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16—38949a-2

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UNITED STATES DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS ADMINISTRATION

Supplement - Form MF-103

Foote Mineral Company
18 West Chelten Avenue
Philadelphia (44), Pa.

Name and Address
of Applicant

June 18, 1952.

- - - - -

Filed Form MF-103 May 23, 1952 - Docket Number DMEA-2547

Filed Form MF-100 June 28, 1951 - Serial Number MS-2033 July 17, 1951.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUL 7 1952

FOOTE MINERAL COMPANY
(Name of company)

By
(Signature of authorized official)

June 18, 1952
(Date)

Vice President - Production
(Title).

Estimate of possible tonnages and values of beryl, tin, and columbite that might be discovered and produced under the proposed program, and certain proposed changes.

I. Total mineable pegmatite (exceeding 40 feet in width) in the main area of exploration above 780 feet elevation (average depth - 120 feet) (calculated at 15 cubic feet per ton):-

Block	Tons
A-8	95,000
A-9	220,000
A-10	29,000
B-7	343,000
B-8	408,000
B-9	73,500
B-11	98,000
B-12	97,000
B-13	450,000
C-7	125,000
C-8	54,000
C-9	92,000
C-10	358,000
C-11	620,000
C-12	642,000
C-13	175,000
D-7	122,000
D-8	157,000
D-9	253,000
D-10	215,000
D-11	272,000
D-12	332,000
D-13	368,000
E-7	42,000
E-8	104,000
E-9	135,000
E-10	177,000
E-11	168,000
E-12	135,000
E-13	145,000
Total	6,504,500

II. BERYL

Exhibit "C" shows an average BeO content of all pegmatites sampled of 0.037%. Substantial widths were sampled giving results of 0.06% to 0.08% BeO. Based upon the average analysis, this area may have 21,700 tons of beryl to a depth of 120 feet.

The Defense Materials Procurement Administration has authorized an expansion program calling for the annual production of 24,000 tons of specimens from these properties. This will require the mining and milling of 200,000 tons of pegmatite. If certain zones can be discovered with a beryl content equal to the higher values reported by W. R. Griffitts and a 60% yield can be achieved, we might anticipate an annual production of 800 tons of beryl containing 10% BeO.

III. TIN-COLUMBITE

Mr. T. L. Kesler reports considerable variation in tin content in these ore bodies and our mill experience todate has shown an average content of 0.03% to 0.05% Sn. The $(CbTa)_2O_5$ content is consistently about 60% of the Sn value in the heavy mineral concentrate. If certain zones can be discovered with 0.1% Sn and a corresponding $(CbTa)_2O_5$ ratio then the potential output can be increased to 120 tons per year of heavy concentrate containing:

70 tons of 67% Sn Cassiterite

50 tons of 60% $(CbTa)_2O_5$ Columbo-Tantalite

IV. ECONOMIC DATA AND FORECAST

The current production of the Kings Mountain plant has the following monthly values:

Spodumene - 700 tons at $75.00 per ton.....	$52,500.00
Tin - 2,400 pounds at $1.00 per pound.....	2,400.00
Cb-Ta - 1,600 pounds at $1.70 per pound.....	2,720.00
Mica - 30 tons at $30.00 per ton.....	900.00
Total.....	$58,520.00

On the larger scale operations projected for 1953, the potential monthly values based upon adequate content in mill feed might be:

Spodumene - 1,800 tons at $60.00 per ton.....	$108,000.00
Tin - 11,667 pounds at $1.00 per pound.....	11,667.00
Cb-Ta - 8,330 pounds at $1.70 per pound.....	14,161.00
Mica - 90 tons at $30.00 per ton.....	2,700.00
Total.....	$136,528.00

With low values of Sn and Cb-Ta, these figures would be reduced about $10,000.00 - $12,000.00 per month, or $125,000.00 - $140,000.00 per year. Therefore the locating of suitable zones for mining can substantially increase the output and values of these strategic minerals and will permit the rapid amortization of the loan.

To summarize, a program that is successful in delineating zones containing BeO and Sn-Cb in amounts approaching the higher values of existing samples will permit a substantial increase in output of tin, columbium, and beryl.

In view of the urgent need for these minerals, it is further proposed to increase the number of holes to be drilled, although maintaining the proposed total footage. It is felt that the purposes of this program can best be served by not exploring to depths which can not be reasonably reached by mining within two or three years, and that the drilling should be concentrated in the areas suitable for mining within a reasonable time. A revised map (Exhibit "P") will be submitted promptly showing the additional hole locations and depths.

3. (a) Describe fully the proposed work and give the total cost of the project. Cont'd.

It is, therefore, proposed to drill approximately 5,500 feet of diamond drill core holes, to log the core, split and analyze the core for beryllium, columbium, tin, and lithium, and from such data to determine grades and tonnages in the various pegmatites and portions of pegmatites. It is further proposed to expose and trench the contact zones of these pegmatites to accurately delineate the ore bodies.

From all the above data, to construct plans and cross-sections showing the tonnages, and grade of strategic minerals recoverable from the various portions of the ore bodies -

the total cost is estimated to be.....$49,689.00

7. Furnish a detailed list of operating equipment, separated into items to be -

(a) Rented

Diamond drilling will be done on a contract basis and all equipment furnished by the contractor. It is proposed to secure three bids and award contract to lowest acceptable bidder.

Estimated cost 5,500' at $4.50 per foot.....	$24,750.00
1 - D-8 Bulldozer - rental $88.00 per day including operator, fuel, and maintenance - required 30 days..	2,640.00
TOTAL RENTALS.....	$27,390.00

7. Furnish a detailed list of operating equipment, separated into items to be:- Cont'd.

(b) Purchased

1,000' 2" Pipe	$ 300.00
Valves and fittings	200.00
Small tools	100.00
Core boxes	400.00
TOTAL PURCHASED	$1,000.00

7. Furnish a detailed list of operating equipment separated into items to be:- Cont'd

(c) Furnished by you

1 Pickup truck at 150 miles per week at $0.08 per mile - 32 weeks.....	$ 384.00
Surveying equipment - Book value $600.00 - $10.00 per month depreciation - 10 months.	100.00
TOTAL FURNISHED BY FOOTE MINERAL COMPANY..	$ 484.00

8. Furnish an itemized schedule of labor, by numbers and classes (miners, muckers, etc.) and of supervisors by numbers and positions, with the maximum wages or salaries to be paid to each.

1	Bulldozer operator (included in rental)	$
2	Laborers - $1.00 per hour required 180 days.....	2,880.00
3	= Total Laborers	

Supervisors

1	Consulting geologist - $60.00 per day required 60 days plus travelling expenses (estimated $500.00).....	4,100.00
1	Mining engineer - $400.00 per month required 20%.	800.00
1	Draftsman - $1.75 per hour required 300 hours....	525.00
1	Accountant - $400.00 per month required 10%.....	400.00
1	Stenographer - $1.00 per hour required 300 hours.	300.00
	TOTAL LABOR.....	$9,005.00

9. Furnish a detailed list with estimated cost of each item for materials, supplies, engineering, assaying, accounting, power, water, utilities, and any other items not provided for above.

(A)	Power		$ 250.00
(B)	Water - 10 c/M gallons $30.00 per week		960.00
(C)	Engineering Supplies		100.00
(D)	Analyses - 300 samples		9,000.00
	Be at $5.00 (Spectrographic)	$1,500.00	
	Cb-Ta at $15.00	4,500.00	
	Sn at $10.00	3,000.00	
	TOTAL SUPPLIES AND SERVICES		$10,310.00

10. (a) How much are you prepared to invest in the proposed project?

$4,968.90.

600

AUG 5 1952

Mr. Felix Shay, Vice-President
Foote Mineral Company
P. O. Box 796
Paoli, Pennsylvania

Subject: Docket No. DMEA-2547
King Mountain Pegmatites
Cleveland County, North Carolina

Dear Mr. Shay:

In addition to the material returned to you July 30, 1952, by Mr. Robert E. Adams, Chief, Operations Control & Statistics Division, we find that we have two sets of supporting exhibits and maps. These two sets we are now returning to you herewith.

2 sets - Exhibit A-1 through Exhibit J and accompanying maps.

Sincerely yours,

Signed

Lawrence G. Houk, Chief
Non-Metallic Minerals Division
Defense Minerals Exploration
Administration

Enclosures - 33

JTROBERTSON:mp 8/5/52
cc: Docket File
Adm. Reading File
Field Team, Region VII
Mr. Houk

Mr. F. B. Shay
Production Manager
Foote Minerals Company
18 West Shelten Avenue
Philadelphia 44, Pennsylvania

Subject: Docket No. DMEA-2547
King's Mountain Pegmatites
Cleveland County
North Carolina

Dear Mr. Shay:

Reference is made to subject application for exploration assistance on King's Mountain Pegmatites in North Carolina.

A careful study of your proposal indicates that the exploration program is primarily development drilling. Pegmatite Eight has been drilled, the outline is known and reserves of lithium have been blocked out. The columbite-tantalite and tin are by-products of the lithium operation and any increase in their production will depend upon improved metallurgical practices and not upon selective mining or bulk mining of enriched zones. The recovery of beryl is a metallurgical problem which requires additional study.

Inasmuch as the exploratory drilling has already been performed and the proposed drilling is of a development nature and will contribute little new data on this pegmatite, your application is herewith denied.

The Defense Minerals Exploration Administration thanks you for your willingness to cooperate in the Exploration Assistance Program and regrets we cannot approve the expenditure of Government funds for development work of this nature.

Sincerely yours,

(signed) FRANK E. JOHNSON

Acting Administrator
Defense Minerals Exploration
Administration

LGHouk:mp 7/17/52
cc: Docket File
Admin. Reading File
Operating Committee
Mr. Kauffman, 1347
Mr. Norton, G-232, GSA Bldg.
Mr. Houk
Field Team, Region VII

640

Mr. F. D. Hagy
Production Manager
Foote Minerals Company
18 West Chelten Avenue
Philadelphia 44, Pennsylvania

Subject: Contract No. AT-547
King's Mountain Pegmatites
Cleveland County
North Carolina

Dear Mr. Hagy:

Reference is made to subject application for exploration assistance on King's Mountain pegmatites in North Carolina.

A careful study of your proposal indicates that the exploration program is primarily development drilling. Pegmatite light has been drilled, the outline is known and reserves of lithium have been blocked out. The columbite-tantalite and tin are by-products of the lithium operation and any increase in their production will depend upon improved metallurgical practices and not upon selective mining or bulk mining of enriched zones. The recovery of beryl is a metallurgical problem which requires additional study.

Inasmuch as the exploratory drilling has already been performed and the proposed drilling is of a development nature and will contribute little new data on this pegmatite, your application is herewith denied.

The Atomic Energy Commission thanks you for your willingness to cooperate in the exploration assistance program and regrets we cannot approve the expenditure of government funds for development work of this nature.

Sincerely yours,

S - 7/18/57

Acting Administrator
Office of Domestic Exploration
Administration

M.Hoskins 7/17/57
cc: Project File
Admin. Reading File
Operating Committee
Mr. Kauffman, 1347
Mr. Forton, [illegible], GMA Eng.
Mr. Hook
Field Team, Region VII

IN REPLY REFER TO:

G-MD-CNM

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

July 14, 1952

Memorandum

SUPPLEMENTARY COMMENTS ON APPLICATION DMEA-2547 (Tin, columbite-tantalite)

To: L. G. Houk, Defense Minerals Exploration Administration
From: P. L. Weis, U. S. Geological Survey
Reference: My memorandum to you dated July 10, 1952.
Applicant: Foote Mineral Company.
Name of property: Kings Mountain Division, Foote Mineral Company.
Location of property: Cleveland County, North Carolina.
Estimated cost of project: $49,689.
Comments: 1. According to production figures furnished by the applicant, .4 to .64 lb. of cassiterite and .26 to .41 lb. of columbite-tantalite can be recovered from each ton of ore mined. Spodumene recovery has averaged about 12%, or 240 lb. per ton of ore. These represent values of approximately $0.50 in cassiterite, $1 in columbite-tantalite, and $7.20 in spodumene per ton of rock. The tin and columbite-tantalite recovery amounts to about 17% of the gross value of the minerals recovered.

2. Large reserves of spodumene-bearing pegmatite are known to exist in the district, as Kesler and Griffitts have pointed out. Therefore the applicant's proposal has some of the characteristics of development drilling. Available data indicate that the average grade of columbite-tantalite and cassiterite can be expected to remain fairly constant throughout these pegmatites.

3. It appears likely that the applicant will continue to mine the pegmatites for spodumene, regardless of what action is taken on this application. Since the cassiterite and columbite-tantalite values represent 17 percent of the gross value of the ore, it appears very likely that the applicant will continue to recover them as long as he mines spodumene ore. Approval of this application would in no way stimulate the production of columbite-tantalite or cassiterite. Whether DMEA accepts or denies this application will have little or no influence on the future production of strategic minerals from this area.

RECOMMENDATION: The application should be denied.

Weis:jeh
G-7/14/52
cc: Director's reading file 4212
Branch " " "
DMEA
Norton G-230
Weis G-228

Paul L. Weis

IN REPLY REFER TO:

G-MD-CMM

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

July 10, 1952

Memorandum

REVIEW OF APPLICATION DMEA-2547 (Tin, columbite-tantalite)

To: L. G. Houk, Defense Minerals Exploration Administration
From: P. L. Weis, U. S. Geological Survey
Applicant: Foote Mineral Company.
Name of property: Kings Mountain Division, Foote Mineral Company.
Location of property: Cleveland County, North Carolina.
Estimated cost of project: $49,689.
Summary of applicant's proposal:

1. Drill 5,500 feet of core drill holes.
2. Log, split and analyze core for Li, Sn, Be, Cb, Ta.
3. Determine grades and tonnages in the areas drilled.

Sources of information on applicant's property:

1. Kesler, T. L. 1942. The tin-spodumene belt of the Carolinas. Strategic Minerals Investigations Report, U. S. Geol. Survey Bull. 936-J.
2. Correspondence and field notes by W. R. Griffitts, U. S. Geological Survey.

Comments:

1. The revised report has furnished essentially all of the information requested by me in my memorandum on the original application (memo. dated June 17, 1952).
2. The comments made on the original application to the effect that this is essentially a policy matter which should be decided on by DMEA still hold true. If DMEA decides that the quantities of tin and columbite-tantalite likely to be recovered justify the exploration loan, the loan should be granted.
3. Inasmuch as there is no milling process available at present that makes beryl recovery possible, the presence of beryl and its potential value in the ore should be disregarded.

RECOMMENDATION:

1. Action should be taken by DMEA to determine their policy on the desirability of allowing an exploration loan on the quantities of tin and columbite-tantalite likely to be recovered.
2. If the policy decision is favorable, a contract should be drawn up with the assistance of the field team.

Paul. L. Weis

Weis:jeh
G-7/10/52
cc: Director's r. file 4212
Branch reading 4212
DMEA
Norton G-230 Weis G-228

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

July 9, 1952

Memorandum

To: Lawrence G. Houk, Chief
Non-Metallic Minerals, DMEA

From: A. J. Kauffman, Jr.
Rare and Precious Metals Branch

Subject: Transmittal of DMEA #2547, Foote Mineral Co., 18 West Chelten Avenue, Philadelphia 44, Pennslyvania

Transmitted herewith is DMEA #2547 which is recommended for approval subject to confirmation of current production data of columbite-tantalite concentrates at the Kings Mt. plant.

It is understood that the emphasis of this application should be placed on columbite-tantalite and beryl production potential in the Kings Mt. area. Recovery of beryl from these deposits is known to be a problem that entails further ore dressing research. However, in the case of columbite-tantalite, which is associated with the cassiterite, separation is not a difficult operation.

The United States production of columbite-tantalite combined has been about one (1) ton annually. The applicant claims that about 10 tons could be produced annually which is an appreciable contribution to the supply of these strategic and critical materials.

A. J. Kauffman, Jr.

Attachment

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUL 10 1952

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

July 9, 1952

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Non-Metallic Minerals, DMEA

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A. J. Kauffman, Jr.

Attachment

SNeedleman:gh
Copy to: Minerals Division
A. J. Kauffman, Jr.
S. Needleman
Rare and Precious Metals Branch
L. G. Houk, DMEA
F I L E S

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUL 10 1952

UNITED STATES DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS ADMINISTRATION

Supplement - Form MF-103

Foote Mineral Company
18 West Chelten Avenue
Philadelphia (44), Pa.

Name and Address
of Applicant

June 18, 1952.

- - - - -

Filed Form MF-103 May 23, 1952 - Docket Number DMEA-2547

Filed Form MF-100 June 28, 1951 - Serial Number MS-2033 July 17, 1951.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUL 7 1952

FOOTE MINERAL COMPANY
(Name of company)

By [illegible]
(Signature of authorized official)

June 18, 1952
(Date)

Vice President - Production
(Title).

Estimate of possible tonnages and values of beryl, tin, and columbite that might be discovered and produced under the proposed program, and certain proposed changes.

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F-13	145,000
Total	6,504,500

II. BERYL

Exhibit "C" shows an average BeO content of all pegmatites sampled of 0.037%. Substantial widths were sampled giving results of 0.05% to 0.08% BeO. Based upon the average analysis, this area may have 21,700 tons of beryl to a depth of 120 feet.

The Defense Materials Procurement Administration has authorized an expansion program calling for the annual production of 24,000 tons of spodumene from these properties. This will require the mining and milling of 200,000 tons of pegmatite. If certain zones can be discovered with a beryl content equal to the higher values reported by W. R. Griffitts and a 60% yield can be achieved, we might anticipate an annual production of 800 tons of beryl containing 10% BeO.

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Mr. T. L. Kesler reports considerable variation in tin content in these ore bodies and our mill experience todate has shown an average content of 0.03% to 0.05% Sn. The $(CbTa)_2O_5$ content is consistently about 60% of the Sn value in the heavy mineral concentrate. If certain zones can be discovered with 0.1% Sn and a corresponding $(CbTa)_2O_5$ ratio then the potential output can be increased to 120 tons per ~~day~~ year of heavy concentrate containing:

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Mica - 30 tons at $30.00 per ton.....	900.00
Total.....	$58,520.00

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Tin - 11,667 pounds at $1.00 per pound.....	11,667.00
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Mica - 90 tons at $30.00 per ton.....	2,700.00
Total.....	$136,528.00

With low values of Sn and Cb-Ta, these figures would be reduced about $10,000.00 - $12,000.00 per month, or $125,000.00 - $140,000.00 per year. Therefore the locating of suitable zones for mining can substantially increase the output and values of these strategic minerals and will permit the rapid amortization of the loan.

To summarize, a program that is successful in delineating zones containing BeO and Sn-Cb in amounts approaching the higher values of existing samples will permit a substantial increase in output of tin, columbium, and beryl.

In view of the urgent need for these minerals, it is further proposed to increase the number of holes to be drilled, although maintaining the proposed total footage. It is felt that the purposes of this program can best be served by not exploring to depths which can not be reasonably reached by mining within two or three years, and that the drilling should be concentrated in the areas suitable for mining within a reasonable time. A revised map (Exhibit "F") will be submitted promptly showing the additional hole locations and depths.

3. (a) Describe fully the proposed work and give the total cost of the project. Cont'd.

It is, therefore, proposed to drill approximately 5,500 feet of diamond drill core holes, to log the core, split and analyze the core for beryllium, columbium, tin, and lithium, and from such data to determine grades and tonnages in the various pegmatites and portions of pegmatites. It is further proposed to expose and trench the contact zones of these pegmatites to accurately delineate the ore bodies.

From all the above data, to construct plans and cross-sections showing the tonnages, and grade of strategic minerals recoverable from the various portions of the ore bodies -

the total cost is estimated to be.....$9,689.00

7. Furnish a detailed list of operating equipment, separated into items to be -

(a) Rented

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Estimated cost 5,500' at $4.50 per foot.....$24,750.00

1 - D-8 Bulldozer - rental $88.00 per day including operator, fuel, and maintenance - required 30 days.. 2,640.00

TOTAL RENTALS.....$27,390.00

7. Furnish a detailed list of operating equipment, separated into items to be:- Cont'd

(b) Purchased

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Small tools	100.00
Cave houses	400.00
TOTAL PURCHASED	$1,000.00

7. Furnish a detailed list of operating equipment separated into items to be:- Cont'd

(c) Furnished by you

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Surveying equipment - Book value $600.00 - $10.00 per month depreciation - 10 months.	100.00
TOTAL FURNISHED BY FOOTE MINERAL COMPANY..	$ 484.00

8. Furnish an itemized schedule of labor, by numbers and classes (miners, muckers, etc.) and of supervisors by numbers and positions, with the maximum wages or salaries to be paid to each.

1 Bulldozer operator (included in rental) $

2 Laborers - $1.00 per hour required 180 days..... 2,880.00

3 - Total Laborers

Supervisors

1 Consulting geologist - $60.00 per day required 60 days plus travelling expenses (estimated $500.00)..... 4,100.00

1 Mining engineer - $400.00 per month required 20%. 800.00

1 Draftsman - $1.75 per hour required 300 hours.... 525.00

1 Accountant - $400.00 per month required 10%..... 400.00

1 Stenographer - $1.00 per hour required 300 hours. 300.00

TOTAL LABOR.....$9,005.00

9. Furnish a detailed list with estimated cost of each item for materials, supplies, engineering, assaying, accounting, power, water, utilities, and any other items not provided for above.

(A)	Power		250.00
(B)	Water - 10 c/M gallons $30.00 per week		960.00
(C)	Engineering Supplies		100.00
(D)	Analyses - 300 samples		9,000.00
	Be at $5.00 (Spectrographic)	$1,500.00	
	Cb-Ta at $15.00	4,500.00	
	Sn at $10.00	3,000.00	
	TOTAL SUPPLIES AND SERVICES		$10,310.00

10. (a) How much are you prepared to invest in the proposed project?

$4,968.90.

Form MF-103
(Revised June 1951)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.1.

MF-103 Should Be Filed With General Technical Data Form MF-100

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

Not To Be Filled in by Applicant

Docket No. DMEA-2547
Metal or Mineral
Date Received 5-23-52
Amount $
Participation (Government %)

Foote Mineral Company
18 W. Chelten Avenue
Philadelphia (44), Pa.

Name and address of applicant

Date May 9, 1952

If you have already filed MF-100, give date filed June 28, 1951, type of assistance requested Priorities,

DMA Docket Number (if available) Serial No. M.S.2033 July 17, 1951

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four copies each, of the signed application form, General Technical Data Form MF-100, and answers to questions as specified, to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive office thereof, with your name and address on each sheet of the application and all accompanying papers. If you have previously filed MF-100, it is not necessary to file it again. However, you should indicate in space provided above the type of assistance previously applied for (loans, procurement contracts, etc.) and DMA Docket Number, if available. *When a question is inapplicable it should be so stated in the form.* Additional sheets should be attached in answering any questions or in supplying additional information. IF YOU CANNOT ANSWER A QUESTION, SO STATE.

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

   (*b*) If you are not the owner of the property, submit a copy of the lease, purchase option, or other agreements under which you are authorized to operate the property with each copy of your application.

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

   NOTE: (1) If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*c*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

   (2) If applicant is not the owner of the property or if there are any liens or encumbrances against the property, copy of agreements of claimants, lienors, encumbrances, and lessors subordinating their interests in the property to the interest of the Government under the Exploration Project Contract will be required for attachment to the Contract.

2. (*a*) What metals or minerals do you expect to find?

   (*b*) Furnish statement of the geologic features of your property, giving type of ore deposit and reasons for expecting to find commercial ore bodies. Illustrate with maps or sketches. If you have a geologic or engineering report, or assay maps showing width and grade, please send them with application, stating whether or not you wish to have them returned.

The information requested in questions 3, 4, 5, 6, 7, 8, and 9 below should be answered specifically and in detail, as this information will be attached to and incorporated as part of the Exploration Project Contract, if such contract is entered into with you by the Government.

ANSWER EACH QUESTION ON SEPARATE SHEETS OF PAPER AND SUBMIT A COPY OF EACH ANSWER FOR EACH COPY OF YOUR APPLICATION.

3. (*a*) Describe fully the proposed work and give the total cost of the project.

   (*b*) State the time required to start the project and to complete it.

4. Submit a map or sketch of the property involved showing a plan (and cross section, if needed) of the present mine workings and the *location of the proposed exploration work* as related to geologic features, such as contacts, veins, ore-bearing beds, etc.

5. Furnish an itemized list of existing facilities, buildings, installations, and fixtures with a statement of the cost of any necessary rehabilitation or repairs to put into useful and operable condition.

6. Furnish a detailed list of additional facilities, buildings, and fixtures to be purchased, installed, or erected by you, with the estimated cost of each item.

7. Furnish a detailed list of operating equipment, separated into items to be—

   (*a*) Rented

   (*b*) Purchased

   (*c*) Furnished by you

   with the rental, purchase price, or depreciation of each item, as the case may be, to be charged as a cost of the project.

8. Furnish an itemized schedule of labor, by numbers and classes (miners, muckers, etc.) and of supervisors by numbers and positions, with the maximum wages or salaries to be paid to each.

9. Furnish a detailed list with estimated cost of each item for materials, supplies, engineering, assaying, accounting, power, water, utilities, and any other items not provided for above.

10. (*a*) How much are you prepared to invest in the proposed project?

    (*b*) Is this amount sufficient to pay your part of the cost of the project, in accordance with the regulations on Government participation (Sec. 9 of MO–5)?

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

CERTIFICATION

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

FOOTE MINERAL COMPANY
(Name of company)

By [signature]
(Signature of authorized official)

May 9, 1952
(Date)

Vice President - Production.
(Title)

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

U. S. GOVERNMENT PRINTING OFFICE 16—64067-2

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

This project will be carried out on mineral lands owned or leased by the Foote Mineral Company in Cleveland County, North Carolina. An existing flotation plant of 350 tons per day capacity is being operated for recovery of spodumene, tin, columbite, mica, and feldspar.

1. (b) If you are not the owner of the property, submit a copy of the lease, purchase option, or other agreements under which you are authorized to operate the property with each copy of your application.

(A) Attach copy of Agreement between Allied Chemical and Dye Corporation and Foote Mineral Company October 16, 1951 (Exhibit A-1).

(B) Attach copy of lease between L. M. Williams and wife, Lena B. Williams, Janie McClintock Cole, Jean Cole Hatcher, Rube Hatcher, Emily Cole Hovis, Robert A. Hovis, Frances Cole Culp, B. B. Culp and Foote Mineral Company December 10, 1949 (Exhibit A-2).

(C) Attach copy of Agreement between L. M. Williams and wife, Lena B. Williams and The Solvay Process Company August 1, 1942. Assigned to Foote Mineral Company by Instrument dated October 16, 1951 in file TSP#1100-1-32-1 (Exhibit A-3).

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

This project will be carried out on the specified areas marked "Ex" on the maps attached as part of answer to Question 4.

2. (a) What metals or minerals do you expect to find?

Beryl, Columbite, Tantalite, Tin, Spodumene and Mica.

2. (b) Furnish statement of the geologic features of your property, giving type of ore deposit and reasons for expecting to find commercial ore bodies. Illustrate with maps or sketches. If you have a geologic or engineering report, or assay maps showing width and grade, please send them with application, stating whether or not you wish to have them returned.

(A) United States Department of the Interior, Geological Survey Bulletin 936-J entitled "The Tin-Spodumene Belt of The Carolinas." (Exhibit B).

(B) Attach a report from W. R. Griffitts of the United States Geological Survey (Exhibit C).

(C) Attach letter from Dr. R. M. Foose dated January 11, 1952 (Exhibit D).

3. (a) Describe fully the proposed work and give the total cost of the project.

The attached data (Exhibits B, C, D, E and F) show the presence of large pegmatite ore bodies, and small scale sampling and mill head analyses confirm the presence of beryl, columbite, and cassiterite in these pegmatites. Little is known of possible zoning of these minerals, and although in 1943 - '45 the Solvay Process Company did 7,000' of core drilling, the cores were not analyzed for beryllium, tin, or columbium. These cores were subsequently discarded, and identification is impossible.

The production of beryllium, columbium and tin depends upon the mining and processing of lithium ores. The possibility of the occurrence of enriched zones of these strategic minerals, and the selection of these areas for mining forms the basis for this program. A further important factor, is the necessity for mining firm unaltered pegmatite for lithium recovery. With present flotation techniques, it is impossible to achieve suitable recovery of acceptable spodumene concentrates on mill feed that is soft, stained, or kaolinized. It is, therefore, imperative that any exploration program, not only locate adequate content of beryl, tin, and columbium, but that it, also, find this content in fresh hard rock.

3. (a) Describe fully the proposed work and give the total cost of the project. Cont'd

It is, therefore, proposed to drill approximately 5,500 feet of diamond drill core holes, to log the core, split and analyze the core for beryllium, columbium, tin, and lithium, and from such data to determine grades and tonnages in the various pegmatites and portions of pegmatites. It is further proposed to strip outcrops and contact zones, to trench these outcrops, and to do sufficient excavation to determine depth of kaolinization or weathering.

From all the above data, to construct plans and cross-sections showing the tonnages, and grade of strategic minerals recoverable from the various portions of the ore bodies -

the total cost is estimated to be.....$68,460.00.

3. (b) State the time required to start the project and to complete it.

The project can start within thirty days after approval of this application. Field work is estimated to require 6 to 8 months, and an additional 2 months to complete office and laboratory work and to prepare a final report.

Total time from approval of application.....9 - 11 months.

4. Submit a map or sketch of the property involved showing a plan (and cross section, if needed) of the present mine workings and the location of the proposed exploration work as related to geologic features, such as contacts, veins, ore-bearing beds, etc.

See maps attached (Exhibits E and F).

See sections and drill data in MF-100 attached.

5. Furnish an itemized list of existing facilities, buildings, installations, and fixtures with a statement of the cost of any necessary rehabilitation or repairs to put into useful and operable condition.

Inasmuch as a fully equipped mine and mill is adjacent to the area under exploration, no major structures will be needed. One existing vacant house may be used as a field office and will require an expenditure of $500.00 for repairs and rehabilitation.

6. Furnish a detailed list of additional facilities, buildings, and fixtures to be purchased, installed, or erected by you, with the estimated cost of each item.

Storage shed for tools, drill cores, etc.....$1,000.00.

7. Furnish a detailed list of operating equipment, separated into items to be -

(a) Rented

Diamond drilling will be done on a contract basis and all equipment furnished by the contractor. It is proposed to secure three bids and award contract to lowest acceptable bidder.

Estimated cost 5,500' at $4.25 per foot.....	$ 23,375.00
1 - 1 1/2 Yard shovel at $160.00 per day including operator, fuel, and maintenance - required 60 days.....	9,600.00
3 - Trucks or dumptors at $32.00 per day each including operator, fuel and maintenance - required 60 days.....	5,760.00
1 - D-8 Bulldozer - rental $88.00 per day including operator, fuel, and maintenance - required 30 days.....	2,640.00
1 - Portable compressor at $15.00 per day without fuel - required 30 days.....	450.00
TOTAL RENTALS.....	$41,825.00

7. Furnish a detailed list of operating equipment, separated into items to be:- Cont'd

(b) Purchased

1,000' 2" Pipe	$ 300.00
Valves and fittings	200.00
Air hose	300.00
Small tools	100.00
Core boxes	400.00
TOTAL PURCHASED	$1,300.00

7. Furnish a detailed list of operating equipment separated into items to be - Cont'd

(c) Furnished by you

1 Wagon Drill - Book value $1,800.00 Total Depreciation for two months.....$	60.00
1 Pickup truck at 150 miles per week at $0.08 per mile - 32 weeks.....	384.00
Surveying equipment - Book value $600.00 - $10.00 per month depreciation - 10 months	100.00
TOTAL FURNISHED BY FOOTE MINERAL COMPANY.	$544.00

8. Furnish an itemized schedule of labor, by numbers and classes (miners, muckers, etc.) and of supervisors by numbers and positions, with the maximum wages or salaries to be paid to each.

1 Shovel operator (included in rental)	$
3 Truck drivers (included in truck rental)	
1 Bulldozer operator (included in rental)	
2 Miners - $1.20 per hour required 30 days.....	576.00
2 Laborers - $1.00 per hour required 180 days.....	2,880.00
9 = Total Laborers	

Supervisors

1 Consulting geologist - $50.00 per day required 100 days.....	5,000.00
1 Mining engineer - $400.00 per month required 20%..	800.00
1 Draftsman - $1.75 per hour required 300 hours.....	525.00
1 Accountant - $400.00 per month required 10%.....	400.00
1 Stenographer - $1.00 per hour required 300 hours..	300.00
TOTAL LABOR.....	$10,481.00

9. Furnish a detailed list with estimated cost of each item for materials, supplies, engineering, assaying, accounting, power, water, utilities, and any other items not provided for above.

(A)	Drilling and blasting supplies.....	$ 1,000.00
(B)	Explosives.....	1,500.00
(C)	Power.....	250.00
(D)	Water - 10 c/M gallons $30.00 per week.....	960.00
(E)	Engineering Supplies.....	100.00
(F)	Analyses - 300 samples.....	9,000.00
	Be at $5.00 (Spectrographic).....$1,500.00	
	Cb-Ta at $15.00..... 4,500.00	
	Sn at $10.00..... 3,000.00	
	TOTAL SUPPLIES AND SERVICES.....	$12,810.00

10. (a) How much are you prepared to invest in the proposed project?

$6,846.00.

10. (b) Is this amount sufficient to pay your part of the cost of the project, in accordance with the regulations on Government participation (Sec. 9 of Mo-5)?

Yes.

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

None known.

Form MF-100
(May 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Form approved.
Budget Bureau No. 42-R1026.

GENERAL TECHNICAL DATA
FOR USE UNDER THE
DEFENSE PRODUCTION ACT OF 1950

NOT TO BE FILLED IN BY APPLICANT

Docket No. DMEA-2347

Date received 5-23-52

Foote Mineral Company
18 W. Chelten Avenue
Philadelphia (44), Pa.

Name and address of applicant

Date June 28, 1951

INSTRUCTIONS

This form is to be filed with Defense Minerals Administration, Department of the Interior, Washington 25, D. C. It should be accompanied by appropriate application form when a specific type of Government assistance is requested, in the form of (1) loan, (2) purchase contract, (3) Government guarantee of a private loan, (4) priorities or allocation of mining equipment, and maintenance, repair and operating supplies, and (5) other forms of Government assistance that might arise under the Act. Submit four (4) signed copies of the form and accompanying papers. Name and address should be stamped or typed on each sheet of this form and all accompanying papers. *When a question is inapplicable it should be so stated on the form.* Additional sheets may be attached in answering any questions or in supplying additional information. (IF YOU CANNOT ANSWER A QUESTION, SO STATE.) If a question is answered elsewhere indicate where answered. It is not necessary to answer it again.

GENERAL TECHNICAL DATA

Supply the following information on separate sheets, arranged, numbered, and lettered as indicated:

1. Materials produced:
   (*a*) What are the chief mine, mill, or smelter products?
   (*b*) What are the byproducts, if any?
2. Name(s) and type(s) of mine(s), mill(s), smelter(s), refinery(ies), pit(s), quarry (ies), drilling operation(s). Include old names of property, if any. Show extent of workings, including the following:
   (*a*) Linear feet of shafts.
   (*b*) Linear feet of drifts and crosscuts.
   (*c*) Linear feet of tunnels or adits.
   (*d*) Linear feet of other mine openings (explain briefly).

   Indicate whether mine is flooded or not. Describe any pumping problems. Give size or productive capacity.
3. For each operation listed above supply the following:
   (*a*) Distance and direction from nearest town and shipping point.
   (*b*) Mining district.
   (*c*) Township, Section, Range.
   (*d*) County, State.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
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4. (*a*) State whether or not property is now in operation, and if in operation, by whom operated.
   (*b*) Are you operating this property as:
   - ☐ Owner.
   - ☐ Lessee.
   - ☐ Contractor.
5. Number of years in production .....

   If not in production or operation, estimated date when production will begin June 1951
6. Experience of operators:

   Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who manage the project.
7. History:
   (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for suspension of operation.
   (*b*) State briefly the known history and production of adjoining and neighboring properties.
   (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

8. Names and addresses of Officers, Directors, or Partners, and in addition thereto, the five largest stockholders if applicant is a corporation.

Name and Address (a)	Official Title (If officer is also director indicate by "D") (b)	Total of Annual Salary, Commissions, Bonuses, Etc., Received From Applicant and Affiliates During Last Fiscal Year (c)	Estimated Net Worth Outside of Interest in Applicant (d)	Number of Shares Held in Applicant Corporation		Life Insurance Carried for Benefit of Applicant	
				Common (e)	Preferred (f)	Amount (g)	Net Cash Surrender Value After Loans (h)
See Exhibit A							
	Total		x x x x x			x x x x x	x x x x x

If more lines are needed continue on separate sheet.

9. Capital Stock Issues:

For Corporate Applicants

Item	Authorized (a)	Outstanding (b)	Par Value (c)	Number of Shares Outstanding (d)	Dividend Rate Last Paid* (e)
See Exhibit A					
Common stock	$	$	$		
Preferred stock	$	$	$		

*Indicate period covered.

10. Production: Not in production

Item	Kind of Product (a)	1948 Total (b)	1949 Total (c)	1950 Total (d)	Present Average Monthly (e)
1. Quantity of product mined or quarried (Short, long, metric tons; barrels; pounds; etc.)					
2. Quantity of product processed (specify unit of measure and type of process)					
3. Quantity and grade of product sold or shipped (specify units of measure)					

11. Do you contemplate a change in the present average monthly rate of production? If so, state estimated maximum monthly production and basis of change.

12. Ore or Mineral Reserves:

(a) Describe the ore or mineral deposit briefly. Accompany the application by any available report on the geology and ore reserves.

Foote Mineral Company
18 West Chelten Avenue
Philadelphia (44), Pa.

1. Materials produced:

   (a) The chief products are lithium ore and feldspar.

   (b) It is anticipated that modest tonnages of mica and cassiterite will be produced. This property also contains large reserves of beryl, but no present process for separation is known.

2. The properties are known as the Kings Mountain Division of the Foote Mineral Company, and consist of 881.82 acres. The mining is by open pit, and a 300 ton per day flotation plant was constructed in 1943. The property was formerly known as the Kings Mountain Division of the Solvay Process Company.

   (a) No shafts

   (b) No drifts nor crosscuts

   (c) No tunnels nor adits

   (d) Two open pits

      1. #25 - 300' long, 60' wide, 60' deep

      2. #21 - 150' long, 50' wide, 40' deep

   These pits are not flooded. In pit #25, it is necessary to pump for one to two hours per day with a portable gasoline pump. Pit #21 is dry. No serious pumping problems are anticipated.

3. (a) The mine and mill are located one mile northeast of a private siding on the main line of the Southern Railroad near the southern edge of the City of Kings Mountain, North Carolina. The mailing address is Foote Mineral Company - Post Office Box 31, Kings Mountain, North Carolina.

(b) Not applicable

(c) Not applicable

(d) Cleveland County, North Carolina.

4. (a) This property is now mining pegmatite ore, and milling operations will commence in June 1951. It is operated by the Foote Mineral Company.

(b) The Foote Mineral Company is operating this property under lease with option to purchase from the Solvay Process Company, Syracuse, New York.

5. Production is estimated to begin in June 1951.

6. (a) A general description of the Foote Mineral Company is given in a recent prospectus filed with the Securities and Exchange Commission (Exhibit A).

(b) The Kings Mountain Division is under the direction of F. B. Shay, Production Manager of the Foote Mineral Company. Mr. Shay is a graduate mining engineer with twenty years experience in mining and mineral processing. The resident plant manager is A. B. Chandler, who has held responsible positions in the Foote Mineral Company for five years.

7. History:

(a) This property was first described in a general fashion in United States Geological Survey Bulletin 936-J - "The Tin-Spodumene belt of the Carolinas" published in 1942.

In 1943-1945 the Solvay Process Company acquired land and mineral leases, erected a flotation plant, and produced 6,000 - 8,000 tons of lithium ore concentrates, and 8,000 - 10,000 tons of feldspar. No attempt was made to recover tin, and although mica was floated to upgrade the feldspar, no recovery was made. Operations stopped in January 1945 due to a lack of demand for lithium ores.

(b) Several carloads of hand picked lithium ores have been shipped from adjoining properties in 1930-1940. Tin production is summarized in United States Geological Survey Bulletin 936-J.

(c) We attach a report from Dr. R. M. Foose covering preliminary examination in 1949 (Exhibit B). We also attach a report from W. R. Griffits of the United States Geological Survey covering occurence of beryllium values in this property (Exhibit C).

During 1949-1951 several investigations into the metallurgy were carried out with successful results.

8. Names and addresses of Officers, Directors, or Partners, and in addition thereto, the five largest stockholders if applicant is a corporation:

See Exhibit A.

9. Capital Stock Issues:

See Exhibit A.

10. Not in production.

11. It is estimated that we will mine and process 8,000 tons per month of ore, and recover 1,200 tons per month of 6% lithium ore and 2,000 tons per month of feldspar. Quantities of mica and cassiterite will vary but should average 20 - 40 tons per month of ground mica and 1 - 2 tons per month of cassiterite concentrates.

12. (a) The deposit consists of more than fifty exposed pegmatite dikes. A plan showing known outcrops is attached (Exhibit D). On two of these dikes quarries have been opened, and about 100,000 tons have been mined and processed. Ore reserves are presumed large and of economic grade, but additional drilling is needed to definitely prove large tonnages and to determine shape and extent of the dikes.

(b) 1. Attached sections show results of diamond drilling on dikes #21, #24 and #25 together with analytical values for Li_2O (Exhibit E). Logs of drill holes 4S, 6S, 7S and 8S are also attached (Exhibit F).

2. Calculated reserves are attached (Exhibit G), for the present workings. No estimate has been made on other ore bodies.

13. Access Roads:

State Highway system borders property. No problem.

14. Water Supply:

Attached blueprint shows water supply from Kings Creek and reservoir (Exhibit H). This system should yield 300 g.p.m. In addition a six inch line connects the plant with the Kings Mountain City System.

15. Power:

Copy of contract with Duke Power Company is attached (Exhibit I).

16. Labor:

Table of Organization is attached (Exhibit J).

17. (a) Mining Equipment:

1 - 3/4 yard New P and H Diesel shovel
1 - 320 cfm Ingersoll Rand compressor with 50 H.P. electric motor
2 - Ingersoll Rand wagon drills
1 - Ingersoll Rand jackhammer

Note: Trucks are rented locally.

(b) Crusher and Mill:

16 x 24 Traylor jaw crusher
#236 Allis Chalmers hydrocone crusher
2- 7 x 48 Hardinge pebble mills
22 Morse-Weineg flotation cells
3 Rake or drag classifiers
2 Dorr thickeners
3 Oliver filters
1 5' x 50' Ruggles-Coles drier
Necessary pumps, motors, elevators, conveyors, etc.

(c) General Facilities:

A chemical laboratory is equipped for routine analyses.

The machine shop contains two lathes, drill press, band saw, welding equipment, forge, and other necessary items.

Supplies reagents, explosives, and parts are stocked in several buildings devoted to these purposes.

Offices and locker rooms are adequate for about eighty employees.

Most buildings are of wood frame construction, with wood siding and built up roofs. The main storeroom and crushing plant buildings are steel frame with corrugated steel siding. The dynamite magazine is of cement block construction.

A general property drawing is attached (Exhibit K) showing buildings, roads, and utilities.

18. Are there any particular conditions or circumstances affecting your operations that are not described above?

No

(*b*) If deposit is other than placer:

(1) Submit assay plans and/or sections showing location and size of proved (measured) and probable (indicated) ore or mineral reserve.

(2) State the tonnage (indicate type of ton) and grade of each class of ore reserve, as above, and show how computed. Tabulated total ore reserve as follows:

TOTAL ORE OR MINERAL RESERVES

Ore or Mineral Reserve	Estimated Tons (a)	Metal or Mineral Content Per Ton (Grade) (b)	Gross Value Per Ton (c)	Recoverable Unit Value Per Ton (d)	Estimated Cost of Production Per Ton (e)
Measured (proved)					
Indicated (probable)					

(*c*) If placer:

(1) Give estimated total yardage and average marketable mineral content of each deposit.

(2) Submit map showing location of placer deposit and surrounding area, with all test holes or pits. Submit logs of each hole and test pit with depth and average value of each.

(3) Describe gravel, stating whether fine, medium or coarse; loose, tight, cemented, or frozen, and whether it contains stumps or boulders more than 1 foot in diameter; if so, how large, and in what proportion.

(4) Describe bedrock, giving type (granite, sandstone, shale, etc.) and state whether it is hard or soft, smooth, uneven or rough.

(5) Describe overburden, stating whether loose, tight, or cemented; fine or coarse textured; furnish estimate of average thickness and total amount.

(6) Tabulate the reserves using the form outlined above for ore or mineral reserves.

13. Access Roads:

Give road distances to shipping, supply and residence points, stating kind and condition of roads.

14. Water Supply:

State source and quantity of water available for operations and whether sufficient for all seasons of year.

15. Power:

State amount of power used, rate per hour, and source thereof.

16. Labor:

State number and classes (miners, muckers, millmen, etc.) of men employed during a recent representative payroll period.

17. Equipment and Facilities:

Describe present equipment on the property, including buildings. (State condition.) List major pieces of equipment now owned or controlled and in serviceable condition available for this operation.

18. Are there any particular conditions or circumstances affecting your operations that are not described above? If so, explain.

CERTIFICATION

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

FOOTE MINERAL COMPANY
(Name of company)

By _____
(Signature of authorized official)

June 28, 1951
(Date)

PRODUCTION MANAGER.

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

U. S. GOVERNMENT PRINTING OFFICE 16—63792-1

UNITED STATES DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS ADMINISTRATION

Supplement - Form MF-103

Foote Mineral Company
18 West Chelten Avenue
Philadelphia (44), Pa.

Name and Address
of Applicant

June 18, 1952.

- - - - -

Filed Form MF-103 May 23, 1952 - Docket Number DMEA-2547

Filed Form MF-100 June 28, 1951 - Serial Number MS-2033 July 17, 1951.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
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FOOTE MINERAL COMPANY
(Name of company)

By [signature]
(Signature of authorized official)

June 18, 1952
(Date)

Vice President - Production
(Title).

Estimate of possible tonnages and values of beryl, tin, and columbite that might be discovered and produced under the proposed program, and certain proposed changes.

I. Total mineable pegmatite (exceeding 40 feet in width) in the main area of exploration above 780 feet elevation (average depth - 120 feet) (calculated at 15 cubic feet per ton):-

Block	Tons
A-8	95,000
A-9	220,000
A-10	29,000
B-7	343,000
B-8	408,000
B-9	73,500
B-11	98,000
B-12	97,000
B-13	450,000
C-7	125,000
C-8	54,000
C-9	92,000
C-10	358,000
C-11	620,000
C-12	642,000
C-13	175,000
D-7	122,000
D-8	157,000
D-9	253,000
D-10	215,000
D-11	272,000
D-12	332,000
D-13	368,000
E-7	42,000
E-8	104,000
E-9	135,000
E-10	177,000
E-11	168,000
E-12	135,000
E-13	145,000
Total	6,504,500

II. BERYL

Exhibit "C" shows an average BeO content of all pegmatites sampled of 0.037%. Substantial widths were sampled giving results of 0.06% to 0.08% BeO. Based upon the average analysis, this area may have 21,700 tons of beryl to a depth of 120 feet.

The Defense Materials Procurement Administration has authorized an expansion program calling for the annual production of 24,000 tons of spodumene from these properties. This will require the mining and milling of 200,000 tons of pegmatite. If certain zones can be discovered with a beryl content equal to the higher values reported by W. R. Griffitts and a 60% yield can be achieved, we might anticipate an annual production of 800 tons of beryl containing 10% BeO.

III. TIN-COLUMBITE

Mr. T. L. Kesler reports considerable variation in tin content in these ore bodies and our mill experience todate has shown an average content of 0.03% to 0.05% Sn. The $(CbTa)_2O_5$ content is consistently about 60% of the Sn value in the heavy mineral concentrate. If certain zones can be discovered with 0.1% Sn and a corresponding $(CbTa)_2O_5$ ratio then the potential output can be increased to 120 tons per ~~day~~ year of heavy concentrate containing:

70 tons of 67% Sn Cassiterite

50 tons of 60% $(CbTa)_2O_5$ Columbo-Tantalite

IV. ECONOMIC DATA AND FORECAST

The current production of the Kings Mountain plant has the following monthly values:

Spodumene - 700 tons at $75.00 per ton.....	$52,500.00
Tin - 2,400 pounds at $1.00 per pound.....	2,400.00
Cb-Ta - 1,600 pounds at $1.70 per pound.....	2,720.00
Mica - 30 tons at $30.00 per ton.....	900.00
Total.....	$58,520.00

On the larger scale operations projected for 1953, the potential monthly values based upon adequate content in mill feed might be:

Spodumene - 1,800 tons at $60.00 per ton.....	$108,000.00
Tin - 11,667 pounds at $1.00 per pound.....	11,667.00
Cb-Ta - 8,330 pounds at $1.70 per pound.....	14,161.00
Mica - 90 tons at $30.00 per ton.....	2,700.00
Total.....	$136,528.00

With low values of Sn and Cb-Ta, these figures would be reduced about $10,000.00 - $12,000.00 per month, or $125,000.00 - $140,000.00 per year. Therefore the locating of suitable zones for mining can substantially increase the output and values of these strategic minerals and will permit the rapid amortization of the loan.

To summarize, a program that is successful in delineating zones containing BeO and Sn-Cb in amounts approaching the higher values of existing samples will permit a substantial increase in output of tin, columbium, and beryl.

In view of the urgent need for these minerals, it is further proposed to increase the number of holes to be drilled, although maintaining the proposed total footage. It is felt that the purposes of this program can best be served by not exploring to depths which can not be reasonably reached by mining within two or three years, and that the drilling should be concentrated in the areas suitable for mining within a reasonable time. A revised map (Exhibit "E") will be submitted promptly showing the additional hole locations and depths.

3. (a) Describe fully the proposed work and give the total cost of the project. Cont'd.

It is, therefore, proposed to drill approximately 5,500 feet of diamond drill core holes, to log the core, split and analyze the core for beryllium, columbium, tin, and lithium, and from such data to determine grades and tonnages in the various pegmatites and portions of pegmatites. It is further proposed to expose and trench the contact zones of these pegmatites to accurately delineate the ore bodies.

From all the above data, to construct plans and cross-sections showing the tonnages, and grade of strategic minerals recoverable from the various portions of the ore bodies -

the total cost is estimated to be.....$49,689.00

7. Furnish a detailed list of operating equipment, separated into items to be -

(a) Rented

Diamond drilling will be done on a contract basis and all equipment furnished by the contractor. It is proposed to secure three bids and award contract to lowest acceptable bidder.

Estimated cost 5,500' at $4.50 per foot.....$24,750.00

1 - D-8 Bulldozer - rental $88.00 per day including operator, fuel, and maintenance - required 30 days.. 2,640.00

TOTAL RENTALS.....$27,390.00

7. Furnish a detailed list of operating equipment, separated into items to be:- Cont'd

(b) Purchased

1,000' 2" Pipe	$ 300.00
Valves and fittings	200.00
Small tools	100.00
Core boxes	400.00
TOTAL PURCHASED	$1,000.00

7. Furnish a detailed list of operating equipment separated into items to be- Cont'd

(c) Furnished by you

1 Pickup truck at 150 miles per week at $0.08 per mile - 32 weeks.....	$ 384.00
Surveying equipment - Book value $600.00 - $10.00 per month depreciation - 10 months.	100.00
TOTAL FURNISHED BY FOOTE MINERAL COMPANY..	$ 484.00

8. Furnish an itemized schedule of labor, by numbers and classes (miners, muckers, etc.) and of supervisors by numbers and positions, with the maximum wages or salaries to be paid to each.

1	Bulldozer operator (included in rental)	$
2	Laborers - $1.00 per hour required 180 days.....	2,880.00
3	= Total Laborers	

Supervisors

1	Consulting geologist - $60.00 per day required 60 days plus travelling expenses (estimated $500.00).....	4,100.00
1	Mining engineer - $400.00 per month required 20%.	800.00
1	Draftsman - $1.75 per hour required 300 hours....	525.00
1	Accountant - $400.00 per month required 10%.....	400.00
1	Stenographer - $1.00 per hour required 300 hours.	300.00
	TOTAL LABOR.....	$9,005.00

9. Furnish a detailed list with estimated cost of each item for materials, supplies, engineering, assaying, accounting, power, water, utilities, and any other items not provided for above.

(A)	Power		$ 250.00
(B)	Water - 10 c/M gallons $30.00 per week		960.00
(C)	Engineering Supplies		100.00
(D)	Analyses - 300 samples		9,000.00
	Be at $5.00 (Spectrographic)	$1,500.00	
	Cb-Ta at $15.00	4,500.00	
	Sn at $10.00	3,000.00	
	TOTAL SUPPLIES AND SERVICES		$10,310.00

10. (a) How much are you prepared to invest in the proposed project?

$4,968.90.

Form MF-103
(Revised June 1951)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.1.

MF-103 Should Be Filed With General Technical Data Form MF-100

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

Not To Be Filled in by Applicant

Docket No. DMEA-2547
Metal or Mineral
Date Received 5-23-52
Amount $
Participation (Government %)

Name and address of applicant

Footo Mineral Company
18 W. Chelton Avenue
Philadelphia (44), Pa.

Date May 9, 1952

If you have already filed MF-100, give date filed June 28, 1951, type of assistance requested Priorities,

DMA Docket Number (if available) Serial No. M.S.2033 July 17, 1951

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four copies each, of the signed application form, General Technical Data Form MF-100, and answers to questions as specified, to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive office thereof, with your name and address on each sheet of the application and all accompanying papers. If you have previously filed MF-100, it is not necessary to file it again. However, you should indicate in space provided above the type of assistance previously applied for (loans, procurement contracts, etc.) and DMA Docket Number, if available. *When a question is inapplicable it should be so stated in the form.* Additional sheets should be attached in answering any questions or in supplying additional information. IF YOU CANNOT ANSWER A QUESTION, SO STATE.

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

   (*b*) If you are not the owner of the property, submit a copy of the lease, purchase option, or other agreements under which you are authorized to operate the property with each copy of your application.

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

   NOTE: (1) If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*c*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

   (2) If applicant is not the owner of the property or if there are any liens or encumbrances against the property, copy of agreements of claimants, lienors, encumbrances, and lessors subordinating their interests in the property to the interest of the Government under the Exploration Project Contract will be required for attachment to the Contract.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 23 1952

2. (*a*) What metals or minerals do you expect to find?

   (*b*) Furnish statement of the geologic features of your property, giving type of ore deposit and reasons for expecting to find commercial ore bodies. Illustrate with maps or sketches. If you have a geologic or engineering report, or assay maps showing width and grade, please send them with application, stating whether or not you wish to have them returned.

The information requested in questions 3, 4, 5, 6, 7, 8, and 9 below should be answered specifically and in detail, as this information will be attached to and incorporated as part of the Exploration Project Contract, if such contract is entered into with you by the Government.

ANSWER EACH QUESTION ON SEPARATE SHEETS OF PAPER AND SUBMIT A COPY OF EACH ANSWER FOR EACH COPY OF YOUR APPLICATION.

3. (*a*) Describe fully the proposed work and give the total cost of the project.

   (*b*) State the time required to start the project and to complete it.

4. Submit a map or sketch of the property involved showing a plan (and cross section, if needed) of the present mine workings and the *location of the proposed exploration work* as related to geologic features, such as contacts, veins, ore-bearing beds, etc.

5. Furnish an itemized list of existing facilities, buildings, installations, and fixtures with a statement of the cost of any necessary rehabilitation or repairs to put into useful and operable condition.

6. Furnish a detailed list of additional facilities, buildings, and fixtures to be purchased, installed, or erected by you, with the estimated cost of each item.

7. Furnish a detailed list of operating equipment, separated into items to be—

   (*a*) Rented

   (*b*) Purchased

   (*c*) Furnished by you

   with the rental, purchase price, or depreciation of each item, as the case may be, to be charged as a cost of the project.

8. Furnish an itemized schedule of labor, by numbers and classes (miners, muckers, etc.) and of supervisors by numbers and positions, with the maximum wages or salaries to be paid to each.

9. Furnish a detailed list with estimated cost of each item for materials, supplies, engineering, assaying, accounting, power, water, utilities, and any other items not provided for above.

10. (*a*) How much are you prepared to invest in the proposed project?

    (*b*) Is this amount sufficient to pay your part of the cost of the project, in accordance with the regulations on Government participation (Sec. 9 of MO–5)?

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

CERTIFICATION

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

FOOTE MINERAL COMPANY
(Name of company)

By _____
(Signature of authorized official)

May 9, 1952
(Date)

Vice President - Production.
(Title)

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

U. S. GOVERNMENT PRINTING OFFICE 16—64067-2

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

This project will be carried out on mineral lands owned or leased by the Foote Mineral Company in Cleveland County, North Carolina. An existing flotation plant of 350 tons per day capacity is being operated for recovery of spodumene, tin, columbite, mica, and feldspar.

1. (b) If you are not the owner of the property, submit a copy of the lease, purchase option, or other agreements under which you are authorized to operate the property with each copy of your application.

(A) Attach copy of Agreement between Allied Chemical and Dye Corporation and Foote Mineral Company October 16, 1951 (Exhibit A-1).

(B) Attach copy of lease between L. M. Williams and wife, Lena B. Williams, Janie McClintock Cole, Jean Cole Hatcher, Rube Hatcher, Emily Cole Hovis, Robert A. Hovis, Frances Cole Culp, B. B. Culp and Foote Mineral Company December 10, 1949 (Exhibit A-2).

(C) Attach copy of Agreement between L. M. Williams and wife, Lena B. Williams and The Solvay Process Company August 1, 1942. Assigned to Foote Mineral Company by Instrument dated October 16, 1951 in file TSP#1100-1-32-1 (Exhibit A-3).

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

This project will be carried out on the specified areas marked "Ex" on the maps attached as part of answer to Question 4.

2. (a) What metals or minerals do you expect to find?

Beryl, Columbite, Tantalite, Tin, Spodumene and Mica.

2. (b) Furnish statement of the geologic features of your property, giving type of ore deposit and reasons for expecting to find commercial ore bodies. Illustrate with maps or sketches. If you have a geologic or engineering report, or assay maps showing width and grade, please send them with application, stating whether or not you wish to have them returned.

(A) United States Department of the Interior, Geological Survey Bulletin 936-J entitled "The Tin-Spodumene Belt of The Carolinas." (Exhibit B).

(B) Attach a report from W. R. Griffitts of the United States Geological Survey (Exhibit C).

(C) Attach letter from Dr. R. M. Foose dated January 11, 1952 (Exhibit D).

3. (a) Describe fully the proposed work and give the total cost of the project.

The attached data (Exhibits B, C, D, E and F) show the presence of large pegmatite ore bodies, and small scale sampling and mill head analyses confirm the presence of beryl, columbite, and cassiterite in these pegmatites. Little is known of possible zoning of these minerals, and although in 1943 - '45 the Solvay Process Company did 7,000' of core drilling, the cores were not analyzed for beryllium, tin, or columbium. These cores were subsequently discarded, and identification is impossible.

The production of beryllium, columbium, and tin depends upon the mining and processing of lithium ores. The possibility of the occurrence of enriched zones of these strategic minerals, and the selection of these areas for mining forms the basis for this program. A further important factor, is the necessity for mining firm unaltered pegmatite for lithium recovery. With present flotation techniques, it is impossible to achieve suitable recovery of acceptable spodumene concentrates on mill feed that is soft, stained, or kaolinized. It is, therefore, imperative that any exploration program, not only locate adequate content of beryl, tin, and columbium, but that it, also, find this content in fresh hard rock.

3. (a) Describe fully the proposed work and give the total cost of the project. Cont'd

It is, therefore, proposed to drill approximately 5,500 feet of diamond drill core holes, to log the core, split and analyze the core for beryllium, columbium, tin, and lithium, and from such data to determine grades and tonnages in the various pegmatites and portions of pegmatites. It is further proposed to strip outcrops and contact zones, to trench these outcrops, and to do sufficient excavation to determine depth of kaolinization or weathering.

From all the above data, to construct plans and cross-sections showing the tonnages, and grade of strategic minerals recoverable from the various portions of the ore bodies -

the total cost is estimated to be.....$68,460.00.

3. (b) State the time required to start the project and to complete it.

The project can start within thirty days after approval of this application. Field work is estimated to require 6 to 8 months, and an additional 2 months to complete office and laboratory work and to prepare a final report.

Total time from approval of application.....9 - 11 months.

4. Submit a map or sketch of the property involved showing a plan (and cross section, if needed) of the present mine workings and the location of the proposed exploration work as related to geologic features, such as contacts, veins, ore-bearing beds, etc.

See maps attached (Exhibits E and F).

See sections and drill data in MF-100 attached.

5. Furnish an itemized list of existing facilities, buildings, installations, and fixtures with a statement of the cost of any necessary rehabilitation or repairs to put into useful and operable condition.

Inasmuch as a fully equipped mine and mill is adjacent to the area under exploration, no major structures will be needed. One existing vacant house may be used as a field office and will require an expenditure of $500.00 for repairs and rehabilitation.

6. Furnish a detailed list of additional facilities, buildings, and fixtures to be purchased, installed, or erected by you, with the estimated cost of each item.

Storage shed for tools, drill cores, etc.....$1,000.00.

7. Furnish a detailed list of operating equipment, separated into items to be -

(a) Rented

Diamond drilling will be done on a contract basis and all equipment furnished by the contractor. It is proposed to secure three bids and award contract to lowest acceptable bidder.

Estimated cost 5,500' at $4.25 per foot.....	$ 23,375.00
1 - 1 1/2 Yard shovel at $160.00 per day including operator, fuel, and maintenance - required 60 days.....	9,600.00
3 - Trucks or dumptors at $32.00 per day each including operator, fuel and maintenance - required 60 days.....	5,760.00
1 - D-8 Bulldozer - rental $88.00 per day including operator, fuel, and maintenance - required 30 days.....	2,640.00
1 - Portable compressor at $15.00 per day without fuel - required 30 days.....	450.00
TOTAL RENTALS.....	$41,825.00

7. Furnish a detailed list of operating equipment, separated into items to be:- Cont'd

(b) Purchased

1,000' 2" Pipe	$ 300.00
Valves and fittings	200.00
Air hose	300.00
Small tools	100.00
Core boxes	400.00
TOTAL PURCHASED	$1,300.00

7. Furnish a detailed list of operating equipment separated into items to be - Cont'd

(c) Furnished by you

1 Wagon Drill - Book value $1,800.00 Total Depreciation for two months.....$	60.00
1 Pickup truck at 150 miles per week at $0.08 per mile - 32 weeks.....	384.00
Surveying equipment - Book value $600.00 - $10.00 per month depreciation - 10 months	100.00
TOTAL FURNISHED BY FOOTE MINERAL COMPANY.	$544.00

8. Furnish an itemized schedule of labor, by numbers and classes (miners, muckers, etc.) and of supervisors by numbers and positions, with the maximum wages or salaries to be paid to each.

1 Shovel operator (included in rental)	$
3 Truck drivers (included in truck rental)	
1 Bulldozer operator (included in rental)	
2 Miners - $1.20 per hour required 30 days.....	576.00
2 Laborers - $1.00 per hour required 180 days.....	2,880.00
9 = Total Laborers	

Supervisors

1 Consulting geologist - $50.00 per day required 100 days.....	5,000.00
1 Mining engineer - $400.00 per month required 20%..	800.00
1 Draftsman - $1.75 per hour required 300 hours.....	525.00
1 Accountant - $400.00 per month required 10%.....	400.00
1 Stenographer - $1.00 per hour required 300 hours..	300.00
TOTAL LABOR.....	$10,481.00

9. Furnish a detailed list with estimated cost of each item for materials, supplies, engineering, assaying, accounting, power, water, utilities, and any other items not provided for above.

(A)	Drilling and blasting supplies.....	$ 1,000.00
(B)	Explosives.....	1,500.00
(C)	Power.....	250.00
(D)	Water - 10 c/M gallons $30.00 per week.....	960.00
(E)	Engineering Supplies.....	100.00
(F)	Analyses - 300 samples.....	9,000.00
	Be at $5.00 (Spectrographic).....$1,500.00	
	Cb-Ta at $15.00..... 4,500.00	
	Sn at $10.00..... 3,000.00	
	TOTAL SUPPLIES AND SERVICES.....	$12,810.00

10. (a) How much are you prepared to invest in the proposed project?

$6,846.00.

10. (b) Is this amount sufficient to pay your part of the cost of the project, in accordance with the regulations on Government participation (Sec. 9 of Mo-5)?

Yes.

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

None known.

Form MF-100
(March 1951)

U.S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Form approved.
Budget Bureau No. 42-R1026.

GENERAL TECHNICAL DATA FOR USE UNDER THE DEFENSE PRODUCTION ACT OF 1950

NOT TO BE FILLED IN BY APPLICANT

Docket No. DMEA-2547

Date received 5-23-52

Foote Mineral Company
18 W. Chelten Avenue
Philadelphia (44), Pa.

Name and address of applicant

Date June 26th, 1951

INSTRUCTIONS

This form is to be filed with Defense Minerals Administration, Department of the Interior, Washington 25, D. C. It should be accompanied by appropriate application form when a specific type of Government assistance is requested, in the form of (1) loan, (2) purchase contract, (3) Government guarantee of a private loan, (4)XXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX ~~zation Deduction) of Internal Revenue Code, 1950,~~ XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX ~~(5)~~ priorities or allocation of mining equipment, and maintenance, repair and operating supplies, and ~~(6)~~ 5 other forms of Government assistance that might arise under the Act. Submit four (4) signed copies of the form and accompanying papers. Name and address should be stamped or typed on each sheet of this form and all accompanying papers. *When a question is inapplicable it should be so stated on the form.* Additional sheets may be attached in answering any questions or in supplying additional information. (IF YOU CANNOT ANSWER A QUESTION, SO STATE.) If a question is answered elsewhere indicate where answered. It is not necessary to answer it again.

GENERAL TECHNICAL DATA

Supply the following information on separate sheets, arranged, numbered, and lettered as indicated:

1. Materials produced:
   - (*a*) What are the chief mine, mill, or smelter products?
   - (*b*) What are the byproducts, if any?
2. Name(s) and type(s) of mine(s), mill(s), smelter(s), refinery(ies), pit(s), quarry (ies), drilling operation(s). Include old names of property, if any. Show extent of workings, including the following:
   - (*a*) Linear feet of shafts.
   - (*b*) Linear feet of drifts and crosscuts.
   - (*c*) Linear feet of tunnels or adits.
   - (*d*) Linear feet of other mine openings (explain briefly).

   Indicate whether mine is flooded or not. Describe any pumping problems. Give size or productive capacity.
3. For each operation listed above supply the following:
   - (*a*) Distance and direction from nearest town and shipping point.
   - (*b*) Mining district.
   - (*c*) Township, Section, Range.
   - (*d*) County, State.

DEPARTMENT OF THE [illegible]
Defense [illegible]
[illegible]
MAY 23 1952

4. (*a*) State whether or not property is now in operation, and if in operation, by whom operated.
   (*b*) Are you operating this property as:
   - ☐ Owner.
   - ☐ Lessee.
   - ☐ Contractor.
5. Number of years in production ____________ June 1951

   If not in production or operation, estimated date when production will begin ____________
6. Experience of operators:

   Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who manage the project.
7. History:
   - (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for suspension of operation.
   - (*b*) State briefly the known history and production of adjoining and neighboring properties.
   - (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

16—63792-1

8. Names and addresses of Officers, Directors, or Partners, and in addition thereto, the five largest stockholders if applicant is a corporation.

Name and Address (a)	Official Title (If officer is also director indicate by "D") (b)	Total of Annual Salary, Commissions, Bonuses, Etc., Received From Applicant and Affiliates During Last Fiscal Year (c)	Estimated Net Worth Outside of Interest in Applicant (d)	Number of Shares Held in Applicant Corporation: Common (e)	Number of Shares Held in Applicant Corporation: Preferred (f)	Life Insurance Carried for Benefit of Applicant: Amount (g)	Life Insurance Carried for Benefit of Applicant: Net Cash Surrender Value After Loans (h)
See Exhibit A							
	Total		x x x x x			x x x x x	x x x x x

If more lines are needed continue on separate sheet.

9. Capital Stock Issues:

For Corporate Applicants

Item	Authorized (a)	Outstanding (b)	Par Value (c)	Number of Shares Outstanding (d)	Dividend Rate Last Paid* (e)
See Exhibit A					
Common stock	$	$	$		
Preferred stock	$	$	$		

*Indicate period covered.

10. Production:

Not in production

Item	Kind of Product (a)	1948 Total (b)	1949 Total (c)	1950 Total (d)	Present Average Monthly (e)
1. Quantity of product mined or quarried (Short, long, metric tons; barrels; pounds; etc.)					
2. Quantity of product processed (specify unit of measure and type of process)					
3. Quantity and grade of product sold or shipped (specify units of measure)					

11. Do you contemplate a change in the present average monthly rate of production? If so, state estimated maximum monthly production and basis of change.

12. Ore or Mineral Reserves:

(a) Describe the ore or mineral deposit briefly. Accompany the application by any available report on the geology and ore reserves.

Addendum to MF-100, page 1.
Foote Mineral Company
18 West Chelten Avenue
Philadelphia (44), Pa.

1. Materials produced:

   (a) The chief products are lithium ore and feldspar.

   (b) It is anticipated that modest tonnages of mica and cassiterite will be produced. This property also contains large reserves of beryl, but no present process for separation is known.

2. The properties are known as the Kings Mountain Division of the Foote Mineral Company, and consist of 881.82 acres. The mining is by open pit, and a 300 ton per day flotation plant was constructed in 1943. The property was formerly known as the Kings Mountain Division of the Solvay Process Company.

   (a) No shafts

   (b) No drifts nor crosscuts

   (c) No tunnels nor adits

   (d) Two open pits

      1. #25 - 300' long, 60' wide, 60' deep
      2. #21 - 150' long, 50' wide, 40' deep

   These pits are not flooded. In pit #25, it is necessary to pump for one to two hours per day with a portable gasoline pump. Pit #21 is dry. No serious pumping problems are anticipated.

3. (a) The mine and mill are located one mile northeast of a private siding on the main line of the Southern Railroad near the southern edge of the City of Kings Mountain, North Carolina. The mailing address is Foote Mineral Company - Post Office Box 31, Kings Mountain, North Carolina.

(b) Not applicable

(c) Not applicable

(d) Cleveland County, North Carolina.

4. (a) This property is now mining pegmatite ore, and milling operations will commence in June 1951. It is operated by the Foote Mineral Company.

(b) The Foote Mineral Company is operating this property under lease with option to purchase from the Solvay Process Company, Syracuse, New York.

5. Production is estimated to begin in June 1951.

6. (a). A general description of the Foote Mineral Company is given in a recent prospectus filed with the Securities and Exchange Commission (Exhibit A).

(b). The Kings Mountain Division is under the direction of F. B. Shay, Production Manager of the Foote Mineral Company. Mr. Shay is a graduate mining engineer with twenty years experience in mining and mineral processing. The resident plant manager is A. B. Chandler, who has held responsible positions in the Foote Mineral Company for five years.

7. History:

(a) This property was first described in a general fashion in United States Geological Survey Bulletin 936-J - "The Tin-Spodumene belt of the Carolinas" published in 1942.

In 1943-1945 the Solvay Process Company acquired land and mineral leases, erected a flotation plant, and produced 6,000 - 8,000 tons of lithium ore concentrates, and 8,000 - 10,000 tons of feldspar. No attempt was made to recover tin, and although mica was floated to upgrade the feldspar, no recovery was made. Operations stopped in January 1945 due to a lack of demand for lithium ores.

(b) Several carloads of hand picked lithium ores have been shipped from adjoining properties in 1930-1940. Tin production is summarized in United States Geological Survey Bulletin 936-J.

(c) We attach a report from Dr. R. M. Foose covering preliminary examination in 1949 (Exhibit B). We also attach a report from W. R. Griffitts of the United States Geological Survey covering occurrence of beryllium values in this property (Exhibit C).

During 1949-1951 several investigations into the metallurgy were carried out with successful results.

8. Names and addresses of Officers, Directors, or Partners, and in addition thereto, the five largest stockholders if applicant is a corporation:

See Exhibit A.

9. Capital Stock Issues:

See Exhibit A.

10. Not in production.

11. It is estimated that we will mine and process 8,000 tons per month of ore, and recover 1,200 tons per month of 6% lithium ore and 2,000 tons per month of feldspar. Quantities of mica and cassiterite will vary but should average 20 - 40 tons per month of ground mica and 1 - 2 tons per month of cassiterite concentrates.

12. (a) The deposit consists of more than fifty exposed pegmatite dikes. A plan showing known outcrops is attached (Exhibit D). On two of these dikes quarries have been opened, and about 100,000 tons have been mined and processed. Ore reserves are presumed large and of economic grade, but additional drilling is needed to definitely prove large tonnages and to determine shape and extent of the dikes.

(b). 1. Attached sections show results of diamond drilling on dikes #21, #24 and #25 together with analytical values for Li_2O (Exhibit E). Logs of drill holes 4S, 6S, 7S and 8S are also attached (Exhibit F).

2. Calculated reserves are attached (Exhibit G), for the present workings. No estimate has been made on other ore bodies.

13. Access Roads:

State Highway system borders property. No problem.

14. Water Supply:

Attached blueprint shows water supply from Kings Creek and reservoir (Exhibit H). This system should yield 300 g.p.m. In addition a six inch line connects the plant with the Kings Mountain City System.

15. Power:

Copy of contract with Duke Power Company is attached (Exhibit I).

16. Labor:

Table of Organization is attached (Exhibit J).

17. (a) Mining Equipment:

1 - 3/4 yard new P and H Deisel shovel
1 - 320 cfm Ingersoll Rand compressor with 50 h.p. electric motor
2 - Ingersoll Rand wagon drills
1 - Ingersoll Rand jackhammer

Note: Trucks are rented locally.

(b) Crusher and Mill:

16 x 24 Traylor jaw crusher

#236 Allis Chalmers hydrocone crusher
2 - 7 x 48 Hardinge pebble mills
22 Morse-Weimeg flotation cells
3 Rake or drag classifiers
2 Dorr thickeners
3 Oliver filters
1 5' x 50' Ruggles-Coles drier
Necessary pumps, motors, elevators, conveyors, etc.

(c) General Facilities:

A chemical laboratory is equipped for routine analyses.

The machine shop contains two lathes, drill press, band saw, welding equipment, forge, and other necessary items.

Supplies reagents, explosives, and parts are stocked in several buildings devoted to these purposes.

Offices and locker rooms are adequate for about eighty employees.

Most buildings are of wood frame construction, with wood siding and built up roofs. The main storeroom and crushing plant buildings are steel frame with corrugated steel siding. The dynamite magazine is of cement block construction.

A general property drawing is attached (Exhibit K) showing buildings, roads, and utilities.

18. Are there any particular conditions or circumstances affecting your operations that are not described above?

No

(*b*) If deposit is other than placer:

(1) Submit assay plans and/or sections showing location and size of proved (measured) and probable (indicated) ore or mineral reserve.

(2) State the tonnage (indicate type of ton) and grade of each class of ore reserve, as above, and show how computed. Tabulated total ore reserve as follows:

TOTAL ORE OR MINERAL RESERVES

Ore or Mineral Reserve	Estimated Tons (a)	Metal or Mineral Content Per Ton (Grade) (b)	Gross Value Per Ton (c)	Recoverable Unit Value Per Ton (d)	Estimated Cost of Production Per Ton (e)
Measured (proved)					
Indicated (probable)					

(*c*) If placer:

(1) Give estimated total yardage and average marketable mineral content of each deposit.

(2) Submit map showing location of placer deposit and surrounding area, with all test holes or pits. Submit logs of each hole and test pit with depth and average value of each.

(3) Describe gravel, stating whether fine, medium or coarse; loose, tight, cemented, or frozen, and whether it contains stumps or boulders more than 1 foot in diameter; if so, how large, and in what proportion.

(4) Describe bedrock, giving type (granite, sandstone, shale, etc.) and state whether it is hard or soft, smooth, uneven or rough.

(5) Describe overburden, stating whether loose, tight, or cemented; fine or coarse textured; furnish estimate of average thickness and total amount.

(6) Tabulate the reserves using the form outlined above for ore or mineral reserves.

13. Access Roads:

Give road distances to shipping, supply and residence points, stating kind and condition of roads.

14. Water Supply:

State source and quantity of water available for operations and whether sufficient for all seasons of year.

15. Power:

State amount of power used, rate per hour, and source thereof.

16. Labor:

State number and classes (miners, muckers, millmen, etc.) of men employed during a recent representative payroll period.

17. Equipment and Facilities:

Describe present equipment on the property, including buildings. (State condition.) List major pieces of equipment now owned or controlled and in serviceable condition available for this operation.

18. Are there any particular conditions or circumstances affecting your operations that are not described above? If so, explain.

CERTIFICATION

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

FOOTE MINERAL COMPANY
(Name of company)

By [signature]
(Signature of authorized official)

June 28th, 1951
(Date)

Production Mgr.
(Title)

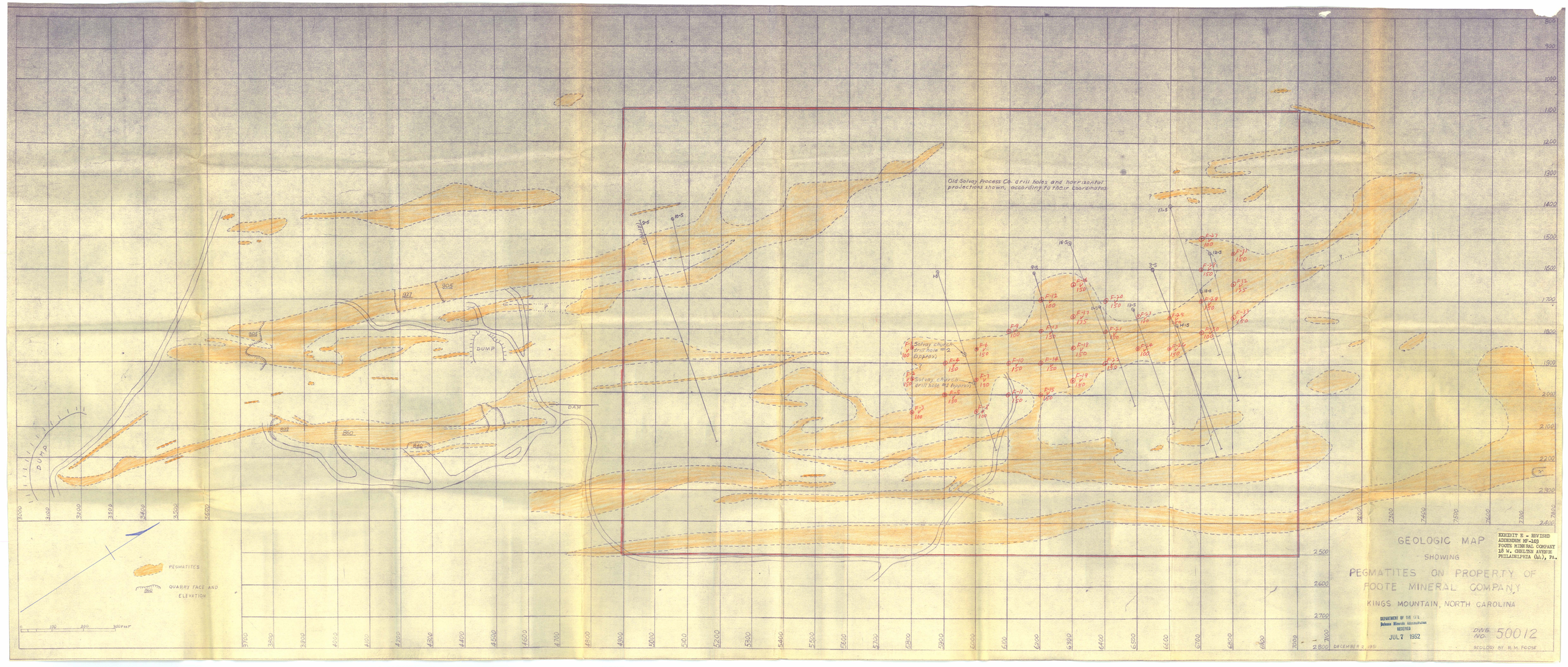
Title 18, U. S. Code (Crimes), Section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

U. S. GOVERNMENT PRINTING OFFICE 16—63792-1

DIAMOND DRILL HOLES PLANNED
(Second list, superseding list of 6-18-52)

All holes vertical

Hole no.	Coordinates	Depth (ft.)
F-1	1850-5800	100
F-2	1950-5800	150
F-3	2050-5800	100
F-4	1900-5900	150
F-5	2000-5900	150
F-6	1850-6000	150
F-7	1950-6000	150
F-8	2050-6000	100
F-9	1800-6100	100
F-10	1900-6100	150
F-11	2000-6100	150
F-12	1700-6200	100
F-13	1800-6200	150
F-14	1900-6200	150
F-15	2000-6200	150
F-16	1650-6300	150
F-17	1750-6300	175
F-18	1850-6300	150
F-19	1950-6300	150
F-20	1700-6400	150
F-21	1800-6400	150
F-22	1900-6400	150
F-23	1750-6500	100
F-24	1850-6500	100
F-25	1750-6600	150
F-26	1850-6600	150
F-27	1600-6700	100
F-28	1600-6700	150
F-29	1700-6700	150
F-30	1800-6700	100
F-31	1550-6800	150
F-32	1650-6800	125
F-33	1750-6800	150
Total footage		4,500


Old Solvay Process Co. drill holes and horizontal projections shown, according to their coordinates.
Solvay church drill hole #2 (approx)
Solvay church drill hole #1 (approx)
DUMP
DAM
PEGMATITES
QUARRY FACE AND ELEVATION
GEOLOGIC MAP
SHOWING
PEGMATITES ON PROPERTY OF
FOOTE MINERAL COMPANY
KINGS MOUNTAIN, NORTH CAROLINA
EXHIBIT E - REVISED
ADDENDUM MF-103
FOOTE MINERAL COMPANY
18 W. CHELTEN AVENUE
PHILADELPHIA (Ub.), PA.
DEPARTMENT OF THE ARMY
Defense Minerals Administration
RECEIVED
JUL 7 1952
DWG. NO. 50012
DECEMBER 2, 1951
GEOLOGY BY R.M. FOOSE

DIAMOND DRILL HOLES PLANNED
(Second list, superseding list of 6-18-52)

All holes vertical

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F-4	1900-5900	150
F-5	2000-5900	150
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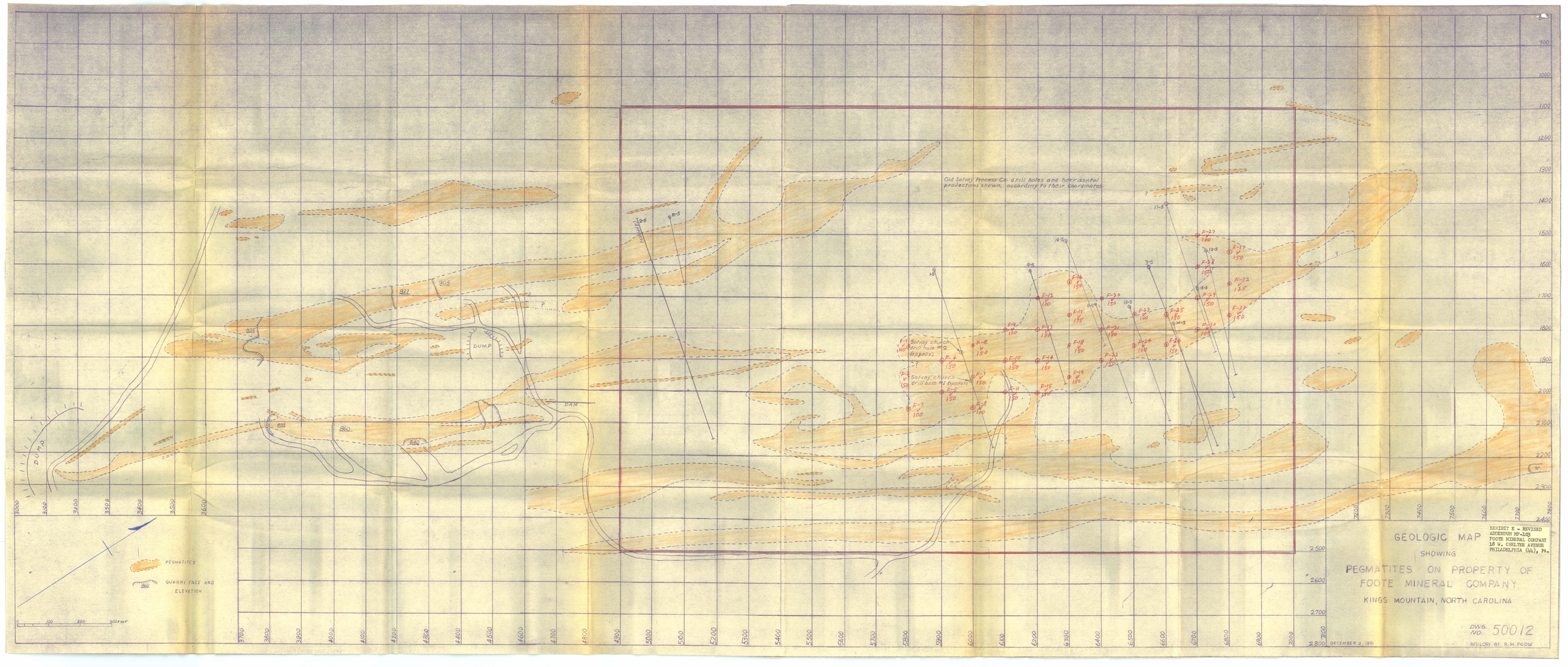
F-7	1950-6000	150
F-8	2050-6000	100
F-9	1800-6100	100
F-10	1900-6100	150
F-11	2000-6100	150
F-12	1700-6200	100
F-13	1800-6200	150
F-14	1900-6200	150
F-15	2000-6200	150
F-16	1650-6300	150
F-17	1750-6300	175
F-18	1850-6300	150
F-19	1950-6300	150
F-20	1700-6400	150
F-21	1800-6400	150
F-22	1900-6400	150
F-23	1750-6500	100
F-24	1850-6500	100
F-25	1750-6600	150
F-26	1850-6600	150
F-27	1600-6700	100
F-28	1600-6700	150
F-29	1700-6700	150
F-30	1800-6700	100
F-31	1550-6800	150
F-32	1650-6800	125
F-33	1750-6800	150
Total footage		4,500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All holes vertical

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F-4	1900-5900	150
F-5	2000-5900	150
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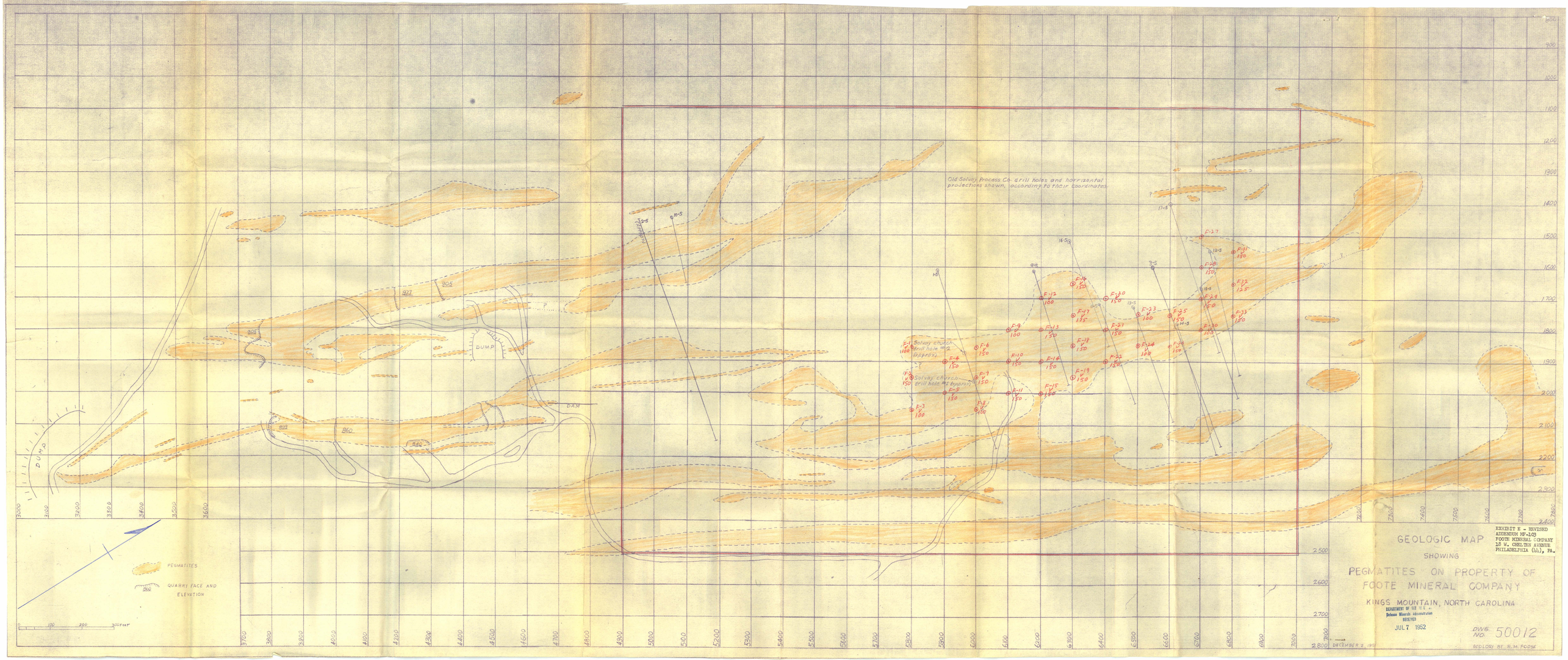
F-7	1950-6000	150
F-8	2050-6000	100
F-9	1800-6100	100
F-10	1900-6100	150
F-11	2000-6100	150
F-12	1700-6200	100
F-13	1800-6200	150
F-14	1900-6200	150
F-15	2000-6200	150
F-16	1650-6300	150
F-17	1750-6300	175
F-18	1850-6300	150
F-19	1950-6300	150
F-20	1700-6400	150
F-21	1800-6400	150
F-22	1900-6400	150
F-23	1750-6500	100
F-24	1850-6500	100
F-25	1750-6600	150
F-26	1850-6600	150
F-27	1600-6700	100
F-28	1600-6700	150
F-29	1700-6700	150
F-30	1800-6700	100
F-31	1550-6300	150
F-32	1650-6800	125
F-33	1750-6800	150
Total footage		4,500


Old Solvay Process Co. drill holes and horizontal projections shown, according to their coordinates
Solvay church drill hole #12 (approx.)
Solvay church drill hole #1 (approx.)
DUMP
DAM
PEGMATITES
QUARRY FACE AND ELEVATION
0 100 200 300 FEET
GEOLOGIC MAP
SHOWING
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