DEC 21 1955

Mr. Sam L. Phillips

Spruce Pine, North Carolina

Re: Docket No. DMEA-3061 - Mica
Howard Boone, et al.
Jeff Howell Mine (Jeff Sparks Mine)
Mitchell County, North Carolina

Dear Mr. Phillips:

This is to acknowledge receipt of your letter of December 12, 1955, withdrawing the above-referenced application.

The application has been withdrawn from our active file and the matter is now considered closed. We regret that we are unable to comply with your request for the return of your application.

We wish to thank you for your interest in the Defense Minerals Program.

Sincerely yours,

C. O. Mitendorf

Administrator

JHopkins:gad 12/20/55
Copy to: Admr. R. File
Docket
Field Team, Region V
Mr. Kiilsgaard, 5222
Mr. Dietrich, 3061
Mr. Houk
Mr. Hopkins

December 20, 1955

Memorandum

To: Operations Control and Statistics Division

From: Nonmetallic Minerals Division

Subject: Withdrawal of application - Docket No. DMRA-3561 - Mica
Howard Boone, et al.
Jeff Howell Mine (Jeff Sparks Mine)
Mitchell County, North Carolina

In a letter dated December 12, 1955, the applicants withdrew the above-referenced application.

The application, therefore, will be considered in inactive status and placed in our inactive file.

James Hopkins
Nonmetallic Minerals Division

JHopkins:gad 12/20/55
Copy to: Docket
Admr. R. File
Mr. Houk
Mr. Hopkins

600

NOV 14 1955

Mr. Sam L. Phillips

Spruce Pine, North Carolina

Re: Docket No. DMEA-3061 - Mica
Howard Boone, et al.
Jeff Howell Mine (Jeff Sparks Mine)
Mitchell County, North Carolina

Dear Mr. Phillips:

Reference is made to our letter dated September 14, 1955, regarding the lease and Consent to Lien on the subject property and your reply dated September 29, 1955, stating you were making an effort to get the necessary forms signed and hoped to get something done in the near future.

We trust that you will soon submit those documents so that we may continue processing your application.

Sincerely yours,

Ralph Mitchell

Administrator

JHopkins:ad 11/10/55
Copy to: Admr. R. File
Docket
Operating Committee
Field Team, Region V
Mr. Kiilsgaard, 5222
Mr. Dietrich, 3061
Mr. Houk
Mr. Hopkins

Memorandum

To: Files

From: James Hopkins

Subject: Docket No DMF A3861 - Mica

Jeff Howell Mine

During a visit to this office October 24th Mr. Sam Philips was asked about the status of this application and if a lease on the property had been executed.

It appears that the obtaining of a lease has been held up because of the necessity of securing a lease of land adjoining the Jeff Howell property.

He stated he had talked with Mr. Lawrence about a program involving only diamond drilling. This does not appear very attractive as he would not want to be obligated to develop the property with a shaft and drifts at his own expense if drill holes showed the pegmatite extended down dip.

He said that the small amount of probing with short winzes below the Adit level gave evidence that the pegmatite will continue down dip for a considerable distance.

He said the work proposed for the western part of the property would not be justified and the cost of rehabilitation of the west arm would be prohibitive.

Memorandum

To: Files
From: James Hopkins
Subject: Evaluation of application and Field Team report
Docket No DMEA 3861
Howard Boone et al (Boone, Beam & Phillips)
Jeff Howell Mica Mine
Mitchell County, North Carolina

This mine has been a substantial producer of mica over a long period. The pegmatite mined has been relatively rich in mica and the mica is good quality.

The Field Team states, "Additional reserves of mica are probably available below levels previously worked".

Mica

The only workable deposit of sheet mica in the mine area is the relatively thin, medium-grained oligoclase-quartz-microcline pegmatite.

The mica books are bronzish-tan in color, and range from 1 inch to 14 inches in diameter. The average block is 3 x 4 x 1 inches. Most of the books are slightly warped, and a few contain faint "A" structure. Mineral inclusions are rare. A light green stain is a minor defect. The mica is free splitting

hard, and contains no air staining. The quality of the trimmed sheet material is good, almost all being classed as No. 1 and No. 2 superior. The recovery of sheet mica from block mica is reported to be about 16% (It is probably not more than 10%) The ratio of sheet to punch sizes in the trimmed mica is about 4:3

Pegmatite:

The country rock of the area consists of inter-layered fine to medium grained hornblende and biotite gneisses.

Three types of pegmatite have been intruded into the country rock.

One, a relatively thin medium-grained pegmatite has been mined for its mica. Another ~~a~~ thicker medium-grained one was mined for feldspar. The third and thickest is a fine-grained pegmatite that has little or no commercial value.

The mica-bearing pegmatite, ranging from 2 to 10 feet in thickness consists dominantly of a medium-grained aggregate of oligoclase, quartz and microcline in an estimated 3:2:1 ratio. Muscovite probably constitutes less than five percent of the pegmatite. Very minor amounts of biotite, garnet, sericite and apatite occur throughout the pegmatite. Only a few crystals of feldspar more than 6 inches in diameter were observed. The quartz is intimately intergrown with the feldspar crystals and no segregations

of massive quartz were noted. A few thin veinlets of quartz cut across both pegmatite and gneiss. The structure is complicated in detail by rolls and inclusions of gneiss.

Rolls have played a definite part in the mica concentration control.

The major roll in the stope in the western part of the workings appear to contain more and larger blocks of muscovite than the adjacent less contorted parts of the pegmatite.

The best concentrations of mica encountered in sinking the present incline may be due to a combination of a gentle roll of the pegmatite and the "feathering out" end of a gneiss septum.

Within the pegmatite the hanging-wall side is generally richer. Where horses of gneiss split the pegmatite, as in the eastern incline, the upper pegmatite body appears to contain more muscovite than the lower. There is no apparent orientation of the mica books.

The pegmatite has been worked over a strike distance of 250 feet in the east and west arms of Adit A.

Old Workings:

The northern workings consist of two adjacent open cuts in an east-sloping hillside. These workings are mainly on the feldspar pegmatite.

The southern workings have been entirely like

result of operations for mica

The pegmatite was first worked by inclines from the hillside but are now mostly obliterated Adit A extends northward for 180 feet from the level of the creek (alt. 2505 ft) then forks to the west and northeast for about 120 feet in each direction. A 60-ft raise has been sunk near the end of the eastern arm (1944 operations)

Adit "B" was driven into the hillside at E12560 for 90 feet to intersect the pegmatite.

The pegmatite has been largely mined out from a block of ground between the arms of Adit "A" and the surface

It is reported that old workings extend 25' to 30' below the level of Adit "A" in the center of the workings.

Three small passageways lead into old caved stopes from Adit A, but appear too dangerous to enter

Method of Exploring

The Applicant proposes to drill 3 D.D. holes to explore for the pegmatite down dip. If results are promising, it is proposed to sink a vertical shaft 100 deep to the pegmatite and then to drive 150 feet of drifts on the pegmatite

The Field Team propose to drill four

D.D. holes to explore for the down dip extension of the pegmatite. If results are promising sink a 125- foot vertical shaft to the pegmatite and drift for 150 feet on the pegmatite.

Four drill holes are proposed by the Field Team - all to be located where only the extension in depth of the Eastern part of the pegmatite will be explored.

The Field Team report does not recommend any drilling to explore down dip from the western arm, altho a previous U.S.G.S. report states a major roll in the pegmatite in the West end should be given particular attention.

The Diamond Drilling proposal is good sound mining engineering practice for exploratory purposes but shaft sinking to follow the drilling is more of the nature of development and would therefore not be eligible for government assistance.

SEP 23 1955 600

Mr. Robert A. Laurence
Executive Officer, DMEA
Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

Subject: Docket No. DMEA-3061 - Miss
Howard Boone, J. H. Boone,
John Phillips and Sam Phillips
Jeff Howell Mine (Jeff Sparks Mine)
Mitchell County, North Carolina

Dear Mr. Laurence:

Reference is made to the Field Team examination report, dated July 13, 1955, and Mr. Houk's telephone conversation September 7, 1955, on the subject property.

It is noted that the proposed work is to be performed in two stages. The first stage consists of diamond drilling four holes to explore down dip on the pegmatite from the east arm of Adit A. The second stage to consist of sinking a vertical shaft to the pegmatite and drifting on the pegmatite.

It is considered by this office that possibly the work under Stage II might be more accurately classified as development if carried out after the completion of a successful diamond drilling phase of the work. Under the circumstances, the work under Stage II would not be eligible for Government exploration assistance.

Therefore, as an alternate to your proposal we suggest a program involving your proposed diamond drill holes with at least two additional holes to explore down dip from the west arm of the Adit A, and to extend the drift on the west arm of Adit A a distance of 50 to 75 feet.

If you approve this alternate proposal please discuss it with the applicants. If it meets with their approval we will process their application along these lines.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

Approved:

/s/ Robert W. Geehan

Member, Bureau of Mines

N. E. Nelson

Member, Geological Survey

JHopkins:gad 9/21/55
Rewritten 9/22/55
Copy to: Admr. R. File
Docket
Mr. Houk
Operating Committee
Mr. Dietrich, 3061
Mr. Kiilsgaard, 5222
Mr. Hopkins

Mr. Robert A. Laurence
Executive Officer, DMEA
Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

Subject: Docket No. DMEA-3061 - Mica
Howard Boone, J. R. Boone,
John Phillips and Sam Phillips
Jeff Howell Mine (Jeff Sparks Mine)
Mitchell County, North Carolina

Dear Mr. Laurence:

Reference is made to the Field Team examination report, dated July 13, 1955, and Mr. Nouk's telephone conversation September 7, 1955, on the subject property.

It is noted that the proposed work is to be performed in two stages. The first stage consists of diamond drilling four holes to explore down dip on the pegmatite from the east arm of Adit A. The second stage to consist of sinking a vertical shaft to the pegmatite and drifting on the pegmatite.

It has been determined by this office that the work under Stage II might be more accurately classified as development if carried out after the completion of a successful diamond drilling phase of the work. Therefore, the work under Stage II is not eligible for Government exploration assistance.

As an alternate to your proposal we suggest a program involving your proposed diamond drill holes with at least two additional holes to explore down dip from the west arm of the Adit A and to extend the drift on the west arm of Adit A a distance of 50 to 75 feet.

If you approve this alternate proposal please discuss it with the applicants. If it meets with their approval we will process their application along these lines.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

Approved:

/s/ Robert W. Geehan
Member, Bureau of Mines

N. E. Nelson
Member, Geological Survey

JHopkins:gad 9/21/55
Copy to: Admr. R. File
Docket
Operating Committee
Mr. Kiilsgaard, 5222
Mr. Dietrich, 3061
Mr. Nouk
Mr. Hopkins

SEP 14 1955

Mr. Sam L. Phillips

Spruce Pine, North Carolina

Re: Docket No. DMA-3061 - Miss
Howard Boone, J. R. Boone,
John Phillips and Sam Phillips
Jeff Howell Mine (Jeff Sparks Mine)
Mitchell County, North Carolina

Dear Mr. Phillips:

Reference is made to your letter, dated June 17, 1955, stating that copies of the lease and Consent to Lien forms on the subject property were being prepared and would follow. To date they have not been received.

Upon receipt of these documents we will continue processing your application.

Sincerely yours,

F. L. Knouse, Acting Chief
Nonmetallic Minerals Division

JHopkins:gad 9/14/55
Copy to: Admr. R. File
Docket
Field Team, Region V
Mr. Kiilsgaard, 5222
Mr. Dietrich, 3061
Mr. Houk
Mr. Hopkins

September 7, 1955

Mr. L. G. Houk calling Mr. R. A. Laurence, Knoxville, Tennessee

Re: Docket No. DMEA-3861 - Mica
Howard Boone, J. R. Beam,
John and Sam Phillips
Jeff Howell Mine
Mitchell County, North Carolina

Mr. Houk: There has been some thought in giving them a more extensive diamond drilling program and letting them go ahead on their own. No definite determination has been made on that. We have been having discussions on bringing our mica program more in line with other programs such as uranium, etc., where the Government participates in a diamond drilling program to explore for an ore body. If any when a new ore body is discovered by diamond drilling, Government assistance will end and the operator allowed to carry on additional work on his own.

Mr. Laurence: If you do the drilling and discover a deposit like the Campbell as long as it is consistant throughout the country we have no objections to that. If they prove tonnage then shaft sinking becomes development.

Mr. Houk: We will throw this idea around for the next few weeks.

Mr. Laurence: If we do it for one and do it differently for another that makes for unpleasant feelings. However, I would put mica in a different class. All you prove in mica is that there is a pegmatite.

Mr. Houk: There will be some deviations from that. Where ~~no~~ pegmatite has been mined out we would not have to do anything but the drilling.

Mr. Laurence: That would be different from something brand new. I would be inclined to agree with that.

Mr. Houk: I think we can work out something.

LGHouk:gad 9/7/55
Copy to: Admr. H. File
Docket
Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D.C.
ROOM POST OFFICE BLDG.
KNOXVILLE 2, TENN.

RECEIVED
AUG 30 1955

August 29, 1955

Memorandum

To: Operating Committee, DMEA - Washington

From: Field Team, DMEA - Region V - Knoxville, Tennessee

Subject: DMEA-3861 (mica) Jeff Howell Mine, Mitchell County, N. C.
Howard Boone, et al, applicants.

Reference is made to your telegram, dated August 26, 1955, concerning drilling bids, description and costs of head frame, and description and current value of operating equipment of the subject application.

The applicants have been requested to furnish three written bids signifying what costs are included for the proposed core drilling.

They have also been requested to submit a list of operating equipment owned by the group giving a description and the current value.

The head frame would be similar in construction and costs to others built under DMEA contracts in the area such as the Sinkhole Mine (DMEA 2379), Charles Robinson Mine (DMEA-3157), Liberty Mine, DMEA-2599) and the Doc Thomas Mine (DMEA-3356).

Actual Costs of Installing Headframe:

Liberty Mine - DMEA-2599, Idm-E472.

| | |
|---|---|
| Labor on poles, cutting, peeling, dragging | $27.00 |
| 2 - kegs nails @ $10 | 20.00 |
| 28 clamps, 375 ft. @ $.25 | 7.00 |
| Guy cables, 375 ft. @ .03 | 10.25 |
| 2 x 6, 2 x 8, 2 x 4 and 1" lumber 1925 ft. @ $50.00 | 96.25 |
| 2, 7 x 9 cross ties @ $1.10 | 2.20 |
| 2, 10" x 10" x 16', 266 ft. @ $90.00 | 23.94 |
| Bolts | 3.60 |
| Turn buckle | 2.25 |
| Sheave and freight on same | 77.82 |
| Building and erecting, labor | 803.84 |
| Insurance | 80.31 |
| | $ 1,165.36 |

Sinkhole - DMA-2379, Idm-E364

| | |
|---|---|
| Hardware, including, sheave, bearing, bolts, washers, hinge, nails and locks | $178.00 |
| Lumber | 487.31 |
| Labor | 390.69 |
| Total | $1,056.00 |

V. J. Lynch, Acting Executive Officer
DMA Field Team- Region V

K. H. Teague, Geologist
U. S. Geological Survey

DHA/sm
cc:
Lynch
Shirley
Files

RECEIVED

AUG 3 0 1955

August 29, 1955

Memorandum

To: Operating Committee, DMEA - Washington

From: Field Team, DMEA - Region V - Knoxville, Tennessee

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They have also been requested to submit a list of operating equipment owned by the group giving a description and the current value.

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Actual Costs of Installing Headframe:

Liberty Mine - DMEA-2599, Idm-1472.

| | |
|---|---|
| Labor on poles, cutting, peeling, dragging | $27.00 |
| 2 - kegs nails @ $10 | 20.00 |
| 28 clamps, 375 ft. @ $.25 | 7.00 |
| Guy cables, 375 ft. @ $.03 | 10.25 |
| 2 x 6, 2 x 8, 2 x 4 and 1" lumber 1925 ft. @ $50.00 | 96.25 |
| 2, 7 x 9 cross ties @ $1.10 | 2.20 |
| 2, 10" x 10" x 16', 266 ft. @ $90.00 | 23.94 |
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| Labor | 390.69 |
| Total | $1,056.00 |

V. J. Lynch, Acting Executive Officer
DM A Field Team- Region V

K. H. Teague, Geologist
U. S. Geological Survey

DHA/mm
cc: Lynch
Shirley
Files

AUG 2 6 1955

Interior
Defense Minerals Exploration
Administration
14X4401(91) Revolving Fund
Defense Production Act
Interior (Allocated Working Fund to the
Office of the Secy.)

TELETYPE

Mr. Robert A. Lawrence
Executive Officer, DMEA
Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

Refer DMEA-3361, Howard Boone, et al. Field Team report cost estimate. Please furnish three diamond drilling bids and recommendation justifying cost per foot. Does cost per foot include all costs incident to drilling? Also furnish detailed description of head frame material and construction cost, and a description of operating equipment with unit current value and depreciation rates. See especially Operating Committee Minutes No. 296, dated November 23, 1953.

George C. Selfridge

George C. Selfridge, Chairman,
Operating Committee, DMEA

JHopkins:pk 8/25/55
Copy to: Admr. R. File
Docket
Operating Committee
Confirmation - Region V
Mr. Kiilsgaard, 5222
Mr. Bistrick, 3061
Mr. Houk
Mr. Hopkins

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

RECEIVED
AUG 2 1955

August 24, 1955

Memorandum

To: Nonmetallic Minerals Division
Defense Minerals Exploration Administration

From: Acting Chief, Branch of Ceramic and Fertilizer Materials

Subject: DMEA-3861 (mica)

Applicant: H. Boone, J. R. Beam, J. Phillips, S. Phillips

Name and Location of Property: Jeff Howell Mine, Mitchell County, N. C.

Date of Field Team Report: 6/13/55

Date Rec'd. by Br. of Ceramic & Fertilizer Materials: 8/23/55

Field Team Recommendation: Recommend a 2-stage unit-cost exploration program at a cost of $14,505.00.

Comments:

1. The first paragraph of the field examination report states that Stage I consists of 5 core drill holes, but on page 7, last two lines, it is stated that Stage I consists of 4 holes, as shown on the attached plan map.

2. The proposed program of exploration will determine value of ground in mine that previously has been reported as a producer of mica.

3. Proposed exploration outlined by the field team is consistent with good engineering practices and estimated costs are in line with other DMEA projects.

Recommendation: I concur in the field team's recommendation for a staged unit-cost program of exploration.

SIGNED
Donald R. Irving

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

RECEIVED
AUG 2 5 1955

August 24, 1955

Memorandum

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Defense Minerals Exploration Administration

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

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Recommendation: I concur in the field team's recommendation for a staged unit-cost program of exploration.

SIGNED

Donald R. Irving

IN REPLY REFER TO:

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

August 23, 1955

Re: DMEA 3861
Howard Boone
Jeff Howell Mine
Mitchell Co., N. C.
$14,505.00 - Mica

Memorandum

To: L. G. Hook, Defense Minerals Exploration Administration

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

Subject: Review of Field Team report.

The pegmatites at this property possess more than average interesting features, features which prompt curiosity and warrant exploration.

The two-stage work program is well designed, though an extended section A-A' of Pray's map suggests that diamond drill hole #3 as proposed may not be deep enough. Unless the work by 'recent former' operators exhausted the apparent shances down dip from the end of the west arm of Adit A, I would recommend a drill hole to test the possibility. Pray says the major roll there should be given particular attention. A 60° hole from the hillside would need to be 120-130 feet deep if the dip continues at about 30°.

I concur with the recommendations of the Field Team.

N. E. Nelson

N. E. Nelson

NENelson:iml
G-8/23/55

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
W. F. Dietrich, 3061

RECEIVED
AUG 24 1955

IN REPLY REFER TO:

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

August 23, 1955

Re: DMEA 3861
Howard Boone
Jeff Howell Mine
Mitchell Co., N. C.
$14,505.00 - Mica

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N. E. Nelson

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NENelson:iml
G-8/23/55

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
W. F. Dietrich, 3061

RECEIVED
AUG 24 1955

IN REPLY REFER TO:

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

August 23, 1955

Re: DMEA 3861
Howard Boone
Jeff Howell Mine
Mitchell Co., N. C.
$14,505.00 - Mica

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N. E. Nelson

N. E. Nelson

NENelson:iml
G-8/23/55

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
W. F. Dietrich, 3061

RECEIVED
AUG 24 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM WASHINGTON POST OFFICE BLDG.
KNOXVILLE 2, TENN.

August 17, 1955

Memorandum

To: Operating Committee - DMEA - Washington

From: Acting Executive Officer, DMEA - Region VII

Subject: Field Examination Report, DMEA-3861 (mica) Howard Boone

Transmitted are four copies of the subject report with two maps attached to each, and nine extra copies of each map enclosed for your use.

The Field Team is in agreement with the recommendations set forth in the report and recommend a unit-cost contract.

V. J. Lynch, Acting
EXECUTIVE OFFICER
DMEA REGION V

D. H. Amos, Geologist
U. S. Geological Survey

z

RECEIVED
AUG 19 1955

~~Mr Brown~~
Mr Hopkins

RECEIVED
AUG 19 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

# REPORT OF FIELD EXAMINATION

BY

FIELD TEAM, REGION V

ON

DMEA - 3861 (mica) JEFF HOWELL MINE
Mitchell County, N. C.

By
R. A. Laurence, Geologist U. S. G. S.
K. M. Teague, Geologist U. S. G. S.
D. H. Amos, Geologist U. S. G. S.
and
L. B. Shirley, Mining Engineer
U. S. Bureau of Mines

July 13, 1955

FIELD EXAMINATION REPORT
On
DMEA-3861 (mica) JEFF HOWELL MINE, N. C.

Applicants: Howard Boone, R#3, Bakersville, North Carolina - J. R. Beam, Spruce Pine, N. C., and John and Sam Phillips, Spruce Pine, North Carolina

This mine has been a substantial producer of mica over a long period. Additional reserves of mica are probably available below levels previously worked. The pegmatite mined has been relatively rich in mica and the mica is good quality. Significant quantities have been sold from the deposit under the current stockpiling program. Exploration assistance is recommended, to be conducted in stages. Stage I should consist of core drilling 5 holes, and Stage II, of shaft sinking and drifting.

The deposit was examined July 13, 1955. Messrs. Howard Boone and Sam Phillips accompanied the examiners on the inspection which required two hours.

The Jeff Howell Mine is at an altitude of about 2500 feet, 7.2 miles N. 63° W. of Spruce Pine, Mitchell County, North Carolina. It is along the northeast side of N. C. Highway No. 80, thus is readily accessible at all times.

All the applicants are competent to conduct the proposed work. Area under lease is adequate.

Adequate facilties for mining are on the property at present. These include 2 - 105 Cu. ft. air compressors, a gasoline and an electric hoist, air and electric pumps, etc. Necessary storage and magazine facilities are available.

The land is owned by Jeff Sparks, whose farm is adjacent to the mine on the east. International Minerals & Chemical Corporation own the minerals rights.

The mine was discovered about 1875 by C. Miller and Peter Grindstaff. The first large-scale operator was J. K. Irby, who reportedly worked the mica vein from the hillside by an incline toward the south. Irby sold the lease to Goulon and Watson, who are reported to have driven adit A about 1905. The next known mica operator was a Mr. Berman of New York, who worked the mine below the level of adit A in 1917. The mine was worked intermittently from this time until July, 1943, when J. M. Boone and George Young obtained assistance from the Colonial Mica Corp., and drove the northeastern 75 feet of adit A. In January, 1944 the lease was sold to J. Henline, B. S. Buchanan, Jack McKinney and Lee McKinney who operated the mine until October 1944.

The mining history of the pegmatite exposed in the open cuts at the northern end of the mapped area is imperfectly known. The last, and probably major operation was by J. M. and Edw. Boone of Spruce Pine, N. C., who worked this pegmatite for feldspar about 1935.

During the present mica program, the mine has been operated by two groups of Operators. The first operators mined from a winze and stope near the head of the western arm of Adit A. Extent of this working is not known. It is reported that approximately 1200 pounds of trimmed mica worth $23,000 was sold by these operators to the Spruce Pine Mica Depot. The applicants are the present operators. They have cut an open trench beginning on the pegmatite outcrop in the northwestern corner of the mapped area . This trench is about 150 feet long, 100 feet deep, with banks sloping to a width of about 20 feet in the bottom. Approximately 11 tons of mica were recovered from old muck filled stopes and pillars left from previous mining. This mica was sold to the Spruce Pine Depot as "hand cobbed" and brought about $23,000. At present the applicants are sinking an incline on the pegmatite (actually in muck filled workings) from the floor of the cut, hoping to locate unmined pillars. They are also sinking an inclined winze from the northeast arm of adit A, about 25 feet northeast of the point where it forks. This work is in undisturbed pegmatite.

Most of the following description of the old workings and pegmatite are quoted from an unpublished U. S. G. S. Manuscript report on the mine, prepared by Lloyd C. Pray in June 1944. It should be mentioned that the recent extensive trenching has destroyed much of the workings in the weathered part of the pegmatite.

"The northern workings consist of two adjacent open cuts in an east-sloping hillside. The cuts are connected at their bases by partially caved underground workings, which followed the pegmatite downward and to the east for an unknown distance."

"The southern workings have been entirely the result of operations for mica. They expose a pegmatite 2 to 10 feet thick that strikes about N. 70° E. and dips 35° to 40° southeast. The pegmatite was first mined by inclines from the hillside, but much of the early work has been obliterated by scattered and overgrown dumps. Adit A extends northward for 180 feet from the level of the creek on the south (altitude 2505 ft.), then forks to the west and northeast for about 220 feet in each direction. Near the end of the eastern arm the adit intersects the mica pegmatite. Here a 60-foot incline has been sunk toward the southeast during the current operation (1944)."

"The western arm of adit A opens into the base of a stope, at the top of which is a "raise" connecting with the inner, accessible end of adit B. Adit B was driven northwestward into the hillside at an altitude of 2560 feet for a distance of 90 feet to intersect the pegmatite. The short segment between the former heading in pegmatite and the head of the "raise" is now caved. The pegmatite has been largely mined out from a block of ground between the arms of adit A and the surface. It is reported that old workings extend 25 to 30 feet below the level of adit A in the

center of the workings (see project A-A'). Three small passageways lead into old caved stopes from adit A, but appear too dangerous to enter."

"Rock types.-- The country rock of the area consists of interlayered fine- to medium-grained hornblende and biotite gneisses. The former is dominant. The structure of the gneisses is that of a gently folded nose that plunges southeast at a moderate angle. The foliation strikes about N. 70° E. in the southern and western parts of the area and swings to the north in the northern part. This general gneissic structure is complicated by tight minor folds or rolls that plunge 30° in a S. 60° E. direction."

"Three types of pegmatite have been intruded into the country rock in the mapped area. One of these, a relatively thin, medium-grained pegmatite, has been mined for its mica. A thicker medium-grained one was mined for feldspar. The third and thickest type is a fine-grained pegmatite that has little or no commercial value. Minor amounts of garnet and sulfides, principally pyrite, occur throughout these rocks. The pegmatites are generally conformable with the foliation of the country-rock gneiss, although the contacts are commonly discordant in detail. Their shape reflect the general arcuate structure of the gneiss. The thin-mica-bearing pegmatite is also influenced by the minor rolls.

"Northern workings.-- The two open cuts in the northern end of the mapped area expose a pegmatite that dips moderately southeast and has a maximum exposed thickness of about 20 feet. The strike of the pegmatite and the enclosing gneiss swings from N. 70° E near the head of the southern open cut to north along the northern edge of the northern cut. Along the northern rim of the northern cut the pegmatite splits, and both offshoots appear to thin updip. It seems likely that the top of the pegmatite plunges eastward from the northwestern corner of this cut. The limited exposures in the southern cut may be interpreted as parts of the same rather irregular pegmatite or as two separate bodies; the former interpretation seems to be the more reasonable."

"The pegmatite in these cuts is a medium-grained aggregate of microcline, quartz, and plagioclase in that order of abundance. Minor amounts of muscovite and biotite also occur. This pegmatite is of no importance so far as sheet mica is concerned, but it has been mined for its feldspar content. Irregular lenses of quartz occur sporadically in its thicker parts (see section C-C'); the largest of these is exposed on the southern side of the narrow septum that separates the open cuts. The minimum thickness of this quartz mass is 3 feet, and lateral exposed dimensions exceed 10 to 15 feet."

"Southern workings.-- Two distinct types of pegmatite occur within the southern workings. Quantitatively dominant is a fine-grained feldspar-quartz pegmatite. The average grain size of this rock is less than a half inch, although some crystals 2 inches across were noted. The coarser phases of this rock seem to occur along the footwall contact. Microcline,

plagioclase, and quartz occur in about equal quantities. Muscovite amounts to a few percent of the rock, and biotite much less than one percent."

"This fine-grained pegmatite is exposed at several surface localities and underground in adits A and B. The main mass is exposed from the mouth of adit A to the fork in this adit, a distance of about 200 feet that corresponds to a thickness of about 130 feet. The hanging wall of this body strikes N. 55° E. and dips 50° southeast; the footwall strikes N. 80° E and dips 40° S. Several small bodies of gneiss, probably inclusions, are present in adit A."

"A partition of gneiss 10 to 20 feet thick separates the footwall of this fine-grained pegmatite from the relatively thin pegmatite that has yielded the commercial mica. The gneiss between these pegmatites contains small pods and lenses of fine grained pegmatite that are less than 1 foot thick. These lenses increase in abundance near the hanging wall of the mica pegmatite."

"The mica-bearing pegmatite, ranging from 2 to 10 feet in thickness, consists dominantly of a medium-grained aggregate of oligoclase, quartz, and microcline in an estimated 3:2:1 ratio. Muscovite probably constitutes less than five percent of the pegmatite. Very minor amounts of biotite, garnet, sericite, and apatite occur throughout the pegmatite. Only a few crystals of feldspar more than 6 inches in diameter were observed. The quartz is intimately intergrown with the feldspar crystals, and no segregations of massive quartz were noted. A few thin veinlets of quartz cut across both pegmatite and gneiss."

"A fine-grained feldspar-quartz phase with a conspicuous streaked appearance occurs locally within this pegmatite. The streaked appearance is due to concentrations of thin flakes of muscovite along planes 1/4 to 1/2 inch apart. The cleavage of the flakes is generally parallel with the layering. Contacts between this rock and the medium-grained pegmatite are gradational over distances of less than an inch. This rock type is most common adjacent to gneiss (see sketch of heading), particularly along the footwall or along inclusions. It probably constitutes less than 10 per cent of the pegmatite, though in at least two places the lower half to two-thirds of the pegmatite consists of this streaked rock and the upper portion contains the large books of muscovite in the medium-grained pegmatite. An unusual occurrence is at the western end of adit A, where an elliptical pod, 10 feet across and 3 feet thick, protrudes below the footwall of the medium-grained pegmatite. This pod plunges 30° in a S. 60° E direction (see section G-G'). The entire pod is conspicuously streaked; the contact between the two types of pegmatites is sharp and coincident with the top of the footwall gneiss as project from the sides."

"The strike of the mica-bearing pegmatite at both ends of the arms of adit A is about N. 70° E but for most of the distance between these extremities the pegmatite is convex toward the southeast. This pegmatite dips 35° to 40° southeast. The structure is complicated in detail by rolls and inclusions of gneiss. The rolls all plunge about 30° in a S. 60° E direction, or parallel to the minor folding of the gneiss. Rolls occur in both the hanging wall and the footwall of the pegmatite, and generally the two walls are parallel. The structure is especially contorted along the northeast side of this stope and where the western arm of adit A opens into the stope. Just east of this the pegmatite is about 3 feet thick and fairly regular in shape, but along this line it "folds under itself" several times and continues as a relatively regular pegmatite to the west (see sections G-G' and H-H'). This zone of marked flexures appears to have controlled a rich mica shoot. Separate rolls of this shoot can be traced for 30 to 40 feet in the stope, although the continuity of the shoot is maintained by other rolls. The probable cross-section of this shoot is about 10 by 15feet."

"Along the eastern arm of adit A it appears that mineable lenses or pods of pegmatite have occurred above the general level of the hanging wall, in much the same manner as the footwall protuberance in the westernmost part of adit A. All these bodies plunge S. 60° E at an angle of 30°."

"A body of gneiss that thickens toward the northeast splits the pegmatite near the eastern end of adit A. It can be traced continuously for 60 feet down the northeastern side of the incline, but nowhere is it present on the southwestern side. This may mean that the direction of structural control noted in the rolls is also applicable to some of the gneissic inclusions or apparent inclusions. Smaller apparent inclusions of gneiss occur sporadically throughout the pegmatite."

Localization.-- The only workable deposit of sheet mica in the mine area is the relatively thin, medium-grained oligoclase-quartz-microcline pegmatite. Almost all of this medium-grained pegmatite contains sufficient quantities of block mica to pay for mining wherever the body is more than a few feet thick. One to two percent of the pegmatite that has been mined from the incline is represented by recovered block mica. The major roll in the stope in the western part of the workings appear to contain more and larger books of muscovite than the adjacent, less contorted parts of pegmatite. The limited exposures do not permit definite extension of this relationship to other more gentle rolls, although there is a suggestion that this may be the case. The best concentrations of mica encountered in sinking the present incline may be due to a combination of a gentle roll of the pegmatite and the "feathering out" end of a gneiss septum."

"Within the pegmatite the hanging-wall side is generally richer. Where horses of gneiss split the pegmatite, as in the eastern incline, the upper pegmatite body appears to contain more muscovite than the lower. There is no apparent preferred orientation of the mica books."

"Description.-- The mica books are brownish-rum in color, and range from an inch to 14 inches in diameter. The average block of mica recovered in recent mining operations is about 3 x 4 x 1 inches. Most of the books are slightly warped, and a few contain faint "A" structure. Mineral inclusions are rare, although a few black spots were noted. A light green stain is a minor defect. The mica is free splitting, hard, and contains no air staining. The quality of the trimmed sheet material is good, almost all being classed as No. 1 and No. 2 superior. The recovery of sheet mica from block mica is reported to be about 16 percent. This figure may be too high, but it is probably at least 10 percent. The ratio of sheet to punch sizes in the trimmed mica is about 4:3."

"The outlook seems favorable for continued high production from this mine. There is no geological evidence for believing that the mica does not continue below the depths to which it has been mined at any point between the ends of the arms of adit A, and there is every reasonable expectation that it does continue to depth. This is corroborated by reports of men who claim to have mined to the depth of the now caved workings."

"Particular attention should be given to the major roll in the western arm of adit A. This is reported to have been mined only 10 to 12 feet below the level of the adit, and abandoned because of water trouble. An incline, either directly following this shoot or lying parallel with it along the southwest (lower) side, seems the most feasible mining method to employ."

"When the base of the incline now being worked at the northeast end of adit A is 20 feet or more below the reported depth of the old workings, lateral exploration should be started in both directions."

"Other major rolls or pronounced shoots of mica pegmatite may exist beyond the western limit of adit A. It is recommended that this heading be advanced westward for at least 20 to 30 feet with as small a cross-section as is practical in order to investigate this possibility."

## Economic Considerations

"Statistics.-- Records of the Colonial Mica Corporation include the following purchases of mica from the Jeff Howell Mine:

Boone and Young operation (July 1943 to January, 1944):

| | |
|---|---|
| Trimmed punch | 307.63 pounds |
| 3/4 trimmed | 294.56 " |
| Total value | $3,010.45 |

McKinney, et. al. operation (January, 1944 to June 2, 1944):

| | |
|---|---|
| Trimmed punch | 1,280.18 pounds |
| 3/4 trimmed | 1,629.22 " |
| Total value | $17,899.91 |

Reported recovery of sheet mica from block mica: 16%

Computed tons of pegmatite mined during current operation: 370

Pounds of trimmed mica per ton of pegmatite mined: 7.8

Value per ton of pegmatite during current operation: $47.50

"The records of the Colonial Mica Corporation show the following average quality of the purchased sheet mica since January 1944:

| | |
|---|---|
| Quality No. 1 | 11 percent |
| Quality No. 2 (superior) | 72 percent |
| Quality No. 2 (inferior) | 17 percent |
| | 100 |

Mine crew during the current operation: 4 men, including the Operator; one shift per day, five days per week.

"Conclusions.— The operation undoubtedly yielded a good profit for the operators. During one three months interval this mine averaged 680 pounds of trimmed sheet mica per month, and production increased during this period. There is no known reason for a belief that this mine cannot continue to yield mica."

It appears to the examiners that future work at this deposit should be directed toward extending the known mica pegmatite along the strike and further down the dip. Since the date of the examination, the applicants report they have encountered old works from the winze that they are sinking. This suggests that old workings extend over most of the length of the pegmatite from the head of the two forks of "Adit A" to an unknown depth. It appears to the examiners the best approach to further exploration and mining is to try to extend the known pegmatite, especially to the northeast. If mica pegmatite can be located, then a vertical shaft should be sunk to the pegmatite and drifts be driven on it.

Four drill hole locations are shown on the attached plan map. It is recommended that these holes be drilled as Stage I, as follows:

| | | | |
|---|---|---|---|
| Hole 1 | vertical | - | 125 foot depth |
| Hole 2 | " | - | 160 " " |
| Hole 3 | " | - | 175 " " |
| Hole 4 | - 30° to NW | - | 100 " " |
| | Total | | 560 feet |

If drilling results are favorable, a shaft with drifts are recommended. The proposed shaft should be located in the interval between Hole 1 and 2, if these holes are good. The examiners believe that if two adjacent holes are favorable sufficient reserves of pegmatite are present to warrant shaft sinking.

Shaft depth is uncertain until Stage I is completed. It is thought the depth will not be in excess of 125 feet. A total of 150 feet of drift are recommended. If the required shaft is less than 100 feet, then no rigid headframe will be needed.

Estimated Cost:

Stage I. Drill a total of 560 feet of NX diamond drill holes @ $5.50 per foot..... $3,080.00

Stage II. Sink shaft not to exceed 125-foot depth. Shaft if more than 100 feet deep to have rigid headframe, 2-compartment, timbered, 5' x 7' in cross-section and to contain guides (80 shifts)

| | |
|---|---|
| Headframe... | 550.00 |
| **Labor:** | |
| 1 - Miner @ $1.50/hr. | $960.00 |
| 1 - Hoistman @ $1.25/hr. | 800.00 |
| 2 - Laborers @ $1.00/hr. | 1,280.00 |
| **Equipment** (depreciation) | |
| Compressor, drill & pump | 300.00 |
| Hoist | 60.00 |
| **Equipment** (rental) | |
| Ventilation system @ $20/Mo. | 80.00 |
| **Supplies** ( | |
| Explosives | 450.00 |
| Drill steel | 250.00 |
| Timber, 5M @ $65/M | 325.00 |
| Gasoline and oil, electricity | 225.00 |

G **Supplies (cont'd)**

| | | |
|---|---|---|
| Hand tools and pipe | $235.00 | |
| Miscellaneous | 250.00 | |
| Compensation Insurance | 300.00 | |
| Unemployment " | 60.00 | |
| Sales tax | 50.00 | $5,625.00 |

Drive 150 feet of drift on pegmatite
(75 shifts)

**Labor:**

| | | |
|---|---|---|
| 1 - Miner @ $1.50/hr. | 900.00 | |
| 1 - Hoistman @ $1.25/hr. | 750.00 | |
| 2 - Laborers @ $1.00/hr. | 1,200.00 | |

**Equipment** (depreciation)

| | | |
|---|---|---|
| Compressor, drill and pump | 280.00 | |
| Hoist | 55.00 | |

**Equipment** (rental)

| | | |
|---|---|---|
| Ventilation system @ $20/Mo. | 75.00 | |

**Supplies:**

| | | |
|---|---|---|
| Explosives | 500.00 | |
| Drill steel | 225.00 | |
| Gasoline, oil and electricity | 300.00 | |
| Small tools and pipe | 250.00 | |
| Miscellaneous, repairs, etc. | 323.00 | |
| Compensation Insurance | 285.00 | |
| Unemployment insurance | 57.00 | |
| Sales tax | 50.00 | $5,250.00 |

Estimated Cost of Stage II - $11,425.00

Estimated Cost of Stages I and II $14,505.00

August 4, 1955

R. A. Laurence
K. M. Teague
D. H. Amos, Geologists, U. S. G. S.

L. E. Shirley, Mining Engineer
U. S. Bureau of Mines

IN REPLY REFER TO:

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

RECEIVED
JUN 29 1955

June 29, 1955

Re: DMEA 3861
Boone, Beam, Phillips & Phillips
Jeff Howell Mine
Mitchell Co., N. C.
$22,350.00 - Mica

Memorandum

To: L. G. Houk, Defense Minerals Exploration Administration

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

Subject: Review of application

Too little information concerning this prospect is given to support an application for such an amount.

Referral to the field is indicated and recommended.

N. E. Nelson

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NENelson:iml
G-6/29/55

Copy to: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
W. F. Dietrich, 3061

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

RECEIVED
JUN 28 1955

June 27, 1955

Memorandum

To: Nonmetallic Minerals Division
Defense Minerals Exploration Administration

From: Chief, Branch of Ceramic and Fertilizer Materials

Subject: DMEA - 3861 (mica)

Applicant: Boone, Beam, Phillips and Phillips

Name and Location of Property: Jeff Sparks Mine

Date Application Rec'd by Br. of Ceramic & Fertilizer Materials: 6/21/55

Comments:

1. Although it would be desirable for the applicant to furnish more complete information, it appears that a visit by an examiner would furnish more useful data.

Recommendation:

It is recommended that the field team visit this mine when in that vicinity to ascertain if an exploration project is justified. If so, the field team and applicant should agree on a definite plan of exploration on a unit-cost basis.

SIGNED

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