DMEA Form 9
Rev. 6/57

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration

OFFICIAL DOCKET FILE Idm-E NO._____ DMEA NO. 4873

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- [ ] Withdrawn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: 50%

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
- [XX] 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 Semi-Annual 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)
- [ ] Settlement Sheets
- [ ] Drill Logs

Additional Folders:

Left Side

Folders No._____: Reports
- [ ] Analysis of Semi-Annual Inspection Reports
- [ ] Project Summary (Interim) by DMEA Engineers

Right Side

- [ ] Field Team Semi-Annual Report for Certified Project
- [ ] Field Team Interim Reports
- [ ] Operator's Monthly Reports with transmittal, narrative and maps.

Folders No. 2 : Maps (Use pocket folder or envelope)

Folders No._____: Settlement Sheets

Folders No._____: Drill Logs

Folders No._____: Royalty material

17963

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

224 New Customhouse
Denver 2, Colorado

November 12, 1957

OFFICE
DMEA
RECEIVED NOV 14 1957
DATE CODE

Memorandum

To: Secretary to the Operating Committee, DMEA

From: DMEA Field Team, Region III

Subject: Application for DMEA Aid, (Copper) Arapahoe Mining & Uranium Corporation (Malachite Mine) Jefferson County, Colorado

Enclosed are the following:

1. Original and two copies of the application for DMEA Aid.
2. A copy of a thesis on the geology of the Malachite Mine by George E. Morehouse.
3. A copy of a paper on Geophysical Surveys at the Malachite Mine by C. A. Heiland, R. M. Tripp, and Dart Wantland.

One copy of each of the above is retained in our file.

The applicant requests a three-stage program as follows:

Stage I to consist of a magnetic survey with 1,300 Magnetometer readings. This would require 30 days' work in the field and 30 office days at a total estimated cost of $3,650.

Stage II to consist of self-potential and geochemical work. This would require from 5 to 15 laboratory and field days and from 5 to 10 office days at an estimated cost of $2,350.

Stage III to consist of diamond drilling 8 holes at an estimated cost of $23,044. Only 1 drilling bid accompanied the application.

The application does not show the location of the 8 holes drilled by the American Smelting and Refining Company or the results of their 2,704 feet of drilling.

On page 9 it is stated, "Geochemical surveys carried out by the United States Geological Survey and others on the Malachite property have successfully outlined the ore zones and have given information as to the expected mineralization."

Geochemical surveys for the property will probably be available from U.S.G.S.

A considerable amount of geological, geophysical, and geochemical work has already been done on the property and we wonder if we are not being asked to duplicate work already done. A complete record of all previous work is essential.

E. N. Harshman

E. N. Harshman
Acting Executive Officer

Form MF-103
Revised Feb. 1957

UNITED STATES
DEPARTMENT OF THE INTERIOR

Budget Bureau No. 42-R1035.3
Approval expires June 30, 1958

DEFENSE MINERALS EXPLORATION ADMINISTRATION

APPLICATION FOR AID IN AN EXPLORATION PROJECT

PURSUANT TO DMEA ORDER I, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

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

Arapahoe Mining & Uranium Corporation
309 First National Bank Building,
Englewood, Colorado

DMEA
DEPARTMENT OF THE INTERIOR
NOV 8 - 1957
REGION III
DENVER, COLORADO

APPLICANT NOT TO USE THIS BLOCK

Docket Number: DMEA-4873
Date Received: 11/14/57
Government Participation %:
Region: III
Division Code: 500

BUSINESS ORGANIZATION (Check one)

- Individual [ ]
- Corporation [X]
- Partnership [ ]
- Other (Specify) [ ]

State in which firm is organized: Colorado

LIST CORPORATE OFFICERS OR PARTNERS HERE, IF APPLICABLE

Name	Address	Title
Ralph M. Stuck	1027 E. Amherst Ave., Englewood	President
C. J. Gillaspey	2850 No. Ave., Grand Junction	Vice-Pres
Frank W. Renwick	P.O. Box 776, Colorado Springs	Treasurer
Susie Smith Hall	179 So. Newton St., Denver	Secretary

Mineral(s) for which you wish to explore: Copper

Estimated Cost of Project: $ 31,644.00

LOCATION OF PROPERTY

Name	County	State
Malachite	Jefferson,	Colorado

GENERAL INSTRUCTIONS

Before filling out this application, please read DMEA Order-I, Amended, "Government Aid in Defense Exploration Projects." 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 four 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 1, existing mine workings and geology in item 2, and the proposed exploration project in item 4. 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 2(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 Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest DMEA 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.

November 1, 1957
Dated

Ralph M. Stuck
BY (Signature)

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. *Applicant's Property Rights:*

(a) 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 land adjacent to the proposed project area which you own or control. Describe any part of the project land or workings which should not be subject to Government lien for royalty payments. If the land consists of unpatented claims, state the book and page number for each recorded location notice, including amended locations, and the place where recorded (courthouse, recorder's office, county, and state).

(b) State all the names by which you know the property.

(c) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise. If you are not the owner, submit with this application one exact copy of the lease, contract, or other document (with address of owner) under which you control the property.

(d) Describe all liens, mortgages, or other encumbrances on the property.

2. *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 lands, including existing mine workings. Describe all production facilities.

(b) State your interest, if any, in operations stated in 2*(a)*.

(c) State, as far as 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 on the property giving quantities and grades and sampling methods used, supporting 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 may have, indicating on each whether you require its return to you.

3. *Accessibility of Project:*

(a) To aid DMEA representatives who may be required to examine the property, state the name and address of the person who will meet the DMEA representative; give directions for reaching the property; and describe accessibility of the property including the mine workings.

(b) Name the shipping and supply points and places where employees reside and state the distances between them and the property.

4. *The Exploration Project:*

(a) Describe fully the proposed exploration project giving individual footages and sizes of openings *for each item of work*. Use narrative, maps, plans, and longitudinal and cross sections as necessary. Show the 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 *property boundaries* or to the closest identifiable corner.

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

(c) In the event that an exploration contract with DMEA is executed, how soon will the work start and how many months will be required to complete it? State your anticipated average daily or monthly rate of progress for each type of work.

5. *Experience:*

State your operating experience and background with relation to your ability to carry out this exploration project, and also that of the person or persons who will supervise the operations.

6. *Estimate of Costs:*

Furnish detailed estimates of the costs *for each item of the work proposed in 4(a)* under the headings listed below with a total for each heading and the estimated total cost of the project. Costs for any work to be performed by an independent contractor should be shown separately under category *(a)* below. Costs for any work that is not to be performed by an independent contractor should be given in detail under categories *(b)* through *(g)*.

(a) Independent contracts. State the cost of any proposed independent contract for the performance of all or any part of the work, expressed in units of work, such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, 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. For necessary supervision, engineering and geological services, and labor, include an itemized schedule of numbers, classes, rates of wages, salaries or fees, and periods of employment. State whether these technicians and employees are available.

(c) Operating materials and supplies. List items of material and supplies with their cost. 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 operating equipment to be used giving specifications and indicating how each item is to be acquired – i.e., rented, purchased, or provided by the applicant. If it is rented or purchased, state the estimated rental or purchase price. If it is to be furnished by the applicant, give its present fair market value.

(e) Initial rehabilitation and repairs. Describe the type and the cost of necessary *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 on the exploration project.

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

(g) Miscellaneous. For the operating equipment listed in 6*(d)*, describe the type and estimate the cost of repairs and maintenance expected during project operations. Do not repeat initial repairs listed in 6*(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 – No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

7. *(a)* State whether you are prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation stated in Sec. 7 of DMEA Order–I, Amended.

(b) Explain to what extent you propose to furnish your share of the costs by providing money, by use of equipment owned by you, or otherwise.

* * * * *

INT.–DUP., SEC., WASH., D.C. 15539

OFFICIAL FILE COPY
DMEA
RECEIVED NOV 14 1957

DATE	INITIALS	CODE

APPLICATION FOR AID IN AN EXPLORATION PROJECT

Pursuant to DMEA Order 1, under the defense production act of 1950, as amended.

1 (a) The exploration project shall be carried out on the following described property:

The Malachite and Morrison Lodes with all dips, spurs, and angles, situated in the South Half (S½) of the Southwest Quarter (SW¼) and the Southwest Quarter of the Southeast Quarter (SW¼ SE¼), except tract described in deeds recorded in books 105 and 137, at pages 295, respectively, of Section 19; the Northwest Quarter of the Northwest Quarter (NW¼ NW¼), and the South Half of the Northwest Quarter (S½ NW¼) and the Southwest Quarter (SW¼) of Section 29; the North Half (N½), and the North Half of the Southwest Quarter (N½ SW¼), and tract in the Southwest Quarter of the Southeast Quarter (SW¼ SE¼) of section 30 described as follows: Beginning at the Southwest corner of the Southeast Quarter (SE¼) of said section and running thence North 87 18 ' East along South B oundary of said Section 752 feet; thence North 0 .02' East 579.25 feet; thence South 87 18' West 752 feet; thence South 0 .02' West 579.25 feet to place of beginning; also right-of-way 20 feet wide across any part of West Half of Southeast Quarter (W½ SE¼) Section 30; all in Township Four (4) South, Range Seventy (70) West; except portion being condemned for Bear Creek Road.

On March 26, 1866, there was recorded in the Jefferson County courthouse filings on two claims; the Malachite Claim and the Morrison Claim (Book E page 429). The claims have been patented and more land has been acquired bounding these claims and included in this property.

1 (a) continued

Arapahoe Mining and Uranium Corporation hold a mining lease on the North Half of the North Half ($N\frac{1}{2}$ $N\frac{1}{2}$) of Section 25 in Township Four (4) South, Range Seventy One (71) West, 6th PM.

1 (b) The property is known only as the Malachite Mine or Malachite Property.

1 (c) The Arapahoe Mining and Uranium Corporation is the lessee of the above described property. A photostatic copy of this lease, and modification, accompanies this proposal as appendix A and appendix B respectively.

1 (d) There are no known liens, mortgages or other encumbrances on this property.

2 (a) Plates II and III show the property and the underground mine workings. In 1941 and 1942, the American Smelting and Refining Company diamond drilled the property, drilling a total of 2704 feet in eight holes. This drilling outlined ore as reported in 2 (d) below.

Present operations are being carried out by open cut mining. All mining and equipment is on a contract basis, however, Arapahoe Mining and Uranium Corporation have built a camp and have improved and maintain the road.

Contract equipment presently in use:

1 - TD 24 Bulldozer

3 - front end loaders

2 - 10 yard tandam axle dump trucks

3 - 6 yard single axle dump trucks

1 - 350 IR compressor

2 - wagon drills

1 - RD 6 bulldozer

1 - diesel power plant

2 (b) Only the work carried out in 1957 was done by and for Arapahoe Mining and Uranium Corporation.

2 (c) The exact figures of the early production are unknown. However, a 1908 report states that the estimated total value of production to that time was $35,000.

From September 1940 to March 1941, ore shipped from the Malachite Mine (Lower East Tunnel) totaled 6388 tons. This yielded 244 ounces of gold, 3108 ounces of silver and 306,000 pounds of copper at a total value of $44,000.

2 (c) continued

In 1946, R. G. Moore of Idaho Springs, Colorado leased the property. Between August 1946 and October 1947, shipments from the mine totalled about 5274 tons,-- most of which came from the Lower East Tunnel. No grade or dollar values are known for this production.

In 1957, the first three shipments produced 150 tons,-- averaging 3.5% copper. These shipments were run-of-mine from open cut operations.

A purchase schedule was negotiated on August 13, 1937, allowing Arapahoe Mining and Uranium Corporation to ship to American Smelting and Refining Company's smelter at Garfield, Utah.

2 (d)

In 1941, The American Smelting and Refining Company obtained the property. By spring of 1942, this company had completed eight diamond-drill holes with a total of 2704 feet,-- outlining the existence of about 34,000 tons of ore assaying 0.05 ounces of gold, 0.90 ounces of silver, and 3.5% copper. These estimates were made and reported by American Smelting and Refining Company employees. It must be remembered that production of mineral has taken place since this estimate was made.

2 (e)

Plate III is a map showing the underground working and the geology.

The Malachite mine is in an amphibolite belt enclosed in gneisses and schists of the Idaho Springs formation. The highly contorted beds are nearly vertical and strike slightly north of west. A series of granite-pegmatite dikes have been intruded almost at right angles into the gneisses and schists and doubtless

2 (e) continued

are post-mineral. While most of the formations are exposed at the surface, a part of the slope is covered by slide rock and float and, in places, by alluvium and creek fill.

The mineralization is found in a shear zone which cuts through the schists at a small angle with nearly vertical dip. This elongate shear zone has indefinite walls and ore bodies of from 10 to 35 feet have been mined. Diamond drilling has indicated a depth of mineralization of over 300 feet.

The ore lenses have been oxidized near the surface, giving mostly malachite and azurite minerals. The primary sulphides, which occur at greater depth, are massive and consist, in the West body, of coarsely crystalline chalcopyrite, pyrrhotite, sphalerite, bornite, pyrite and chalcocite. In the Lower East Tunnel the ore is similar except that bornite and sphalerite are absent, and cuprite, malachite and azurite are present. It is possible that the eastern ore body is of somewhat different origin from that of the western ore. The gangue minerals are chiefly quartz, andesine, biotite and hornblende. Minor amounts of magnetite are associated with the ore.

The outcrop of the mineralized zone is sometimes determined by observing a gosson. One other small gosson outcrop was observed on the property by Mr. G. E. Morehouse, a geologist who recommended further examination of this zone. No examination has been carried out in this area but it is covered in this proposal.

2 (g)

An unpublished thesis "Geology of the Malachite Mine, Jefferson County, Colorado" by G. E. Morehouse is on file at the Library of the Colorado School of Mines, Golden, Colorado. This thesis contains a bibliography of reports covering the Malachite

2 (g) continued

Mine,--the most important being: Heiland, C. A. et al, "Geophysical Surveys of Malachite Mine, Jefferson County, Colorado", American Institute of Mining and Metallurgical Engineers. Transactions vol. 164, 1945.

Included with this proposal are two copies of Mr. G. E. Morehouse's thesis. It is requested that these copies be returned to Arapahoe Mining and Uranium Corporation.

3 (a)

The DMEA representative will be conducted to the property by Mr. D. F. Coolbaugh, Jones Road, Golden, Colorado. The location of and directions to the property are shown in Plate I. The roads are easily traversed by automobile.

The west ore body workings are open but in poor repair. The east ore body workings were destroyed by open pit work.

3 (b)

An ore loading dock has been constructed in Golden, Colorado on the Colorado and Southern Railroad. Supply points are Golden, Colorado and Denver, Colorado which are $9\frac{1}{4}$ and 22 road miles, respectively, from the Malachite property.

No permanent living quarters have been constructed on the property; however, adequate housing can be found within a ten mile radius.

4. THE EXPLORATION PROJECT

From DMEA Order-1 Amended under Explanatory Provisions, Section 2, Definitions a) "Exploration project" means the search for indicated or underdeveloped sources of strategic or critical metals or minerals-- whether conducted from the surface or underground, including recognized and sound procedures for obtaining pertinent geological, geophysical and geochemical information.

a) In line with the above definition the proposed exploration is divided into the following three stages:

1) Magnetic survey

2) Geochemical- Self-potential survey

3) Diamond drilling

A history of recent developments at the Malachite Mine is necessary to present the above program.

In 1937 a magnetic survey was made of the old (West) mine workings area and the known ore body and mineralized zone was outlined. In 1938, students of the Colorado School of Mines continued the magnetic survey and also conducted a self-potential survey. The anomalies continued to the east into the unknown and unworked area and the surveys were extended in this direction. The owners became interested in the eastern anomalies and drove a crosscut to explore the best anomaly, where there was agreement between the magnetic and self-potential anomalies. A massive sulphide ore body was encountered in this the Lower East Tunnel.

An earlier small drift adit was driven slightly north and a little above this new ore mass and failed to encounter significant ore. This drift was not based on geophysical findings.

4 (a) continued

The high magnetic susceptability of the pyrrhotite and magnetite in the mineralized zone produced magnetic anomalies. These anomalies have shown discontinuous high zones suggesting the lenticular nature of the ore.

The magnetic properties of the respective formations of the country rock are very similar, making a survey of this type rather easy to interpret.

The ore bodies to be expected are heavy sulphide, tabular bodies with their upper extremities oxidizing. This phenomenon gives rise to self-potentials that can be measured. An anomalous self-potential area can indicate a sulphide body.

Both the magnetic and self-potential methods are capable of locating a mineralized body but can not discriminate as to type of mineral. Geochemical surveys carried out by the United States Geological Survey and others on the Malachite property have successfully outlined the ore zones and have given information as to the expected mineralization.

Plate II shows the lines along which Magnetic readings are proposed. The magnetometer stations would be 50 feet apart along these north-south lines. A spacing greater than 50 feet would not be warranted as buried structures parallel to the known structure could be missed. Magnetometer readings to detail any area on the property are accounted for in this proposal. Plate IV is a map showing the vertical magnetic intensity on the area that has been surveyed magnetically.

The self-potential and geochemical readings would be taken only in areas that gave anomalous magnetic readings.

Drilling of the anomalous areas would be undertaken

4 (a) continued

in the last stage to check the results of the geophysical survey if heavy mineralization is believed to be present.

Stage I, consisting of 1300 magnetometer readings, would require 30 field days of work and 30 office days for computations and interpretation. The work could be started 60 days after granting of a DMEA contract; however, in some of the winter months snows might slow the field work considerably. Five days of surveying would be required to lay out the lines and stations for the field work.

Stage II, consisting of self-potential and geochemical work, would require from 5 to 15 laboratory and field days and from 5 to 10 office days.

Stage III If the results of Stage I and II indicate anomalous areas, these zones should be diamond drilled. A maximum of 8 holes is proposed. It must be realized that drilling should only be undertaken if the geophysical work indicates such a course. The maximum depth of each hole would be 500 feet.

Since Stage II depends on Stage I and Stage III upon Stage I and II, then the figures given for Stage II and Stage III are maximum figures.

4 (b)

No access road is needed for the project. Drill sites and roads are necessary for Stage III, the drilling phase.

4 (c)

The exploration work would be begun within two months after a contract with DMEA is executed. Stage I will require two (2) months. Stage II could begin immediately after Stage I is completed and would require a maximum of two (2) months. Stage III could begin within one month after drilling is decided upon and would be completed within four (4) months.

The magnetic field work would progress at 50 stations per day after surveying is completed. The calculations and interpretation will require one office day per field day.

Fifty self-potential stations per day will be recorded. Thirty geochemical analyses would be run per day and sixty geochemical samples would be taken per day. Calculations and interpretation will require one office day for each field day.

The drilling should average 40 feet per day on single shift.

From the above proposed exploration project it is seen that a logical approach to discovery of copper mineralization is taken. First, the area is known to be favorable; second, geophysics has proven to be of great assistance in locating mineralization; and third, the high cost drilling is guided by cheaper exploration methods.

5. Experience

Mr. C. J. Gillaspey is Vice President and General Manager of Arapahoe Mining and Uranium Corporation. Mr. Gillaspey has had forty years mining experience in the Western United States. He is familiar with base and precious metal mining as well as uranium mining.

Mr. R. V. McGuire is the mining contractor and has been conducting open pit mining operations for fifteen years in West Virginia and Colorado.

Mr. D. F. Coolbaugh is the consulting engineer and will supervise the exploration program. Mr. Coolbaugh is a graduate of the Colorado School of Mines with degrees of Geological Engineer and Engineer of Mines and is a registered Professional Engineer in Colorado. His experience includes work with large and small mining operations and exploration projects in the Western United States, Canada, Mexico, Honduras, and Panama.

Stage I

6 (a) Independent Contracts

1300 magnetometer stations	$1300.00	
5 days surveying	$ 200.00	
survey stakes	$ 50.00	
calculations and interpretation	$1500.00	
6(a) estimated costs Stage I		$3050.00
6 (b) supervision $300.00/month		600.00
Total estimated costs Stage I		$3650.00

Stage II

6 (a) Independent Contracts

self-potential and geochemical surveys. maximum	$1050.00	
calculations and interpretations maximum	$1000.00	
6(a) maximum estimated costs Stage II		$2050.00
6 (b) supervision $300.00/month		300.00
Total estimated maximum costs Stage II		$2350.00

Stage III

6 (a) Independent Contracts

Bulldozing access roads and drill sites 30 hours @ $16.00/hour	$ 480.00	
Moving bulldozer on and off project 4 hours @ $16.00/hour	$ 64.00	
Core drilling		
0 to 400 foot depths 3200 feet @ $5.00/foot	$16,000.00	3200'
400 to 600 foot depths 800 feet @ $6.00/foot	$4,800.00	800' 4,000'
Cementing and drillin g out or reaming and casing 400 feet @ $4.00/foot	$1,600.00	
Stand-by time 10 hours @ $10.00/hour	100.00	
6(a) maximum estimated costs Stage III		$23,044.00

Stage III (continued)

6 (b and c)	supervision and supplies		
	Drilling supervision, core boxes, and incidental allowance. 4000 feet @ $0.60/foot	$2,400.00	
6 (g)	Chemical analysis	200.00	
	6(b) maximum estimated costs Stage III		$ 2,600.00
	Total estimated maximum costs Stage III		$25,644.00
	Total estimated maximum cost of project		$31,644.00

As all work except supervision is to be contracted, 6 (c), 6 (d), 6 (e), and 6 (f) do not apply.

7 (a)

Arapahoe Mining and Uranium Corporation is prepared to furnish their share of the cost of the proposed project in accordance with the regulations on Government participation as stated in Sec. 7 of DMEA Order-1, Amended.

7 (b)

Arapahoe Mining and Uranium Corporation will furnish their share of the costs by providing money.

appendix A

1016 54

Recorded at 11:57 o'clock A. M., AUG 30 1956

Reception No. 655283 ROBERT W. NEWTON, Recorder.

MINING LEASE

THIS AGREEMENT OF LEASE, made and entered into at Denver, Colorado this 15th day of August, A.D. 1956, by and between THE COLORADO-KANSAS SYNDICATE of Denver, Colorado, hereinafter called the Lessor, and THE ARAPAHOE MINING AND URANIUM CORP., a Colorado Corporation, of Englewood, Colorado, hereinafter called the Lessee;

W I T N E S S E T H

That the said Lessor for and in consideration of the payment to it of the sum of One Dollar ($1.00), receipt of which is hereby acknowledged, and also for and in consideration of the rents, royalties and the performance of the covenants, conditions and agreements hereinafter contained by the Lessee, each of which is hereby agreed to be material and essential, has leased, demised, and let and by these presents does lease, demise and let unto the said Lessee the following described mining property situated in the Mount Vernon Mining District, in the County of Jefferson, State of Colorado, to-Wit:

The Malachite and Morrison Lodes with all dips, spurs, and angles, situated in the South Half (S½) of the Southwest Quarter (SW¼) and the Southwest Quarter of the Southeast Quarter (SW¼SE¼) of Section 19; the Northwest Quarter of the Northwest Quarter (NW¼NW¼), and the South Half of the Northwest Quarter (S½NW¼) and the South Quarter of (S¼) Section 29; the North Half (N½), of the North Half of the Southwest Quarter (N½SW¼), and tract in the Southwest Quarter of Southeast Quarter (SW¼SE¼) of Section Thirty(30) described as follows: Beginning at the Southwest corner of Southeast Quarter (SE¼) said section and running thence North 87°18' East along South Boundary of said Section 752 feet; thence North 0°.02' East 579.25 feet; thence South 87°18' West 752 feet; thence South 0°.02' West 579.25 feet to place of beginning; also right of way 20 feet wide across any part of West Half of Southeast Quarter (W½SE¼) Section Thirty (30); all in Township Four (4) South, Range Seventy (70) West; except portion being condemned for Bear Creek Road:

subject, however, to the provisions, restrictions and easements of record and particularly those contained in that certain Deed dated on or about December 19, 1947, from the Lessor herein to Fred Braun and Charles Braun.

To have and to hold the above described premises for the purpose of mining from the 15th day of August, A.D. 1956 to the 15th day of August, A.D. 1961, unless sooner forfeited or terminated through the violation of any of the covenants and conditions herein contained, with no power to assign this lease or any part thereof, or to sublet the whole or any part of said leased premises without the written consent of the said Lessor first had and obtained.

The said Lessee in consideration of such demise hereby covenants, [illegible] and agrees and by these presents does covenant, contract, and [illegible] with the said Lessor, its successors and assigns:

1. To enter upon said mine or premises on or [illegible] A.D. 1956, and work the same mine [illegible] in manner [illegible] systematical mining so as to take out the greatest amount of [illegible] and to do all [illegible] the development and preparation of the [illegible] so as to reasonably develop the said mine in advance [illegible] during all stoped or obstruction of drifts, levels, or [illegible] from the default or negligence of said Lessee [illegible] improper timbering shall be remedied and repaired [illegible]

2. To well and sufficiently timber with [illegible] workings on the premises hereby leased at all points [illegible] with good mining and to promptly repair [illegible] rendered insufficient by [illegible] [illegible]

3. To allow said Lessor and its agents at any time desired to enter upon and descend into all parts of said mine and property for the purpose of inspection, testing values, surveying, or any other purpose or purposes, and to have free access to all workings on the premises herein leased, which may be reached from the surface, and also the right to inspect all working maps of said premises and obtain copies of same, at any time, by paying the cost of making copies. To promptly furnish Lessor at any time upon demand full and true information as to the progress of the work and character of the rock encountered. To promptly notify Lessor of any strike of ore of importance on said premises, as disclosed by assays, within twenty-four (24) hours thereafter. To allow the Lessor to enter and descend into the mill where ore from said premises is being treated for the purpose of obtaining samples.

4. To occupy and hold all cross or parallel lodes, spurs, or mineral deposits of any kind which may be discovered by said Lessee and to follow all veins in their dip, with the privilege to said Lessee of working the same as part of the said demised premises under the terms of this lease.

5. To keep at all times the drifts, shafts, tunnels, and other workings thoroughly drained and clear of loose rock and rubbish, unless prevented by strikes, Acts of God, governmental regulations or restrictions, or extraordinary mining casualties.

6. To not adulterate or mix any ores from properties of the Lessor with ores from other mines, either for milling, shipment, or other purposes, and Lessee agrees to mill or ship all ores from the properties of the Lessor as being from the properties of the Colorado-Kansas Syndicate. The mixing of wall or waste rock with ores for the purpose of lowering their assay value for the determination of royalties as set forth herein, constitutes a violation of this lease and will make same subject to immediate cancellation.

7. To do no underhand stoping below the bottom of any working level or winze; to do no stoping or breaking of ore within five (5) feet of any working shaft; to make all working shafts at least four (4) feet by eight (8) feet in the clear, of all drifts and tunnels at least three and one-half (3½) feet by six and one-half (6½) feet in the clear, and all winzes and raises at least three and one-half (3½) feet by seven (7) feet in the clear.

8. To keep conspicuously posted at all times during the term hereof at places near the working shaft or tunnel and at such place or places as required by Law, a notice or notices upon said premises as follows:

> "Notice is hereby given by the undersigned owner that it has a lease to The Arapahoe Mining & Uranium Corporation on the so-called Malachite and Morrison lodes upon which premises this notice is posted, situate in Jefferson County, State of Colorado and notice is hereby given that the undersigned owner or the interest of the said owner in said property leased as aforesaid, will not be responsible for or held liable for any claim or claims for performing labor or furnishing skill, material, supplies, machinery, or other fixtures, or for damages on account of the operation, working, preservation, prospecting, or development of said property, or on account of the erection, construction, alteration, removal, addition, or repair of any structures or other improvements on said property by or for the said Lessee, or by or for any other persons, or person, and that the said property or the interest of said owner in said property will not be subject to any lien or claims of lien therefor."

Dated this 15th day of August, A.D. 1956.

(Signed) THE COLORADO KANSAS SYNDICATE
Owner and Lessor

9. It is understood that this lease is made upon the express condition and shall not take effect or give the Lessee any rights whatsoever either with respect to possession or the conduct of mining operations upon the premises herein described until and unless the Lessee shall first comply in all respects with the Workmen's Compensation Law of the State of Colorado as therein provided, and it is understood by acceptance of the lease, the Lessee agrees to accept the terms of the said Workmen's Compensation Law of the State of Colorado, and in accordance with the provisions thereof and continue same in force during the term hereof as may be required by the rules and regulations of the Industrial Commission of the State of Colorado; to furnish to the Lessor satisfactory proof from time to time of having complied with the requirements of said Act, and said rules and regulations, and further, procure and maintain public liability insurance covering the Lessor before beginning of and during the continuance of work on said property; and further, to procure and maintain adequate fire insurance on all buildings and property so soon as they are erected.

The Lessee shall comply with all provisions of the Workmen's Compensation Act, the rules and regulations of the Industrial Commission of the State of Colorado and keeping liability insurance and fire insurance in force and effect during the continuance of this lease in adequate amounts, protecting the Lessor and deliver to Lessor said policies and receipts showing payments of premiums.

10. All taxes assessed against the leased premises, improvements and equipment thereon and the output therefrom during the term hereof shall be paid by the Lessee within sixty (60) days following the date when such taxes become due and payable, and the Lessee shall furnish Lessor copies of receipts showing payment of said taxes immediately thereafter.

11. All bills and expenses incurred by the Lessee or those in privity with said Lessee shall be promptly paid by the Lessee and by such prompt payment said Lessee shall prevent the filing of any and all liens of miners, mechanics, or material men, against said demised premises; and, if by reason of the failure of said lessee to pay any valid claims or expenses, any lien or liens shall be filed against said premises, the said Lessor may forthwith pay off and discharge the same, and the said Lessee shall be held liable to said Lessor to repay such sums so advanced or paid to clear said premises from liens which may be filed as aforesaid, together with any expenses incurred, in so doing.

12. All ores extracted from said premises shall be shipped or milled without delay and the concentrates delivered with convenient speed to the smelter as agreed to by the Lessor and Lessee, leaving with such smelter instructions to pay to the treasurer of the Colorado-Kansas Syndicate, c/o Jessica Stroud, 609 East Colfax Ave., Denver, Colorado, and to the Lessee their said proportionate shares of the smelter returns, as contained herein in accordance with the instructions of the Lessor. The Lessee shall give Lessor copies of each load of ore hauled to the mill and of each bill of lading covering such shipments without delay, and the Lessor shall also have the right to have check assays and umpire upon its request.

13. The Lessor hereby reserves and the Lessee shall pay the Lessor, or its Accredited agent, as rent for said premises hereby conveyed, the following royalties on all ore extracted from said premises:

On all ore of the value of less than $25.00 per ton - 7½%

On all ore of the value of $25.00 up to $50.00 - 10%

On all ore of the value of $50.00 or more - 12½%

Provided Lessee shall pay Lessor royalties of not less than ~~[illegible]~~ 25 cents per ton on ore marketed as provided herein. RS JS

Lessor hereby reserves and Lessee also agrees to pay to Lessor as additional royalty the same percentages on all of said ores of all development allowances, discovery bonuses and transportation allowances paid by the Atomic Energy Commission or other governmental agencies.

The term "value" as herein used shall be construed as the crude ore value and shall be determined by and computed from the assay value of concentrates. This value is to be computed by dividing the assay value of concentrates by the ratio of reduction. Payment of royalty is to be made on the net value of concentrates after freight and smelter charges are deducted.

14. Notwithstanding anything herein contained, it is expressly understood and agreed that Lessee may at any time he so desires, upon thirty (30) days written notice, surrender this lease and said premises and abandon further mining operations hereunder and thereupon be relieved and released from any and all further obligations, covenants, and performance under this lease, provided, however, that prior thereunto he shall make good any default existing under said lease, and further, deliver and yield up to Lessor quiet and peaceable possession of said demised premises in good order and condition, free and clear of any and all liens or claims arising out of Lessee's operation or possession and any and all moneys paid to the Lessor hereunder shall be retained by the Lessor as rentals for the use of said demised premises in accordance with the provisions of this lease. In the event of surrender of this lease as provided herein, Lessee may within ninety (90) days after such surrender remove all equipment and machinery placed thereon by them.

15. The Lessee further agrees not to conduct or permit to be conducted on said premises any business or permit any act which is contrary to or in violation of the laws of the United States of America, the State of Colorado, or the ordinances or regulations of Jefferson County, State of Colorado; or any other governmental agency now in force or hereafter enacted, and the Lessee further covenants and agrees that it will at all times during the continuance of the term hereby granted at its own cost and expense execute, comply with, obey and perform all statutes, ordinances, rules, orders, regulations and directions which may exist or be enacted, made or given by any of the federal, state, municipal governments, or any department, bureau, commission, or any officer thereof, in respect to his use and occupancy of the demised premises, or any part thereof.

16. Throughout said term as aforesaid and forever afterward, the Lessee agrees hereby to indemnify and save harmless the Lessor for and against any and all liability, damages and expenses, causes of action, and judgements arising from injury during said term to persons or property occasioned wholly or in part by any act, or acts, omission or omissions of the Lessee, his agents, employees, servants, or those under contract with him or in connection with the use or operation of said property.

17. The Lessee acknowledges and agrees that they have not relied upon any statements, representations, agreements, or warranties, except such as are expressed herein.

18. No waiver of any breach of any one or more of the conditions or covenants of this lease by the Lessor shall be deemed to imply or constitute a waiver of any succeeding or other breach hereunder, that failure of the Lessor to insist upon the strict performance of the terms, covenants, agreements, and conditions herein contained, or any of them shall not constitute or be construed as a waiver or relinquishment of the Lessor's right to thereafter enforce such term, covenant, agreement or condition, but the same shall continue in full force and effect.

19. No amendment or modification of this lease shall be valid or binding unless expressed in writing and executed by the parties hereto in the same manner as the execution of this lease.

20. Upon the violation of any covenants or conditions herein contained, this lease shall at the option of the Lessor, expire and terminate, subject to the following: It is further understood and agreed that a forfeiture shall be declared only on and by written notice to the Lessee, addressed to the President of the Corporation, Ralph M. Stuck, of the Arapahoe Mining & Uranium Corporation, 1027 East Amherst Avenue, Englewood, Colorado, said notice shall state the violation of the particular covenant or covenants of the lease wherein forfeiture is claimed, and shall allow the Lessee thirty (30) days from date of receipt of said notice by Lessee in which to make good the default within the time prescribed, the said lease shall expire and forfeiture take place upon the expiration of the thiryt (30) days as above set forth, without further notice to the said Lessee; and the said Lessor, or its agents, may re-enter and take possession of the premises, dispossessing all persons found there.

21. All notices hereunder shall be in writing and sent by registered mail, with a return receipt requested, in a post paid envelope.

22. Lessee shall cut no timber from the demised premises.

23. It is further understood and agreed that if the Lessee shall fully comply with the terms hereof and said lease be in force and effect on August 15, 1961, the Lessee shall have the option to continue the lease for an additional period of five (5) years from such date. To indicate such election the Lessee shall at least ninety (90) days prior to such date notify the Lessor in writing of their election so to continue said lease.

24. This agreement shall be binding upon and enforceable by the respective successors, personal representatives and assigns of the parties hereto.

Time is of the essence of this Agreement and each and every clause of this indenture and all the covenants and conditions herein expressed or implied, shall be binding upon the parties hereto.

Executed the day and year first above written.

THE COLORADO-KANSAS SYNDICATE

ATTEST:

Jessica P. Stroud
Secretary

By E. G. Forrester
President
LESSOR

THE ARAPAHOE MINING & URANIUM CORP.

Ralph M. Stuck
RALPH M. STUCK, PRESIDENT

Ann Garceau
ANN GARCEAU, SECRETARY

EXHIBIT "A"

1016 59

R I D E R

THIS RIDER IS ATTACHED TO AND HEREBY FORMS A PART OF THAT CERTAIN LEASE DATED AUGUST 15, 1956, BY AND BETWEEN THE COLORADO-KANSAS SYNDICATE OF DENVER, COLORADO, THEREIN REFERRED TO AS THE LESSOR, AND ARAPAHOE MINING AND URANIUM CORPIRATION THEREIN REFERRED TO AS THE LESSESS, COVERING CERTAIN MINING PROPERTY SITUATED IN MOUNT VERNON MINING DISTRICT IN JEFFERSON COUNTY STATE OF COLORADO.

For and in consideration of ONE HUNDRED DOLLARS ($100.00) cash, to be paid upon the execution of this Rider, the receipt of which is hereby acknowledged, it is hereby agreed that the within lease be modified, amended and ratified as follows:

1. Notwithstanding anything contained in said lease, the lessee shall pay to the lessor a minimum guaranteed montly rental of $100.00 each and every month during the term of this lease commencing November 15, 1956, which said minimum guaranteed monthly rental payments shall apply in payment of royalities as provided in said lease.

2. It is further agreed that the lessor shall not be entitled to receive any portion of the "transportation allowances," however, there shall be deducted in determining the "value" the cost of transportation or freight only to the extent that the same is not reimbursable by the Atomic Energy Commission or other governmental agency.

3. In all other respects said lease is hereby ratified and confirmed as being in full force and effect.

THE COLORADO-KANSAS SYNDICATE

By E G Forester
President

ATTEST:

Jessica P. Stroud
Secretary

ARAPAHOE MINING AND URANIUM CORPORATION

By Ralph M. Stuck
Ralph M. Stuck, President

By Ann Garceau
Ann Garceau, Secretary

We, the undersigned, being owners and interest holders of and in THE COLORADO-KANSAS SYNDICATE, a common law trust, hereby ratify, approve and confirm the above and foregoing mining lease.

NAME	OFFICE
J. E. Jacobson	
Marguerite L. Jacobson	
By J. E. Jacobson Atty. in Fact.	
E. W. Forrester	
Carrie M Biles By E L Biles	
Maynard Peterson	

appendix B

Recorded at 2:00 P.M. OCT 21 1957 1086 55

Reception No. 696513 ROBERT W. NEWTON, Recorder.

MODIFICATION OF MINING LEASE

Norton, Kansas, this 14th day of October, A.D. 1957 J.P.S. R.M.S

THIS MODIFICATION OF LEASE, made and entered into at ~~Denver, Colorado, this 27th day of December, A.D. 1956~~, by and between THE COLORADO - KANSAS SYNDICATE OF Denver, Colorado, hereinafter called the Lessor, and THE ARAPAHOE MINING AND URANIUM CORP., a Colorado Corporation, of Englewood, Colorado, hereinafter called the Lessee:

W I T N E S S E T H

WHEREAS the parties hereto have entered into an agreement of lease affecting property hereinafter described, situated in the Mt. Vernon Mining District in the County of Jefferson, State of Colorado; and

WHEREAS, the parties are desirous of entering into certain agreements modifying, correcting and supplementing the provisions of said agreement of lease;

NOW THEREFORE, IN CONSIDERATION of the agreements therein set forth and contained, the parties hereto agree as follows, to-wit:

That the mining lease entered into under date of August 15, 1956, said lease being recorded in Book 1016 at page 54 of the records of the Clerk and Recorder, Jefferson County, Colorado, be modified, corrected and supplemented to reflect the true and correct description of the mining property leased, demised and let unto said lessee, said property being described as follows, to-wit:

The Malachite and Morrison Lodes with all dips, spurs, and angles, situated in the South Half (S½) of the Southwest Quarter (SW¼) and the Southwest Quarter of the Southeast Quarter (SW¼ SE¼), except tract described in deeds recorded in books 105 and 137, at pages 295, respectively, of Section 19; the Northwest Quarter of the Northwest Quarter (NW¼ NW¼), and the South Half of the Northwest Quarter (S½ NW¼) and the Southwest Quarter (SW¼) of Section 29; The North Half (N½), and the North Half of the Southwest Quarter (N½ SW¼), and tract in the Southwest Quarter of Southeast Quarter (SW¼ SE¼) of Section Thirty (30) described as follows: Beginning at the Southwest corner of Southeast Quarter (SE¼) said section and running thence North 87°18' East along South Boundary of said Section 752 feet; thence North 0°.02' East 579.25 feet; thence South 87°18' West 752 feet; thence South 0°.02' West 579.25 feet to place of beginning; also right of way 20 feet wide across any part of West Half of Southeast Quarter (W½ SE¼) Section Thirty (30); all in Township Four (4) South, Range Seventy (70) West; except portion being condemned for Bear Creek Road:

subject, however, to the provisions, restrictions and easements of record and particularly those contained in that certain Deed dated on or about December 19, 1947, from the Lessor herein to Fred Braun and Charles Braun.

It is further understood and agreed that if the lessee shall fully comply with the terms hereof and said lease be in force and effect on August 15, 1961, the Lessee shall have the option to continue the lease for an additional period of twenty-five (25) years from such date. To indicate such election the Lessee shall at least ninety (90) days prior to such date notify the Lessor in writing of their election so to continue said lease.

J.P.S
R.M.S.

The provisions of the agreement of lease dated August 15, 1956, referred to hereinabove are hereby modified, corrected and supplemented to conform herewith, but in all other respects are to be and continue in full force and effect.

Executed the day and year first above written.

THE COLORADO-KANSAS SYNDICATE

BY E. G. Forrester
President
Lessor

ATTEST:

Jessica Poteet Stroud
Secretary

THE ARAPAHOE MINING & URANIUM CORP.

Ralph W. Stuck
Ralph W. Stuck, President

Susie Hall
Susie Hall, Secretary

We, the undersigned, being owners and interest holders of and in THE COLORADO-KANSAS SYNDICATE, a common law trust, hereby retify, approve and confirm the above and foregoing Modification of Mining Lease.

Manford Peterson
Barrie M. Bill Byler & Bills
E. W. Forrester
Beulah Forrester
Fremont Forrest

Geo. Jenkins
Margarette L. Jenkins
By G. C. Jenkins, Atty. in Fact.

MINERAL EXPLORATION -- TEST BORINGS -- GROUT HOLE DRILLING

appendix C

GOLDEN DRILLING COMPANY

DIAMOND DRILLING CONTRACTORS
2301 EAST STREET
GOLDEN, COLORADO
PHONE CRestview 9-1371

ORIGINAL FILE COPY
DMEA
RECEIVED NOV 14 1957

DATE	INITIALS	CODE

Nov. 5 1957

D. F. Coolbaugh
Golden
Colorado

GOLDEN DRILLING CO. ESTIMATE FOR CORE DRILLING MALACHITE MINE PROJECT

AX Size Bit

0 to 400'	$5.00 per ft.
400 to 600'	6.25 per Ft.

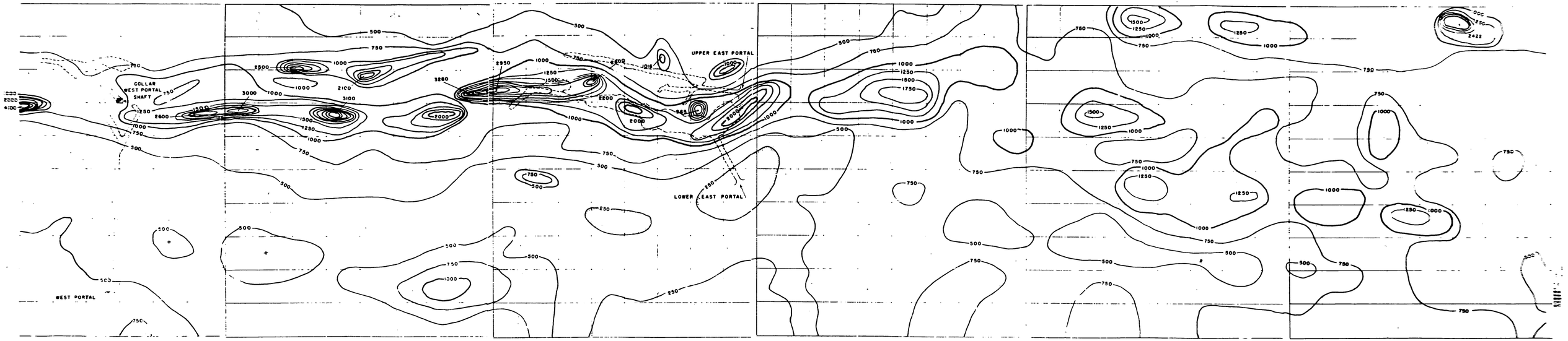
Reaming and casing
$3.00 per ft.

Cementing and drilled out
$2.25 per ft.

Mobe and Demobe
$150.00

Stand-by time for probing hole etc.
$7.50 per hour.

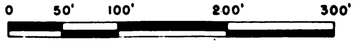
GOLDEN DRILLING CO.
W E Matthews



LEGEND

CONTOUR LINES

MINE WORKINGS



CONTOUR INTERVAL 250 GAMMAS

PLATE IV

MAP OF VERTICAL MAGNETIC INTENSITY

MALACHITE MINE AREA

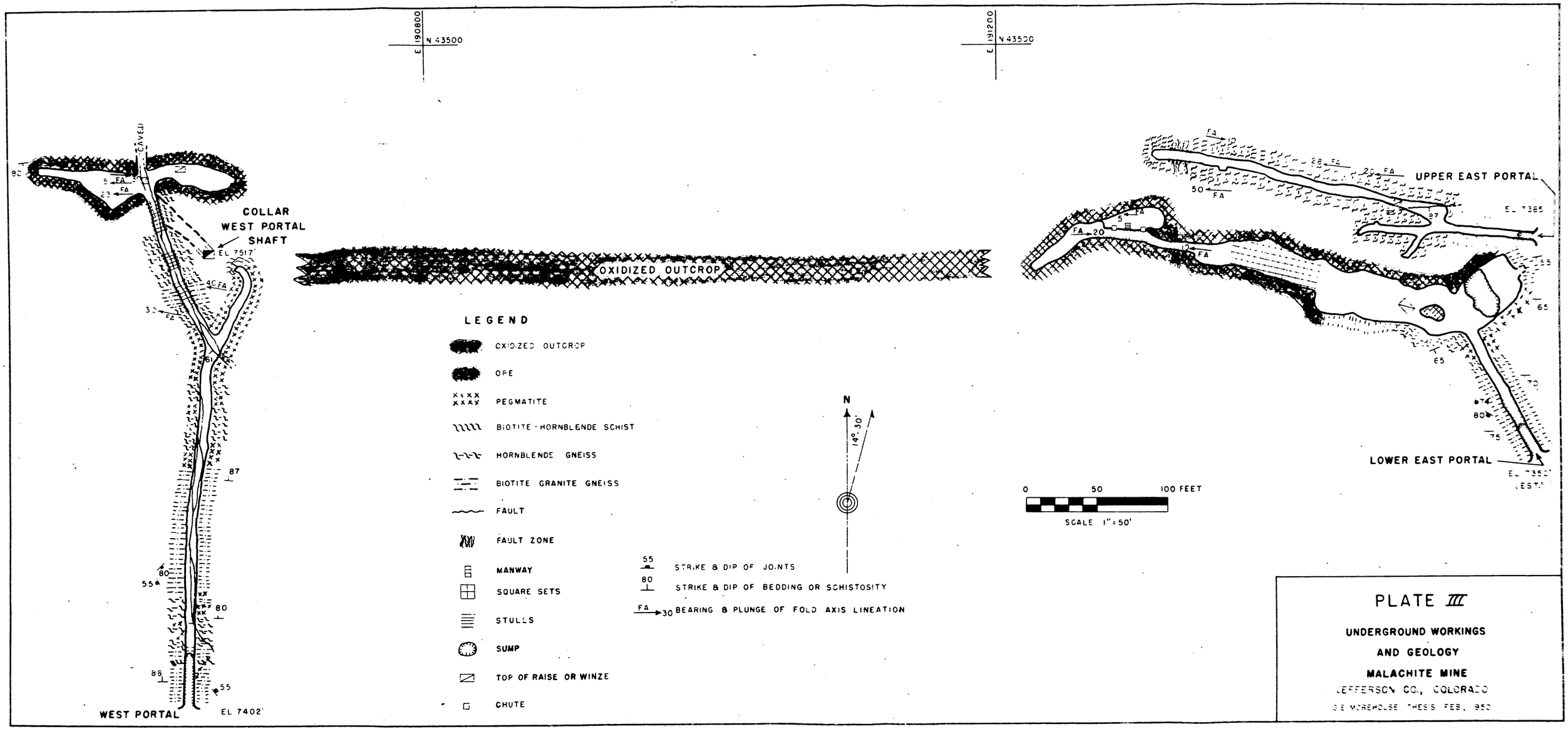
DATA AND CONTOURING BY STUDENTS OF

COLORADO SCHOOL OF MINES

GEOPHYSICS DEPARTMENT

1938, 1948 AND 1949

G.E MOREHOUSE THESIS FEB, 1950


E 190800 N 43500
E 191200 N 43500
COLLAR
WEST PORTAL
SHAFT
EL 7517'
OXIDIZED OUTCROP
UPPER EAST PORTAL
EL 7385
LOWER EAST PORTAL
EL 7350' (EST.)
WEST PORTAL
EL 7402'
LEGEND
OXIDIZED OUTCROP
ORE
PEGMATITE
BIOTITE - HORNBLENDE SCHIST
HORNBLENDE GNEISS
BIOTITE GRANITE GNEISS
FAULT
FAULT ZONE
MANWAY
SQUARE SETS
STULLS
SUMP
TOP OF RAISE OR WINZE
CHUTE
STRIKE & DIP OF JOINTS
STRIKE & DIP OF BEDDING OR SCHISTOSITY
BEARING & PLUNGE OF FOLD AXIS LINEATION
N
14° 30'
0 50 100 FEET
SCALE 1" = 50'
PLATE III
UNDERGROUND WORKINGS
AND GEOLOGY
MALACHITE MINE
JEFFERSON CO., COLORADO
G.E. MOREHOUSE THESIS FEB. 950

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
	Klugescheid	500
	Williams	500
		~~120~~
		~~100~~
1/7	C	220
		560

AIR MAIL

JAN 6 1959

Mr. Donald B. Caldwell
c/o Mr. H. E. Wulfing, Jr.
9755 50th Court
Oak Lawn, Illinois

Re: Docket No. DMEA-4573 (Copper)
Arapahoe Mining & Uranium Corporation
Malachite Mine
Jefferson County, Colorado

Dear Mr. Caldwell:

Reference is made to your letter of December 31, 1958, to the Administrator concerning the denial of the subject application for an exploration contract.

We consider that we are not at liberty to disclose information concerning denial of an application, except to persons having an appropriate interest therein. Although your letter states you hold a "considerable stock interest" in the company and that you are attempting to reorganize it, we actually have no specific information at hand as to the extent of your interest. Accordingly, if you will furnish to us details of your interest in the company, we shall be pleased to provide you with the same information relating to the denial that was sent to the applicant.

However, as you are in a hurry for this information, we suggest that you communicate with Mr. Ralph M. Stuck who was the president of the Arapahoe Mining & Uranium Corporation at the time the application was denied; and who, if he is aware of your interest, can immediately give you the information you seek. His address is:

1027 E. Amherst Avenue
Englewood, Colorado.

Sincerely yours,

George C. Selfridge (for)

Acting Director

WPKlugescheid/GCSelfridge/fw
1/6/59
cc: Docket
Dir. Read. File
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
Region III (2)
Chron.

8623

File

Mr. Donald B. Caldwell
c/o Mr. H. E. Wulfing Jr.
9755 50th Court
Oak Lawn, Illinois

Re: Docket No. DMEA-4873 (Copper)
Arapahoe Mining & Uranium Corp.
Malachite Mine
Jefferson County, Colorado

Dear Mr. Caldwell:

~~We refer to your inquiry,~~ In response made to your letter to the Admr. dated December 31, 1958, concerning the ~~cited~~ denied application subject for an exploration contract. ~~We regret to inform you that ordinarily no information~~ We consider that we are not at liberty to disclose information concerning denials of applications, ~~is given out~~ except to persons having an appropriate interest ~~in the property in question.~~ therein. In this regard, ~~our files we have no information that will indicate to us that you hold such an interest.~~ ~~If you can prove such an interest to us, we will be glad to give the information that was contained in the denial.~~ your letter states you hold a "considerable stock interest" in the Corporation and that you are attempting to reorganize it. Accordingly, we actually have no specific information at hand as to the extent of your interest in the Corporation. Accordingly, if you will furnish us with details of your interest in the Corporation, we shall be pleased to ~~furnish you with the~~ advise you as to the status of the application. However, As you are in a hurry for this information, we ~~would~~ suggest that you communicate with Mr. Ralph M. Stuck, who was the President of the ~~Ar~~apahoe Mining & Uranium Corp. at the time ~~that~~ the application was denied; and who, if he is aware of your interest, can immediately give you the information you ~~require~~ seek. His address is:

1027 E. ~~Am~~herst Ave.
Englewood, Colorado

~~S~~incerely yours,

Acting Director

Ho. company

Although it appears actually he has no specific information at hand as to the extent of your interest in the Corporation, we shall be pleased to advise you as to the status of the application. However, suggest that you communicate with Mr. Ralph M. Stuck, President of the Corporation.

Ho. President.

Mr. Donald B. Caldwell
c/o Mr. H. E. Wulfing Jr.
9755 50th Court
Oak Lawn, Illinois

Re: Docket No. DMEA-4873 (Copper)
Arapahoe Mining & Uranium Corp.
Malachite Mine
Jefferson County, Colorado

Dear Mr. Caldwell:

We refer to your letter, dated December 31, 1958, concerning the cited application.

In answer to your inquiry, the application was denied in February 1958 and the reason for the denial was as follows:

Careful study of all the data at hand, although noting some ore on the lease, indicates to us that with the existing targets, the probability of disclosing significant ore reserves is not sufficiently promising to justify Government participation.

The denial was addressed to Mr. Ralph M. Stuck, then President of the Arapahoe Mining & Uranium Company.

Sincerely yours

Acting Director

OFFICIAL FILE COPY
O. M. E.
RECEIVED JAN 5 1959

DATE	INITIALS	CODE
1-5	C	220
		500

DONALD B. CALDWELL
MINING PROMOTERS

PHONE ACOM 4-7711
16 A MONDAY THRU FRIDAY
BOX 1
DENVER 2 COLORADO

Hotel Argonaut,
Denver, Colorado
December 31, 1958

AIRMAIL

Mr. C. O. Mittendorf,
Administrator - DMEA
Department of the Interior
Washington 25, D.C.

Subject: Request for information re rejection of DMEA loan application by Arapahoe Mining & Uranium Corp. of Colorado. Late 1957 or early 1958.

Dear Mr, Mittendorf,

The writer not only has a considerable stock interest in the subject company but got a number of good friends to invest in it. Therefore he is doubly concerned with the success of the Malachite Mine operation.

As I am trying to do some refinancing to get the company on its feet under new management and plan to meet with some men in Chicago next week with that in mind, and especially to work out some reorganization so that the present stockholders will not lose out, I would be most grateful to you if you would answer a question which may have an important bearing on the success of my efforts.

The question is, "Why was the loan application denied?" If a direct answer is not available,(and I can get no information here on it) can you answer this question instead, " Was the denial of the application a reflection, in any way, on the potential of the Malachite Mine property to produce sizeable, and economically-profitable quantities of copper ore, if properly mined and developed?"

I realize that you are very busy with your many responsibilities, but nevertheless would you perhaps be able to amswer or direct an answer to this letter soon after its receipt? You see I make this unusual request because the meeting in Chicago came up rather unexpectedly and specifically raised a question about the denial of the loan application being a possible reflection on the worthwhileness of the property.

Please address the reply to me c/O H. E. Wulfing, Jr. 9755 50th Court, Oak Lawn, Illinois. The first meeting I have with them will be Thursday, January 8th.

I wish you continued success in your work as Administrator during 1959, and hope it will be a good year for you personally as well,

Yours very truly,

Donald B. Caldwell

DBC/jc

DMEA

3/6 C 220
~~3/7 with 500~~
3/7 225

224 New Customhouse
Denver 2, Colorado

March 3, 1958

Mr. Ralph M. Stuck, President
Arapahoe Mining & Uranium Corporation
309 First National Bank Building
Englewood, Colorado

Re: Docket No. DMEA 4873
(Copper) (Malachite
Mine) Jefferson County,
Colorado

Dear Mr. Stuck:

Enclosed herewith are the copies of a thesis by George E. Morehouse on the geology of the Malachite Mine. Two copies of the thesis were attached to the captioned application with your request that they be returned to you.

Very truly yours,

Original signed by
W. H. KING

W. H. King
Executive Officer

HMC:dp

Enclosure

cc: Sec. Oper. Comm. (2)
Harshman
DMEA/DFC
Docket
Chron.

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
2/25	Klugescheid	500
	Adiamel	500
2/26	Selford	130
2/26	Lamb	130
2/26	Kiilsgaard	130
"	Johnson	110
27	Whitenden	100
		225

FEB 27 1958

Mr. Ralph M. Stuck, President
Arapahoe Mining & Uranium Corporation
309 First National Bank Building
Englewood, Colorado

Re: Docket No. DMSA-4873 (Copper)
Arapahoe Mining & Uranium Corporation.
Malachite Mine
Jefferson County, Colorado

Dear Mr. Stuck:

Your application for aid for an exploration project and other data available to us in Washington relating to the above-named property have been reviewed.

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

Careful study of all our information, although noting a small amount of ore on your lease, indicates to us that the probability of disclosing significant ore reserves is not sufficiently promising to justify Government participation. We regret to advise you, under these circumstances, that your application for exploration assistance is denied.

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

Sincerely yours,

[illegible] (for)

Administrator

WPKlugescheid/er 2/25/58
Copy to: Docket
Admr R File
Op. Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
Region III (2)
Chron.
Sen. Gordon Allott
Cong. W. S. Hill
Cong. Wayne Aspinall
Sen. John A. Carroll

See R. File -

8623

DMEA Form 7
(12-56)

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Date	Surname	Code
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500

FEB 27 1958

Mr. W. H. King
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Bldg.
Denver 2, Colorado

Re: Docket No. DMEA-4873 (Copper)
Arapahoe Mining & Uranium Corp.
Malachite Mine
Jefferson County, Colorado

Dear Mr. King:

As you requested, in your memorandum of February 12, 1958, we are returning the copy of the thesis by George E. Morehouse, on the geology of the Malachite mine, which was forwarded to us.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

Enclosure

APPROVED:

Frank D. Lamb (GCS)
Member, Bureau of Mines

Thor H. Kiilsgaard (GCS)
Member, Geological Survey

WPKlugescheid/er 2/25/58
Copy to: Docket
Admr R File
Op. Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
Chron.

8623

DMEA Form 7
(12-56)

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2/26	Klugescheid	500
	Dressmel	500
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2/26	Ridgeway	130
"	Johnson	110
27	Whitehead	100
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FEB 27 1958

Hon. William S. Hill
House of Representatives
Washington, D. C.

Re: Docket No. DMEA-4873 (Copper)
Arapahoe Mining & Uranium Corp.
Malachite Mine
Jefferson County, Colorado

Dear Mr. Hill:

The field examination report on the cited property has now been received and a denial of the application issued.

We are enclosing a copy of our letter to Mr. Ralph M. Stuck, which we believe is self-explanatory, as requested in the February 24 phone call from your office.

Please feel free to call upon us at any time when I can be of service to you.

Sincerely yours,

(for)

Administrator

Enclosure
WPKlugescheid/er 2/25/58
Copy to: Docket
Admr R File
Op. Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
Region III (2)
Chron.

8623

DMEA Form 7
(12-56)

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FEB 27 1958

Hon. Wayne Aspinall
House of Representatives
Washington, D. C.

Re: Docket No. DMEA-4873 (Copper)
Arapanoe Mining & Uranium Corp.
Malachite Mine
Jefferson County, Colorado

Dear Mr. Aspinall:

The field examination report on the cited property has now been received and a denial of the application issued.

We are enclosing a copy of our letter to Mr. Ralph M. Stuck, which we believe is self-explanatory, as requested in the February 24 phone call from your office.

Please feel free to call upon [us] at any time when [we] can be of service to you.

Sincerely yours,

(for)

Administrator

Enclosure
WPKlugescheid/er 2/25/58
Copy to: Docket
Admr R File
Op. Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
Region III (2)
Chron.

8623

DMEA Form 7
(12-56)

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2/26	Frame	500
2/26	Selfridge	130
2/26	Smith	130
2/26	Kiilsgaard	130
"	Ohman	110
27	Bentley	100
		225

FEB 27 1958

Hon. John A. Carroll
United States Senate
Washington, D. C.

Re: Docket No. DMEA-4873 (Copper)
Arapahoe Mining & Uranium Corp.
Malachite Mine
Jefferson County, Colorado

Dear Senator Carroll:

We have your letter of February 21, 1958, enclosing a letter dated February 17, 1958, to you from Mr. C. J. Gillaspey of Grand Junction, Colorado, regarding an application which his company filed with this Administration.

The field examination report on the cited property has now been received and a denial of the application issued.

We are enclosing a copy of our letter to Mr. Ralph M. Stuck, which we believe is self-explanatory.

As you requested, Mr. Gillaspey's letter is returned herewith.

Please feel free to call on us at any time when we can be of service.

Sincerely yours,

PRS - 6705

(for) WPKlugescheid/er 2/26/58
Copy to: Docket
Admr R File
Op. Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
Region III (2)
MR
DL
DCCO
Chron.
Sec. Reading File

Administrator

Enclosures

8623

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(12-56)

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Date	Surname	Code
2/25	Klugescheid	500
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2/26	Selbridge	130
2/26	Kamp	130
2/26	Dagnard	130
"	Blum	110
"	Rotberding	100
		225

FEB 27 1958

Hon. Gordon Allott
United States Senate
Washington, D. C.

Re: Docket No. DMEA-4873 (Copper)
Arapahoe Mining & Uranium Corp.
Malachite Mine
Jefferson County, Colorado

Dear Senator Allott:

We have your memorandum of February 19, 1958, enclosing a letter dated February 17, 1958, to you from Ralph M. Stuck, M. D. of Englewood, Colorado, regarding an application which his company filed with this Administration.

[copy]

The field examination report on the cited property has now been received and a denial of the application issued.

We are enclosing a copy of our letter to Mr. Ralph M. Stuck, which we believe is self-explanatory.

Please feel free to call upon us at any time when we can be of service to you.

Sincerely yours,

(for)

Administrator

PRS 6525

Enclosure
WPKlugescheid/er 2/25/58
Copy to: Docket
Admr R File
Op. Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
Region III (2)
MR
DDCO
Chron.
Sec. Read.File

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code

February 26, 1958

Memorandum for the Files

From: W. P. Klugescheid, Division of Base Metals

Subject: Justification for Denial of Application, Docket No. DMEA-4873, Arapahoe Mining and Uranium Corporation, Malachite Mine, Jefferson County, Colorado, Copper.

The cited application, dated November 1, 1957, was received in this office on November 15.

The Applicant proposed to explore the property by means of

(1) A magnetic survey along an assumed extension of the shear zone.

(2) Geochemical and Self-potential survey, to be taken in areas that showed anomalous magnetic readings in Stage I.

(3) Drill any anomalous areas found in Stages I and II.

A rectangular area was previously extensively explored by geophysical, and geochemical methods and by diamond drilling. This area was to be excluded from the project area.

The property was examined by E. N. Harshman, USGS and W. W. Winkel, USBM, on December 18, 1957. The examiners were accompanied by Ralph M. Stuck, C. J. Gillaspey and the corporation engineer, D. F. Goolbaugh.

The examination revealed that the eastern and western limits of the shear zone in which the ore bodies occur do not continue east or west of the area already intensively explored.

The geochemical exploration by Huff has shown a very abrupt decrease in the copper content of the soil both to the east and to the west of the known limits of the shear zone.

An examination of the surrounding area has failed to reveal any additional parallel or en echelon shear zones.

These facts suggest that exploration for extensions of the known copper-bearing shear zone (outside of the small rectangular block already extensively explored) would be fruitless.

Work north or south of the shear zone would be pure prospecting as there are no potential targets.

In view of all the foregoing, the examiners recommend that the application be denied, and the Field Team and the commodity members of the USGS and USBM concur.

We also concur that the application be denied.

W. P. Klugescheid

W. P. Klugescheid

WPK/er
Copy to;Docket
Chron.

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

February 25, 1958

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: Commodity Specialist, Branch of Base Metals

Subject: Review of Examination Report, Docket No. DMEA 4873 (copper), Arapahoe Mining and Uranium Corporation, Malachite Mine, Jefferson County, Colorado. $31,644.00.

The examiners conclude from their inspection of the property, and principally from their review of geochemical studies and geological mapping conducted by Lyman C. Huff that:

(1) The eastern and western limits of the shear zone in which the known ore bodies occur have been defined.
(2) Copper content of the soil east and west of the known limits of the shear zone decreases abruptly.
(3) Exploration in extensions of the shear zone would not be promising.

Further, a brief survey by the examining team of the areas surrounding the Malachite mine failed to locate any ore-bearing structures that could be considered potential exploration targets; accordingly they recommended that the application be denied.

I concur in that recommendation.

A. D. McMahon

A. D. McMahon

Copy to: Division of Minerals
Branch of Base Metals (2)
Thor Kiilsgaard, U.S.G.S.
F. D. Lamb
F i l e s

IN REPLY REFER TO:

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

RECEIVED
DATE
2/24 C 220
500

Memorandum

February 21, 1958

To: W. R. Griswold, Defense Minerals Exploration Administration

From: W. P. Williams, U. S. Geological Survey

Subject: Review of field examination report, DMEA 4873 (copper), Arapahoe Mining and Uranium Corp., Malachite mine, Jefferson County, Colorado.

The examining team report that, from all indications on the property, a significant discovery of new ore reserves would probably not result from additional exploratory work.

The applicant's proposal includes geophysical and geochemical surveys and diamond drilling. Past work on the property has consisted of magnetic, self-potential, and resistivity surveys. Eight core-drill holes were drilled by American Smelting and Refining Company. Personnel of the U. S. Geological Survey have conducted an extensive geochemical survey on the property. No part of the past work indicates that undiscovered ore bodies are present on the property. The examining team could find no evidence of a geologic structure similar to the known mineralized fissure.

From the examining team's report, it appears that enough exploratory work, with negative results, has already been done on the subject property. I agree with the Field Team's recommendation for denial of the application.

W. P. Williams

W. P. Williams

JAMES E. MURRAY, MONT., CHAIRMAN
CLINTON P. ANDERSON, N. MEX.
HENRY M. JACKSON, WASH.
JOSEPH C. O'MAHONEY, WYO.
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RICHARD L. NEUBERGER, OREG.
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HENRY DWORSHAK, IDAHO
THOMAS H. KUCHEL, CALIF.
FRANK A. BARRETT, WYO.
BARRY GOLDWATER, ARIZ
GORDON ALLOTT, COLO.

RICHARD L. CALLAGHAN, CHIEF CLERK

United States Senate

COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS

February 21, 1958

PRS
2/25/58 6705

TO:	MDM	
REPLY TO BE PREPARED BY:	MDM	
FOR SIGNATURE OF:	MDM	
COPY OF LETTER FURNISHED		
MR	DL	
SEND REPLY COPY TO ABOVE		

Mr. C. O. Mittendorf,
Administrator
Defense Minerals Exploration Administration
Interior Building
Washington, D. C.

Dear Mr. Mittendorf:

Enclosed is a letter I received from Mr. C. J. Gillaspey of Grand Junction, Colorado concerning an application for a D.M.E.A. loan, Docket No. 4873.

Please inform me of the status of this loan application at your earliest practicable convenience.

Sincerely,

John A. Carroll

JOHN A. CARROLL

JAC/cdd

Enclosure

DMF
RECEIVED FEB 26 1958

2/26	C	220
		500

P. S. Please return Mr. Gillaspey's letter to me with your reply.

Arapahoe Mining & Uranium Corporation
309 First National Bank Building
Englewood, Colorado

February 17, 1958

[illegible] Carroll,
[illegible] Minerals,
[illegible] Office Building,
Washington, D. C.

Dear Sir:

We applied for a RMEA Loan, Docket No. 4873, under the name of the Arapahoe Mining & Uranium Corporation.

The field inspection was made under this Application in [illegible] 1957 by Mr. Marshman of the Area Office and his report has [illegible] forwarded to Washington with his recommendations. The [illegible] was on the Malachite Copper Mine in Jefferson County, [illegible] that of Denver.

Would you please check the Defense Minerals Office in Washington and help expedite this application, either in the form of [illegible] or rejection?

Your kind consideration in this matter will be deeply appreciated.

Very truly yours,

C. J. "Bill" Gillespey,
2850 North Avenue,
Grand Junction, Colorado

United States Senate

RECEIVED
FEB 21
1958

Washington, D. C., Feb. 19, 1958

Respectfully referred to

Mr. W. R. Griswold, Director
Base Metals Division
Defense Minerals Exploration Admn.
Department of the Interior
Washington 25, D. C.

Dear Mr. Griswold:

Attached is a copy of the letter from Dr. Stuck which my office discussed with you. I will appreciate your advising my office when the application is received from the Area Office and further action is taken.

PRS
FEB 21 1958 6525

TO: MDM	
REPLY TO BE PREPARED BY:	MDM
FOR SIGNATURE OF:	MDM
COPY OF LETTER FURNISHED	
MR	
SEND REPLY COPY TO ABOVE	

Gordon Allott

Gordon Allott, U.S.S. *U. S. S.*

U. S. GOVERNMENT PRINTING OFFICE 16—45102-2

Arapahoe Mining & Uranium Corporation
309 First National Bank Building
Englewood, Colorado

February 17, 1958

Honorable Gordon Allott,
United States Senator,
Senate Office Building,
Washington, D. C.

Dear Gordon:

We applied for a DMEA loan, Docket No. 4873, under the name of the Arapahoe Mining & Uranium Corporation.

The field inspection was made under this Application in December, 1957 by Mr. Harshman of the Area office and his report has been forwarded to Washington with his recommendations. The application was on the Malachite Copper Mine in Jefferson County, 22 miles West of Denver.

Would you please check the Defense Minerals Office in Washington and help expedite this application, either in the form of approval or rejection?

Your kind consideration in this matter will be deeply appreciated.

Very truly yours,

Ralph M. Stuck, M. D.
1027 East Amherst Ave.,
Englewood, Colorado

RMS/aje

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

224 New Customhouse
Denver 2, Colorado
February 12, 1958

OFFICIAL FILE COPY
DMEA
RECEIVED FEB 17 1958

DATE	INITIALS	CC
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Memorandum

To: Secretary to the Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket No. DMEA 4873 (Copper) Arapahoe Mining and Uranium Corporation, (Malachite mine) Jefferson County, Colorado

The applicant requested the return of the two copies of the thesis by George E. Morehouse, on the geology of the Malachite mine, Jefferson County, Colorado.

One of the copies is in our file and the other copy was forwarded you with our memorandum of November 12, 1957.

When you have no further use for your copy of the thesis will you please forward it to this office so that we may return both copies to the applicant.

W H King

W. H. King

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

224 New Customhouse
Denver 2, Colorado

February 11, 1958

RECEIVED FEB 14 1958

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Memorandum

To: Secretary to the Operating Committee, DMEA

From: DMEA Field Team, Region III

Subject: Docket No. DMEA 4873 (Copper) Arapahoe Mining and Uranium Corporation (Malachite Mine) Jefferson County, Colorado - Joint Report of Examination

Enclosed are the original and two copies of the Joint Report of Examination on the subject property.

The Field Examiners conclude that the probability for making a significant discovery is not sufficiently promising to justify Government participation. Accordingly, they recommend that the application be denied, in which the Field Team concurs.

Please note that Figures 2 and 3 were printed directly from tracings prepared by Lyman Huff of the U. S. Geological Survey. These figures will be used in a forthcoming publication by Mr. Huff and must not be reproduced without his permission.

W H King

W. H. King
Executive Officer

Enc.

Reviewed by
DMEA OPERATING COMMITTEE
2-19-58
(date)

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver, Colorado

DMEA
DEPARTMENT OF THE INTERIOR
FEB 6 - 1958
REGION III
DENVER, COLORADO

February 6, 1958

OFFICIAL FILE COPY
DMEA
RECEIVED FEB 14 1958
2/19 130 220

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: E. N. Harshman

Subject: DMEA Docket 4873 (Copper), Arapahoe Mining and Uranium Corporation (Malachite mine), Jefferson County, Colorado

Enclosed are the original and seven copies of the joint examination report on the subject application for DMEA exploration assistance. Denial of the application is recommended.

Please note that Figures 2 and 3 were printed directly from tracings prepared by Lyman Huff of the U. S. Geological Survey. These figures will be used in a forth coming publication by Mr. Huff and must not be reproduced without his permission.

E. N. Harshman
E. N. Harshman
Member, Field Team

Enclosures (8)

Reviewed by
DMEA OPERATING COMMITTEE
2-19-58
(date)

RECEIVED FEB 14 1958
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UNITED STATES
DEPARTMENT OF THE INTERIOR
FRED A. SEATON, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

ON SITE REPORT

DMEA 4873

Arapahoe Mining and Uranium Corporation

Malachite mine

Jefferson County, Colorado

Copper

Joint Engineering and Geologic Report

by

E. N. Harshman, Geologist
Geological Survey

W. W. Winkel, Mining Engineer
Bureau of Mines

February 5, 1958

Reviewed by
DMEA OPERATING COMMITTEE
2-19-58
(date)

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Introduction and summary..... 1

Location, topography, and physical features..... 2

History, production, and ownership..... 3

Present status..... 6

Exploration and development..... 6

Mining equipment and other facilities..... 7

Geology and ore deposits..... 7

Ore reserves..... 11

Applicant's proposed program..... 11

Conclusions and recommendations..... 12

ILLUSTRATIONS

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2. Geological map of the Malachite mine and vicinity, Jefferson County, Colorado..... 13

3. Topographic and geochemical map of the Malachite mine and vicinity, Jefferson County, Colorado..... 13

4. Map showing drill holes and vertical magnetic intensity, Malachite mine, Jefferson County, Colorado..... 13

5. Plan map at Malachite mine property showing proposed geophysical traverses and areas covered by prior geophysical and geochemical work..... 13

DMEA 4873

2/19 2HB 130 220

ARAPAHOE MINING AND URANIUM CORPORATION
MALACHITE MINE
JEFFERSON COUNTY, COLORADO

INTRODUCTION AND SUMMARY

The Arapahoe Mining and Uranium Corporation, 309 First National Bank Building, Englewood, Colorado, applied for DMEA assistance to explore for copper ore on the Malachite mine property in Jefferson County, Colorado.

The proposed project consists of the application of geophysical, geochemical, and diamond drilling methods in an attempt (1) to extend laterally a known copper-bearing shear zone, (2) to locate parallel structures, and (3) to explore for ore bodies along any extensions or parallel structures so discovered. The three-stage program is estimated by the applicant to cost $31,644.00, Government participation 50 percent or $15,822.00.

The property was examined on December 18, 1957, by W. W. Winkel, U. S. Bureau of Mines, and E. N. Harshman, U. S. Geological Survey, in company with Ralph M. Stuck and C. J. Gillaspey, respectively president and vice-president of the applicant corporation, and D. F. Coolbaugh engineer for the corporation.

Although the proposed program of exploration is considered to be technically sound, it is concluded from data available to the examining

team that the proposed work will not result in the discovery of significant deposits of copper ore. Denial of the application for exploration assistance (DMEA Docket 4873) is therefore recommended.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The Malachite mine is located in secs. 19, 29, and 30, T. 4 S., R. 70 W., 6th P.M., Jefferson County, Colorado. The property is approximately 15 airline miles west of Denver, Colorado (fig. 1) and is accessible over paved and improved dirt roads as follows:

Start 0.0 miles	Junction U. S. Highways 6 and 40 (9-1/2 miles west of Denver) proceed west on U. S. 40.
at 4.9 miles	turn southwest (left) on Shingle Gulch road
at 5.7 miles	take right fork
at 7.3 miles	take left fork
at 7.4 miles	take right fork
at 9.4 miles	Malachite mine

The property is generally accessible throughout the year except after periods of very heavy snowfall when the last 2 miles of road may not be cleared by snow plows.

The property is in the eastern part of the Colorado Front Range of an average altitude of about 7,500 feet above sea level. A number of prominent southward trending ridges and valleys occupy the central and western parts of the property; in the eastern part these features

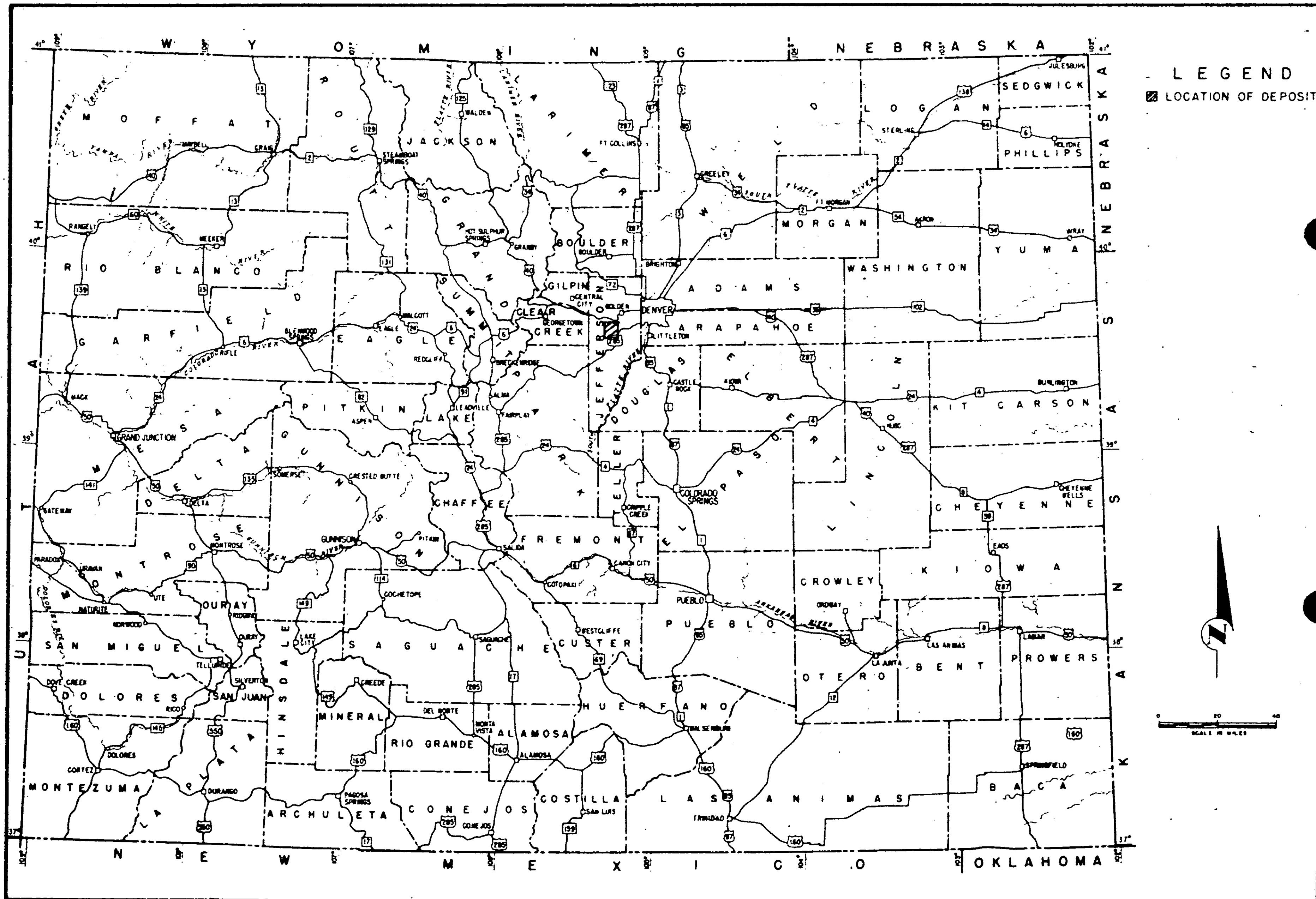

Figure 1. - Index map showing location of Malachite mine, Jefferson County, Colo. DMEA 4873

trend eastward. Relief is moderate, altitudes range from 7,000 to 7,800 feet above sea level. Drainage is southerly to Bear Creek, an eastward flowing tributary of the South Platte River.

Climate is moderate with cool summers and occasional sub-zero temperatures in winter. Winter snowfall ranges from light to moderate, with the most rigorous winter weather in the period January to March.

Vegetation consists of grasses, pine, and spruce trees.

There are no unusual problems of supply, water, power, or labor.

HISTORY, PRODUCTION, AND OWNERSHIP

The Malachite mine has been worked intermittently since the early 1880's particularly during the times of high copper prices. The present workings consist of three adits, known as the Lower East, Upper East, and West tunnels, and several shafts or raises connecting with the underground workings. Lindgren [1/] reports that prior to 1907 the value of the total production from the Malachite mine was about $35,000. This production came from a shaft 150 feet deep that now connects with the West workings.

During the years 1937 to 1939 students from the Colorado School of Mines made geophysical surveys of the Malachite mine area. Magnetic, self-potential, resistivity, and equipotential-line methods were employed. These surveys resulted in the discovery of an anomalous

---

1/ Lindgren, Waldemar (1908), Notes on copper deposits in Chaffee, Fremont, and Jefferson Counties, Colorado: U. S. Geological Survey Bull. 340, pp. 167-170.

area east of the West workings and subsequent underground work exposed ore-grade material in this area. These newer workings are known as the East workings and consist of the Upper East tunnel and Lower East tunnel.

In 1941 and 1942 the American Smelting and Refining Company drilled eight core holes with a total length of 2,704 feet. The locations of these holes are shown on Figure 4. As a result of this drilling, about 34,000 tons of ore assaying 0.05 ounce of gold, 0.90 ounce of silver, and 3-1/2 percent copper per ton were reported to have been outlined, principally in the area of the East workings.

In 1948 Lyman C. Huff, U. S. Geological Survey, started a comprehensive geochemical and geological survey of the Malachite mine area in order to secure basic data for comparing geological, geochemical, and geophysical methods of prospecting. Figures 2 and 3 were prepared by Mr. Huff on the basis of his studies.

The applicant reports production subsequent to 1907 as follows:

Sept. 1940 to March 1941	6,388 tons (from West tunnel area) containing 244 ounces of gold, 3,108 ounces of silver and 306,000 pounds of copper.
August 1946 to October 1947	5,274 tons (from Lower East tunnel area) - no grade figures available.
1957	150 tons containing 3.5 percent copper.

The recent (1957) production came from opencut operations carried out above the East and West workings. At the time of the examination the mine was not being operated but equipment was on the property for continued opencut operations.

A mining lease dated August 30, 1957, amended October 21, 1957, between the Arapahoe Mining and Uranium Corporation (lessee) and The Colorado-Kansas Syndicate of Denver, Colorado (lessor) establishes the applicant's rights to the Malachite mine property which is described as follows:

"The Malachite and Morrison Lodes with all dips, spurs, and angles, situated in the South Half (S 1/2) of the Southwest Quarter (SW 1/4) and the Southwest Quarter of the Southeast Quarter (SW 1/4 SE 1/4), except tract described in deeds recorded in books 105 and 137, at pages 295, respectively, of Section 19; the Northwest Quarter of the Northwest Quarter (NW 1/4 NW 1/4), and the South Half of the Northwest Quarter (S 1/2 NW 1/4) and the Southwest Quarter (SW 1/4) of Section 29; The North Half (N 1/2), and the North Half of the Southwest Quarter (N 1/2 SW 1/4), and tract in the Southwest Quarter of Southeast Quarter (SW 1/4 SE 1/4) of Section Thirty (30) described as follows: Beginning at the Southwest corner of Southeast Quarter (SE 1/4) said section and running thence North 87° 18' East along South Boundary of said Section 752 feet; thence North 0° .02' East 579.25 feet; thence South 87° 18' West 752 feet; thence South 0° .02' West 579.25 feet to place of beginning; also right of way 20 feet wide across any part of West

Half of Southeast Quarter (W 1/2 SE 1/4) Section Thirty (30); all in Township Four (4) South, Range Seventy (70) West; except portion being condemned for Bear Creek Road: subject, however, to the provisions, restrictions and easements of record and particularly those contained in that certain Deed dated on or about December 19, 1947, from the Lessor herein to Fred Braun and Charles Braun." The lease is in effect until August 15, 1961, and may be extended for an additional period of 25 years.

PRESENT STATUS

Exploration and development

The Malachite mine consists of three separate workings known as the West tunnel, Upper East tunnel, and Lower East tunnel. The West tunnel workings consist of a 400-foot crosscut and a 140-foot drift, a 150-foot shaft, and 2 winzes of unknown depth. The West ore body has been stoped above the drift. These workings were partly inaccessible at the time of the examination.

The Upper East tunnel workings consist of a drift about 275 feet long, a raise from the drift to the surface and a short crosscut. These workings were driven along a mineralized shear zone but only minor amounts of oxidized copper-bearing material were found.

The Lower East tunnel workings consist of a 100-foot crosscut, about 360 feet of drift, and a winze of unknown depth. Considerable

stoping has been done above the drift and a major portion of the 5,274 tons of ore mined in 1946 and 1947 came from these stopes.

The locations of the eight diamond drill holes drilled by the American Smelting and Refining Company are shown on Figure 4. Details of what was found in these holes are not available.

Mining equipment and other facilities

The following equipment (contractor owned) is on the property:

1 - TD 24 Bulldozer

3 - front end loaders

2 - 10 yard tandem axle dump trucks

3 - 6 yard single axle dump trucks

1 - 350 ft^3/min I.R. compressor

2 - wagon drills

1 - RD-6 bulldozer

1 - diesel power plant

Surface buildings, satisfactory for exploration and mining activities, are located near the Lower East portal.

GEOLOGY AND ORE DEPOSITS

The Malachite mine is located about 15 miles southwest of Denver in the Front Range of Colorado. It is southeast of the Front Range Mineral Belt, as defined by Lovering and Goddard [1/] in a minor

---

1/ Lovering, T. S. and Goddard, E. N. (1950) Geology and Ore Deposits of the Front Range, Colorado: U. S. Geological Survey Prof. Paper 223.

parallel belt of small copper and uranium deposits. The area is underlain by the Precambrian Idaho Springs formation, a rock unit consisting of highly metamorphosed sedimentary rocks, and by the Precambrian Swandyke gneiss, considered to be metamorphosed volcanic rocks.

Rock types in the vicinity of the mine include quartz-biotite schist, hornblende gneiss, and pegmatite. The schistose and gneissic rocks are in parallel bands trending west to slightly north of west. Dips of the contacts between the rock units range from steeply north to steeply south. Foliation in the schistose rocks approximately parallels the contacts (fig. 2).

The metamorphic rocks are cut by many pegmatite dikes, some of which are as much as 50 feet thick. The dikes dip steeply and strike northeastward.

No major faults were noted during the examination but several minor faults are exposed in the underground workings. A majority of the minor faults dip steeply and strike north to northwestward.

The major structural feature in the mine area is a prominent shear zone in which the known ore deposits are found. This zone is about 2,700 feet long and ranges in width from a few feet at the eastern and western extremities, to as much as 80 feet in the vicinity of the East workings. The shear zone strikes east and dips steeply north. The outcrop is marked by a gossan containing limonite and

minor amounts of malachite, azurite, and chrysocolla. A brief examination of the surrounding area failed to reveal any additional parallel or en echelon shear zones.

The ore deposits in the East and West workings are similar and consist of irregular lenticular bodies of brecciated wall rock containing pyrrhotite, pyrite, and chalcopyrite, as the dominant sulfides, and minor amounts of galena, sphalerite and magnetite. Silica is present as small stringers of "vein" quartz, as silicified fragments of wall rock in the ore, and as silicification of the host rocks.

No significant zone of supergene sulfide minerals is present at the Malachite mine. According to Morehouse [1/] very minor amounts of bornite, chalcocite, and covellite are present in the ore but these minerals are recognized only in polished sections.

The West ore body, not accessible at the time of the examination, is reported to be a pipe like ore body with rather indefinite walls. It has a known strike length of about 140 feet and a width of 10 to 30 feet. Sulfide ore is said to have been stoped to a height of 30 feet above the level and it is reported in a winze at a depth of 45 feet below the level, where it is about 4 feet wide.

The East ore body is an irregular pipe like deposit at least 360 feet long, and ranging in width from 15 to 40 feet. It extends 15 to 20 feet above the level, and was cut by diamond drill holes at

---

1/ Morehouse, George E. (1950) Geology of the Malachite mine, Jefferson County, Colorado; unpublished Masters thesis--Colorado School of Mines.

a depth of 300 feet below the level. About 5,000 tons of sulfide ore has been mined from this ore body.

The origin and age of the ore bodies at the Malachite mine are not definitely known. The association of the ore with hornblende gneiss has led to some speculation that the West ore body may be a magmatic segregation in a basic intrusive. This interpretation is open to some doubt and both ore bodies appear to have originated from hydrothermal solutions ascending along the shear zone in which the ore bodies are found.

Two periods of mineralization have been postulated for the ore deposits in the Front Range, an older Precambrian period and a younger Tertiary period. The copper deposits at the Malachite mine are believed to be of Precambrian age.

Considerable geophysical, geochemical, and diamond drilling exploration has been done at the Malachite mine. Figure 4 shows the extent of the vertical magnetic intensity surveys completed by the Colorado School of Mines geophysical classes. This work defined very high anomalous areas in the vicinity of the West and Lower East workings but failed to outline significant anomalies to the east of the Lower East workings.

Geochemical studies conducted by Lyman C. Huff, started in 1948, outlined significant copper anomalies in soil over the shear zone and extending as much as 600 feet downhill from it. In the eastern

and western parts of the area studied by Huff, copper in the soil is not anomalously high. The results of Huff's studies are shown on Figure 3.

The locations of eight diamond drill holes drilled by the American Smelting and Refining Company in 1941 and 1942 are shown on Figure 4. These holes indicate that the East ore body extends to a depth of about 300 feet where its width is reported to be 4 to 5 feet.

ORE RESERVES

Based on the results of diamond drilling, the American Smelting and Refining Company is reported to have estimated ore reserves of all classes to be about 34,000 tons containing about 3-1/2 percent copper. Since these estimates were made, some ore has been mined and an estimate of 30,000 tons of ore containing 3-1/2 percent copper seems reasonable.

APPLICANT'S PROPOSED PROGRAM

The applicant proposes to explore the Malachite mine area by geophysical, geochemical, and diamond drilling methods at an estimated total cost of $31,644.00. The program is in three stages as follows:

Stage I--Magnetic surveys along the traverses shown on Figure 5; stations on the traverses would be 50 feet apart.

Stage II--In areas of anomalous magnetic readings self-potential geophysical studies and geochemical studies would be conducted.

Stage III--Diamond drilling of areas shown by Stage I and Stage II exploration to contain significant geophysical and geochemical anomalies.

A rectangular area that has been extensively explored by geophysical, geochemical, and diamond drilling methods is excluded from proposed project area. The excluded area, the areas covered by prior exploration, and the area proposed for exploration are shown on Figure 5.

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the copper deposits at the Malachite mine are genetically related to the prominent shear zone in which they are found and that if additional ore bodies are present on the property they will be associated with similar shear zones.

Geologic mapping by Huff (fig. 2), confirmed by the examining team, has defined the eastern and western limits of the shear zone in which the known ore bodies occur and it appears that the zone does not continue east or west of the area already intensively explored by geophysical, geochemical, geological, and diamond drilling methods (fig. 5). Geochemical exploration by Huff (fig. 3) has shown a very abrupt decrease in the copper content of the soil both to the east and west of the known limits of the shear zone. These

facts suggest that exploration for extensions of the known copper-bearing shear zone (outside the small rectangular block already extensively explored) would be fruitless.

The applicant, apparently because of a lack of knowledge of any portion of the property except the immediate mine area, could offer no evidence of unexplored mineralized structures on the property. A brief survey by the examining team of the areas surrounding the Malachite mine area failed to locate any potentially ore-bearing structures. Without potential targets, work north and south of the intensively explored block is considered prospecting.

For reasons outlined above it is recommended that the application of the Arapahoe Mining and Uranium Corporation (DMEA Docket 4873) be denied.

		CODE
2/10	C	220
2/10	[illegible]	

224 New Customhouse
Denver 2, Colorado
February 6, 1958

Memorandum

To: E. N. Harshman) w/enclosures, Items 1 to 5, below
DMEA/DFC (Binyon) w/enclosures, Items 1 to 6, below

From: DMEA Field Team, Region III

Subject: Docket No. DMEA 4921 (Copper) Good Venture Mining Company, (Comstock Mine) Laramie County, Wyoming

Enclosed is the following material relating to the subject docket:

1. Copy of application for Government assistance in exploration work under the DMEA program.

2. Memorandum of review by A. D. McMahon, U. S. B. M.

3. Memorandum of review by N. E. Nelson, U. S. G. S.

4. Letter of transmittal of the foregoing to this office, dated January 31, 1958, from Chairman, Operating Committee, DMEA.

5. Routing Control Sheet.

6. Photo copy of mining leases dated January 12, 1956, and assignment of the lease, dated January 19, 1956.

A field examination of the property and a joint report of findings and recommendations pertaining to the applicant's work proposal are requested.

The applicant has been requested to furnish three bids for diamond drilling but these bids have not as yet been received in this office.

If the Field Examiners recommend Government participation in the proposed exploration program please submit 11 extra copies of each map used in the joint report which show the land to be subordinated and the location and extent of recommended work, relative to property boundaries.

Please return the routing control sheet with the joint examination report.

Original signed by
W. H. KING

W. H. King

Enclosures

HMC;hmh

cc: Secretary, Op. Comm. (2)
Docket
Chron

224 New Customhouse
Denver 2, Colorado

December 3, 1957

OFFICIAL FILE COPY
DMEA
RECEIVED DEC 6 1957

DATE	INITIALS	CODE
12/6	C	220
~~12/6~~	~~Kbg~~	~~500~~

Memorandum

To: E. N. Harshman) With enclosures,
DMEA/DFC) Items 1 to 5, below

From: DMEA Field Team, Region III

Subject: Docket No. DMEA 4873 (Copper) Arapahoe Mining & Uranium Corp.
(Malachite Mine) Jefferson County, Colorado

Enclosed is the following material relating to the subject docket: -

(1) Copy of application for Government assistance in exploration.

(2) Memorandum of review of the application by A. D. McMahon, USBM.

(3) Memorandum of review of the application by N. E. Nelson, USGS.

(4) Letter of transmittal of the foregoing, to this office dated November 27, 1957, from the Chairman, Operating Committee, DMEA.

(5) Routing Control Sheet.

A field examination of the property and a joint report of findings and recommendations pertaining to the Applicant's work proposal are requested.

Your attention is especially directed to the six important points for consideration in the Chairman's letter.

Eleven extra copies of each map used in the joint report, which show the land to be subordinated and the location and extent of recommended work, relative to property boundaries, should be submitted if Government participation is recommended.

Please return the Routing Control Sheet to this office.

The only copy of the geology of the Malachite Mine by George E. Morehouse is included in the Survey brochure.

Original signed by
W. H. KING

W. H. King,
Executive Officer

HMC:bh
cc-Sect., Op. Comm. (2)
Docket
Chron.

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
11/26	Kluegel	500
11/27	[illegible]	130
11/27	[illegible]	110
"	[illegible]	100
11/29	[illegible]	220
		500

NOV 27 1957

Mr. E. N. Harshman
Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-4873 (Copper)
Arapahoe Mining & Uranium Corp.
Malachite Mine
Jefferson County, Colorado

Dear Mr. Harshman:

The cited application for exploration assistance is being referred to your office for consideration, a field examination of the property if warranted, and recommendations.

If the project is favorably considered by the Field Team, the following points should be taken into consideration:

1. Only one bid was received for the diamond drilling and it would be necessary to obtain two more.

2. The locations of the 8 drill holes drilled by the American Smelting & Refining Company are missing from any data included with the application. However, they are to be found in Volume 164 of the Transactions of the American Institute of Mining and Metallurgical Engineers - Geophysics - 1945, Fig. 2, as a part of the same report which was submitted with the application but for which the maps are lacking. The assay results of the drill holes are not included in this report. It would be very helpful if the results of these drill holes could be obtained, but it may not be possible to do so at this late date.

3. The size of the bulldozer to be used would be necessary when preparing a contract.

4. It would appear that some of the geophysical work requested would be a repetition of work that was previously done. However, the Applicant might have some special reason for wishing to check some results, and this can only be ascertained by a discussion of the work with the consultants.

8623

5. It might be well to ascertain the method of geochemical survey the Applicant has in mind. We have been informed that the Japanese have developed a method for copper which is very effective. They have mentioned that the U.S.G.S. made a geochemical survey of the property and, if the results are available, it would be well to discover why there should be further work along this line.

6. The property is held by virtue of a lease and, if a contract should be granted, it would be necessary to obtain a Consent to Lien and Subordination Agreement from the owners.

Copies of memoranda dated November 18 and 19, 1957, by N. E. Nelson, Geological Survey, and A. D. McMahon, Bureau of Mines, respectively, relating to the project, are enclosed for your information. We are also enclosing two copies the application for the use of the Field Team.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

Enclosures

APPROVED:

Frank D. Lamb (GCS)

Member, Bureau of Mines

W. P. Williams (GCS)

Member, Geological Survey

WPKlugescheid/bjm (written 11/26/57)

Copy to: Docket
Admr. R. File
Op. Committee
Mr. McMahon
Mr. Kiilsgaard
Chron.

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
11/26	Klugescheid	500
11/27	Selfridge	130
11/27	Lamb	130
11/27	Jones	110
27	Mittendorf	100
11/29	gb	220
		500
11/27	Williams	130

NOV 27 1957

Mr. Ralph M. Stuck, President
Arapahoe Mining & Uranium Corporation
309 First National Bank Building
Englewood, Colorado

Re: Docket No. DMEA-4873 (Copper)
Arapahoe Mining & Uranium Corp.
Malachite Mine
Jefferson County, Colorado

Dear Mr. Stuck:

Your application for Government assistance to explore the cited property has been reviewed by the Division of Base Metals of the Defense Minerals Exploration Administration and has been referred to:

Mr. E. N. Harshman
Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

If the Field Team requires additional information concerning your application, they will contact you at an early date.

Sincerely yours,

C. O. Mittendorf (for)

Administrator

WPKlugescheid/bjm (11/26/57)

Copy to: Docket
Admr. R. File
Op. Committee
Mr. McMahon
Mr. Kiilsgaard
Region III (2)
Chron.

8623

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

November 19, 1957

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: Commodity Specialist, Branch of Base Metals

Subject: Review of Application, Docket No. DMEA-4873 (copper), Arapahoe Mining & Uranium Corporation, Malachite Mine, Jefferson County, Colorado. $31,644.00.

The applicant requests Government assistance in an exploration program consisting of geophysical and geochemical surveys and subsequent drilling of 8 diamond drill holes.

As pointed out by the Acting Executive Officer of the Field Team a considerable amount of this type of exploration has been done on the property. It is suggested that the applicant be requested to attempt to obtain the results of all previous exploration work.

Referral of the application to the Field Team for appropriate action is recommended.

A. D. McMahon

A. D. McMahon

Attachment

Copy to: Division of Minerals
Branch of Base Metals (2)
Thor Kiilsgaard, U. S. G. S.
F. D. Lamb
F i l e s

OFFICIAL FILE COPY
DMEA
RECEIVED NOV 19 1957

DATE	INITIALS	CODE
11/20	gb	220
11/20	RLug	500

IN REPLY REFER TO:

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

November 18, 1957

Re: DMEA 4873
Arapahoe Mining &
Uranium Corp.
Malachite Mine
Jefferson Co., Colo.
$31,644 - Copper

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of application

The applicant requests assistance in continuing the exploration of a zone, part of which has already been prospected and from which 16,812 (estimate) tons of ore has been shipped. As a result of a geophysical survey made by a Golden student, the zone is believed to have been extended easterly and further exploratory work justified.

The proposed work program consists of:-

Stage I	Magnetic survey, 1300 magnetometer readings	$3,650
Stage II	Self-potential and geochemical surveys	$2,350
Stage III	Diamond drilling	$23,044

Referral of the application to the Field Team is recommended. An analysis of the results obtained by the American Smelting and Refining drilling, if available, and other data, may enable evaluation of the potential of the zone.

OFFICIAL FILE COPY
DMEA
RECEIVED NOV 19 1957

DATE	INITIALS	CODE
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11/20	K Eug.	500

N. E. Nelson

N. E. Nelson

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

November 14, 1957

Arapahoe Mining & Uranium Corporation
309 First National Bank Building
Englewood, Colorado

Gentlemen:

Subject: DMEA-4873

Your application for exploration assistance, dated November 1, 1957 submitted to our office at Denver, Colorado has been assigned Docket Number DMEA-4873 and referred to the Base Metals Division in the Washington office. Kindly identify all future correspondence relating to your application by this Docket Number.

Sincerely yours,

Allen S. Dakan, Director
Operations Control and
Statistics Division

Copy to:

Region III

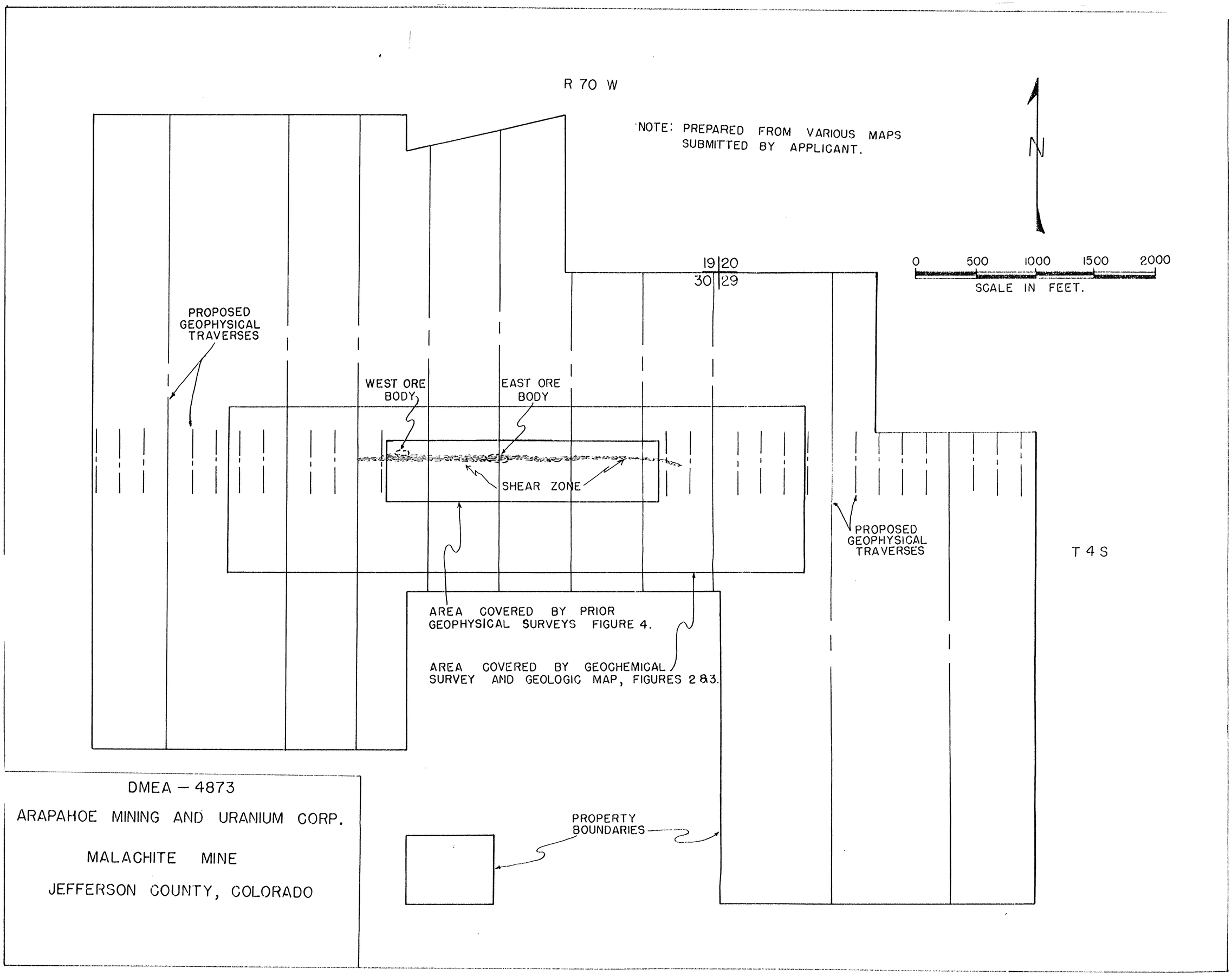


FIGURE 5. PLAN MAP AT MALACHITE MINE PROPERTY SHOWING PROPOSED GEOPHYSICAL TRAVERSES AND AREAS COVERED BY PRIOR GEOPHYSICAL AND GEOCHEMICAL WORK.

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

DMEA 4873
EXAMINATION REPORT

PREPARED FOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

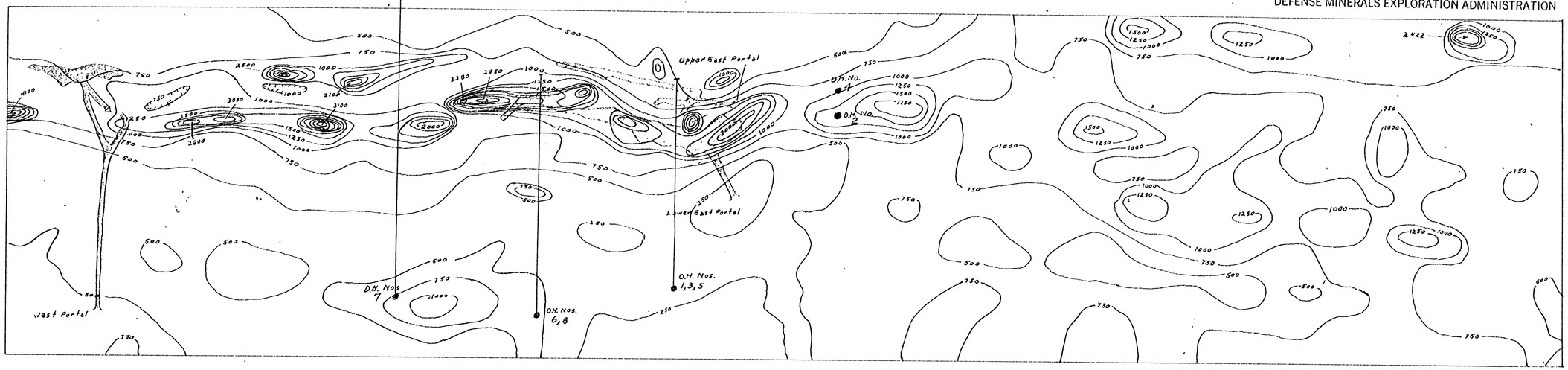


FIGURE 4. MAP SHOWING DRILL HOLES AND VERTICAL MAGNETIC INTENSITY, MALACHITE MINE, JEFFERSON COUNTY, COLORADO.

N

SCALE

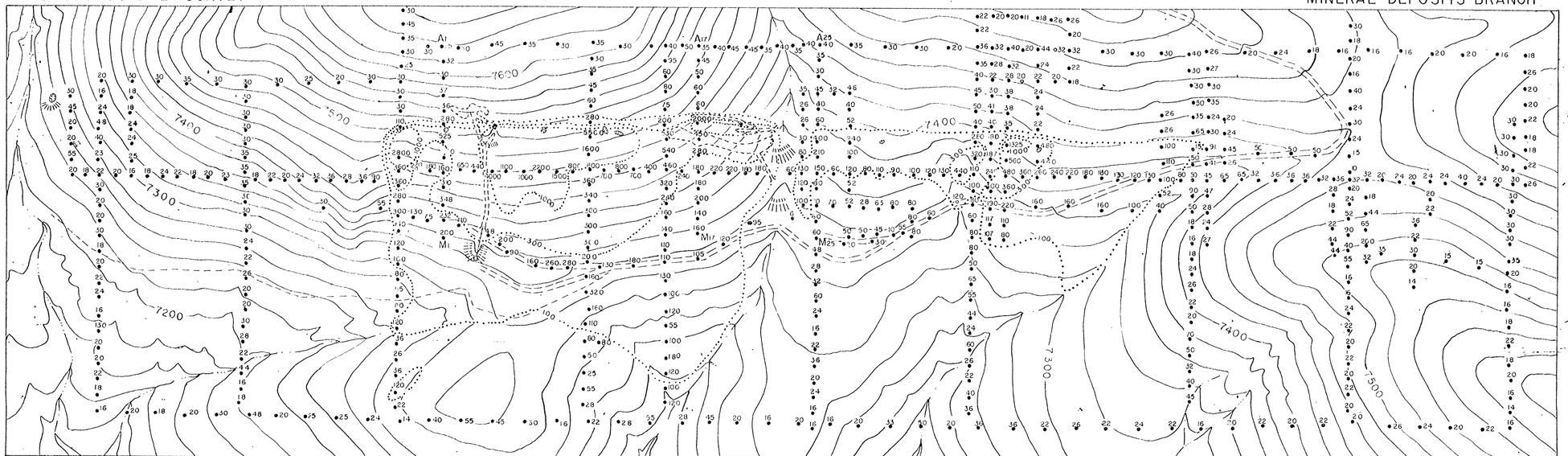
0 100 200 300 feet

CONTOUR INTERVAL - 250 GAMMAS

CONFIDENTIAL
NOT FOR PUBLIC RELEASE OR QUOTATION

U. S. GEOLOGICAL SURVEY

MINERAL DEPOSITS BRANCH



EXPLANATION

- • 40 Sample site and copper concentration in parts per million of soil sample.
- 300 Copper contour connecting places of equal copper concentration. Copper contours are shown for 100, 300, and 1000 parts per million copper content
- Projection of mine workings.
- Mine shaft.
- Prospect pit.
- Dumps.
- 7400 Topographic contour, showing altitude in feet above mean sea level. Datum taken from Denver Mountain Parks Quadrangle. Contour interval 20 feet.
- Dirt road.
- Trail

Topography by Harold Bloom

TOPOGRAPHIC AND GEOCHEMICAL MAP OF THE MALACHITE MINE AND VICINITY, JEFFERSON COUNTY, COLORADO

Geochemistry by Lyman Huff 1950-52

Fig 3

100 0 100 200 300 400 500 FEET

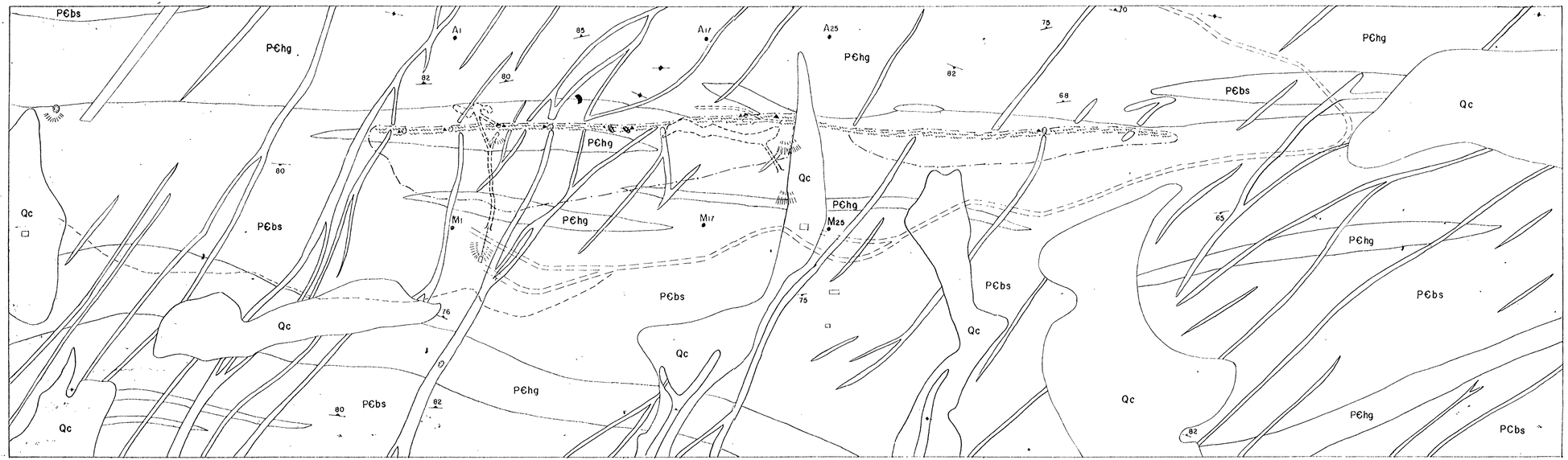
N

$13\frac{1}{2}°$

CONFIDENTIAL
NOT FOR PUBLICATION OR QUOTATION

U. S. GEOLOGICAL SURVEY

MINERAL DEPOSITS BRANCH



Base from topographic map by Harold Bloom

GEOLOGICAL MAP OF THE MALACHITE MINE AND VICINITY, JEFFERSON COUNTY, COLORADO

Fig. 2

Geology by Lyman Huff

1951-52

100 0 100 200 300 400 500 FEET

N

14½°

EXPLANATION

Quaternary

Qc — Colluvium

Pre-Cambrian

PЄp — Pegmatite

PЄhg — Swandyke hornblende gneiss

PЄbs — Idaho Springs biotite schist

Shear zone

Malachite stains

Approximate boundry of iron-stained float

Strike and dip of foliation

Strike of vertical foliation

Projection of mine workings

Mine shaft

Prospect pit

Dump

A1

Colorado School of Mines grid stake

Trail

Dirt Road

Fault boundary
Follow dot at M25
North line
Mine at M25

PLATE I

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF COLORADO
REPRESENTED BY THE
STATE ENGINEER

COLORADO
DENVER MOUNTAIN PARKS
QUADRANGLE

FOR SALE BY U.S. GEOLOGICAL SURVEY, FEDERAL CENTER, DENVER, COLORADO OR WASHINGTON 25, D.C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

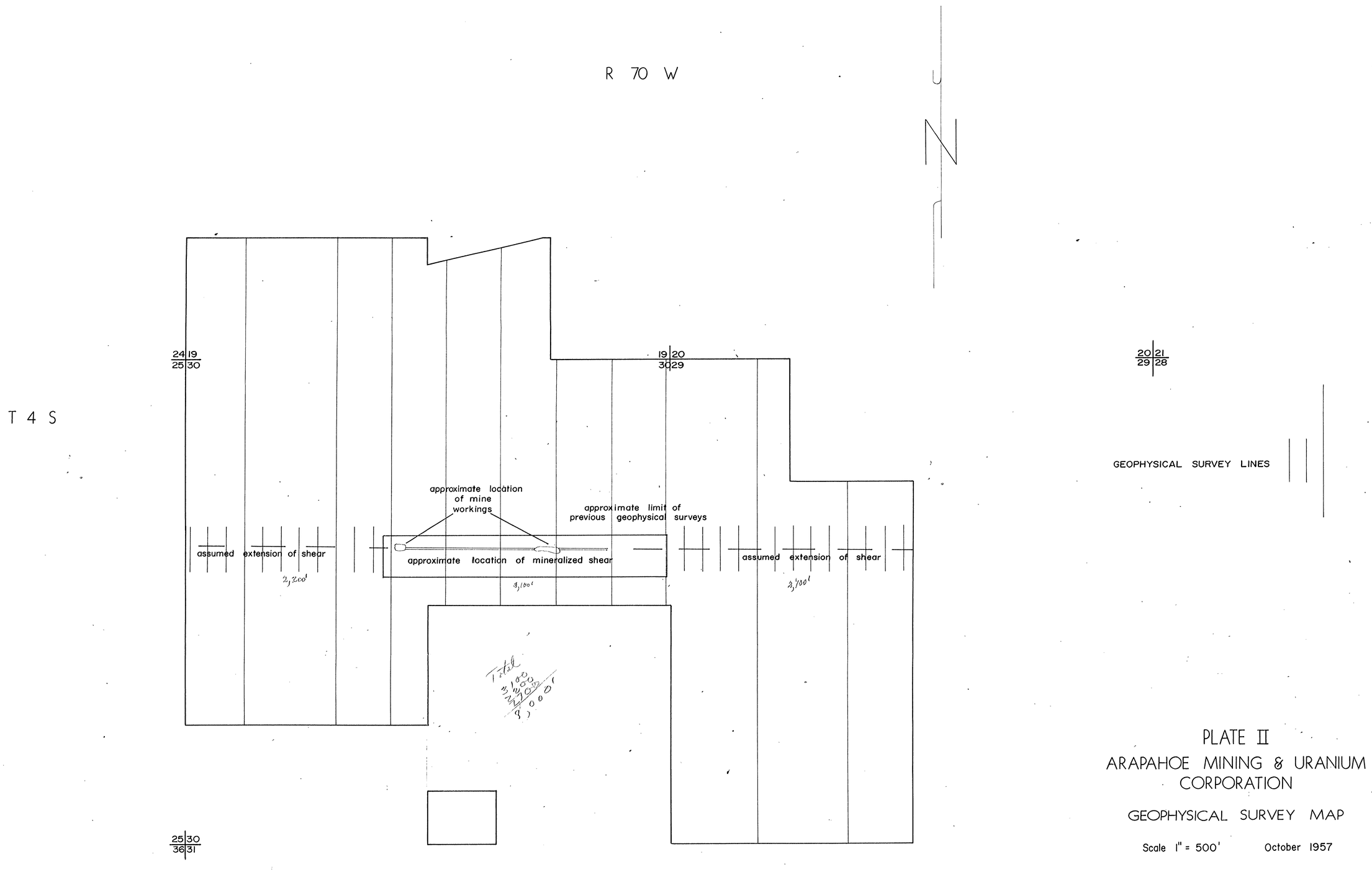


PLATE II

ARAPAHOE MINING & URANIUM CORPORATION

GEOPHYSICAL SURVEY MAP

Scale 1" = 500' October 1957

D.P.C.