample	GOLD OZS. PER TON	GOLD VALUE PER TON	SILVER OZS. PER TON	SILVER VALUE PER TON	TOTAL VALUE PER TON	PERCENTAGE OF COPPER	PERCENTAGE OF LEAD	PERCENTAGE OF ZINC
300 FOOT #1	.14	$ 4.90	.73	$ 1.24	$ 6.14			
20 FOOT #2	1.76	$ 61.60	1.68	$ 2.86	$64.46			

GOLD @ $ 35 PER OZ.
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ASSAYER

Established 1916

TWENTY FOOT HOLE DYNAMITED
AND DUG BY GRAIN & McCARTHY.
GOLD AND SILVER SAMPLES

(5)

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COPY
O. M. E.
RECEIVED
MAY 6 1968
INITIALS | CODE

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
1/16/69	E Peterson	120
1/18/69	Krikorian	120
1/17	Kielsgaard	110
1/21	[illegible]	
		220

JAN 22 1969

AIRMAIL

Tri-State Gold & Silver Mines, Inc.
P. O. Box 958
Bullhead City, Arizona 86430

Re: OME-6722 (Gold and Silver)
Tri-State Gold & Silver Mines, Inc.
Mohave Butte Claims
Mohave County, Arizona

Gentlemen:

A careful study has been made of all the information available to us relating to your application for financial assistance to explore the cited property. Although small bodies of ore-grade material may occur, our study indicates that the probability of disclosing significant reserves of eligible minerals on the property is not sufficiently promising to justify Government participation in the proposed work. Accordingly, we regret to inform you that your application for assistance is denied.

We wish to thank you for your interest in the minerals exploration program and for bringing your property to our attention.

Sincerely yours,

FRANK E. JOHNSON (gk)

Frank E. Johnson
Chief, Office of
Minerals Exploration

cc: Director's Reading File
Economic Geology File
OME Docket
OME Reading File
Region III
Mr. Peterson
130

ECPeterson/bl 1/16/69

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
1/13/69	Kirberson	120
"	[illegible]	120
1/17	Kolsgaard	~~110~~
		110
		220

January 16, 1969

Memorandum

To: The File

From: Edward C. Peterson
Office of Minerals Exploration

Subject: OME-6722 (Gold and Silver)
Tri-State Gold & Silver Mines, Inc.
Mohave Butte Claims
Mohave County, Arizona

Justification for Denial of Application

The OME field examiner found no well-developed, continuous vein structures exposed on the Mohave Butte property. Instead the property contains discontinuous gash fractures mostly less than 50 feet long and 3 inches thick and carrying submarginal values in gold and silver. This is borne out by the assay data furnished by the Applicant which shows the structures to be weakly mineralized. The examiner concluded that any reserves which may exist are too small and low grade to justify Government participation in the proposed work.

I concur with the field examiner and recommend that the application for assistance be denied.

Edward C. Peterson

Edward C. Peterson

cc: Director's Reading File
Economic Geology File
OME Docket
OME Reading File
Mr. Peterson
130

ECPeterson/bsl 1/16/69

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
FEDERAL CENTER, DENVER, COLORADO 80225

Office of Minerals Exploration
Building 53 Room 200

January 14, 1969

OFFICIAL COPY
O. M. E.
RECEIVED
JAN 15 1969

INITIALS	CODE
	130
	120
	110
	120

Memorandum

To: Chief, Office of Minerals Exploration

From: James L. Gualtieri

Subject: OME-6722 (Silver-Gold)
Tri-State Gold and Silver Mines
Mohave Butte
Mohave County, Arizona

The Field Officer concurs with the geologist, Jacques F. Robertson, that what is presently known of the deposit indicates it to be of insufficient grade or volume to rate Office of Minerals Exploration assistance.

James L. Gualtieri

James L. Gualtieri for
J. William Hasler,
Field Officer, Region III
Office of Minerals Exploration

Enclosure

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
FEDERAL CENTER, DENVER, COLORADO 80225

Office of Minerals Exploration
Building 53 Room 200

January 14, 1969

Memorandum

To: Chief, Office of Minerals Exploration

From: Jacques F. Robertson

Subject: OME-6722 (Silver-Gold)
Tri-State Gold and Silver Mines
Mohave Butte
Mohave County, Arizona

Report of examination on the subject property is transmitted herewith. From the geologic information available, the targets for exploration are meager and highly uncertain, and there is little chance of making a significant discovery. It is recommended that the application for federal assistance be denied. The application could be reviewed in the future if sound prospecting by the company were to develop more promising information.

Jacques F. Robertson

Jacques F. Robertson,
Geologist
Office of Minerals Exploration

UNITED STATES

DEPARTMENT OF THE INTERIOR

STEWART L. UDALL, SECRETARY

U. S. GEOLOGICAL SURVEY

OFFICE OF MINERALS EXPLORATION

REPORT OF EXAMINATION

REGION III

On-Site Exam Report

OME-6722 (SILVER-GOLD)

TRI-STATE GOLD AND SILVER MINES

MOHAVE BUTTE

MOHAVE COUNTY, ARIZONA

BY

JACQUES F. ROBERTSON,

GEOLOGIST

JANUARY, 1969

Contents

Introduction---------- 1

Geology---------- 3

Applicant's proposed exploration---------- 5

Review of assay data---------- 6

Recommendations and conclusions---------- 9

Introduction

The Tri-State Gold and Silver Mines, Inc. applied to the Office of Minerals Exploration in April, 1968 for financial assistance to explore for gold and silver in the Mohave Butte Mine, Mohave County, Arizona. The project proposed by the applicant would cost an estimated $91,578.00. The application, given the OME Docket No. 6722, was reviewed in Washington and further information was requested from the applicant. The application was then referred to the Field Officer, Region III on July 3, 1968 for a field examination and review. Mr. Jacques F. Robertson of the U. S. Geological Survey visited the property on August 27 in company with Messrs. Richmond B. Terrell, President-Treasurer, C. A. Buckley, Vice President, Merle Shearer, Secretary, F. M. Smith, Director and mine surveyor, and James McCarthy, miner, members of the company.

The Mohave Butte mine is on the west flank of the Black Mountains in the Union Pass mining district, Arizona, about 7.5 airline miles east of the Arizona-Nevada border where Davis Dam spans the south-flowing Colorado River and where the resort town of Bullhead City is situated. The mine is reached by 2 miles of dirt road that runs south from Arizona State Highway 68 at a point 6 miles east of Davis Dam. Kingman, Arizona, Mohave County seat and stop on the Atchinson, Topeka & Santa Fe Railroad is 25 miles east of the mine via State Highway 68 and Federal Highway 93. The mine is situated in the NW-1/4, SE-1/4, Sec. 29, T. 21 N., R. 20 W. within the Union Pass, Arizona 7-1/2 minute quadrangle. The

property, controlled by the Tri-State Gold and Silver Mines Company, covers 20 contiguous unpatented claims on federally-owned land filed with the Mohave County Recorder, as listed in the application and in the letter of October 10, 1968. The immediate ground on which exploration assistance is requested covers the Mohave Butte and part of the Mohave Butte No. 1 claims. No limit on the amount of the property reserved for government lien has been defined. The Mohave Butte claim is bounded on the southeast by the George and other claims belonging to another mine group.

Since the OME application was submitted in April, 1968, the company has restored the main workings rendered inaccessible by fire about 1959. The workings include (see attachment #2 of application) a main shaft 250 feet deep with levels at -100 and -250 feet on the Mohave Butte claim. The shaft collar is at an altitude of approximately 2,350 feet. The -100 foot level consists of a drift driven 45 feet northwest and 35 feet southeast of the shaft along a thin and poorly mineralized fracture. The -250-foot level consists of a crosscut extending 235 feet southwest from the shaft, plus an extension of the same crosscut for 35 feet to the northeast where it was caved at the date of the visit, and a 50-foot crosscut from the shaft to the west northwest. Another shaft from the surface, reported to be 40 feet deep, is located 205 feet west northwest of the main shaft. It is open but has not been investigated yet because of the poor condition of the ladder. A drift extending south 80 feet from the bottom of the shaft is reported, but not confirmed,

supposed to have been driven in 1927. Shallow pits and trenches are scattered over the surface of the claims where numerous small gash fractures and veins have been tested. A number of adits were seen along cliffs one-quarter to one-half mile northwest of the Mohave Butte shaft, but were not visited. The main shaft and workings were driven by the Bald Eagle Mining Company in 1959 but no production resulted from this endeavor.

Geology

The area of the Mohave Butte mine is underlain by andesitic flows and flow breccias of Tertiary age that lie with profound unconformity on crystalline rocks, principally granitic gneiss and schist, of Precambrian age. The Tertiary lavas are probably correlative with the Patsy Mine Volcanics of Longwell (1963, p. E18). Overlying

---

1/ Longwell, Chester R., 1963, Reconnaissance Geology Between Lake Meade and David Dam, Arizona-Nevada, U. S. G. S. Prof. Paper 374.

---

these andesitic lavas are light yellowish gray, latitic to rhyolitic ash flow tuffs and breccias that form the conspicuous cliffs and oddly eroded ridges east and north of the mine. They are probably the Golden Door Volcanics of Longwell (1963, p. E20); the contact between them and the underlying andesitic rocks is well exposed at the abrupt change in slope of the terrain 800 feet east of the mine. Although bedding planes are obscure in the andesite, the volcanic sequence has been tilted 20° or more to the east. The

andesite is intruded by diabasic and andesitic dikes and possibly by rhyolitic dikes also, though none were seen. Chloritic, hematitic, and argillic alteration of andesite is general.

The andesite in the mine area is broken by numerous and irregular minor fractures, most of which trend in a northerly direction but extend no more than a few tens of feet in length. These gash fractures are sparsely filled at intervals with quartz, calcite, and hematite, from 1/16 inch to 3 inches thick. Rarely fluorite and adularia are associated with them. The fractures contain sparse amounts of gold, with values generally low and erratically distributed. One persistent fracture or minor fault is exposed in the gully south of the mine shaft where a spring issues from it. The fault strikes north-northeast at a steep dip and is exposed for 400 feet on the surface before it is lost to view by colluvium that mantles the surface east of the mine. It contains gouge and "caliche", probably from the deposition of calcium carbonate from groundwater that circulated along it. Little prospecting had been done along this fault.

The thin, short lenses of quartz and calcite within the gash fractures or fracture veins are very spotty and discontinuous. Contrary to the inferences of the applicant that show throughgoing vein structures on both the surface and underground maps, few vein structures on the property continue for more than 40 or 50 feet. Possibly these short northerly-trending gash fractures are concentrated within a broad fracture zone, but if so they are poorly developed.

Diabase dikes were inspected on the surface and underground on the 250-foot level, but no direct relationship could be seen between them and the gash veins or with gold mineralization. The "dyke in wash" shown on the applicant's map is erroneous; the andesitic country rock is mistaken for a dike because it has a fresh appearance from being stream-scoured in the wash.

Applicant's Proposed Exploration

The company originally proposed to deepen the main shaft to the 500 foot level, then drive exploratory drifts along inferred veins for a total of 705 feet, and raise approximately 400 feet to the surface on an alleged andesite dike and vein intersection. The total cost was put at $91,578.00. The exploration program was reconsidered after the main shaft and 250 foot level were reopened and after the visit by the OME representative. The company then submitted a new proposal in October 1968 outlining three phases at a total estimated cost of $116,384.25. Phase A includes consultant and engineering services to map the mine area in detail, and 350 feet of crosscutting in the 250-foot level. Phase B includes 300 feet of drifting from the crosscuts of Phase A along mineralized veins. Phase C proposes 4,400 feet of diamond core drilling from the 250-foot level and from the surface to explore vein structures down to the 500-foot level.

Review of Assay Data

Interest in the Mohave Butte property hinges on two occurrences of high grade gold. One occurrence was found as a result of diamond drilling an inclined hole from the surface by the former owners of the property, the Bald Eagle Mining Company, about 1958. The collar of the drill hole is located about 220 feet northwest of the main shaft, and is shown on both the surface and underground maps. The hole is inclined -71° to west southwest and extends 452 feet. Samples taken between 405 and 452 feet down the drill hole assayed as follows:

DDH Samples	Au/oz/ton	Value @ $35.00/oz.
3	.07	$2.45
4	4.12	144.20
5	9.40	329.00
6	2.44	85.40
	$16.03	$561.05
Average	$4.01	$140.26

There is no information available on the core intervals represented by these samples and assays. The samples could have been concentrated by panning of sludge or broken core, as suggested by the drillers' account that is furnished with the application. On the strength of these high values the Bald Eagle Mining Company sank the 250-foot deep shaft and explored by drifting and crosscutting for extensions of the gold-bearing vein. This search proved discouraging. The second rich intercept is from a thin vein on which a shallow prospect

trench was driven, located some 500 feet southeast of the main shaft. A single sample taken from it in 1967 was assayed and gave a 1.76 oz. per ton gold, worth $61.60, and 1.68 oz. per ton silver, worth $3.36 at a price of $2.00 per ounce. Evaluation cannot be fairly made because it is not known how the sample was taken, whether grab, channel, or selected, although limited by the 3 or 4 inch thickness of the vein. This assay, along with the drill hole values and the consistent though low gold values taken from gash fractures scattered about the surface, encouraged the applicants to reopen the mine workings and seek assistance to further explore the ground.

Dollar values reported from 8 grab samples taken from scattered gash fractures exposed in surface prospect pits (shown on the applicant's surface map), range from $2.40 per ton to a high of $12.25 per ton. It is not known if these were assayed for gold and silver, or for gold alone. Their average dollar value is $5.38 per ton.

Grab samples taken from the 250-foot level with their assay values are listed below:

Sample	Location	Au oz/ton	Value per ton @$35.00/ton	Ag oz/ton	Value per ton @$2.00/oz.	Total value per ton
MBS-11	Edge of diabase dike SW crosscut	.04	$1.40	.26	$.52	$1.92
MBS-21	Fracture in crosscut N. of shaft	.015	.53	.18	.36	.89
MBS-12	Thin calcite-fluorite vein in S. drift off of SW crosscut	.03	1.05	.56	1.12	2.17
MBS-13	Thin vein in N. drift	.055	1.93	.14	.128	2.21
#1*	off of SW crosscut	.01	.35	.90	1.80	2.15
#2		.04	1.40	.76	1.52	2.92
#3		.09	3.15	.80	1.60	4.75
#4		.06	2.10	.92	1.84	3.94
#5		tr	-----	.90	1.80	1.80

*Samples 1 through 5 are grab samples that were taken from the vein in the drift off of the SW crosscut, and in the face of the crosscut, but their individual location descriptions are obscure.

The above gold and silver values from the underground workings are clearly submarginal.

Recommendations and Conclusions

There are no well-developed, continuous vein structures exposed in the Mohave Butte property. Instead the property contains discontinuous gash fractures in andesite, most of them less than 50 feet long and 3 inches thick and carrying submarginal values in gold and silver. An isolated "hot" spot containing a questionable but rough average of 4 ounces of gold was fortuitously encountered in the deep diamond drill hole. A considerable number of other samples from the surface and underground indicate, however, that such gold-bearing streaks cannot be sustained in mineable values and volume in the poorly defined veins. The only merit in the applicant's proposal is to extend the crosscuts to east and west in search of new and larger vein structures. None, however, are evident on the surface except the fault structure that passes east of the shaft, and little fruitful prospecting has been done on it at the surface. From the geologic information available, the targets for exploration are meager and highly uncertain at best, and there is little likelihood of making a significant discovery that would justify the effort and cost involved. It is therefore recommended that the Office of Minerals Exploration deny the application for federal assistance to explore the Mohave Butte property. It is possible, of course, that further prospecting by the Tri-State Gold and Silver Mines Company on the property might uncover a strong vein or information that would justify government participation at some time in the future.

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
10/28/68	Peterson	120
10/28/68	Kirkham	120
		110
10/28	[illegible]	220
		120M

AIRMAIL

Tri-State Gold & Silver Mines, Inc.
P. O. Box 958
Bullhead City, Arizona 86430

Re: OME-6722 (Gold and Silver)
Tri-State Gold & Silver Mines, Inc.
Mohave Butte Claims
Mohave County, Arizona

Gentlemen:

This will acknowledge receipt of your amended project proposal dated October 10, 1968.

After our staff has reviewed this new material and the pending examination report by our field examiner, we will notify you of our decision regarding your proposal.

Sincerely yours,

FRANK E. JOHNSON (gla)

Frank E. Johnson
Chief, Office of
Minerals Exploration

cc: Director's Reading File
Economic Geology File
~~OME~~ Docket
OME Reading File
Region III - Attachment #1 Balance Sheet and
Attachment #4 (4) photographs
retained in Washington Office files
Mr. Peterson

ECPeterson/hsl 10/28/68

Copies of 5 assay certificates + balance sheet forwarded to Washington 9/16/68 - Survey map (attachment 2) retained in Denver.

September 10, 1968

Mr. Jacques F. Robertson
Office of Minerals Exploration
Building 53, Room 203
Federal Center
Denver, Colorado 80225

Re: OME-6722(Gold and Silver)
Tri-State Gold and Silver Mines, Inc.
Mohave Butte Claims
Mohave County, Arizona

Dear Mr. Robertson:

Enclosed for your information are the following:

Attachment #1 Consists of five assays certificates taken from the 250 foot level with notes of each assay indicating the location from where the sample was taken.

Attachment #2 A survey map of the surface veins and underground workings with the additional information on vein #2 which you requested on your visit to the Mohave Butte on August 27, 1968.

Attachment #3 A balance sheet showing Tri-State's capital investment, assets and liabilities.

If there is any additional information you may need, you may contact us at either of the following telephone numbers: (602) 754-8252 or (213) 887-4474.

Very truly yours,

TRI-STATE GOLD & SILVER MINES, INC.

C. A. Buckley, Vice President

CAB/jk

Enclosures

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SEP 19 1968
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Fed ~~110~~
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RECEIVED
SEP 18 1968
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TRI-STATE GOLD & SILVER MINES, INC.

P. O. Box 958

Bullhead City, Arizona 86430

OME-6772
Tri-State Gold & Silver Mines
Mohave Butte
Mohave, Arizona

BALANCE SHEET

25 August 1968

CURRENT ASSETS		
Cash on Hand	$2,277.77	
Notes Receivable	2,000.00	
Prepaid Insurance (1)	820.00	
		$5,097.77
FIXED ASSETS		
Mining Equipment	14,504.18	
Truck	500.00	
Trailer	3,300.00	
Buildings	500.00	
Headframe	1,000.00	
Lumber	1,985.00	
Organization Costs	1,125.44	
Land-Recordings, Survey, & Required Workings	2,500.00	
		$25,414.62
EXPENDITURES (Paid thru 25 August 1968)		
Labor (incl.Fed. Tax)	14,868.09	
Misc. Services & Operating Costs	6,385.49	
Personal Expense	1,601.55	
State Ind. Commission Insurance	1,210.39	
Social Security	411.09	
		$24,476.61
CURRENT LIABILITIES		
None		
CAPITAL		
Stock Outstanding (Total authorized 2500 shares)		
1,000 Shares issued to General Minerals, Inc. (2)		$10,389.00
Tri-State Stockholders (1150 Shares issued)		$44,600.00
	TOTAL	$54,989.00

(1) State Industrial Commission - Arizona

(2) Assets transferred into Tri-State Corp. from General Minerals Corp. including Mining claims plus $11,589.00 in exchange for 1000 shares of Tri-State Stock.

THE EISENHAUER LABORATORIES
316-322 South San Pedro Street
Los Angeles, California 90013

ED. EISENHAUER JR.
C. EISENHAUER RAYMOND
LAWRENCE EARL RAYMOND
All members of American Institute of Mining, Metallurgical, and Petroleum Engineers

ASSAY CERTIFICATE

PHONE 622-9828

Los Angeles, Calif. Aug. 28/68 19

I hereby Certify that the samples described below, received from

Tri-State Gold & Silver Mines, Inc. assay as follows:

Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#1	.01	$ .35	.90	$ 1.80	$ 2.15			
3' FACE IN DRIFT @ STATION								

GOLD @ $ 35 PER OZ.
SILVER @ $ 2.00 PER OZ.
LEAD @ ____ C.
COPPER @ ____ C.

CHARGES ____

C. Eisenhauer Raymond
ASSAYER

Established 1916

ATTACHMENT #1

THE EISENHAUER LABORATORIES
316-322 South San Pedro Street
Los Angeles, California 90013

ASSAY CERTIFICATE

PHONE 622-9828

ED. EISENHAUER JR.
C. EISENHAUER RAYMOND
LAWRENCE EARL RAYMOND
All members of American Institute of Mining, Metallurgical, and Petroleum Engineers

Los Angeles, Calif. Aug. 28/68 19

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Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#2 2' LEDGE AT FACE OF NORTH CROSSCUT	.04	$ 1.40	.76	$ 1.52	$ 2.92			

GOLD @ $ 35 PER OZ.
SILVER @ $ 2.00 PER OZ.
LEAD @ ____ C.
COPPER @ ____ C.

CHARGES ____

C. Eisenhauer Raymond
ASSAYER

Established 1916

ATTACHMENT #1

THE EISENHAUER LABORATORIES
316-322 South San Pedro Street
Los Angeles, California 90013

ASSAY CERTIFICATE

PHONE 622-9828

ED. EISENHAUER JR.
C. EISENHAUER RAYMOND
LAWRENCE EARL RAYMOND
All members of American Institute of Mining, Metallurgical, and Petroleum Engineers

Los Angeles, Calif. Aug. 28/68 19

I hereby Certify that the samples described below, received from

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Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#3 HIFACE IN SOUTH CROSSCUT IN FACE OF NORTH DRIFT	.09	$ 3.15	.80	$ 1.60	$ 4.75			

GOLD @ $35 PER OZ.
SILVER @ $2.00 PER OZ.
LEAD @ ____ C.
COPPER @ ____ C.

CHARGES ____

C. Eisenhauer Raymond
ASSAYER

Established 1916

ATTACHMENT #1

THE EISENHAUER LABORATORIES
316-322 South San Pedro Street
Los Angeles, California 90013

ASSAY CERTIFICATE

PHONE 622-9828

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Los Angeles, Calif. Aug. 28/68 19

I hereby Certify that the samples described below, received from

Tri-State Gold & Silver Mines, Inc. assay as follows:

Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#4 4' FACE SOUTH CROSSCUT (FAULT)	.06	$ 2.10	.92	$ 1.84	$ 3.94			

GOLD @ $35 PER OZ.
SILVER @ $2.00 PER OZ.
LEAD @ ____C.
COPPER @ ____C.

CHARGES ____

C. Eisenhauer Raymond
ASSAYER

Established 1916

ATTACHMENT #2

THE EISENHAUER LABORATORIES
316-322 South San Pedro Street
Los Angeles, California 90013

ASSAY CERTIFICATE

PHONE 622-9828

ED. EISENHAUER JR.
C. EISENHAUER RAYMOND
LAWRENCE EARL RAYMOND
All members of American Institute of Mining, Metallurgical, and Petroleum Engineers

Los Angeles, Calif. Aug. 28/68 19

I hereby Certify that the samples described below, received from Tri-State Gold & Silver Mines, Inc. assay as follows:

Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#5 1811 HANGING WALL STREAK @ FACE OF SOUTH CROSSCUT.	trace		.90	$ 1.80	$ 1.80			

GOLD @ $ 35 PER OZ.
SILVER @ $ 2.00 PER OZ.
LEAD @ ____ C.
COPPER @ ____ C.

CHARGES ____

C. Eisenhauer Raymond
ASSAYER

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ATTACHMENT #2

TRI-STATE GOLD & SILVER MINES, INC.

P. O. Box 958
BULLHEAD CITY, ARIZONA 86430

20 August 1968

OFFICIAL COPY
O. M. E.
RECEIVED
AUG 27 1968

OME Rec
RECEIVED
AUG 22 1968
Denver, Colorado

Mr. Jacques F. Robertson
Office of Minerals Exploration
Building 53, Room 200
Federal Center
Denver, Colorado 80225

RE: 1. OME-6722 (Gold and Silver)
Tri-State Gold & Silver Mines, Inc.
Mohave Butte Claims
Mohave County, Arizona

2. Telecon Robertson - Terrell, Wednesday, 14 August 1968

Dear Mr. Robertson:

Enclosed please find the following information requested by reference 2:

ATTACHMENT #1 - Sketch map showing profile of the main shaft and the largest drift (250 foot) and it's relationship to the 450 foot diamond care drill.

ATTACHMENT #2 - Sketch map showing the underground workings and their relationship to the veins.

ATTACHMENT #3 - Assays and spectographs taken from the 250 foot level with the exact location identified on attachment 2 as the following:

MBS-21
MBS-11
MBS-12
MBS-13

These assays and spectograph reports are being generated at the present time and hopefully will be received prior to mailing this letter on Wednesday, 21 August. However, if not, they will be available during the visit to the mine.

Reservations will be made for you at the Riverside Resort Motel for the evenings of 26 and 27 August. I will confirm same by telephone as soon as possible. Upon arrival please contact myself or C. A. Buckley at the following number:

(602) 754-8252
Grandview Trailer Court
Space #32
Bullhead City, Arizona

Sincerely yours,

TRI-STATE GOLD & SILVER MINES, INC.

R. B. Terrell

R. B. Terrell, President

RBT/jk

Attachments

The EISENHAUER LABORATORIES
316-322 South San Pedro Street
Phone 622-9328 (Code 213) • LOS ANGELES, CALIF. 90013

ED. EISENHAUER, JR.
C. EISENHAUER RAYMOND
LAWRENCE EARL RAYMOND
All members of American Institute of Mining, Metallurgical, and Petroleum Engineers

Established 1916
ASSAYERS
METALLURGISTS
CHEMISTS
ORE TESTING

Aug. 20/68

Cornelius Buckley
Canoga Park, California

Subject: Semiquantitative Spectrographic Analyses of Ores.

Marked:	TS-11	MBS-11 *
Silicon-	major constituent	major constituent
Aluminum-	0.20%	8.0 %
Magnesium-	0.30	10.
Iron-	10.	2.0
Calcium-	1.0	3.0
Sodium-	---	2.0
Potassium-	---	0.90
Lead-	0.01	0.02
Chromium-	0.01	0.013
Arsenic-	0.001	---
Manganese-	0.50	0.20
Gallium-	0.002	0.005
Nickel-	0.001	0.0001
Molybdenum-	0.05	---
Vanadium-	0.001	0.01
Copper-	0.01	0.005
Silver-	0.0001	trace
Titanium-	0.01	1.0
Zirconium-	trace	0.0001
Indium-	0.001	---

Respectfully submitted,

The Eisenhauer Laboratories

Ed. Eisenhauer Jr.

Ed. Eisenhauer, Jr.

* REFERENCE ATTACHMENT 2

THE EISENHAUER LABORATORIES
316-322 South San Pedro Street
Los Angeles, California 90013

ED. EISENHAUER JR.
C. EISENHAUER RAYMOND
LAWRENCE EARL RAYMOND
All members of American Institute of Mining, Metallurgical, and Petroleum Engineers

ASSAY CERTIFICATE

PHONE 622-9828

Los Angeles, Calif. Aug. 20/68 19

I hereby Certify that the samples described below, received from Cornelius Buckley assay as follows:

Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE C	
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD
MB-21	.06	$ 2.10	.20	$ .40	$ 2.50		
MB-41	.02	$ .70	.26	$ .52	$ 1.22		
TSO 1	.035	$ 1.23	.14	$ .28	$ 1.51		
MB5-1	.03	$ 1.05	.29	$ .58	$ 1.63		
MBS-11 *	.04	$ 1.40	.26	$ .52	$ 1.92		
TS-11	.03	$ 1.05	.20	$ .40	$ 1.45		
MBS-13 *	.055	$ 1.93	.14	$ .28	$ 2.21		
MBS-12 *	.03	$ 1.05	.56	$ 1.12	$ 2.17		
MBS-21 *	.015	$ .53	.18	$ .36	$ .89		

GOLD @ $ 35 PER OZ.
SILVER @ $ 2.00 PER OZ.
LEAD @ ____ C.
COPPER @ ____ C.

CHARGES ____

C. Eisenhauer Raymond
ASSAYER

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* REFERENCE ATTACHMENT 2

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
7/3/68	Peterson	120
7/3/68	Anderson	120
		110
7/3	[illegible]	220
		120M

AIRMAIL

JUL 3 1968

Tri-State Gold & Silver Mines, Inc.
P. O. Box 958
Bullhead City, Arizona 86430

Re: OME-6722 (Gold & Silver)
Tri-State Gold & Silver Mines, Inc.
Mohave Butte Claims
Mohave County, Arizona

Gentlemen:

Thank you for your letter of June 28 enclosing additional information in support of the subject application for financial assistance.

We are now referring the application for further consideration to Mr. J. William Hasler, Field Officer, Region III, Office of Minerals Exploration, Room 203, Building 53, Denver Federal Center, Denver, Colorado 80225.

Mr. Hasler will notify you if additional information concerning the application is needed, and possibly to make arrangements for a field examination.

Sincerely yours,

FRANK E. JOHNSON

Frank E. Johnson
Chief, Office of
Minerals Exploration

cc: Director's Reading File
Economic Geology File
OME Docket
OME Reading File
Region III
Mr. Peterson
130

ECPeterson/bsl 7/3/68

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
7/3/68	Peterson	120
7/9/68	Kirkemo	120
		110
		220
		120M

AIRMAIL

Memorandum

JUL 3 1968

To: Field Officer, Region III

From: Chief, Office of Minerals Exploration

Subject: OME-6722 (Gold and Silver)
Tri-State Gold and Silver Mines, Inc.
Mohave Butte Claims
Mohave County, Arizona

The subject application is referred to you for further consideration, a field examination if warranted, and recommendations.

Based on the information furnished by the Applicant, indications are that the potential of the property does not justify the cost of the proposed $91,500.00 project. Therefore, if a contract is recommended we suggest that a less ambitious program be considered where project costs would be comparable to the value of the potential deposit. Perhaps some underground drilling from sites on the third level in addition to the proposed drifting on this level would suffice.

In view of the limited funds presently available for OME contracts, it seems that Government assistance should be limited only to actual exploration and exclude the preliminary work of shaft sinking, driving lengthy crosscuts, etc. Such work should be done at an Applicant's own expense, or at the most, OME assistance limited to 25 percent of these costs.

If a contract is contemplated, the Applicant should be requested to clarify what interest the General Minerals, Inc., has in the Tri-State Gold and Silver Mines, Inc.

FRANK E. JOHNSON

Frank E. Johnson

cc: Director's Reading File
Economic Geology File
OME Docket
OME Reading File
Region III
Mr. Peterson 130

ECPeterson/bsl 7/3/68

TRI-STATE GOLD & SILVER MINES, INC.

P. O. Box 958
BULLHEAD CITY, ARIZONA 86430

OFFICIAL COPY
O. M. E.
RECEIVED
JUL 2 1968

OME Region III
RECEIVED
JUL 1 - 1968
Denver, Colorado

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120
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28 June 1968

Mr. Frank E. Johnson
Chief, Office of Minerals Exploration
Denver Federal Ctr. Bldg. 53 Room 203
Denver, Colorado 80225

RE: OME-6722 (Gold and Silver)

Dear Mr. Johnson:

Reference is made to your letter of May 8, 1968. You stated that several discrepancies existed in Tri-State's application for exploration assistance. Listed below are, we trust, satisfactory explanations to the questions you raised.

Assay Samples, Geologic Maps, Projection or Sections

Enclosed are eight assay samples taken from the cuts indicated on sheet (2). The average depth of a cut is three feet with an average cross sectional area of fourteen square feet. The samples chosen for an assay were selected randomly throughout a cut. Geologic maps and projections of the Mohave Butte are enclosed for your study.

Target Vein Geology

The host rock of the Mohave Butte area is andesite. The target vein has a strike of N 72°W, a dip of 70°N and a width varying from 20 ft. to 50 ft. in the surface outcroppings traceable for 2000 feet. Along the length of the target vein numerous faults exist with little or no displacement. The target vein consists of altered andesite, quartz siderite, calcite, fluorite, hematite, manganese, adularia, kaolin, gold and silver. Where the vein has been cut by a fault relatively heavy concentrations of fluorite exist.

It must be pointed out that both veins on the Mohave Butte claim present a strikingly similar pattern, both in strike and gangue composition to the major producing veins of the Tom Read, Eastern and Gold Roads mines. The combined output of gold from these mines was 1,740,000 troy ounces. These mines are located ten miles to the south of the Mohave Butte.

Comments on Diamond Drilling vs. Underground Workings

Tri-State feels that diamond drill holes and underground workings can be both competitive and/or complimentary modes of exploration. Extensive drilling operations coupled with drilling delays, poor core recovery and indecisive results may not guarantee us whether underground workings are feasible or not. Diamond drilling on the Mohave Butte is quite expensive due to the hardness of the rock. Tri-State does not wish to find itself in the

position of moving on to further exploration underground after an initial heavy investment in surface drilling. The only sure way of determining the feasibility of a profitable mining operation is via underground exploration.

I would also like to add that on enclosed sheet (1) the proposed explorations indicated do not agree with those stated in the original OME application. The drift into the andesite dyke on the 300 foot level and the drift into the secondary vein on the 500 foot level are proposed work efforts if the exploration work proves successful.

Thank you for your interest in and consideration of Tri-State's application.

Very truly yours,

Cornelius A. Buckley

Cornelius A. Buckley
Vice President
Tri-State Gold and Silver Mines, Inc.

CAB:ab

THE EISENHAUER LABORATORIES
316-322 South San Pedro Street
Los Angeles, California 90013

ED. EISENHAUER JR.
C. EISENHAUER RAYMOND
LAWRENCE EARL RAYMOND
All members of American Institute of Mining, Metallurgical, and Petroleum Engineers

ASSAY CERTIFICATE

PHONE 622-9828

Los Angeles, Calif. June 14/68 19

I hereby Certify that the samples described below, received from

Tri-State Mining Co. assay as follows:

Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#1	.05	$ 1.75	.26	$ .65	$ 2.40			

GOLD @ $____ PER OZ.
SILVER @ $ 35 PER OZ.
LEAD @ 2.50 C.
COPPER @ ____ C.

CHARGES _____

Ed. Eisenhauer
ASSAYER

Established 1916

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	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#2	.06	$ 2.10	.46	$ 1.15	$ 3.25			

GOLD @ $ PER OZ.
SILVER @ $ 35 250 PER OZ.
LEAD @ C.
COPPER @ C.

CHARGES

Ed. Eisenhauer
ASSAYER

Established 1916

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Los Angeles, Calif. June 14/68 19

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Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#3	.07	$ 2.45	1.24	$ 3.10	$ 5.55			

GOLD @ $35 PER OZ.
SILVER @ $2.50 PER OZ.
LEAD @ ____C.
COPPER @ ____C.

CHARGES ____

Ed. Eisenhauer Jr.
ASSAYER

Established 1916

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Los Angeles, California 90013

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C. EISENHAUER RAYMOND
LAWRENCE EARL RAYMOND
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ASSAY CERTIFICATE

PHONE 622-9328

Los Angeles, Calif. June 14/68 19

I hereby Certify that the samples described below, received from

Tri-State Mining Co. assay as follows:

Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#4	.30	$ 10.50	.70	$ 1.75	$ 12.25			

GOLD @ $ 35 PER OZ.
SILVER @ $ 2.50 PER OZ.
LEAD @ ____ C.
COPPER @ ____ C.

CHARGES ____

Ed. Eisenhauer
ASSAYER

Established 1916

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Los Angeles, California 90013

ED. EISENHAUER JR.
C. EISENHAUER RAYMOND
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PHONE 622-9828

Los Angeles, Calif. June 14/68 19

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Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#5	.16	$ 5.60	.88	$ 2.20	$ 7.80			

GOLD @ $35 PER OZ.
SILVER @ $2.50 PER OZ.
LEAD @ ____C.
COPPER @ ____C.

CHARGES ____

E. L. Eisenhauer Jr.
ASSAYER

Established 1916

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ASSAY CERTIFICATE

PHONE 622-9328

Los Angeles, Calif. June 14/68 19

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Tri-State Mining Co. assay as follows:

Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#6	.09	$ 3.15	.32	$ .80	$ 3.95			

GOLD @ $35 PER OZ.
SILVER @ $2.50 PER OZ.
LEAD @ ____ C.
COPPER @ ____ C.

CHARGES ____

Ed. Eisenhauer Jr.
ASSAYER

Established 1916

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PHONE 622-9828

Los Angeles, Calif. June 14/68 19

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Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#7	.08	$ 2.80	.35	$ .88	$ 3.68			

GOLD @ $ 35 PER OZ.
SILVER @ $ 2.50 PER OZ.
LEAD @ ____ C.
COPPER @ ____ C.

CHARGES ____

Ed. Eisenhauer Jr.
ASSAYER

Established 1916

THE EISENHAUER LABORATORIES
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Los Angeles, California 90013

ED. EISENHAUER JR.
C. EISENHAUER RAYMOND
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All members of American Institute of Mining, Metallurgical, and Petroleum Engineers

ASSAY CERTIFICATE

PHONE 622-9828

Los Angeles, Calif. June 14/68 19____

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Tri-State Mining Co. assay as follows:

Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
#8	.10	$ 3.50	.28	$ .70	$ 4.20			

GOLD @ $35 PER OZ.
SILVER @ $2.50 PER OZ.
LEAD @ ____C.
COPPER @ ____C.

CHARGES ____

Ed. Eisenhauer Jr.
ASSAYER

Established 1916

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
5/8/68	Peterson	120
5/8/68	Kiberson	120
		110
		220
		120M

AIRMAIL

Tri-State Gold & Silver Mines, Inc.
P. O. Box 958
Bullhead City, Arizona 86430

Re: OME-6722 (Gold & Silver)
Tri-State Gold & Silver Mines, Inc.
Mohave Butte Claims
Mohave County, Arizona

Gentlemen:

Our review of your application for exploration assistance indicates that the geological evidence furnished is too generalized for us to properly evaluate the proposed program. Consequently, additional information is needed before we can continue its processing.

The data required includes assays of samples taken from mineralized showings of the vein to be explored, geologic maps, projections or sections, and a description of the structures, formations, and mineral occurrences of the project area. The strike, dip, width, and known length of the target vein should also be furnished. The sample information should include the location of samples taken, how sampled, sample widths, and copies of the assay certificates. The geologic reports submitted refer to the generalities of the district and not to the specific area to be explored, and therefore, add little support to your proposal.

Please comment on the feasibility of other, less costly, exploration such as diamond drilling from surface sites in lieu of the proposed work. It seems that several well planned holes would adequately explore the vein at considerable less cost and time.

This request for additional information should not be construed as a commitment by the Government to grant an exploration contract. We shall continue to hold the application until the data are received.

Sincerely yours,

FRANK E. JOHNSON

Frank E. Johnson
Chief, Office of
Minerals Exploration

cc: Director's Reading File
Division File
Economic Geology File
OME DOcket - OME Reading File - Region III - Mr. Peterson

ECPeterson/bsl 5/8/68

May 6, 1968

Tri-State Gold & Silver Mines, Inc.
P. O. Box 958
Bullhead City, Arizona 86430

Subject: OME-6722

Gentlemen:

Your application for exploration assistance, dated April 15, 1968, submitted to our office at Denver, Colorado, has been assigned Docket No. OME-6722.

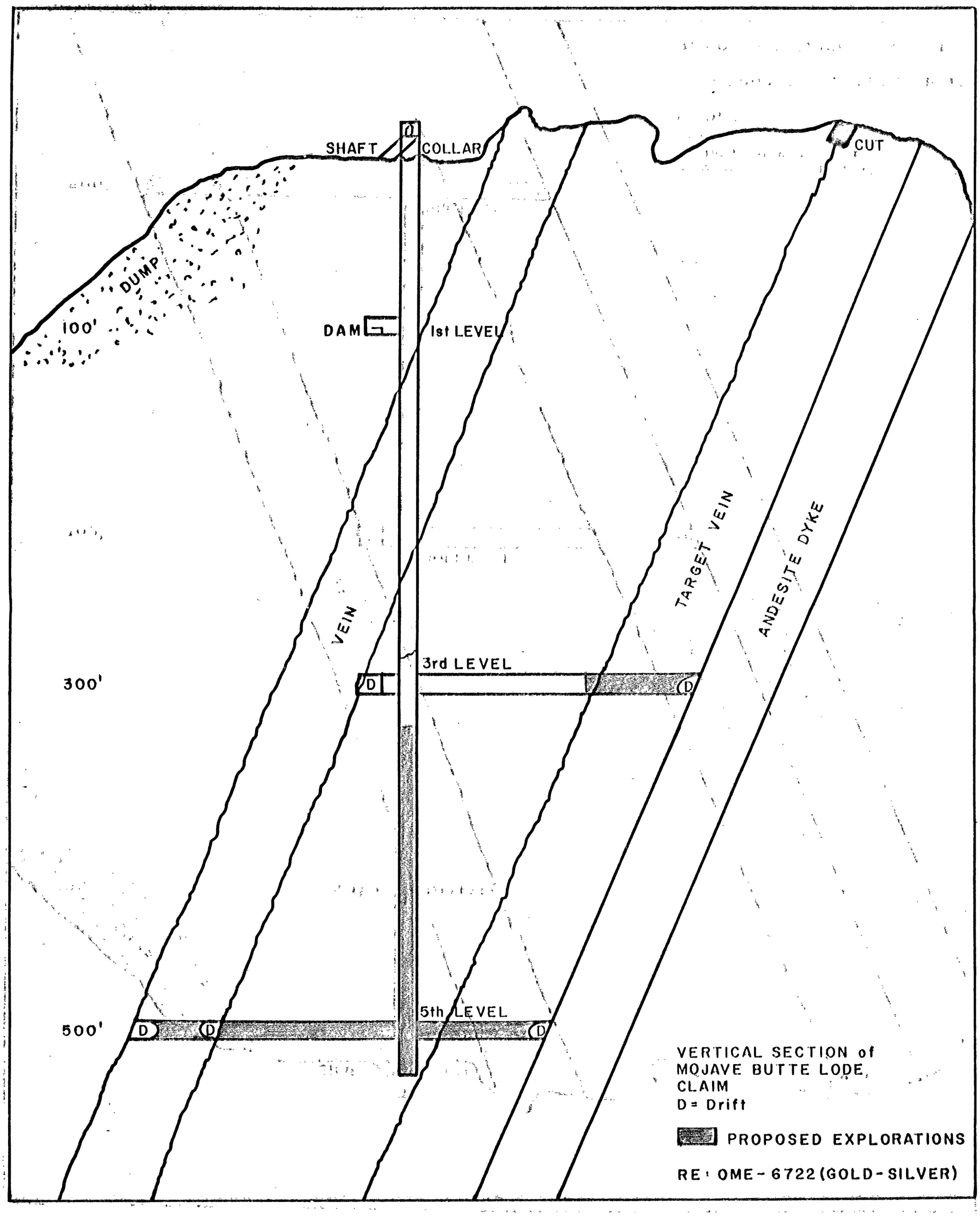
Please identify all future correspondence relating to your application by this docket number.

Sincerely yours,

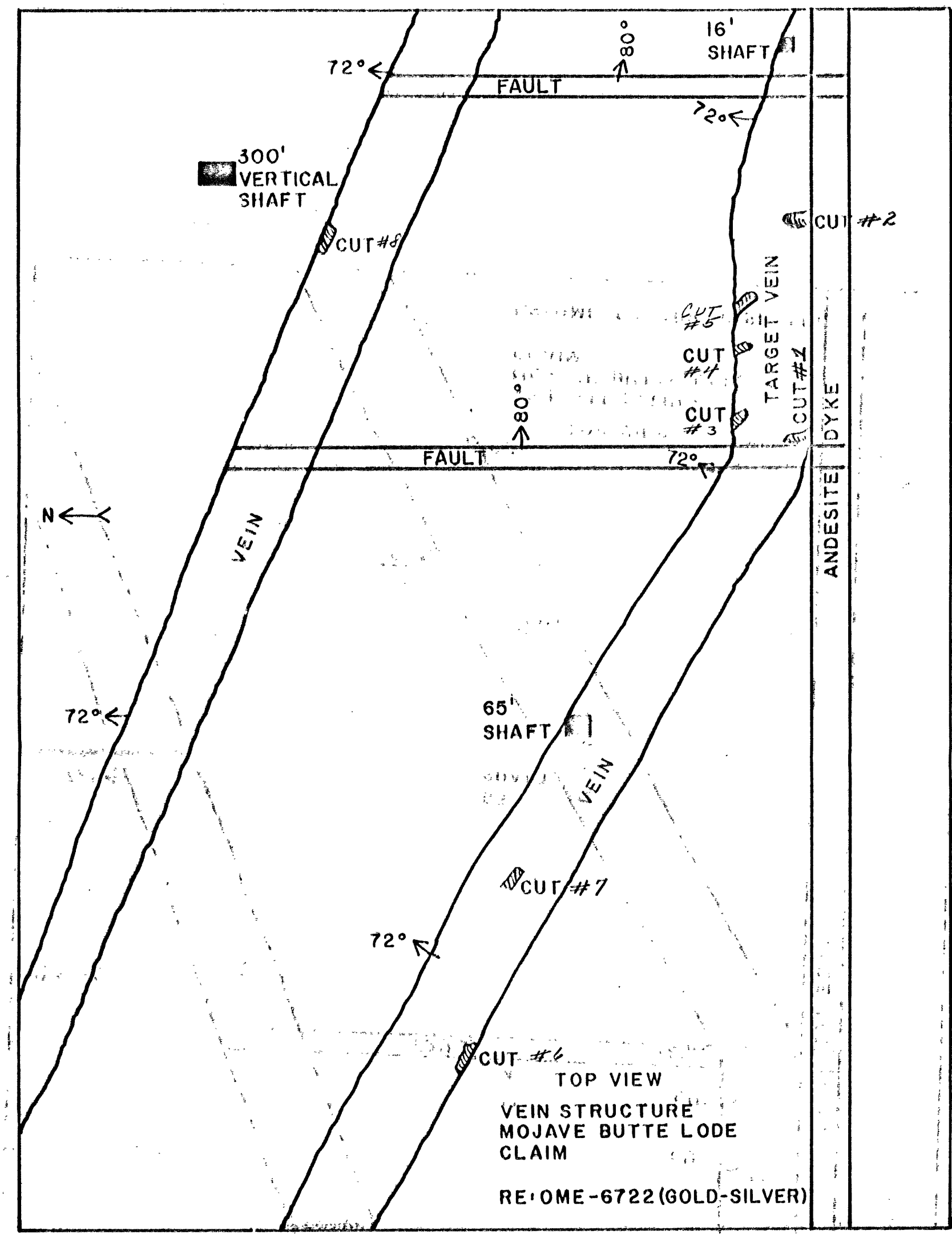
Frank E. Johnson
Chief, Office of
Minerals Exploration

Copy to Region III

ATTACHMENT #4


SHAFT
COLLAR
CUT
DUMP
100'
DAM
1st LEVEL
VEIN
TARGET VEIN
ANDESITE DYKE
3rd LEVEL
300'
D
D
5th LEVEL
500'
D
D
D
VERTICAL SECTION of
MOJAVE BUTTE LODE
CLAIM
D= Drift
PROPOSED EXPLORATIONS
RE: OME-6722 (GOLD-SILVER)

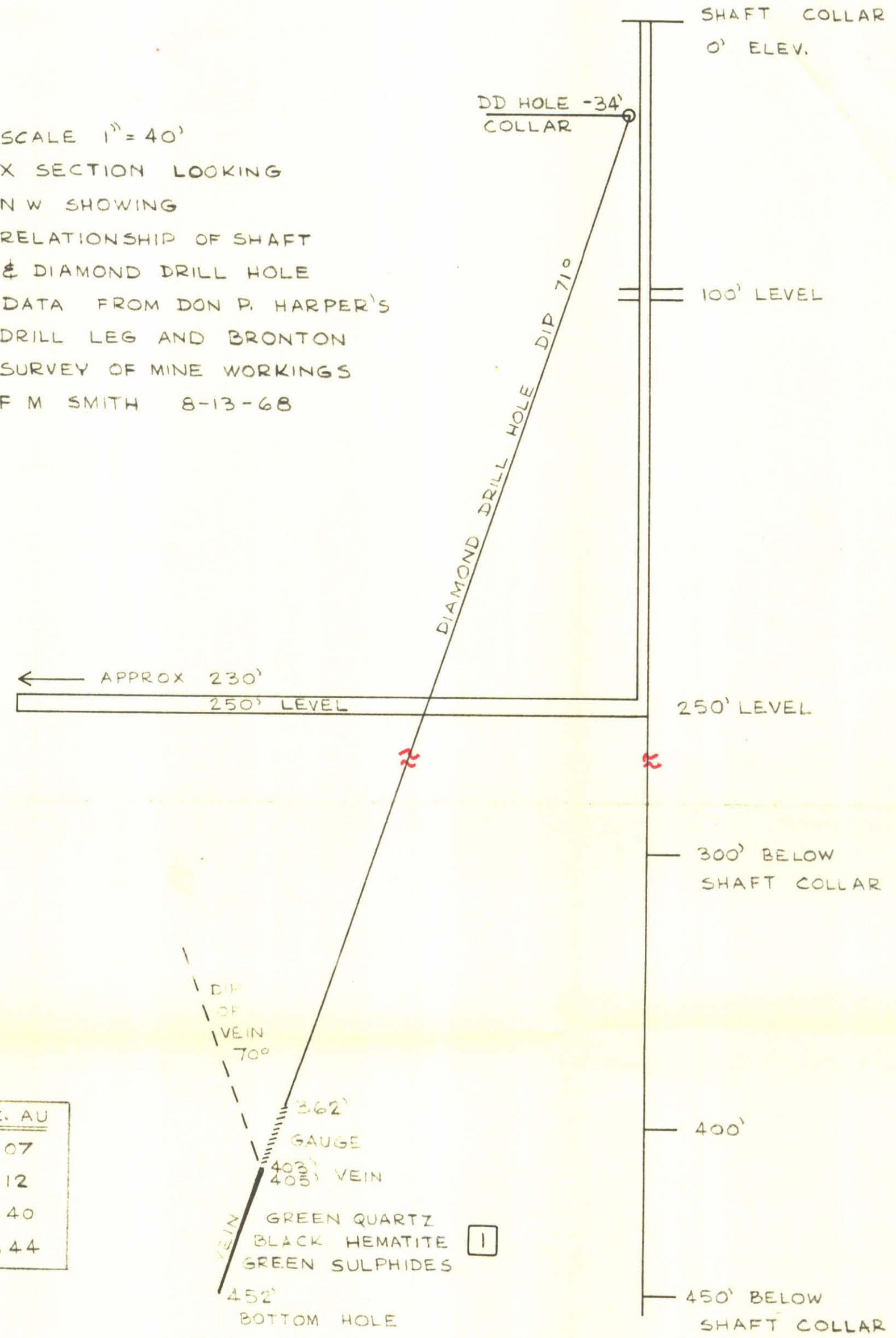
SHEET 1


16'
SHAFT
80°
72°
FAULT
72°
300'
VERTICAL
SHAFT
CUT #8
CUT #2
TARGET VEIN
CUT #5
CUT #4
CUT #3
CUT #1
80°
FAULT
72°
DYKE
ANDESITE
N
VEIN
72°
65'
SHAFT
VEIN
CUT #7
72°
CUT #6
TOP VIEW
VEIN STRUCTURE
MOJAVE BUTTE LODE
CLAIM
RE: OME-6722 (GOLD-SILVER)

SHEET 2

ATTACHMENT #~~1~~ 3

SCALE 1" = 40'
X SECTION LOOKING
N W SHOWING
RELATIONSHIP OF SHAFT
& DIAMOND DRILL HOLE
DATA FROM DON P. HARPER'S
DRILL LEG AND BRONTON
SURVEY OF MINE WORKINGS
F M SMITH 8-13-68



1

	OZ. AU
SAMPLE # 3	.07
SAMPLE # 4	4.12
SAMPLE # 5	9.40
SAMPLE # 6	2.44

NOTE: SAMPLES # 3 THRU # 6 WERE SUBMITTED WITH THE O.M.E. APPLICATION – (OME - 6722)

(SHEET 1)