DMEA Form 9
Rev. 6/57

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration

OFFICIAL DOCKET FILE

Idm-E NO._____

DMEA NO. 5044

Application
- [ ] Denied
- [ ] Withdrawn

Contract 25 JUN 1958 1222
- [ ] Terminated - Not Certified
- [ ] Terminated - Certified

- [ ] Cancelled
- [ ] Royalty Agreement

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

Folder No. 1:

**Left Side**

- [ ] Royalty Audits
- [ ] Certification of Discovery
- [x] Closing Letter 10-20-59
- [x] Cost Audits-4-22-59
- [ ] Termination Notice or Agreement
- [ ] Recision Notice
- [ ] Assignment of Contract
- [ ] Contract Amendments
- [x] Contract with all exhibits and annexes
- [x] Owner's Consent to Lien and Subordination Agreement
- [X] Application and attachments

**Right Side**

- [ ] Project summary (final)
- [x] Work Completed analysis (final)

All other material filed in chronological order including the following reports if checked:

- [ ] Field Team Semi-Annual Report for Certified Project
- [ ] Final Field Team Report (Tab)
- [x] Operator's Final Report (Tab)-4-20-59
- [ ] Interim Field Team Reports
- [ ] Operator's monthly reports and all attachments
- [x] On-site Exam Report (Tab)
- [ ] Settlement Sheets
- [ ] Drill Logs

Additional Folders:

**Left Side**

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

**Right Side**

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

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

Folders No._____: Settlement Sheets

Folders No._____: Drill Logs

Folders No._____: Royalty material

17963

OFFICE OF MINERALS EXPLORATION
CONTRACT ADMINISTRATION AND AUDIT DIVISION

REPORT OF REVIEW

I have reviewed the Monthly Reports of:

Appalachian Sulphides, Inc.
Jefferson, North Carolina

pertaining to Exploration Project Contract No. Idm-21222, DMEA No. 5044, including Amendment No. 1, for October 1958 to March 1959, inclusive, covering a copper and zinc project at the Ore Knob Mine, Ashe County, North Carolina.

My review included an examination of the Monthly Reports (Form MF-104) and supporting documents, comparison of the claimed costs with the contract and pertinent schedules, verification of work performed by reference to Field Team reports and correspondence, and a determination of the reasonableness and propriety of the costs.

This review was made in lieu of a final audit of the Operator's accounts and records for the reasons that:

(a) the Monthly Reports were supported by documentary proof of that portion ($53,142.92) of the costs covering work performed at unit rates under independent contract;
(b) the balance ($2,904.07) of the costs was under a contract provision for payment by the Government at fixed unit costs for work performed; and
(c) the administrative cost to the Government of an audit would be excessive in relation to the estimated amount of possible disallowances.

The findings of this review are stated in the following summary:

| | | |
|---|---|---|
| Total cost billed by Operator | | $56,046.99 |
| Exceptions: | | |
| Prior to this review | $ -0- | |
| Herewith | -0- | -0- |
| Total acceptable cost | | $56,046.99 |

The contract calls for a 50 percent contribution of the allowable costs by the Government. Therefore, if the project is otherwise accepted as having met the terms of the contract, payments as follows are valid and proper:

| | |
|---|---|
| Payable on audited claim | $28,023.10 |
| Paid to date | 24,498.86 |
| Balance due Operator | $ 3,524.24 |

Pd Mar/59

E. L. Talbert

E. L. Talbert, OME Auditor

April 22, 1959

Government's copy

Rmb
Dunigan
App'd. Col. Off.
Financial
Chandler
Selfridge

EXPLORATION PROJECT CONTRACT
APPALACHIAN SULPHIDES, INC.
DOCKET NO. DMEA-5044

AMENDMENT NO. 1

It is agreed this 20th day of November, 1958, between the United States of America, acting through the Department of the Interior, Office of Minerals Exploration, hereinafter called the "Government," and Appalachian Sulphides, Incorporated, hereinafter called the "Operator," that Exploration Project Contract No. Idm-E1222 (Docket No. DMEA-5044), dated June 25, 1958, hereinafter called the "Contract," is amended, effective November 3, 1958, as follows:

In Exhibit A, the fifth paragraph is revised to read:

> "No hole may be drilled so that its intersection with the target zone is closer than 200 feet to the target zone intersection of another hole."

This amendment shall not be construed to increase the estimated total cost of the project, the aggregate amount which the Government may be required to contribute, nor the amount of any item designated as maximum.

Executed in quintuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By Frank E. Johnson
ACTING Director, Office of Minerals Exploration

APPALACHIAN SULPHIDES, INCORPORATED

By Philip Johnson

Title Mine Manager

O.M.E.

OFFICIAL FILE COPY
DMEA
RECEIVED JUN 30 1958
DATE | INITIALS | CODE

APPALACHIAN SULPHIDES, INC.

"On motion duly made, seconded and carried unanimously, it was resolved that Mr. C. R. Benson be appointed, empowered and authorized to execute before June 30th, 1958, an agreement on behalf of the Company with the D.M.E.A. (an agency of the United States Government) for the purpose of effecting a diamond drilling program at the Ore Know property at an estimated total cost of approximately $60,000 (U.S.), as recommended by Mr. Philip Eckman, Mine Manager of the Ore Knob Division."

I hereby certify the foregoing to be a true and correct copy of a resolution passed by the Directors of Appalachian Sulphides, Inc., at a meeting duly convened and held on the 24th day of June, 1958.

DATED this 25th day of June, 1958.

J. Gutierrez
Secretary

OFFICIAL FILE COPY
DMEA
RECEIVED JUN 30 1958
DATE | INITIALS | CODE

MF-200
(Revised June 1954)

Government's Copy

Docket No. DMEA - 5044

Commodity Copper-Zinc

Contract No. Idm-E 1222

# UNITED STATES OF AMERICA
## DEPARTMENT OF THE INTERIOR
### DEFENSE MINERALS EXPLORATION ADMINISTRATION

## EXPLORATION PROJECT CONTRACT[1]

It is agreed this 25 JUN 1958 day of ....., 195...., between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and [2] Appalachian Sulphides, Inc., a Delaware corporation, whose mailing address is 360 Bay Street Toronto, Ontario, Canada, hereinafter called the "Operator," as follows:

ARTICLE 1. *This contract* is entered into under the authority of the Defense Production Act of 1950, as amended. It consists of this form (MF-200), the attached Exhibit "A," Annex I, ~~and~~ Annex II, and two maps

The Operator shall not transfer or assign this contract or any right thereunder without the written consent of the Government.

ARTICLE 2. *Operator's property rights.*—(a) The land which is the subject of this contract (hereinafter called "the land") is in the State of North Carolina, County of Ashe, and is described in Annex I.[3]

(b) The Operator represents and undertakes that:

(1) The Operator is the [4] See Annex I of [5] See Annex I in the land, in possession and entitled to possession for all of the purposes of this contract, under and by virtue of a [6] See Annex I, [7] ..... recorded in Book ....., page ....., official records of said County; and

(2) The Operator's right, title, or interest (whether as owner, lessee, or otherwise) is subject only to the following claims, liens, or encumbrances: See Annex I

(c) The Subordination Agreement of the holder of any claim, lien, or encumbrance listed above, and (if the Operator does not hold the legal title) the Consent to Lien of any holder of the legal title

[1] If sufficient space is not provided in any blank, use an extra sheet of paper and refer to it in the blank.
[2] Insert name, and if an organization, its nature (corporation and place of incorporation, partnership with names of partners, etc.).
[3] State on a separate sheet marked "Annex I" the legal description or enough to identify the property, particularly excluding any areas from which the production is not to be subject to the Government's percentage royalty.
[4] Insert "owner," "lessee," "contract purchaser," "locator," etc.
[5] Insert "the entire interest," "the mineral rights," "an undivided one-third," etc.
[6] Insert "deed," "lease," "contract," "location notice," "patent," etc.
[7] If not recorded, so indicate by inserting "un."

of the land (lessor, seller, optionor, etc.), are attached, as follows: Consents to Lien and Subordination Agreements of holders of five percent royalty interests are waived.

(d) The Operator shall preserve and maintain his right, title, and interest in the land and his right to the possession thereof for the purposes of this contract, and shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of this contract. Until the lapse of the time within which the Government may make a certification of discovery or development without any such certification having been made, and after any such certification has been made, the Operator shall neither transfer, convey, nor surrender the land nor any right, title, or interest therein, nor permit nor suffer any claim, lien, or encumbrance thereon, without expressly referring to and providing in the instrument of conveyance, lien, or encumbrance for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof. If the Government makes no certification of discovery or development within the time limited in Article 8, it shall thereafter have no claim against the land or any production therefrom except for any production referred to in Article 8(b)(1).

ARTICLE 3. *The exploration project.*—The project is a search for indicated or undeveloped deposits of copper-and zinc. The work to be performed is described in Exhibit "A." The Operator on or before August 15, 1958 shall commence the work, and on or before nine months from date (unless the Operator's obligation to prosecute the work is terminated—see Article 10) shall ~~either~~ have completed the work, ~~or shall have incurred [illegible] (see Article [illegible]) [illegible] estimated total allowable cost set forth in Exhibit "A"~~ See Annex II

ARTICLE 4. *Performance of the work.*—(a) *Operator's responsibility.*—The work shall be performed with reasonable diligence, efficiently, expertly, in a workmanlike manner, in accordance with good mining standards and State regulations for health and safety and for liability insurance covering employment; and with suitable and adequate equipment, facilities, materials, supplies, and labor, to bring it to completion within the time fixed.

(b) *Independent contracts.*—To the extent that the allowable costs are estimated in Exhibit "A" with express reference to performance by independent contractors on a unit-price basis (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations), the work may be so performed; but if the reference in Exhibit "A" to any such independent contract requires the Government's approval thereof, payments under such contract will not be allowable costs unless the Government gives its written approval of the contract. Any such independent contract shall refer to some specific and identifiable part of the work, and shall be subject to all of the pertinent terms and conditions of this exploration contract; but the Government shall not be considered a party thereto, and its rights under this contract, including the right to terminate its contributions, shall not be affected thereby. Regardless of the provisions of any such independent contract and regardless of the Government's approval thereof, the Government will participate in payments to the independent contractor only on account of work performed in accordance with the provisions of this exploration project contract, and only to the extent that the Government deems the unit prices for the work under the independent contract to be reasonable.

(c) *Government may inspect.*—The Operator shall consult with and inform the Government on all phases of the work as it progresses. The Government may enter at all reasonable times to inspect the work under the contract, and also after a certification of discovery or development to inspect production operations and underground workings. The operator shall provide the Government with all reasonable means of access for such inspections.

ARTICLE 5. *Contribution by the Government.*—The estimated total allowable cost of the project, set forth in Exhibit "A," is the sum of $58,190.00. The Government shall contribute 50 percent of the allowable costs as they are incurred in a total sum not in excess of $29,095.00: *Provided,* That until the Operator has rendered to the Government his final report, and any final auditing required by the Government has been made, and a final settlement of the contract has been made, the Government may withhold from the last

voucher or vouchers such sums as it sees fit not in excess of 10 percent of the estimated total cost of the work or not in excess of the amount of the Government's contribution to the cost of property which is or may become subject to disposal as provided in Article 9(c), whichever is greater. The Government will make its contribution on the basis of the monthly vouchers referred to in Article 7(b), but all payments by the Government are provisional only, subject to audit, until the account between the Operator and the Government is finally audited and settled. "Costs incurred" mean costs that have been paid or have become due and payable, or that in the opinion of the Government have become an obligation. The Government may make payments directly to independent contractors and suppliers for the account of the Operator rather than to the Operator.

ARTICLE 6. *Estimated costs.*—(a) *Categories of costs.*—The allowable costs of the work to which the Government shall contribute are limited to those that are direct, reasonable, necessary, and that are estimated in Exhibit "A" by categories as specified in this article. If any category or subcategory is omitted from the estimate of costs, or if the word "none" is annexed to the listing thereof, costs under such category or subcategory are not allowable. Any excess over any estimate which is indicated as the maximum of any category, subcategory, or item, either as to requirement or related cost, and any excess over the estimated total allowable cost of the work, shall not be allowable. Any excess over the estimate of any category, subcategory, or item, either as to requirement or related cost, not indicated as a maximum shall be allowable within the limit of the estimated total allowable cost of the work. To the extent that excesses over maximums other than the estimated total allowable cost of the work may be necessary for the performance of the work, the Operator shall incur such excesses for his own account without contribution by the Government; [redacted] **See Annex II.**

To the extent specified in this article or in Exhibit "A" the following categories, subcategories, and elements thereof are maximums; but if not so specified either here or in Exhibit "A" they are not maximums, and may be exceeded within the limit of the estimated total allowable cost of the work:

CATEGORY (1)—INDEPENDENT CONTRACTS.—Work to be performed under independent contracts (see Article 4(b)). The estimated total amount of this category and the estimated cost of each unit of work for performance under an independent contract are maximums. **See Annex II.**

CATEGORY (2)—PERSONAL SERVICES.

*Subcategory (a)—Supervision.*—All elements of this subcategory (number of supervisors, periods of employment, rates of pay, and total) are maximums.

*Subcategory (b)—Technical services.*—All elements of this subcategory (number of technicians, periods of employment, rates of pay, and total) are maximums.

*Subcategory (c)—Labor.*

CATEGORY (3)—OPERATING MATERIALS AND SUPPLIES.—Includes such items as drill bits and steel, explosives, fuel, pipe, power, small tools costing less than $50 each, timber, track.

CATEGORY (4)—OPERATING EQUIPMENT.

*Subcategory (a)—Rental.*—The number of each object to be rented [6 mine cars, 1 truck], the rate of rental [$100 per month, $5 per hour], and the total of this subcategory are maximums.

*Subcategory (b)—Purchases.*—The estimated total of this subcategory is a maximum.

*Subcategory (c)—Depreciation.*—All elements of this subcategory (time periods, rate of depreciation, and subcategory total) are maximums.

CATEGORY (5)—INITIAL REHABILITATION AND REPAIRS.—Estimates under this category include all requirements and related costs, such as labor, materials and supplies, and supervision at a rate not higher than provided for in Category (2), and shall not be duplicated under any other category. The estimated total of this category is a maximum.

*Subcategory (a)—Initial rehabilitation and repairs of existing buildings, fixtures, and installations (exclusive of mine workings).*—The estimated total of this subcategory is a maximum.

*Subcategory (b)—Initial rehabilitation and repairs of operating equipment.*—The estimated total of this subcategory is a maximum.

CATEGORY (6)—NEW BUILDINGS, FIXTURES, AND INSTALLATIONS (EXCLUSIVE OF MINE WORKINGS).—Estimates under this category include all requirements and related costs, such as labor, materials and supplies, and supervision at a rate not higher than provided for in Category (2), and shall not be duplicated under any other category. The estimated total of this category is a maximum.

CATEGORY (7)—MISCELLANEOUS.—Repairs and maintenance (other than initial) of operating equipment, analytical work, prints and other reproductions, accounting, Operator's share of payroll taxes, liability insurance covering employment, travel, communications, and any other items of requirement or cost that do not fall within any of the first 6 categories.

THE ESTIMATED TOTAL ALLOWABLE COST of the work is a maximum.

(b) *Nonallowable costs.*—The following costs are not allowable for contribution by the Government:

(1) *Costs of the land,* such as rental, depreciation, depletion, or other cost of acquiring, owning, or holding possession;

(2) *Indirect costs,* such as general overhead, corporate management, interest, taxes (other than payroll and sales taxes), insurance (other than liability insurance covering employment), damages to persons, damages to property (other than necessary repairs or replacements of equipment or other property used in the work);

(3) *Previous work* performed or costs incurred before the date of this contract; and

(4) *Deferred payments.*—Any costs incurred by the Operator under any rental-purchase agreement, installment-purchase agreement, or any agreement for the purchase of goods under the provisions of which payment of the full purchase price is deferred more than 90 days from the delivery of the goods; unless the purchase agreement is approved by the Government in writing.

(c) *Reductions in costs.*—The Operator shall account for and give the Government credit for any incidental benefits, credits, or money received in the ordinary course of business in prosecuting the work (as by salvage or sale of materials or equipment, furnishing of room or board, furnishing of power or services to third persons, rebates or discounts on purchases, etc.), in the same ratio in which the Government contributes to costs; and such amounts shall be treated as a reduction in costs incurred so that they are available for use within the limit of the original estimated total cost. This provision does not apply to receipts from production which are subject to the Government's percentage royalty under the provisions of Article 8. **See Annex II**

ARTICLE 7. *Reports, accounts, audits.*—(a) *Operator's records.*—The Operator shall keep suitable records and accounts of the work performed and of any production in which the Government may have an interest; and shall preserve those with respect to work performed for at least three years after final payment by the Government, and those with respect to production for at least three years after any obligation to pay royalties to the Government has terminated. The Government may inspect and audit said records and accounts at any time, either by itself or by a certified public accountant. If the Government elects to audit said records and accounts relating to the exploration work by certified public accountant, it may do so as a cost of the work to which the Operator shall contribute. The Comptroller General of the United States or his representative, until the expiration of said three-year periods, shall have access to and the right to examine any pertinent books, documents, papers, and records of the Operator. All of the Operator's vouchers and records and accounts relating thereto and the Government's payments thereof remain subject to adjustment until final audit by the Government. If work under this contract is carried on in conjunction with any other operations, or if labor, supervision, services, materials, supplies, equipment, facilities, or other requirements for carrying on the work are also used in connection with other operations, the costs shall be segregated and accounted for on a basis and by methods and accounts that are satisfactory to and approved by the Government.

(b) *Progress reports and vouchers.*—The Operator shall provide the Government with five copies of monthly progress reports in three sections as follows: (1) Operator's Monthly Report and Voucher showing detailed costs incurred during the reporting period; (2) Operator's Unit Cost and Progress Report showing the various types of work performed during the reporting period and costs incurred for each type of work; and (3) a Narrative Report of the work performed during the reporting period including adequate engineering-geological maps or sketches, drill hole logs and locations, and assay reports on samples taken concurrently with advance in mineralized ground. (Forms for reporting under (1) and (2) above will be provided by the Government.)

(c) *Final report.*—Upon completion of the work or termination of the Government's obligation to contribute to costs, the Operator shall furnish the Government with five copies of a final report (in addition to the final progress report and voucher). This final report shall include a geological and engineering evaluation of the results of the work performed under the contract with an estimate of the ore reserves resulting from such work, complete assay data, adequate geological and engineering maps or sketches, and a summary of the work performed and related costs incurred.

(d) *Report of sales.*—The Operator shall provide the Government with suitable accounting and documentary evidence covering all production to which the Government's percentage royalty relates, such as copies of smelter or concentrator settlement sheets, and certified accounts of production and sale or other disposition of production.

(e) *Compliance with requirements.*—If in the opinion of the Government any of the Operator's reports, records, or accounts are insufficient or incomplete, or if the Operator fails to make them, the Government may procure the making or completion of such with suitable attachments as an expense of the work to which the Operator shall contribute. The Government may withhold approval and payment of any vouchers relating to insufficient or incomplete reports, records, or accounts.

ARTICLE 8. *Repayment by Operator.*—(a) *Certification.*—If the Government considers that a discovery or development from which production may be made has resulted from the work, the Government, at any time not later than six months after a sufficient final report and final account (see Article 7) has been rendered, may so certify in writing to the Operator. Such certification shall describe broadly or indicate the nature of the discovery or development.

(b) *Royalty on production.*—The Operator, as principal if the Operator is the producer, or as surety if the Operator is not the producer, shall pay to the Government a royalty on all minerals mined or produced from the land, as follows: (1) regardless of any certification of discovery or development, from the date of the contract until the lapse of the time within which the Government may make such certification, or until the total net amount contributed by the Government without interest is fully repaid, whichever occurs first; or (2) if the Government makes a certification of discovery or development, within a period of ten years from the date of the contract, or until the total net amount contributed by the Government without interest is fully repaid, whichever occurs first. **See Annex II.**

(c) *Basis for computation.*—The Government's royalty shall be a percentage of the gross proceeds (including any bonuses, premiums, allowances, or other benefits) from the production sold, in the form sold (ore, concentrates, metal, or equivalent), at the point of delivery (the f. o. b. point); *except,* that charges of *the buyer* arising in the regular course of business, and shown as deductions on the buyer's settlement sheets, on account of the cost of treatment processes performed by *the buyer,* sampling and assaying to determine the value of the production sold, and freight paid by *the buyer* to a carrier (not the Operator), shall be allowed as deductions in arriving at the "gross proceeds" as that term is used herein. Any costs of treatment processes, sampling or assaying, or transportation, performed or paid by the Operator or by anyone other than the buyer, are not deductible in arriving at the "gross proceeds" as that term is here used. The term "treatment processes," as here used, means those processes (such as milling, concentrating, smelting, refining, or equivalent) applied to the crude ore or other production after it is extracted from the ground, to put it into a commercially marketable form; excluding fabricating or manufacturing.

(d) *Unsold production.*—If any production (ore, concentrates, metal, or equivalent), after the lapse of six months from the date the ore was extracted from the ground, remains neither sold nor used by the Operator in integrated manufacturing or fabricating operations (for instance, if it is stockpiled), the Government, at its option, as long as it so remains, may require the computation and payment of its royalty on the value of such production in the form (ore, concentrates, metal, or equivalent) it is in when the Government elects to require computation and payment. If any production is used by the Operator in integrated manufacturing or fabricating operations before the Government makes its election, the Government's royalty on such production shall be computed on the value therof in the form in which and at the time when it is so used. "Value" as here used means what is or would be gross income from mining operations for percentage depletion purposes in Federal income tax determination, or the market value, whichever is greater.

(e) *Percentages of royalty.*—The percentages of the Government's royalty shall be as follows:

One and one-half (1½) percent of amounts ("gross proceeds" or "value") not in excess of eight dollars ($8.00) per ton of production in the form in which sold, held, or used, plus one-half (½)

percent for each additional full fifty cents ($0.50) by which such amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) percent of such amounts.

(For instance: the royalty on an amount of five dollars ($5.00) per ton would be one and one-half (1½) percent; on an amount of ten dollars ($10.00) per ton, three and one-half (3½) percent.)

(f) *Time for computation and payment.*—The Government's royalty shall be computed and paid currently upon each lot sold, held, or used in integrated operations, as the case may be, as above provided in this article.

(g) *Lien for payment.*—To secure the payment of its percentage royalty, there is hereby granted to the Government a lien upon the land or the Operator's interest in the land and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(h) *Notice to purchasers.*—The Operator shall give notice of the Government's claim for royalty to any purchaser of the production, and shall authorize and direct such purchaser to pay the royalty directly to the Government and to furnish the Government with copies of the settlement sheets. If the records of any production and sales or other disposition of production, whether the production is by the Operator or by others, are not made available to the Government, the amount of the royalty may be estimated by the Administrator, Defense Minerals Exploration Administration, or his successor, and his estimate thereof shall be final and binding upon the Operator.

(i) *No obligation to produce.*—Nothing in this contract is to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any production operations.

(j) *Government not obligated to buy.*—Nothing in this contract shall be construed as imposing any obligation on the Government to purchase any minerals mined or produced from the land.

ARTICLE 9. *Interests in purchased property.*—(a) *Title and ownership.*—All costs under this contract shall be incurred by the Operator in the Operator's own name and for the Operator's own account; but any property acquired to the cost of which the Government contributes shall belong to the Operator and the Government jointly in proportion to their respective contributions, although title thereto shall be taken in the name of the Operator.

(b) *Preservation of property.*—Until the final disposal of any property in which the Government has an interest the Operator shall preserve and protect same for the best interest of the Government, any reasonable and necessary costs thereof to be treated as an allowable cost of the project. After the completion of the work or termination of the Government's obligation to contribute, or when such property is not in use for or needed for the work, the Operator shall neither use it without the written consent of the Government nor without paying a reasonable rental to be fixed by the Government for its interest.

(c) *Disposal of property.*—Upon the completion of the work or termination of the Government's obligation to contribute to costs, or when the property is no longer needed for the work, the Operator shall promptly dispose of salable or salvageable property in which the Government has an interest for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator or the Government at a price at least as high as could be obtained from others, unless the Government in writing waives its interest in any such property. Without advance approval of the sales price by the Government the Operator shall not sell at any price any item of property the cost of which was more than $500, and shall not sell at less than 25 percent of the purchase price any item of property which cost $500 or less. The Government, in lieu of approving the sales price for any such item, may itself purchase the item at the best price which the Operator is able to obtain or himself cares to give. Property remaining upon any termination of the work shall be considered in groups or categories (such as drill steel, or explosives, or pipe, or rails), and if the original cost of the remaining unexpended portion of any such group or category is less than $50, the Government waives its interest therein. If necessary to accomplish the disposal of any item the Operator shall dismantle and sever it from the land, the cost thereof to be treated as a cost of the project.

(d) *Default of the Operator re disposal.*—If within 90 days after the completion of the work or termination of the Government's obligation to contribute to costs, or after the property is no longer needed for the work, or after such further time as the Government may in writing allow, the Operator has failed to sell or otherwise liquidate or dispose of any property in which the Government has an interest, the Government, at any time prior to final settlement under the contract, may pursue one of the following two courses: (1) the Government, by written notice to the Operator, may place upon such property what in its opinion is a fair valuation thereof, not in excess of the cost less 1.66 percent per month from the

date such property was purchased under this contract to the termination of said 90-day period; and such property shall thereupon be considered and accounted for as having been purchased by the Operator at the valuation so fixed by the Government; or (2) the Government may enter and take possession of such property wherever it may be found, and remove and dispose of it for the joint account of the parties.

ARTICLE 10. *Termination of the Government's obligations.*—(a) If in the opinion of the Government operations at any time have failed to achieve anticipated results that indicate the probability of making a worthwhile discovery, and in the opinion of the Government further operations are not justified, the Government may give the Operator written notice thereof, and thereupon: (1) the Government shall be free of all obligation to contribute to costs not then incurred other than such as may be allowable under the provisions of the contract as necessary and incidental to winding up, reporting, and accounting; and (2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to winding up, reporting, and accounting.

(b) If in the opinion of the Government the Operator is in any manner in default under the terms of the contract, the Government may give the Operator written notice of such default with a specification of reasonable time within which the default must be cured; and if the Operator fails to cure such default as required, thereupon: (1) the Government shall be relieved of all obligation to contribute to costs not incurred when the notice was given, other than such as may be allowable by the provisions of the contract as necessary and incidental to winding up, reporting, and accounting; and (2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to winding up, reporting, and accounting. The remedy provided for the Government in this paragraph "(b)" is in addition to any other remedy provided in this contract, and in addition to any other remedy the law may provide for breach of contract.

(c) The giving of any notice by the Government under the provisions of this Article 10 shall not affect the Government's rights as provided for in the contract with respect to a percentage royalty, and such rights shall be fully preserved.

ARTICLE 11. *Notices to be given by the Government* may be delivered to the Operator, or may be sent by registered mail addressed to the Operator at his mailing address stated in this contract. If mailed, notices are deemed to have been delivered five days after the date of mailing.

ARTICLE 12. *Officials not to benefit.*—No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 13. *Changes and added provisions.*—

**See Annex II.**

Executed in sextuplicate the day and year first above written.

Robin Sleyster
App'd. Sol. Off.
Leonard Talbert
Jeffries Johnson

THE UNITED STATES OF AMERICA

By C. Mitteudorf
Administrator, Defense Minerals
Exploration Administration

APPALACHIAN SULPHIDES, INC.
(Operator)

By Clarence B. Benson

TITLE Assistant Treasurer

---

I, ....., certify that I am the ..... secretary of the corporation named as Operator herein; that ..... who signed this contract on behalf of the Operator, was then ..... of said corporation; that said contract was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

.....

[ CORPORATE SEAL ]

U. S. GOVERNMENT PRINTING OFFICE 16—70617-1

35485

EXPLORATION PROJECT CONTRACT
APPALACHIAN SULPHIDES, INC.
DOCKET NO. DMEA-5044

ANNEX I

The land referred to in Article 2 of the Contract is situate in Ashe County, North Carolina, and is shown outlined on the map entitled, "Appalachian Sulphides, Inc., Property Plan, Ore Knob Mine", attached hereto and made a part of this contract.

The land consists of nine tracts described by metes and bounds in the application for aid filed with this Docket No. DMEA-5044, and the descriptions therein are incorporated herein by reference.

The tracts are as follows:

| Land | Area in Acres |
|---|---|
| 1. Lassiter Tract | 1,718.000 |
| 2. Robert Hall Farm | 7.266 |
| 3. F. W. Atwood Farm | 97.347 |
| 4. Coy Atwood Farm | 57.978 |
| 5. Part of R. H. Bowlin Farm | 64.763 |
| 6. A. T. Atwood Farm | 25.000 |
| 7. Eugene Miller, Jr. Home Tract of Land | 8.774 |
| 8. Verdie Farrington and Katherine Farrington Tract | 7.150 |
| 9. Verdie Farrington Tract | 22.354 |
| Total | 2,008.632 Acres |

The Operator represents and undertakes that it owns 525 acres of the "Lassiter Tract" listed herein in fee simple, (delineated by metes and bounds in the application), that it owns the mineral rights in the remaining acreage of the "Lassiter Tract", and that it owns the mineral rights in all other tracts listed herein.

All land except that known as the Lassiter Tract, or 290.632 acres, is subject to a royalty of five cents per ton of ore mined and delivered to a treatment plant for recovery of the copper content.

## EXCLUDED LAND

The active workings of the Ore Knob mine, that is the presently known ore bodies and extensions thereof only, are excluded from the land described in this Annex I. The workings are shown on the attached plan and section map that is more fully described below. The boundary of the area containing these workings is shown outlined in red color on the attached property plan map, and is labelled "This area reserved from DMEA to elevation 1700." More specifically, the excluded land consists of those known ore bodies or extensions thereof lying within the following boundaries:

> On the north by the vertical plane bearing N. 60° E., astronomic, defined as section 500 N. on the map of the mine plans entitled "Appalachian Sulphides, Inc. Plan and Longitudinal Projection of Ore Knob Mine . . ." attached hereto and made a part hereof. On the south by the vertical plane bearing N. 60° E., astronomic, defined as section 500S. on the mine plans map. On the east by the vertical plane bearing N. 30° W., astronomic, known as section 100 E. on the mine plans map. On the west by the vertical plane bearing N. 30° W., astronomic, known as section 3000 W. on the mine plans map. At depth by the horizontal plane at actual elevation 1700 feet above mean sea level.

## SPECIAL AGREEMENT CONCERNING LAND

In the event the Operator or any subsidiary thereof (whether wholly owned or otherwise), at any time during the period expiring ten years from the date of this contract acquires any interest, title or equity (exclusive of agreements granting the rights to explore, purchase, or acquire leases) in or with respect to any land, including minerals therein, situate within 1500 feet of the land described in this contract, at the contract date and the right to make such acquisition postdates this contract, it is agreed that such land shall thereupon become subject to the provisions of this contract, and the parties hereto shall promptly execute amendments to this contract listing such land as land included in this contract.

EXPLORATION PROJECT CONTRACT
APPALACHIAN SULPHIDES, INC.
DOCKET NO. DMEA-5044

## ANNEX II

### Article 13. Changes and Added Provisions.

(a) In the last sentence of Article 3, the words following the reference to Article 10 are deleted, and the following words are substituted: "shall have completed the work."

(b) In Article 6(a), that part of the last sentence in the first paragraph beginning after the semicolon is deleted.

(c) Categories (2) through (7) of Article 6(a) are deleted.

(d) In addition to the costs of work estimated in Exhibit "A" by categories of actual costs, the costs of work requirements specified in Exhibit "A" as "Fixed Unit Costs" are allowable costs of the project. The Government will contribute to the fixed unit costs as work units are performed. A "Fixed Unit Cost" is an agreed price for each unit of work to be performed regardless of costs incurred by the Operator. Costs set forth in Exhibit "A" include all allowable costs of the work to be performed under the contract.

(e) In Article 6(c), the words "Article 9" are changed to "Article 8".

(f) Notwithstanding any other provisions of the contract, the allowable unit cost per foot of a drilling item is the average unit cost per foot computed on the basis of all actual unit costs of said drilling item incurred by the Operator: Provided, That the Government will not contribute to any portion of an average unit cost of a drilling item that exceeds the estimated unit cost of said item set forth in the contract.

(g) In Article 8(b), the phrase "ten years" is amended to read "fifteen years".

EXPLORATION PROJECT CONTRACT
APPALACHIAN SULPHIDES, INC.
DOCKET NO. DMEA-5044

EXHIBIT "A"

Description of the Work

The purpose of the project is to explore for ores of copper and zinc by diamond drilling, plus incidental overburden drilling, if necessary. It is estimated that eleven diamond drill holes, with depths varying from approximately 900 feet to approximately 2,300 feet, will be required to accomplish the purpose of the project. The total drilling may not exceed 17,000 feet.

The locations, inclinations, and depths of all drill holes are subject to the prior approval of the Government.

The hole locations are indicated on the attached plan and section map. However, any locations may be changed, if warranted by the results obtained as the work progresses, with the prior approval of the Government.

All holes shall be drilled from the surface, with estimated inclinations of from approximately seventy degrees to approximately eighty degrees from the horizontal. All holes shall be surveyed with a Tro-Pari instrument, as necessary.

No hole may be drilled at a distance closer than 200 feet to another hole.

The Government will not participate in the cost of any holes of which any part is closer than one hundred feet to a property boundary.

All drill core shallbe properly logged and made available to the Government for examination. All significantly mineralized units of core shall be properly sampled and the samples assayed for copper, and also for zinc if practical. No sample shall be taken representing more than five feet of core length. The assays, together with proper logs of drill holes, shall be reported to the Government monthly, together with adequate engineering-geological maps or sketches, including plan and section maps, showing the progress of the work.

Diamond drilling shall be done with AX size, or larger, coring bits.

The project work shall be supervised at all times by a competent engineer or geologist.

It is estimated that one hundred samples will require assaying.

## Estimated Costs of the Project

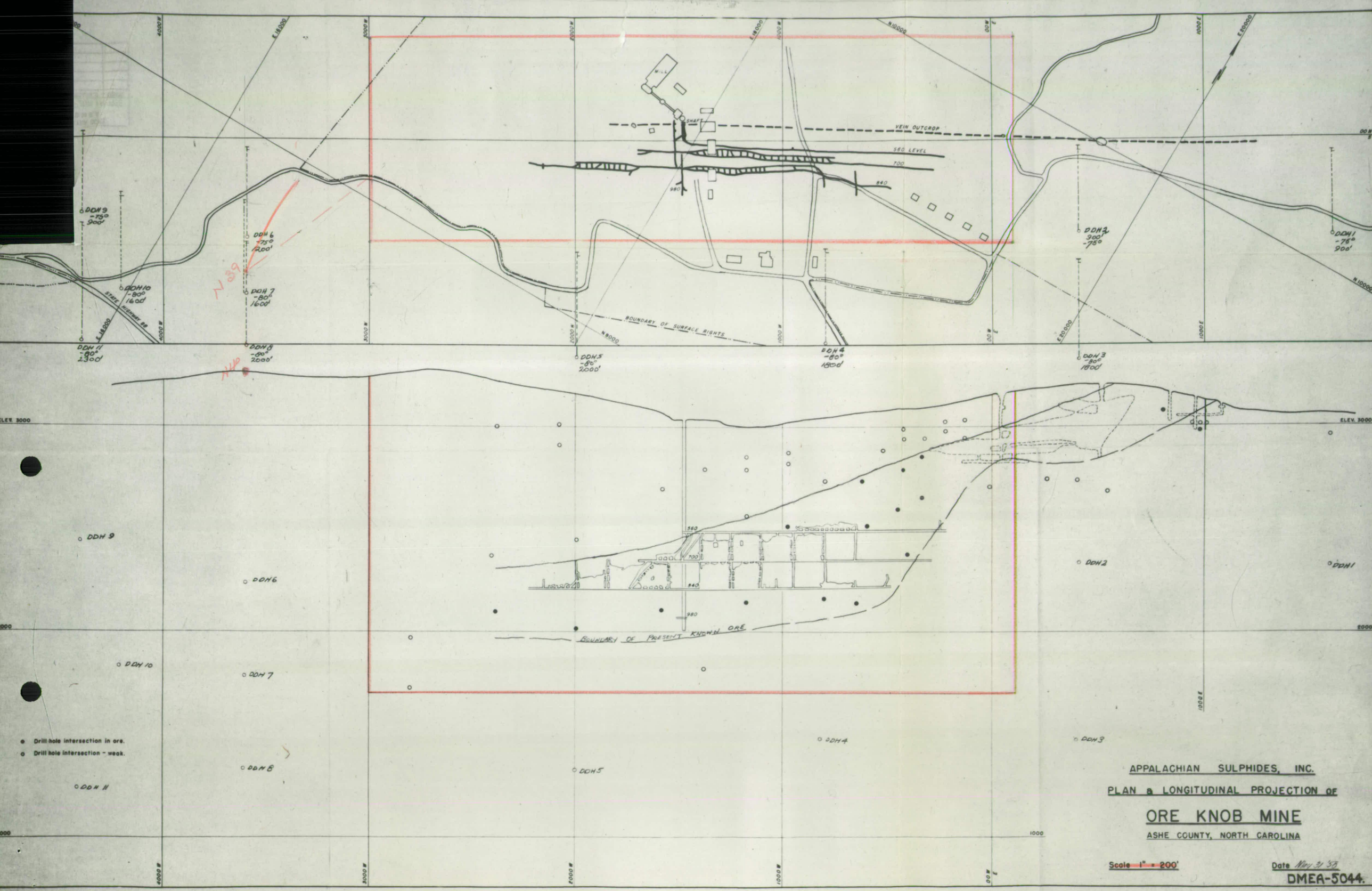
### Actual Costs

Category (1) Independent Contracts

| | | |
|---|---|---|
| Diamond drilling (with incidental overburden drilling) | | |
| Depths 0 to 500 feet | | |
| 5,500 feet @ $2.75/ft. | $15,125.00 | |
| Depths 500 to 1,000 feet | | |
| 5,200 feet @ $3.00/ft. | 15,600.00 | |
| Depths 1,000 to 1,500 feet | | |
| 3,700 feet @ $3.35/ft. | 12,395.00 | |
| Depths 1,500 to 2,000 feet | | |
| 2,300 feet @ $3.85/ft. | 8,855.00 | |
| Depths in excess of 2,000 feet | | |
| 300 feet @ $4.55/ft. | 1,365.00 | |
| Surveying of drill holes (using Tro-Pari instrument), 11 holes @ $160.00/each | 1,760.00 | $55,100.00 |

| | | |
|---|---|---|
| Categories (2) through (7) | None | |
| **Fixed Unit Costs** (See Article 13) | | |
| Incidental allowance 1/ for each foot of drilling completed, 17,000 feet @ $0.17/ft. | $2,890.00 | |
| **Assaying** | | |
| 100 samples (two determinations each), 200 determinations @ $1.00/each | 200.00 | $ 3,090.00 |
| Total Estimated Cost of the Project | | $58,190.00 |
| Government's Participation, 50% | | $29,095.00 |

1/ Includes all costs of the project whatsoever that are not included under Category (1) Independent Contracts and the fixed unit costs for assaying, and is in lieu of Categories (2) through (7) of Article 6(a) of the contract.




APPALACHIAN SULPHIDES, INC.

PLAN & LONGITUDINAL PROJECTION OF

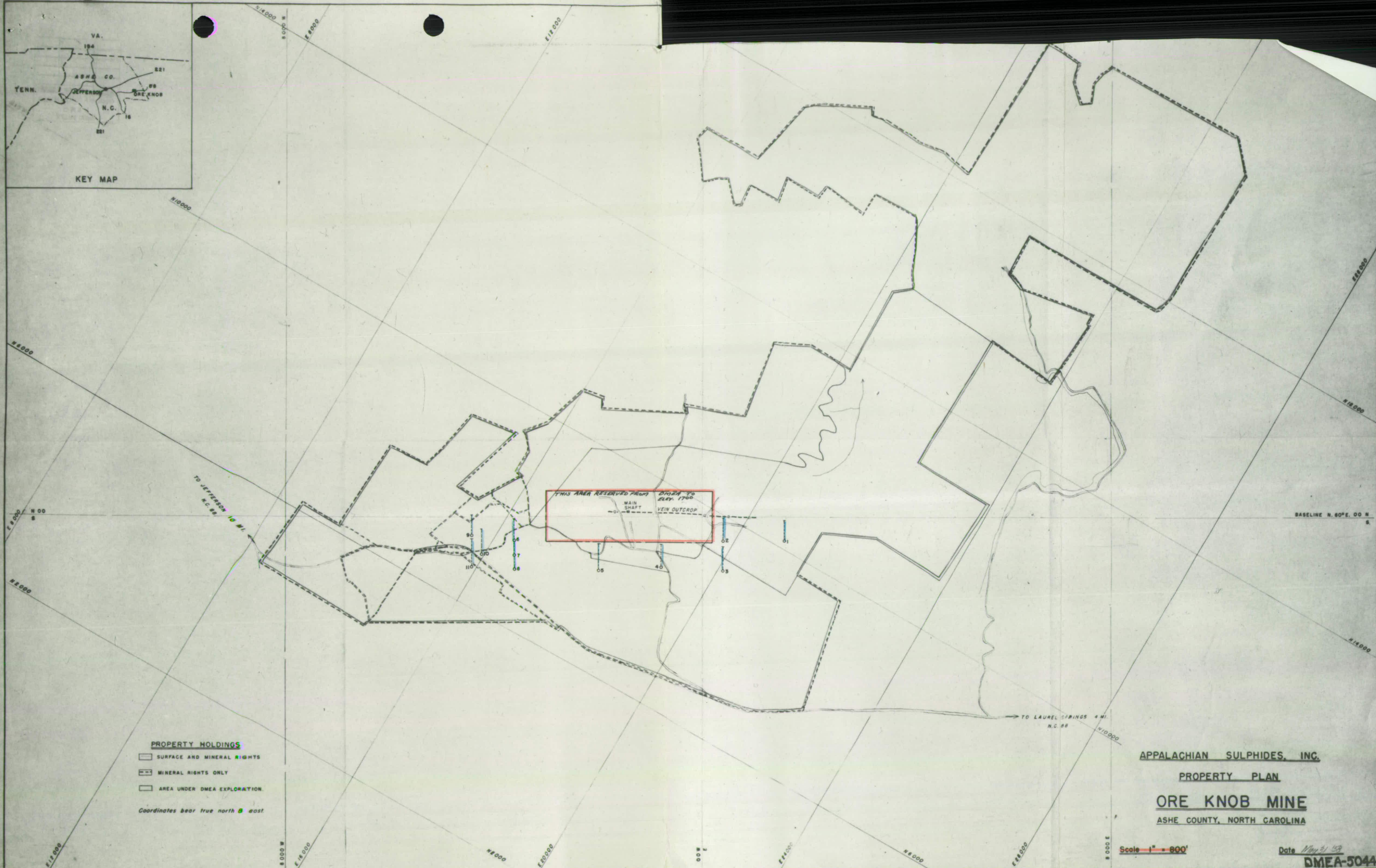
# ORE KNOB MINE

ASHE COUNTY, NORTH CAROLINA

Scale 1" = 200'

Date Nov 31 53

DMEA-5044.




APPALACHIAN SULPHIDES, INC.

PROPERTY PLAN

# ORE KNOB MINE

ASHE COUNTY, NORTH CAROLINA

Scale 1" = 800'

Date May 31 '58

DMEA-5044.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

RECEIVED JUN 9 1958

June 6, 1958

Memorandum

To: Operating Committee, DMEA, Washington, D. C.

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

Subject: Application from Appalachian Sulphides, Jefferson, N. C.
Ore Knob Mine, Ashe County, North Carolina (Copper)

Enclosed are the original and two copies of the subject application, received here today, with only one set of the maps. We are asking the Applicant to mail two additional sets of maps directly to the Washington office.

On May 28, Mr. Laurence and Mr. Wedow met Mr. Arthur Kinkel of the Geological Survey, at the Ore Knob mine and spent a half day underground, in connection with Mr. Kinkel's current study of massive sulfide deposits of the Southern Appalachians. After completion of this underground tour, Mr. Eckman and Mr. Kirsten the Company's Mine Manager and geologist, respectively, discussed their proposed application, and the maps, sections and other pertinent data were reviewed. As a result of this, the Field Team considers that an adequate examination report (in which we would recommend approval) can be written, without further field examination, but obviously this cannot be done in time to complete processing the application before June 30.

It is noted that written bids from drilling contractors will be submitted shortly. It is unlikely that these will differ greatly from the terms of the Applicant's present contract with Sprague and Henwood.

It is our opinion that samples should be assayed for zinc. It seems likely that significant amounts of sphalerite may have been overlooked in the Ore Knob orebody, as previous company practice has been to assay only for copper and iron.

It is our understanding that some of the tracts on which the Applicant owns minerals rights only are subject to a small (5¢ per ton) royalty. Apparently this was done as a good-will gesture, to overcome reluctance on the part of land owners to sell mineral rights.

Also, there is a small tract at the west end of the property whose owner will neither sell nor lease the surface or mineral rights.

Robert A. Laurence
Robert A. Laurence
Executive Officer

V. J. Lynch
V. J. Lynch, Member
Bureau of Mines

Enclosures 4

Form MF-103
Revised Oct. 1957

UNITED STATES
DEPARTMENT OF THE INTERIOR

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

DEFENSE MINERALS EXPLORATION ADMINISTRATION

# APPLICATION FOR AID IN AN EXPLORATION PROJECT

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

RECEIVED JUN 9 1958 D.M.E.A.

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

Appalachian Sulphides, Inc.
Route 1
Jefferson, North Carolina

**APPLICANT NOT TO USE THIS BLOCK**

| | |
|---|---|
| Docket Number | DMEA-5044 |
| Date Received | 6-9-58 |
| Government Participation % | |
| Region | V. |
| Division Code | 500 |

**BUSINESS ORGANIZATION** (Check one)

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

State in which firm is organized: Delaware

**LIST CORPORATE OFFICERS OR PARTNERS HERE, IF APPLICABLE**

| Name | Address | Title |
|---|---|---|
| J. M. Cunningham-Dunlop | 360 Bay St. Toronto, Ontario | President |
| W. H. Woods | 360 Bay St. Toronto, Ontario | Vice-President |
| Philip Bastedo | 230 Park Ave. New York, N. Y. | Secretary |

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

Estimated Cost of Project: $ $75,629.66

**LOCATION OF PROPERTY**

| Name | County | State |
|---|---|---|
| Ore Knob Mine | Ashe | North Carolina |

## GENERAL INSTRUCTIONS

Before filling out this application, please read DMEA Order-I, Revised, "Government Aid in Defense Exploration Projects." To assure prompt action, your application must provide all applicable material and information specified on the back of this application form. Avoid unnecessary correspondence and delays by submitting complete and accurate information. *Please submit four copies of this application and all accompanying papers* except as otherwise noted. Place your name and address on each sheet. Each item of information, maps, and reports required as a part of this application is described on the back of this form. Identify each attached statement by the item number to which it applies. If an item does not apply to your application, show the item number on your statement and after it write "not applicable." Maps or sketches should be used to supplement narrative descriptions of the property location and boundaries in item 1, existing mine workings and geology in item 2, and the proposed exploration project in item 4. When this information is not too complex, all of it may be shown on one map or sketch. All documents and other attachments submitted as a part of this application, except those in item 2(g) which you mark to be returned, become the property of the Government and will not be returned to the applicant. Send true copies, *not originals,* of leases, contracts, and other documents which are an essential part of your business records. *File this application with the Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest DMEA Field Office.*

## CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

June 3, 1958
*Dated*

RECEIVED JUN 6 1958 U. S. Geological Survey Conservation Division Denver, Colo.

By Milly Eckman
*(Signature)*

Mine Manager
*Title*

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

## INFORMATION REQUIRED WITH THIS APPLICATION

1. *Applicant's Property Rights:*

*(a)* State the legal description (section, township, and range; metes and bounds; patent number of claims) of the land upon which you wish to explore and all land adjacent to the proposed project area which you own or control. Describe any part of the project land or workings which should not be subject to Government lien for royalty payments. If the land consists of unpatented claims, state the book and page number for each recorded location notice, including amended locations, and the place where recorded (courthouse, recorder's office, county, and state).

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

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

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

2. *Physical Description:*

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

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

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

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

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

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

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

3. *Accessibility of Project:*

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

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

4. *The Exploration Project:*

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

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

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

5. *Experience:*

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

6. *Estimate of Costs:*

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

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

*(b)* Personal services. For necessary supervision, engineering and geological services, and labor, include an itemized schedule of numbers, classes, rates of wages, salaries or fees, and periods of employment. State whether these technicians and employees are available.

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

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

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

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

*(g)* Miscellaneous. For the operating equipment listed in 6*(d)*, describe the type and estimate the cost of repairs and maintenance expected during project operations. Do not repeat initial repairs listed in 6*(e)*. Show also the costs of analytical work, accounting, workmen's compensation and employees' liability insurance, payroll taxes, and other required costs that do not fall within the previous categories.

*Note* – No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

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

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

* * * * *

INT.-DUP. SEC., WASH., D.C. 25960

E. J. LONGYEAR COMPANY
Minneapolis 2, Minnesota

June 12, 1958

DMEA
RECEIVED 1958

Appalachian Sulphides Company
Route #1
Jefferson, North Carolina

Attention: Mr. Philip Eckman

EXPLORATORY DRILLING PROGRAM - VICINITY OF SPARTA, NORTH CAROLINA

Gentlemen:

1. With reference to Mr. Eckman's telephone call to our Mr. M. J. Gleason on June 2, 1958, and after subsequent examination of your drilling site by our Mr. Williamson Ward, we are pleased to submit below our proposal for your contemplated exploratory drilling program in the area mentioned above.

2. We understand that the work as now planned will consist of approximately eleven 70 degree to vertical, AX-size core holes, ranging from 900 feet to a maximum of 2300 feet in depth, with a total minimum footage of 17,000 feet; that the formation to be drilled will consist of Carolina gneiss, with some stringers of quartz, which, we understand from information furnished by you, is considered to be good core drilling rock; that the overburden thickness will range up to 150 feet in depth, and will consist mostly of clay with some weathered gneiss. We also understand that the water for drilling purposes is available within a maximum distance of 1500 feet from any proposed drill site; and that in general the terrain is easily accessible by skid-mounted drilling equipment. It is also understood and agreed that we will furnish a Tro-Pari instrument and Clinometer case, but that you will be responsible for the instrument, and you will furnish a qualified employee for setting and reading of the instrument.

3. For this program we propose to furnish two skid-mounted Longyear surface drilling machines, together with all accessory equipment required to complete the work as now planned. We also propose to operate the drills on a two shift basis, six days per week.

4. We will carry public liability insurance covering personal injury and property damage, and Workmen's Compensation insurance, and also, all-risk insurance on the drilling equipment protecting against loss by theft, fire, flood, landslides and other similar hazards.

We will also assume and pay any and all Old Age Benefit, Unemployment and Social Security taxes and contributions imposed by federal or state authorities.

Certificates showing the coverage referred to will be furnished upon request.

5. Based upon the conditions as outlined above, we are pleased to quote as follows:

a) <u>Overburden drilling</u> - in holes ranging in inclination from 70 to 90 degrees —

(Overburden)
0 to 100 feet.....$3.00 per ft.
100 to 150 feet.....$3.25 per ft.

b) Diamond core drilling - in holes ranging in inclination from 70 to 90 degrees

AX-size, recovering core approximately 1-3/16" in diameter -

Top of Ledge to 500 feet in depth.....$2.75 per ft.
500 to 1000 feet.....$3.00 per ft.
1000 to 1500 feet.....$3.35 per ft.
1500 to 2000 feet.....$3.85 per ft.
2000 to 2300 feet.....$4.55 per ft.

c) Delays for your convenience or for which you are responsible.....$8.00 per hour, with two man crew

d) Angle and directional testing, using TRo-Pari instrument.....$8.00 per hour, with two man crew, plus cost of repairs and full payment for instrument in the event that it is destroyed or lost in hole through no fault of the Longyear Company.

6. The above-quoted drilling rates are based on wages currently being paid in the State of North Carolina. If during the life of this project, it becomes necessary for us to adjust the wages being paid our workmen because of demands of labor union or otherwise, it is understood and agreed that the Longyear Company reserves the right to increase drilling rates to cover resultant additional operating expenses.

7. Drill cores will be placed in receptacles furnished by you at each drill hole location.

8. Invoices covering work performed will be prepared in accordance with your instructions; otherwise you will be invoiced for all work completed during the current calendar month according to our standard procedure, and all invoices are payable within 30 days after receipt of such invoices.

9. We appreciate the opportunity to consider this work, and hope that we will be selected to perform this core drilling program.

Sincerely,

E. J. LONGYEAR COMPANY

V. N. Burnhart
Vice President and General Manager

V.N. Burnhart:bal

ACCEPTED: APPALACHIAN SULPHIDES, COMPANY BY:_____
Date:_____

C
O
P
Y

JOY MANUFACTURING COMPANY
900 Woodland Ave.
Michigan City, Indiana

AIRMAIL

June 2, 1958

Appalachian Sulphides, Inc.
Jefferson, North Carolina

Attention: Mr. Philip Eckman

Gentlemen:

This will confirm our long-distance phone conversation of this date with regard to proposed core drilling near Jefferson, North Carolina.

Based on the information furnished, we wish to quote as follows:

Approximately 17,000 feet of "AX" drilling:

| | |
|---|---|
| From surface to a depth of 800 feet | @ $3.00 per foot |
| From 800 feet to 1,200 feet | @ $3.25 per foot |
| From 1,200 feet to 1,600 feet | @ $3.75 per foot |
| From 1,600 feet to 2,000 feet | @ $4.50 per foot |
| From 2,000 feet to 2,400 feet | @ $5.50 per foot |
| Reaming for casing, if any | @ $2.00 per foot |
| Cementing, if any | @ $8.00 per hour |
| Surveys, if any | @ $8.00 per hour |
| Delays on your part, if any | @ $6.50 per hour |

You to furnish core boxes.

Joy to furnish and pump water.

We will furnish for this proposed drilling two Joy #22-HD gasoline-driven core drills complete with operating equipment, and will conduct the drilling operations on the basis of two eight-hour shifts per day per drill and six days per week.

We have the necessary equipment and crews available at Jefferson City, Tennessee and can ship the equipment via our truck immediately upon acceptance of this proposition and notice to proceed with the drilling.

Thanking you for giving us an opportunity to quote on your requirements, we are

Yours very truly,

JOY MANUFACTURING COMPANY

W. J. Pilarski, Manager
Contract Drilling Department

WJP:cj

C
O
P
Y

SPRAGUE & HENWOOD, INC.
Scranton, Pennsylvania

June 3, 1958

Appalachian Sulphides, Inc.,
Jefferson, North Carolina

Attention: Mr. Philip Eckman,
Mine Manager

Gentlemen:

We wish to confirm our verbal quotation for Drilling AX Holes outside on your property, depth of holes varying between 900 and 2300 feet or a total of 17,000 feet of Drilling as follows:

For Drilling AX Holes, recovering a core approximately 1-1/8" in diameter

| | | | |
|---|---|---|---|
| 0' | - | 500' | - $3.35 per lin.ft. |
| 500' | - | 750' | - $3.65 per lin.ft. |
| 750' | - | 1000' | - $3.95 per lin.ft. |
| 1000' | - | 1250' | -$ 4.25 per lin.ft. |
| 1250' | - | 1500' | - $4.50 per lin.ft. |
| 1500' | - | 1750' | - $4.90 per lin.ft. |
| 1750' | - | 2000' | - $5.30 per lin.ft. |
| 2000' | - | 2250' | - $6.05 per lin.ft. |
| 2250' | - | 2500' | - $6.80 per lin.ft. |

For the above prices we will furnish two (2) large Mobile mounted Drilling Machines, operating both machines two (2) shifts per day and six (6) days per week.

We understand the holes will be located within a maximum of 1,000 feet from a water supply and you are to furnish permission to go on private property.

Payments for the above work are to be made monthly.

We wish to thank you for the opportunity of quoting and would be pleased to enter into a Contract with you for this work.

Very truly yours,

SPRAGUE & HENWOOD, INC.,

Wm. J. Schank
Vice President

WJS:GT

OFFICIAL FILE COPY
DMEA
RECEIVED JUN 9 1958

APPALACHIAN SULPHIDES, INC.

JEFFERSON, NORTH CAROLINA

INFORMATION IN SUPPORT OF APPLICATION FOR AND IN AN EXPLORATION PROJECT

1. (a) PROPERTY RIGHTS:

Following is a description by metes and bounds of the lands held by Appalachian Sulphides, Inc., in Ashe County, North Carolina. In the following description all distances are horizontal, and all bearings are astronomic.

A. MINERAL AND MINING RIGHTS AND PRIVILEGES:

All of such rights are owned in the following properties:

1. LASSITER TRACT - BEGINNING at an iron pin on north side of old County Road (Farrington corner) and running as follows: - Following a fence line 735' N 36°-20' W; thence 252' N 55°-35' W; thence 110' N 73°-50' W; thence 481' N00°-50' W; thence 90' N 28°-30' W; thence 200' N 42°-00' W; thence 125' N 58°-10'W; thence 398' N 42°-35' E; thence 1030' N 17°-55'E; thence 437' N 77°-17' E; thence 219' S 18°-59' e; thence leaving fence 1560' N 62°-40' E to a stake on west edge of road; thence following center line of road 200' generally N 07°-27' W to a stake on east side of road (Bare-Long corner); thence 1181' N 71°-26' E to a stake; thence 1548' N 08°-41' W to a stake on fence line; thence following fence 743' N 62°-58' E; thence 490' S 88°-29' E to a pin (Lassiter-Appalachian Sulphides, Inc. corner); thence 378' S 88°-29' E to a pin; thence 1370' N 01°-45' W to fence corner; thence (leaving fence) 325' N 01°-45' W to a pin; thence 407' N 53°-30' E to a pin; thence 352' N 33°-12' W to a fence corner; thence following fence 345' N 19°-28' W; thence 682' N 27°-33' W; thence 940' N 89°-21' W to a maple; thence 436' S 02°-53' W to a chestnut oak; thence 282' N 82°-58' W to a white oak at fence corner; thence (leaving fence) 595' N 82o-58' W to a white oak; thence 263' S 06°-51' W to a white oak; thence 178' N 87°- 29' W to a fence corner; thence following fence 279' S 89°-41' W; thence 261' N 82°-54' W; thence 503' S 07°-13' E; thence 623' N 89°-21' W; thence 430' S 03°-54' E; thence 130' S 63°-50' W; thence 529' N 44°-06' W; thence following fence down branch 505; generally S 52°-26' W to Little Peak Creek; thence following Little Peak Creak 920' generally N 36°-50' W; thence following fence line 318' N 11°-43' E; thence 1176' S 89°-02' E; thence 1378' N 12°-54' E; thence 403' N 52°-18' E; thence 955' N 66°-16' E; thence 157' S 25°-10' E; thence 344' N 82°-58' E; thence 374' S 88°-13' E; thence 314' S 80°-17' E; thence 547' N 79°-13' E; thence 606' S 81°-35' E to a maple near west bank of Big Peak Creek; thence 671' N 03°-17' E to fence corner on west side of road; thence (leaving fence) 2261' N 02°-02' E to a maple; thence 746' N 88°-21' E to a chestnut oak; thence following remains of old fence 198' S 08°-11' E; thence 197' S 17°-58' E; thence 82' S 29°-27' E; thence 360' S 51°-31' E to a chestnut in south corner of field; thence following edge of woods 162' N 61°-11' E; thence 379' N 25°-13' W; thence 260' N 11°-39' E; thence 152' N 29°-22' E; thence 110' N 17°-25' E to a locust near a fence corner; thence following fence 2908' N 89°-44' E; thence 712' S 44°-16' E; thence 2873' S 01°-33' W; thence 321' S 16°-22' W; thence 86' S 62°-57' W; thence 840' N 89°-20' W to a fence corner; thence (leaving fence) 2010' N 89°-20 W to a pin; thence 831' S 01°-18' E to a maple on north bank of Big Peak Creek; thence following creek 290' generally S 61°-27' E; thence (leaving Creek) 1595' N 79°-58' E (line crosses stump on west side of road) to a crab apple tree; thence 212' S 00°-50' W to a white oak; thence 61' S 87°-07' E to a stake on fence line; thence following fence line 441' S 07°-33' W; thence 640' S 03°-18' W to a fence corner on north side of road; thence (leaving fence) 319' S 03°- 18' W to a spruce pine; thence 1368' N 88°-34' W to a pin (Lassiter-Darnell-Appalachian Sulphides, Inc. corner); thence 2720' S 02°-19' W to a pin; thence 1607' S 87°-54' E to a pine; thence 1742' S 02°-46' W to a pin; thence 1465' N 87°-04' W to a pin; thence 1049' S 65°-44' W to a pin on east side of old County Road; thence 925' S 02°-29' W to a pin;

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thence 994' S 87°-41' E to fence line; thence following fence 2282' S 10°-36' E to fence corner at north side of N. C. Highway 88; thence following center line of highway 1020' S 59°-47' W; thence 3310' S 80°-39' W; thence 2800' N 78°-18' W; thence 310' S 80°-09' W to the intersection of N. C. Highway 88 with old County Road; thence following center line of old County Road 1690' generally N 40°-58' E to point of origin; said plot of land containing 1718 acres by horizontal measurement.

2. ROBERT HALL FARM - BEGINNING on a stake in a fence corner, said point being the extreme West corner of the Robert Hall farm and being a corner to the Verdie Farrington farm and in the Miller line and being Northwest of the Hall residence approximately 125'; thence running with the fence line between the Miller property and the Robert Hall farm North 32°-55' East 148.36' to a stake; thence continuing with said fence line between the properties North 32°-02' East 466.53' to a stake in the fence line, said point being the extreme North corner of the Hall farm and being in the line of the Ore Knob property; thence with the line of the Ore Knob property and the Robert Hall farm South 49°-51' East 285.65' to a black gum tree; thence continuing with the line between Ore Knob property and the Robert Hall farm and with the fence line South 37°-23' East 419.00' to a stake in the fence line, said point being a corner in the Farrington farm and being the extreme East corner of the Hall farm; thence with the fence line between the Robert Hall farm and the Verdie Farrington farm the following courses and distances: South 32°-48' West 211.50'; thence North 81°-49½' West 586.99'; thence North 49°-28' West 147.43' to the point of beginning, containing 7.266 acres, said acreage calculated on a basis of horizontal measurements.

3. F. W. ATWOOD FARM - BEGINNING on a stake at the intersection of fence lines, said point being the Southwest corner of F. W. Atwood farm and being the Southeast corner of Roger Bare property and in the line of Coy Atwood farm; thence running with the fence line between F. W. Atwood and Roger Bare North 2°-19' East 1876.17' to a stake in a fence corner; thence continuing with fence line between F. W. Atwood and Roger Bare South 89°-43' East 768.77' to a stake; thence with the line between F. W. Atwood and Roger Bare North 19°- East 434.58' to a stake; thence continuing with the line between F. W. Atwood and Roger Bare with the fence line North 10°-06' East 894.01' to a stake in the fence line; thence North 83°-44' East 955.64' to a stake at a point in fence, said point being the North-east corner of the F. W. Atwood farm; thence with the line between F. W. Atwood and the Miller farm South 16°-37' West 1500.61' to a stake and a cherry tree; thence with the fence line between F. W. Atwood and Guy Miller property South 85°-32' East 291.06' to a stake, said point being a corner in the Verdie Farrington property; thence with the fence line between F. W. Atwood and Verdie Farrington South 18°-02' West 1179.94' to a stake and stump; thence with the fence line between F. W. Atwood and Verdie Farrington South 85°-42' East 216.92' to a stake in the Farrington line, said point being a corner to the C. D. Miller property; thence with the fence line between the C. D. Miller property and F. W. Atwood South 15°-17' East 147.80' to a nail in the center line of State Highway #88; thence with State Highway #88 and with the line between F. W. Atwood and C. D. Miller property South 46°-51' West 231.24' to a stake in the South edge of Highway #88; thence continuing with the line between F. W. Atwood and the C. D. Miller property South 31°-48' West 92.94' to a stake in the center line of the Ebenezer road, said point being in the line between F. W. Atwood and R. H. Bowlin; thence with the line between said Bowlin and F. W. Atwood South 66°-04' West 71.47' to a stake and an 18" oak tree on the South side of State Highway #88; thence the following courses and distances along the South shoulder of State Highway #88, said courses and distances being the lines between F. W. Atwood and A. T. Atwood; South 59°-45' West 108.50' to a stake; South 64°-35' West 196.30' to a stake; South 74°-26' West 195.97' to a stake; South 73°-09'

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West 197.15' to a stake; thence continuing with the line of F. W. Atwood and A. T. Atwood and crossing State Highway #88 South 89°-43' West 60.90' to a stake in the North ditch line of said highway, said point being a common corner to F. W., A. T., and Coy Atwood North 89°-37' West 559.34' to a stake in the access road leading to the F. W. Atwood home; thence continuing with the fence line between F. W. Atwood and Coy Atwood South 87°-12' West 294.37' to the point of beginning containing 97.347 acres, said acreage calculated on a basis of horizontal measurements.

4. COY ATWOOD FARM - BEGINNING on a stake at a dead black gum stump on the Southwest side of a gravel road, said point being the Southwest corner of the Coy Atwood farm and being a corner to the Guy Miller and the Alfred Price property; thence crossing said gravel road and State Highway #88 North 5°-01' East 361.88' to a stake in the fence line between Coy Atwood and Alfred Price; thence continuing with the fence line between Coy Atwood, Alfred Price, and Roger Bare North 5°-34' East 638.18' to a stake; thence continuing with the fence line between Coy Atwood and Roger Bare North 5°-57' East 493.01' to a stake and a maple tree; thence with the line between Roger Bare and Coy Atwood South 81°-03' East 64.32'; thence with the fence line between Roger Bare and Coy Atwood the following courses and distances; South 83°-43' East 291.58'; South 87°-53' East 473.87' to a stake, said point being the Southwestern corner of the F. W. Atwood property and being a corner to the Roger Bare property; thence with the fence line between F. W. Atwood and Coy Atwood North 87°-12' East 294.37' to a stake; thence continuing with the fence South 89°-37' East 559.34' to a stake in the Western edge of State Highway #88, said point being a common corner to F. W. Atwood, A. T. Atwood, and Coy Atwood; thence along the Northwestern edge of said State Highway #88 with the line between Coy Atwood and A. T. Atwood the following courses and distances: South 54°-55' West 196.80' to a stake; South 39°-30' West 196.93' to a stake; South 35°-10' West 197.68' to a stake; South 35°-13' West 193.34' to a stake; thence crossing State Highway #88 and with the fence line between A. T. and Coy Atwood South 46°-04' East 510.21' to a stake; thence with the line fence between A. T. and Coy Atwood the following courses and distances: North 78°-47' East 90.28'; South 72°-56' East 367.82'; South 34°-51' East 288.78'; South 44°-19' East 192.35' to a stake in the Bowlin line; thence with the fence line between Bowlin and Coy Atwood South 12°-45' West 105.34' to a stake, said point being the extreme Southeastern corner of the Coy Atwood farm and the Northeastern corner of the Guy Miller farm; thence with the fence line between Guy Miller and Coy Atwood the following courses and distances: North 87°-57' West 812.73' to a stake; thence North 88°-24' West 359.45' to a stake; thence North 89°-09' West 746.26' to a stake; thence North 87°-40' West 480.54' to the point of the beginning containing 57.978 acres, said acreage calculated on a basis of horizontal measurements.

5. PART OF R. H. BOWLIN FARM - BEGINNING on a stake in the fence line, said point being the extreme Southwest corner of the Bowlin property to be leased by the mining company, said point being North 9°-10' East 6.16' from the corner of the A. T. Atwood property; thence running with the line between A. T. Atwood and R. H. Bowlin North 9°-10' East 198.41 to a stake; thence with the property line and fence line between A. T. Atwood and R. H. Bowlin the following courses and distances: North 1°-15' East 198.53'; North 3°-28' East 1253.06' to an 18" oak tree on the South side of State Highway #88 and being on the West side of the Ebenezer road; thence with the line between R. H. Bowlin and F. W. Atwood North 66°-04' East 71.47' to a point in the center of the Ebenezer road; thence with the line between the Miller property and R. H. Bowlin North 66°-24' East 26.47' to a stake in the center of an old road; thence continuing with the line between the Miller property and R. H. Bowlin and in the center of said old road North 48°-18' East 149.98' to a stake in the fence line; thence with the Miller and R. H. Bowlin line, said line being the existing fence line between the two parties and running the following courses and distances: North 44°-51' East

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74.50'; North 51°-52' East 45.68'; North 66°-33' East 55.75'; North 80°-45' East 87.36'; North 57°-10' East 102.06'; North 84°-01' East 82.64'; North 54°-59' East 94.21'; North 69°-58' East 121.13' to a stake in the Eugene Miller line; thence with the Eugene Miller and Bowlin line South 1°-22' West 23.53' to a stake and a chestnut tree; thence with the Eugene Miller and R. H. Bowlin line, said line being existing fence line running the following courses and distances: South 82°-56' East 203.98'; South 77°-06' East 110.11'; South 84°-30' East 408.10'; South 87°-12' East 194.58'; South 76°-28' East 72.75'; South 0°-05' East 155.42'; South 67°-44' East 58.93'; South 87°-07' East 280.78'; South 85°-30' East 689.99'; thence leaving the fence line and running South 60°-00' West on a new surveyed line 3351.77' to the point of beginning containing 64.763 acres, said acreage calculated on a basis of horizontal measurements.

6. A. T. ATWOOD FARM - BEGINNING on a stake and an 18" oak tree on the South side of State Highway #88 and West of the Ebenezer road, said point being the Northeast corner of the A.T. Atwood property and being a corner in the Bowlin property; thence with the fence line between R. H. Bowlin and A. T. Atwood South 3°-28' West 1253.27' to a stake; thence continuing with the fence between A. T. Atwood and Bowlin South 1°-15' West 198.53' to a stake; thence continuing with the line between A. T. Atwood and Bowlin South 9°-10' West 204.57' to a stake in the fence line, said point being the extreme Southeast corner of the A. T. Atwood property; thence with the fence line between A. T. Atwood and Coy Atwood North 44°-19' West 192.35' to a stake; thence continuing with the fence line between A. T. and Coy Atwood North 34°-51' West 288.78' to a stake; thence North 72°-56' West with the line between A. T. and Coy Atwood 367.82' to a stake; thence South 78°-47' West 90.28' to a stake; thence with the fence line between A. T. and Coy Atwood North 46°-04' West 510.21' to a stake; said point being in the Northwest edge of State Highway #88; thence with the Northwest edge of State Highway #88 with the line between A. T. and Coy Atwood the following courses and distances: North 35°-13' East 193.34'; North 35°-10' East 197.68'; North 39°-30' East 196.93'; North 54°-55' East 196.80', said point being the common corner to F. W., Coy, and A. T. Atwood; thence crossing the highway to a stake on the South shoulder of said highway North 89°-43' East 60.90'; thence along the South shoulder of said State Highway #88 with the line between F. W. and A. T. Atwood the following courses and distances: North 73°-09' East 197.15'; North 74°-26' East 195.97'; North 64°-35' East 196.30'; North 59°-45' East 108.50' to the point of beginning containing 25.00 acres, said acreage calculated on a basis of horizontal measurements.

7. EUGENE MILLER, JR. HOME TRACT OF LAND - BEGINNING on a stake at a chestnut tree, said corner being the extreme Southwest corner of the Eugene Miller tract and being a corner in the R. H. Bowlin farm and being located on the South side of an old abandoned road running; thence North 1°-22' East 33.26' to a stake in the old road; thence following the old road North 50°-56' East 180.13' to the center line of State Highway #88; thence with the center line of said State Highway #88 the following courses and distances; South 87°-00' East 128.00'; South 80°-25' East 92.54'; South 78°-00' East 1997.60' to a point in the center of said State Highway over a boxed culvert; thence South 19°-42' East 63.32' to a stake at a maple stump, said point being a corner to the R. H. Bowlin property; thence South 86°-38' West with the Bowlin line 148.73' to a fence corner; thence with the fence line and the Bowlin line South 89°-17' West 182.47' to a stake; said point being the extreme Northeast corner of the R. H. Bowlin property (mineral rights leased by mining company); thence continuing with the Bowlin and Miller line, said line being existing fence line North 85°-30' West 689.99'; North 87°-07' West 280.78'; North 67°-44' West 58.93'; North 00°-05' West 155.42'; North 76°-28' West 72.75'; North 87°-12' West 194.58'; North 84°-30' West 408.10'; North 77°-06' West 110.11'; North 82°-56' West 203.98' to the point of beginning containing 8.774 acres, said acreage calculated on a basis of horizontal measurements.

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8. VERDIE FARRINGTON AND KATHERINE FARRINGTON TRACT - BEGINNING on a stake in the fence corner Northwest of the Farrington residence, said point being in the Guy Miller line and being a corner in the F. W. Atwood property; thence running 87°-36' East 108.03' to a stake near the Farrington residence; thence with the fence line between Guy Miller and the Farrington property North 32°-32' East 264.00' to a stake, said point being the extreme Southwest corner of the Robert Hall farm; thence with the fence line between Robert Hall and the Farrington property the following courses and distances: South 49°-28' East 147.43' to a stake; South 81°-50' East 586.99' to a stake; North 32°-48' East 211.50 to a stake, said point being in the line between the Hall and Farrington property and the Ore Knob property; thence with the line between the Ore Knob property and the Farrington property South 36°-39' East 244.83 to a stake in the old Ore Knob road; thence with the said road South 39°-34' West 97.97' to a stake; thence continuing with the road South 33°-12' West 75.28' to a stake; thence leaving said road and running North 69°-37' West 610.58' to a stake; thence South 41°-30' West 41.25' to a stake; thence South 51°-30' West 82.50' to a stake; thence South 60°-30' West 66.00' to a stake and double chestnut stump; hence South 19°-01' West 528.87' to a stake; thence North 84°-41' West 364.79' to a stake in the Farrington and Atwood line; thence with the Farrington and Atwood line North 18°-02' East 511.69' to the point of beginning containing 7.150 acres, said acreage calculated on a basis of horizontal measurements.

9. VERDIE FARRINGTON TRACT - BEGINNING on a stake and a stump, said point being the extreme Southwest corner of the Verdie Farrington tract and being a corner to the F. W. Atwood property; thence with the fence line between F. W. Atwood and Verdie Farrington tract North 18°-02' East 668.25' to a stake, said point being the extreme Southwest corner of the Verdie Farrington and Katherine Farrington tract; thence with the lines between the Verdie Farrington and Katherine Farrington tract and the Verdie Farrington tract the following courses and distances: South 84°-41' East 364.79' to a stake; North 19°-01' East 528.87 to a stake and a double chestnut stump; thence North 60°-30' East 66.00' to a stake; thence North 51°-30' East 82.50' to a stake; thence North 41°-30' East 41.25' to a stake; thence South 69°-37' East 610.58' to a stake in the old Ore Knob road; thence with the said road the following courses and distances: South 33°-12' West 122.07' to a stake; thence South 27°-29' West 199.99' to a stake; thence South 16°-36' East 150.41' to a stake; thence South 9°-41' West 116.90' to a stake; thence South 54°-07' West 198.16' to a stake; thence South 47°-26' West 231.25' to a stake; thence South 53°-08' West 68.60' to a stake; thence leaving old road running South 52°-34' West 57.19' to a point in the center line of State Highway #88; thence with the center line of said highway #88 on the line between Verdie Farrington and the Miller property the following courses and distances; South 83°-54' West 103.59'; South 78°-21' West 99.04'; South 73°-01' West 99.33'; South 66°-31' West 100.32'; South 60°-33' West 100.07'; thence leaving said State Highway #88 and running with the fence line between Verdie Farrington, the Miller property, and F. W. Atwood North 85°-33' West 425.33' to a stake and a stump to the point of beginning containing 22.354 acres, said acreage calcualted on a basis of horizontal measurements.

The total area of mineral and mining rights owned by Appalachian Sulphides, Inc., in Ashe County, N. C., as described above, is 2,008.632 acres.

Of this area a total of 290.632 acres, being all tracts and farms held except that known as the Lassiter tract, are subject to a royalty of five cents per ton of ore mined and delivered to a treatment plant for recovery of the copper content.

A portion of the above described mineral rights which includes the active workings of the Ore Knob mine is to be withdrawn from the proposed exploration project. This area is shown on the plans and section appended to this report, and is bounded as follows:

On the north by the vertical plane bearing N. 60°E. astronomic defined as Section 500 N. on the mine plans. On the south by the vertical plane bearing N.60°E. astronomic defined as Section 500 S. on the mine plans. On the east by the vertical plane bearing N.30°W. astronomic known as Section 100 E. on the mine Plans. On the west by the vertical plane bearing N.30° W. astronomic known as Section 3000 W on the mine plan At depth by the horizontal plane at actual elevation 1700 feet above mean sea level

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B. LAND HELD IN FEE SIMPLE

The following property, which is a portion of that described above under "LASSITER TRACT", is owned in fee simple:

BEGINNING at an iron pin on north side of old County Road (Farrington corner), and running as follows: 1886' N 08°-36' E to an iron pin at S. W. corner of R. Caudill land; thence 435' N 63°-22' E to an iron pin south boundary of same R. Caudill lot; thence 1246' N 55°-29' E to an iron pin on west side of County Road, (R. Caudill - R. Bare corner); thence 1138' N 69°-57' E to an iron pin (R. Bare corner); thence 706' N 69°-04' E to an iron pin at fence corner at S. W. corner of 100 acre field; thence following fence line 720' generally N 69° E to an iron pin at 3000' elevation; thence following the 3000' contour in an irregular direction, but generally N 17°-14' W 3860' along the contour, to an iron pin at fence line on North end of 100 acre field; thence following fence line 378' S 88°-29' E to an iron pin at fence corner at N. E. corner of 100 acre field (M. Darnell corner); thence following fence line 1370' N 01°-45' W to fence corner (M. Darnell-Eldreth corner); thence continuing N 01°-45' W 325' to an iron pin; thence 407' N 53°-30' E to an iron pin (Eldreth-Lassiter corner); thence 1961' S 85°-22' E to an iron pin next to a white oak (M. Darnell-Lassiter corner); thence 2720' S 02°-19' W to an iron pin (M. Darnell corner); thence 1607' S 87°-54' E to an iron pin (M. Darnell-Hall corner)' thence 1742' S 02°-46' W to an iron pin on fence line (Hall-Sheets corner); thence 1465' N 87°-04' W to an iron pin in a stump (D. Bare corner); thence 1049' S 65°-44' W to an iron pin near South side of old County Road (D. Bare corner); thence 925' S 02°-29' W to an iron pin (D. Bare-Lassiter corner) thence 490' S 00°-49' E to an iron pin at fence corner (Lassiter F. Bare corner); thence following fence line 1888' N 88°-37' W to an iron pin on East side of old County Road (F. Bare corner); thence following center line of road 280' S 04°-06' E to corner of road; thence continuing on center line of road 802' S 71°-19' W to intersection with Nathan's Creek Road (F. Bare corner); thence following West side of Nathan's Creekroad 465' S 58°-05' E to an iron pin on west side of road; thence 1501' S 70°-23' W in line with a cedar to an iron pin on Bowlin fence line; thence following fence line 98' N 18°-59' W to an iron pin on south side of old County Road; thence following center line of old County Road 1420' generally S 85°-36' W to point of beginning, said plot of land containing 525 acres by horizontal measurement.

1. (b) The property is known as the Ore Knob mine, and has been so identified for 90 years.

1. (c) Appalachian Sulphides, Inc., owns all of the lands and mining rights described under 1 (a) above subject only in the case of 290.632 acres to a royalty as described.

1. (d) There are no liens, mortages or other encumbrances on any of the property, and none are contemplated.

2. PHYSICAL DESCRIPTION

2. (a) The existing mine workings as of April 30, 1958 are as follows:

1. A vertical shaft with three compartments each 5'-3" x 5'-6", and stations cut at the 280, 420, 560, 700, 840 and 980 levels, and a loading pocket at the 924 foot level. Shaft bottom is at 1037 feet.

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2. A total of 2,304 feet of crosscutting, 6,156 feet of drifting and 3,823 feet of raising, distributed on the various levels as follows:

| Level | Feet Crosscutting | Feet Drifting | Feet Raising | Total |
|---|---|---|---|---|
| 560 | 158 | 1,276 | 296 | 1,730 |
| 700 | 706 | 2,149 | 1,374 | 4,229 |
| 840 | 1,185 | 2,694 | 2,028 | 5,907 |
| 980 | 255 | 37 | 125 | 417 |
| Total | 2,304 | 6,156 | 3,823 | 12,283 |

3. A total of 15 shrinkage stopes either under development, in production or mined out.

4. The old mine, operated in the period 1873-83, consists of two shafts opening a level at 350 feet vertical and a large open stope from which a total of between 200,000 and 300,000 tons of ore are said to have been mined. These workings are now flooded and inaccessible, but they are now being pumped out and re-opened through one of the shafts.

All of these workings are shown on the Plan and Longitudinal Projection attached to this Application.

Twenty diamond drill holes totalling 4,945 feet were put down on the property by the U.S. Bureau of Mines during 1942-3, and thirty-eight diamond drill holes totalling 26,906 feet of drilling were put down by Appalachian Sulphides, Inc. in 1954-5.

The production facilities on the property comprise a fully modern crushing plant and flotation concentrator capable of treating 800 tons of ore per day.

2. (b) Appalachian Sulphides, Inc. owns all of the operations and production facilities described under 2 (a) above with no encumbrances.

2. (c) The production during the period 1873-83 is believed to have been on the order of 25,000,000 pounds of copper from over 200,000 tons of ore (U.S.B.M. R.I. 4341 page 3).

The production since the inception of present operations to April 30, 1958 has been as follows:

| Tons of Ore Mined | Short Dry Tons of Concentrate Shipped | Lbs. of Copper Shipped | Ozs. Gold Shipped | Ozs. Silver Shipped |
|---|---|---|---|---|
| 152,216.7 | 15,628.27 | 8,619,283 | 947.559 | 17,223.04 |

2. (d) Estimated ore reserves on the property as of December 31, 1957 are 1,162,700 tons averaging 2.63% copper before dilution. The estimate is based on muck samples from development headings and diamond drill hole intersections.

2. (e) The main deposit is a vein of sulphides averaging about 30% pyrrhotite, 8% pyrite and 8% chalcopyrite. Its strike averages N. 63° E., and it dips about 80° south near surface and 65° south on the 700 foot level. It varies from a few inches to thirty-two feet wide in the area drilled, and has been traced for a strike length of 3,300 feet by mine workings and core drilling. An important feature is a definite rake of the ore-bearing part of the vein, which averages 20° to the southwest.

There is a second vein, known as the hangingwall vein, which is sub-parallel to the main vein and lies at varying distances up to 70 feet southeast of the main vein. This vein is similar in character to the main vein, but of weaker mineralization, though it does approach ore grade in places. Down dip the hangingwall vein joins the main vein, so that the two take the form of a syncline pitching southwest, although the one may be a branch of the other rather than a folded structure. The wall rock throughout the mine area is a quartz-mica gneiss. The gneiss strikes generally parallel to the vein, but its dip is extremely variable though always to the southeast. The contact between the vein and wall rock is very sharp showing little or no alteration.

APPALACHIAN SULPHIDES, INC.

JEFFERSON, NORTH CAROLINA

2. (f) We believe the possibility of finding ore in the area to be drilled merits the expense of the program because it is the extension geologically of the same horizon in which the present known ore is located. It is a substantial orebody of remarkable continuity, and there is no known significant change in the geological environment which would inhabit the possibility of ore in the projected area. There has been no exploration in this area, and because of its depth and distance from the underground workings, we believe it can best be explored by deep diamond drilling from surface.

3. (a) The DMEa representatives will be met at the property by Philip Eckman, mine manager, Route 1, Jefferson, North Carolina, telephone West Jefferson 4061. The property is located on a county road one mile north of State Highway #88 and eleven miles east of Jefferson, N. C. The entire property and new mine workings are completely accessible.

3. (b) The concentrates are shipped from a siding on the Norfolk and Western Railway called Smethport, two miles west of Jefferson and thirteen miles west of the mine. The main business center in the area is West Jefferson, two miles south of Jefferson. The employees reside on farms and in towns within a radius of forty miles of the mine, including Jefferson and West Jefferson.

4. (a) The exploration project comprises a total of 17,000 feet of diamond core drilling in eleven holes. The approximate locations of the drill hole collars and proposed intersections are shown on the enclosed plan and longitudinal section. The existing mine workings and property boundaries are also shown on the attached drawings.

The drilling is designed to explore the strike and dip extensions of the known ore zone. In general, drill hole intersections are planned at 1200 foot centers on strike below and east of the existing mine workings, and at 800 foot centers west of the existing workings where the most favorable conditions are believed to exist.

Most of the drill holes will be collared on lands under which only the mineral rights are owned by Appalachian Sulphides, Inc. However, in all cases the agreement with the owners of the surface rights provide for free access to the properties. The applicable clause in all cases reads as follows:

"Appalachian shall have the sole and exclusive right and option to:

(a) enter upon the above described property, including the surface thereof;

(b) explore, develop, diamond drill and/or do other mining work thereon or thereunder as Appalachian may think advisable, it being understood that the mining work done shall be performed so as to do as little damage to the surface as is practicable to carry out the intentions thereof;

(c) bring upon the above described property and erect thereon and on the surface thereof, such buildings, plant machinery, and equipment as Appalachian my think advisable;

(d) remove from the above described property and sell and dispose of such ores, minerals and metals as may be reasonably necessary for the purpose only of making assays or tests."

4. (b) No access road construction is required for the project.

4. (c) In the event that a contract with DMEA is executed, the work would start within one month of the date of contract execution, and would proceed at the rate of approximately 3,000 feet of drilling per month with two machines each working on two shifts daily six days a week.

5. (a) The exploration project will be under the direct supervision of Philip Eckman, Mine Manager, Appalachian Sulphides, Inc., He is a graduate mining engineer (Queen's University, 1942) and has been engaged in the metal mining industry continuously for the past 22 years except for university attendance. The core will be logged by Dewey Kirstein, geologist, Appalachian Sulphides, Inc. He is a graduate geologist (University of North Carolina, 1953) with an M.Sc. degree, and has been in exploration and mine geology for the past three years. The location of the drill holes will be surveyed by the engineering staff of the Ore Knob mine, Appalachian Sulphides, Inc.

APPALACHIAN SULPHIDES, INC.

JEFFERSON, NORTH CAROLINA

6. (a) The diamond drilling will be contracted to one of the following three companies who are prominent in that field:

Joy Manufacturing Company, Michigan City, Indiana.
E. J. Longyear Company, Minneapolis, Pa.
Sprague & Henwood, Inc., Scranton, Pa.

Bids have been requested from all three companies, and will be appended to this application as soon as received. A verbal quotation from Sprague & Henwood, Inc., is as follows:

| | | |
|---|---|---|
| For footage | 0 - 500 | $ 3.35 per foot |
| " " | 500 - 750 | 3.65 " " |
| " " | 750 - 1000 | 3.95 " " |
| " " | 1000 - 1250 | 4.25 " " |
| " " | 1250 - 1500 | 4.50 " " |
| " " | 1500 - 1750 | 4.90 " " |
| " " | 1750 - 2000 | 5.30 " " |
| " " | 2000 - 2250 | 6.05 " " |
| " " | 2250 - 2500 | 6.80 " " |

Under this proposal the total cost of the 17,000 feet of drilling as now outlined would be $67,765.00 for the drilling only. We estimate drill charges of an additional $300.00 per hole to cover survey costs (of the hole at depth) and possible cementing charges, making a total cost of the drill contract $71,065.00 or $4.18 per foot.

The estimated time necessary to complete the project, using two drills, each on two shifts, is six months.

6. (b) Personal services will be provided by the operating staff of the Ore Knob Mine, Appalachian Sulphides, Inc. The estimated cost of these services per month is as follows:

| Personnel | Salary per month incl. Fringe Benefits | Portion of time on DMEA Project | Cost per Month |
|---|---|---|---|
| Geologist | $ 555.66 | 50% | $ 277.83 |
| Engineer | 594.68 | 20% | 118.94 |
| Engineer's Helper | 317.00 | 20% | 63.40 |
| 2 Laborers | 279.58 each | 20% | 55.92 |
| | | Total cost per month | $ 516.09 |
| | | Total cost for project | $ 3,096.54 |
| | | Total cost per foot | $ 0.18 |

The above personnel are available at the Ore Knob Mine.

6. (c) The following operating materials and supplies will be required:

| | | | |
|---|---|---|---|
| 1. | Core boxes, sufficient for 6,000 feet of core, 240 boxes at $2.00 | | $ 480.00 |
| 2. | Assays, estimate 25 copper assays at $1.50 | $ 37.50 | |
| | 25 iron assays at 1.50 | 37.50 | |
| | 25 zinc assays at 1.50 | 37.50 | |
| | 25 sulphur assays at 3.00 | 75.00 | |
| | Total: | | $ 187.50 |
| 3. | Drafting and stenographic materials, estimate | | $ 100.00 |
| | | Total cost for project | $ 767.50 |
| | | Total cost per foot | $ 0.05 |

6. (d) Operating equipment now owned by Appalachian Sulphides, Inc., and to be used in the project consists of a pick-up truck to be used for hauling core from the drill site to the core shack. Cost of this item is estimated to be $2.00 per day used or $200.00 for the project. Fair market value of the truck is $1,200.00.

APPALACHIAN SULPHIDES, INC.

JEFFERSON, NORTH CAROLINA

6. (e) No rehabilitation or repairs of existing buildings or equipment will be required for the project.

6. (f) No new buildings or equipment will be required for the project.

6. (g) There will be no repairs and maintenance to operating equipment chargeable to the project. The cost of analytical work has been shown under 6 (c) 2 above. The cost of accounting is estimated to be as follows:

| Personnel | Salary per month incl. Fringe Benefits | Portion of time on DMEA Project | Cost per Month |
|---|---|---|---|
| Accountant | $ 714.34 | 5% | $ 35.72 |
| Stenographer | 243.78 | 15% | 36.57 |
| | | Total cost per month: | $ 72.29 |
| | | Total cost for project: | $ 433.74 |
| | | Total cost per foot of drilling: | $ 0.03 |

The total cost of Workmen's Compensation and payroll taxes in connection with the project are as follows:

| Personnel | Workmen's Compensation | Payroll Taxes | Total | Portion to DMEA Project | Cost per Month |
|---|---|---|---|---|---|
| Geologist | $ 29.09 | $ 12.88 | $ 41.97 | 50% | $ 20.99 |
| Engineer | 33.69 | 12.88 | 46.57 | 20% | 9.31 |
| Engineer's Helper | 18.38 | 12.88 | 31.26 | 20% | 6.25 |
| Laborer | 2.51 | 11.04 | 13.55 | 20% | 2.71 |
| Laborer | 2.51 | 11.04 | 13.55 | 20% | 2.71 |
| Accountant | 3.85 | 12.88 | 16.73 | 5% | .84 |
| Stenographer | 1.57 | 9.54 | 11.11 | 15% | 1.67 |
| | | | Total cost per month: | | $ 44.48 |
| | | | Total cost for project: | | $ 266.88 |
| | | | Total cost per foot: | | $ 0.02 |

A recapitulation of the total estimated cost of the project is as follows:

| | | Total Project | Per foot |
|---|---|---|---|
| 1. Total direct cost of drilling | | $71,065.00 | $ 4.18 |
| 2. Technical Services: | $ 3,096.54 | | |
| 3. Operating Supplies: | 767.50 | | |
| 4. Accounting services: | 433.74 | | |
| 5. Workmen's Compensation, etc: | 266.88 | $ 4,564.66 | $ 0.27 |
| | | Total costs: $75,629.66 | $ 4.45 |

7. (a) Appalachian Sulphides, Inc., is prepared to furnish its share (50%) of the cost of the proposed project in accordance with the regulations on Government participation stated in Sec. 7 of DMEA Order - 1 Revised.

7. (b) The share of costs payable by Appalachian will be met by cash payments in respect of the diamond drill contract, and by providing the required personnel, equipment and supplies from the Ore Knob Mine for other costs of the program.

APPALACHIAN SULPHIDES, INC.

Philip Eckman

Philip Eckman
Mine Manager

Jefferson, N. C.
June 3, 1958

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U. S. Geological Survey
Geologic Branch
Washington, D.C.

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# PROJECT SUMMARY REPORT

By: J. W. Alt March 17, 1960

1. Docket No. DMEA-5044 (Copper-Zinc)
   Contract No. Idm-E1222

   Operator: Appalachian Sulphides, Inc.
   55 Yonge Street, Suite 1107
   Toronto 1, Ontario, Canada

   Property: Ore Knob Mine
   Ashe County, North Carolina

   Operator's Property Rights -

   Owner of mineral rights

2. Contract, Form MF-200 (June 1954) dated June 25, 1958.

   Work to start on or before August 15, 1958.
   Work to be completed within nine months.
   Royalty payment period - 15 years

   Description of the Work -

   The purpose of the project is to explore for ores of copper and zinc by diamond drilling, plus incidental overburden drilling, if necessary. Diamond drilling shall be done with AX size, or larger, coring bits. It is estimated that eleven diamond drill holes, with depths varying from approximately 900 feet to approximately 2,300 feet will be required to accomplish the purpose of the project. The total drilling may not exceed 17,000 feet.

   It is estimated that one hundred samples will require assaying.

## Estimated Costs of the Project

Actual Costs

Category (1) Independent Contracts

| | | |
|---|---|---|
| Diamond drilling (with incidental overburden drilling) | | |
| Depths 0 to 500 feet | | |
| 5,500 feet @ $2.75/ft. | $15,125.00 | |
| Depths 500 to 1,000 feet | | |
| 5,200 feet @ $3.00/ft. | 15,600.00 | |
| Depths 1,000 to 1,500 feet | | |
| 3,700 feet @ $3.35/ft. | 12,395.00 | |
| Depths 1,500 to 2,000 feet | | |
| 2,300 feet @ $3.85/ft. | 8,855.00 | |
| Depths in excess of 2,000 feet | | |
| 300 feet @ $4.55/ft. | 1,365.00 | |
| Surveying of drill holes (using Tro-Pari instrument) | | |
| 11 holes @ $160.00/ea. | 1,760.00 | $55,100.00 |
| Categories (2) through (7) | None | |
| Fixed Unit Costs | | |
| Incidental allowance for each foot of drilling completed, 17,000 feet @ $0.17/ft. | 2,890.00 | |
| Assaying | | |
| 100 samples (two determinations each) | | |
| 200 determinations @ $1.00/ea. | 200.00 | 3,090.00 |
| Total Estimated Cost of the Project | | $58,190.00 |
| Government's Participation, 50% | | $29,095.00 |

Amendments

No. 1 Agreed November 20, 1958, effective November 3, 1958
Change in the "Description of the Work" in regard to drilling.

Work Completed

| | |
|---|---|
| 12 diamond drill holes, 16,971/ft. drilled | $52,188.75 |
| Tro-Pari Surveys, 12 holes | 954.17 |
| Incidental allowance per foot drilled 16,971/ft @ $0.17/ft. | 2,885.07 |
| Samples, 19 determinations @ $1.00 ea. | 19.00 |
| Total cost | $56,046.99 |

Final Reports

Operator's final report, not dated, received by Field Team April 17, 1959.
Field Team's final report, dated February 26, 1960, received March 2, 1960.
Work on the project under the terms of the contract was commenced on September 10, 1958, and was completed on March 9, 1959.

3. Audit Report of Review, made in lieu of a final audit, dated April 22, 1959.

| | |
|---|---|
| Total cost billed by Operator | $56,046.99 |
| Exceptions | --- |
| Total acceptable cost | $56,046.99 |
| Government Participation @ 50% | $28,023.49 |

4. Certification of discovery - None issued.

5. Comments:

The drilling consisted of 12 diamond drill holes from 11 sites with total footage of 16,972 feet. The holes, all inclined, varied in dip between minus 50° and minus 78° and in bearings from N. 30°W. to N. 40° W. These holes varied in length from 893 feet to 2,302 feet.

Diamond drilling was utilized to search for vein structure to the northeast and southwest of the known ore shoot. In the three holes drilled through the projected target zone northeast of the present workings, no significant zones of sulphide mineralization were found. Nine holes were drilled to cut vein structure to the southwest of the known limits of the ore shoot. Only one hole intersected ore grade material. This hole from 780.5 to 784 feet assayed 2.51 percent copper. One other hole cut 1.2 feet of core containing two percent copper, the remainder of the assays showed values ranging from 0.11 to 0.60 percent copper. As no zinc was recognized visually, no assays for that metal were made.

If the hole containing 2.51 percent copper was encountered within a body of minable ore, it would be mined also. However, because it stands alone with much barren or only weakly mineralized ground lying between it and the main ore body, it cannot be considered as adding to the reserve tonnage at Ore Knob. Therefore, certification of the project is not recommended.

The Division of Minerals concurs with the recommendation of the Field Team that a certification of discovery is not warranted.

Additional work on this property with Government exploration assistance is not warranted.

J. W. Alt

J. W. Alt

JWAlt:kb - March 23, 1960
Copy to: Director's reading file
Mr. Alt
Chron.

Form 17
. 59

OFFICE OF MINERALS EXPLORATION

WORK COMPLETED ANALYSIS

___ Certified — After final audit or review report is received, prepare in duplicate. File original in official docket. Send copy to Code 210.

| | | |
|---|---|---|
| Operator: APPALACHIAN SULPHIDES, INC. | | Actual Cost: X |
| State: NORTH CAROLINA | | Agreed Unit Cost * X |
| Final Report of Audit | Commodity: COPPER-ZINC | Docket No.: DMEA-5044 |
| Final Report of Review: X | | Contract No.: Idm-E1222 |

| Type of Work (Use these categories only) | Authorized by Contract and Amendments | | Completed and Paid for | | Net cost after sale of Gov't. Property |
|---|---|---|---|---|---|
| | Units | Cost 1/ | Units | Cost 1/ | |
| Drifting & Crosscutting | | | | | |
| Raising | | | | | |
| Shafts | | | | | |
| Winzes | | | | | |
| Drilling (Specify) Diamond (AX) | 17,000' | $ 53,340.00 | 16,971' | $ 52,188.75 | $ 52,188.75 |
| Tro-Pari Surveys--11 holes @ $160.00 each | | 1,760.00 | 12 | 954.17 | 954.17 |
| Underground Excavation Incidental allowance per foot drilled 17,000' @ $0.17/ft. * | | 2,890.00 | 16,971' | 2,885.07 | 2,885.07 |
| Operating Equipment Purchased | | | | | |
| Surface Rehabilitation & Repairs | | | | | |
| Underground Rehabilitation | | | | | |
| New Building, Improvements, etc. 100 samples--2 determinations each-- Other (Specify) 200 determinations @ $1.00 each. | | 200.00 | 19 | 19.00 | 19.00 |
| Totals | | $ 58,190.00 | | $ 56,046.99 | 2/ $ 56,046.99 |

1/ Round off to dollars.
2/ Net cost total must agree with final report of audit or review.

Prepared by W. P. Klugescheid Date 5/20/59.

52616

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

March 18, 1960

Memorandum

To: W. R. Griswold, Office of Minerals Exploration

From: Commodity Specialist, Branch of Base Metals

Subject: Review of Field Team's Final Report, Docket No. DMEA 5044 (Copper-zinc), Appalachian Sulphides, Inc., Ore Knob Mine, Ashe County, North Carolina, Idm E1222, $56,046.99

Under the subject contract 12 holes, representing 16,972 feet of diamond drilling, tested the target area for extensions of copper-bearing structures. Although most of the holes penetrated the mineralized zone, only one encountered an isolated 3.5 foot section with a significant copper value. Accordingly, the examiners recommend that a certificate of discovery not be issued.

I concur in that recommendation.

A. D. McMahon

A. D. McMahon

Copy to: Division of Minerals (2)
Branch of Base Metals (2)
Harold Kirkemo, U.S.G.S.
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UNITED STATES
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OFFICE OF MINERALS EXPLORATION
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February 29, 1960

Memorandum

To; Operating Committee, OME - Washington, D. C.

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

Subject: Field Team Final Report - DMEA-5044, Idm-E1222, (Copper-zinc) Appalachian Sulphides, Toronto, Canada Ore Knob Mine, Ashe County, North Carolina

Enclosed are the original and two copies of the subject final report. This Operator is interested in doing additional exploration with OME aid.

Certification was not recommended.

Robert A. Laurence
Robert A. Laurence
Executive Officer, OME
Region V

V. J. Lynch
V. J. Lynch, Member
U. S. Bureau of Mines

FINAL F.T. REPORT

Reviewed by
OME OPERATING COMMITTEE
3-8-60
(date)

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UNITED STATES

DEPARTMENT OF THE INTERIOR

OFFICE OF MINERALS EXPLORATION

# FINAL SUMMARY REPORT

## DMEA-5044, Idm-E1222 (Copper-zinc), ORE KNOB MINE
Ashe County, North Carolina

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

February 26, 1960

Reviewed by
OME OPERATING COMMITTEE
3-8-60
(date)

FINAL SUMMARY REPORT

DMEA-5044, Idm-E1222 (Copper-zinc), ORE KNOB MINE

Ashe County, North Carolina

Operator: Appalachian Sulphides, Inc., Route 1, Jefferson, North Carolina

## SUMMARY AND RECOMMENDATIONS

Extensions of the copper-bearing ore shoot at the Ore Knob mine in Ashe County, North Carolina were sought with a DMEA-assisted exploration program consisting of 17,000 feet of diamond drilling and attendant supporting services. The drilling was considered complete with the coring of 16,972 feet in 12 angle holes at 11 sites. Although no rock of ore grade and thickness was encountered, the mineralized zone was penetrated in most of the holes drilled. Certification of the project was not recommended.

The total cost of items allowable under the contract with DMEA amounted to $58,190.00 of which $29,095.00 (50 percent) was borne by the Government.

## INTRODUCTION

The Ore Knob mine is in Ashe County 11 miles east of Jefferson, North Carolina. Excellent access to the property is afforded by State Highway 88 which is hard-surfaced and crosses the property a few hundred yards southwest of the mine workings and mill. (See fig. 1.)

The application for DMEA assistance to explore at the Ore Knob mine was submitted by Appalachian Sulphides, Inc. on June 4, 1958. Although no formal field examination was made, the mine and adjacent properties had been visited by A. R. Kinkel, R. A. Laurence, and Helmuth Wedow, Jr., of the U. S. Geological Survey on May 28, 1958. On the basis of this visit a field examination report by Laurence and Wedow was submitted on June 26, 1958 in support of a contract (Idm-E1222, copper-zinc) dated June 25, 1958 that provided for the coring of 17,000 feet by diamond drilling in holes spaced no closer than 200 feet. Although the original application was solely for copper, zinc was included in the contract as other ore bodies of similar habit in the region contain appreciable amounts of zinc. Actual operations under the contract were to have been started by August 15, 1958 and were so initiated by the surveying of drilling sites and the moving of drilling rigs on to the property. The drilling itself did not begin until September 10, 1958. On November 20, 1958 Amendment No. 1 was executed which provided that only the target zone intersection of each hole need be no closer than 200 feet, in order to permit use of the same site for the drilling of two holes with different angles of inclination. The drilling of 16,972 feet in 12 holes from 11 sites (fig. 2) was finished on March 9, 1959, and the contract was deemed completed. The Operator's Final Report was received by the Field Team on April 17, 1959 and the Report of Review was completed on April 22, 1959. On October 20, 1959 the Operator was notified that the project was not certified.

Detailed maps, sections, drill logs, and a tabulated summary of the drill hole data have been submitted by the Operator in its monthly and final reports; consequently no attempt will be made to reproduce this information herein.

## PROPERTY

The Ore Knob properties of Appalachian Sulphides, Inc. included in DMEA contract Idm-E1222 are outlined on figure 1. Of the total of 2,533.6 acres within this area, 325 acres was owned in fee simple during the life of the contract with only mining and mineral rights owned on the remainder of 2,008.6 acres. From the total shown above, and mostly within the tract owned in fee simple, a parcel of about 71 acres (a rectangle 3,100 feet by 1,000 feet) surrounding the mine shaft and extending down to an elevation of 1,700 feet above sea level was excluded from the contract (see figs. 1 and 2). This exclusion provision was made to remove previously known reserves and the operating mine area from the royalty provisions of the contract if ore had been discovered and the project had been certified.

## WORK ACCOMPLISHED

The work accomplished under Contract Idm-E1222 (DMEA-5044, copper-zinc) consisted of the diamond drilling of 16,972 feet in 12 holes from 11 sites. The holes were all inclined with inclinations and bearings at the collars varying between minus 50° to minus 78° and N. 30° W. to N. 40° W., respectively. These data are summarized in table 1 and shown on the maps and sections of the Operator's Final Report. All holes were surveyed at suitable intervals by the Tro-Pari method. (See fig. 2.)

The contract permitted assaying of 100 samples with two determinations (one each of copper and zinc). As no zinc was recognized visually, no assays for that metal were made. Copper assays were made on 19 samples; the data relative to these samples are given in table 1 of the Operator's Final Report. The maximum assay value obtained was 2.51 percent copper in a 3.5-foot run from a depth of 780.5 to 784 feet in Hole N-46. Except for 1.2 feet of core containing 2 percent copper in Hole N-49, the remainder of the assays showed values ranging only from 0.11 to no more than 0.60 percent copper.

## GEOLOGY

The geology of the Ore Knob mine area has been described by Ross (1935) and Espenshade (1944). The area was explored during World War II by the U. S. Bureau of Mines (Ballard and Clayton, 1948) without locating the down-plunge extension of the ore-shoot discovered by Appalachian Sulphides, Inc. in 1954-1955.

The deposit at Ore Knob is a sulfide-bearing fissure(?) vein generally paralleling the foliation of the biotite granite-gneiss country rock. The vein has an average strike of about N. 63° E. (fig. 2) with dips ranging from nearly vertical at the surface to less than 65° SE at a depth of about 700 feet. In the area explored prior to the DMEA contract (excluded area of fig. 2, see also sections and maps of application) the vein ranges in thickness from a few inches to as much as 32 feet. Within the vein structure the richest or "ore-bearing" shoot has a rake of about 20° SW. A second vein, locally as much as 70 feet away from the main vein in the hanging wall, is probably a

branch of the main vein, although the junction of the two down dip takes on the aspect of a synclinal structure plunging southwest. A brief description of the geologic features and an interpretation of the structural control of the ore body has been presented recently by Kerstein (1959).

The sulfide minerals in the ore body at Ore Knob are pyrrhotite, pyrite, chalcopyrite, and minor local amounts of sphalerite. Gangue in the veins includes magnetite, biotite, quartz, calcite, and some garnet, feldspar, and other silicates. Brown (1959) believes that the iron content of the biotite in the country rock decreases toward the ore shoot in a halo of alteration and from this concludes that at least some of the iron in the sulfides may have been derived from the enclosing country rock.

## RESERVES

The Operator's estimate of reserves at the Ore Knob mine at the time of the application for DMEA assistance amounted to 1,162,700 tons of ore containing 2.63 percent copper. The area underlain by this reserve is included in the area shown on figure 2 as being underlain by main vein with ground of ore-grade and thickness. Although most of the 12 holes drilled under the DMEA contract encountered sulfide mineralization at the expected positions for extensions of the ore shoot, none penetrated a zone with amounts of copper in ore grade and thickness. The maximum core run obtained was a 3.5-foot section (780.5-784.0) in Hole N-46 (fig. 2) assaying 2.51 percent copper. If this amount of copper mineralization were encountered within a body of minable ore, it

would doubtless be mined also. However, because it stands alone with much barren or only very weakly mineralized ground lying between it and the main ore body, it cannot be considered as adding to the reserve tonnage at Ore Knob. Consequently, certification of the project as a discovery was not recommended and the Operator was informed on October 20, 1959 that certification would not be made.

## EXPENDITURES

The contract covering the work by Appalachian Sulphides, Inc. on the Ore Knob DMEA project called for a maximum expenditure of $58,190.00, of which 50 percent, or $29,095.00 would be borne by the Government. The costs: (1) submitted with the Application; (2) recommended by the Field Team; (3) permitted by the contract; and (4) of actual expenditures approved under the contract are contrasted as follows:

| | Application | Field Examination Report | Contract | Actually approved under contract |
|---|---|---|---|---|
| Drilling | $67,765.00 | $53,340.00 | $53,340.00 | $52,188.75 |
| Tro-Pari Surveys | 3,300.00 | 1,760.00 | 1,760.00 | 954.17 |
| Incidentals | 4,377.16 | 4,012.00 | 2,890.00 | 2,885.07 |
| Assays | 187.50 | 200.00 | 200.00 | 19.00 |
| Totals | $75,629.66 | $59,312.00 | $58,190.00 | $56,046.99 |
| Average cost per foot | $ 4.449 | $ 3.489 | $ 3.423 | $ 3.297 |

A Report of Review, issued by OME on April 22, 1959, verified the actual costs (column 4, above). The wide discrepancy between the drilling (and tro-pari) costs submitted with the application and those permitted by the contract is due to the difference in the bids submitted by Sprague and Henwood and by Longyear, respectively. As Sprague and Henwood was given the drilling contract, it is assumed that the Operator either prevailed upon that company to meet the Longyear bid or paid the additional cost out of preference. * The reason for the discrepancy in incidental costs between the application and the field examination report on one hand, and the amount allowed for this item in the contract is not known.

The Field Examiner's review of costs is summarized as follows:

| | |
|---|---|
| Total approved cost in contract . . . . . | $ 58,190.00 |
| Total cost of project . . . . . | 56,046.99 |
| Government share of cost (at 50 percent) . . . . . | 28,023.49 |
| Government share unexpended . . . . . | 1,021.51 |
| Value of production during exploration . . . . . | -none- |
| Royalty due Government . . . . . | -none- |

No equipment was purchased for this project under the terms of the contract.

* Actual costs for drilling as invoiced by Sprague & Henwood were $55,064.99 including $954.16 for surveys.
Talbert
3/9/60

## REFERENCES CITED

Ballard, T. J., and Clayton, A. B., 1948, Investigation of the Ore Knob copper mine, Ashe County, N. C.: U. S. Bureau of Mines, Rept. of Inv. 4341.

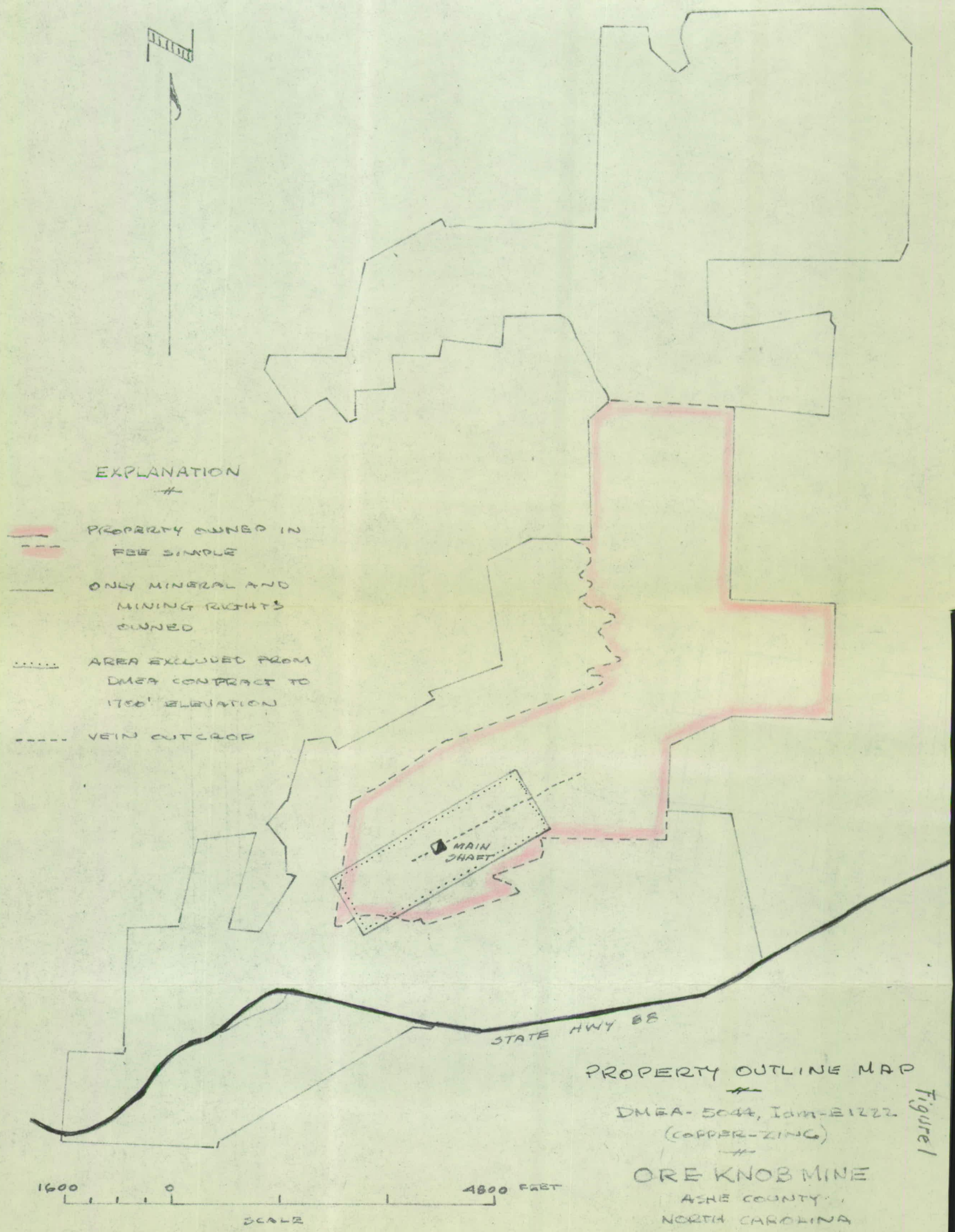
Brown, H. S., 1959, Biotite alteration in the country rock at Ore Knob, North Carolina (abstract): Geol. Soc. America Bull., vol. 70, p. 1757.

Espenshade, G. H., 1944, Ore Knob copper mine, Ashe County, North Carolina, U. S. Geol. Survey, unpublished report, January 10, 1944.

Kirstein, D. S., Jr., 1959, Some geologic features of the Ore Knob copper mine, North Carolina (abstract): Geol. Soc. America Bull., vol. 70, p. 1765.

Ross, C. S., 1935, Origin of the copper deposits of the Ducktown type in the southern Appalachian region: U. S. Geol. Survey, Prof. Paper 179, p. 67-77.

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey




PROPERTY OUTLINE MAP

DMEA-5044, Idm-E1222.
(COPPER-ZINC)

ORE KNOB MINE
ASHE COUNTY,
NORTH CAROLINA

Figure 1

OFFICIAL FILE COPY
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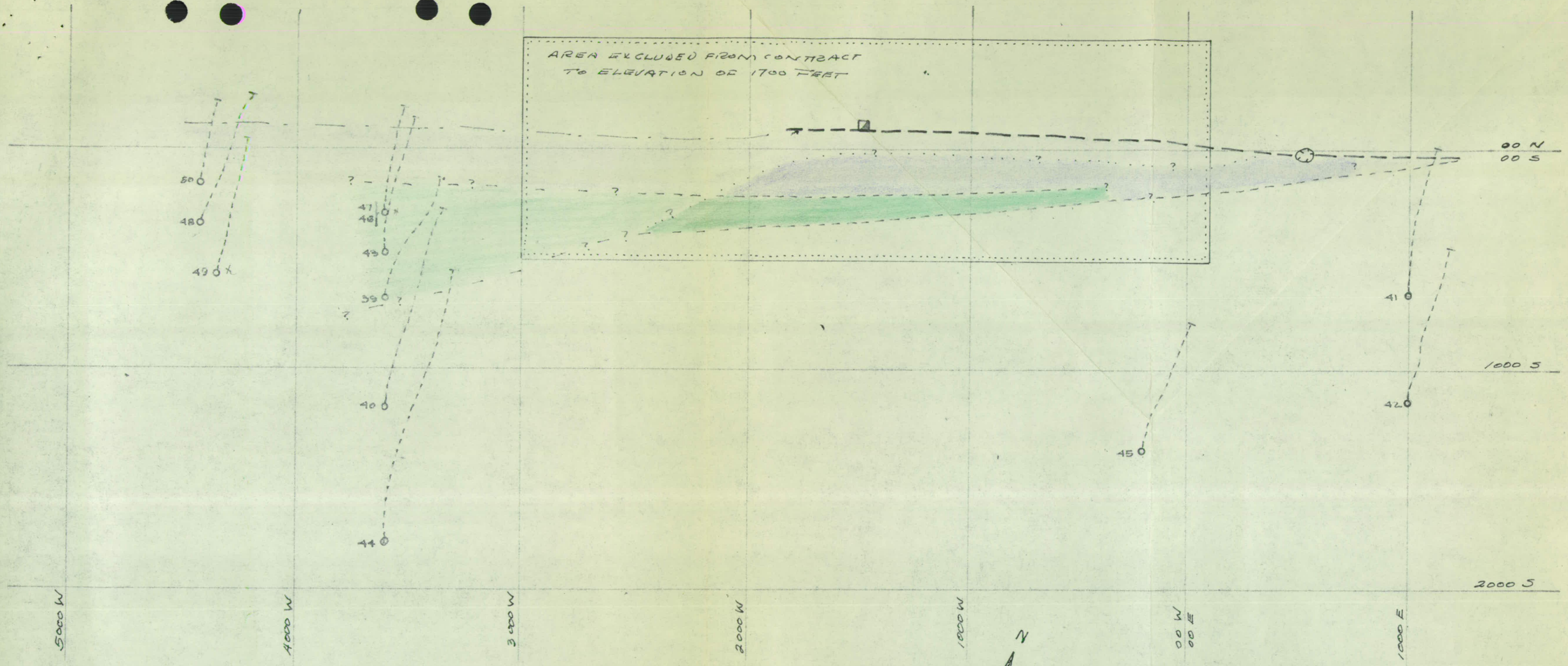
FIGURE 2




EXPLANATION

130----y INCLINED DRILL-HOLE

OPERATING SHAFT

CAGED SHAFT

OUTCROP OF VEIN

AREA UNDERLAIN BY MAIN VEIN (DARKER WHERE MOSTLY OF ORE-GRADE AND THICKNESS

AREA UNDERLAIN BY MAIN VEIN AND HANGING WALL VEIN (DARKER WHERE MAIN VEIN IS MOSTLY OF ORE-GRADE AND THICKNESS)

N

100 0 800 FEET

SCALE

DRILLING PLAT

DMEA-5044, Idm-E1222
(COPPER-ZINC)

ORE KNOB MINE
ASHE COUNTY
NORTH CAROLINA

SUITE 1107
55 YONGE STREET
TORONTO 1, CANADA
[redacted]6
EMPIRE 6-1685

November 3
1959

OFFICIAL FILE COPY
O. M. E.
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United States Department
of the Interior,
Office of Minerals Exploration,
Washington 25, D.C.

Attention: Mr. Frank E. Johnson,
Acting Director

Dear Sirs:

Re: Docket No. DMEA-5044 (Copper-Zinc)
Appalachian Sulphides, Inc.
Ore Knob Mine
Ashe County, North Carolina
Contract No. Idm-E1222

We are obliged to you for your letter of October 20th and with you, regret that the work performed did not result in the locating of additional ore bodies.

Yours very truly,

APPALACHIAN SULPHIDES, INC.,

G. C. Andrew,
Treasurer

GCA/mr

Form 7
(56)

OFFICIAL FILE COPY

| Date | Surname | Code |
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| 10/20 | Talbert | 800 |
| 10/20 | Selfridge | 120 |
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OCT 20 1959

Appalachian Sulphides, Inc.
55 Yonge Street, Suite 1107
Toronto 1, Ontario, Canada

Re: Docket No. DMEA-5044 (Copper-Zinc)
Appalachian Sulphides, Inc.
Ore Knob Mine
Ashe County, North Carolina
Contract No. Idm-E1222

Gentlemen:

Reference is made to your completed exploration contract with the Government.

We sincerely regret that the work performed did not result in a certification of discovery or development under the provisions of the contract. In the absence of such certification, the Government retains no claim or lien against the property subject to the contract or any future production therefrom. We, therefore, are closing our books and records on this project. Your attention, however, is called to the provisions of the contract which require the operator to keep and preserve certain records for the period indicated.

We appreciate your interest and participation in the DMEA exploration program.

Sincerely yours,

(signed) FRANK E. JOHNSON

Acting Director

JWAlt/gla
10-20-59
cc to: Director's Reading File
Contract Adm. & Audit Division
OME Field Team, Region V (2)
Docket
Chron

8623

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Appalachian Sulphides, Inc.

Jefferson, North Carolina

Re: Docket No. DMEA-5044 (Copper-Zinc)
Appalachian Sulphides, Inc.
Ore Knob Mine
Ashe County, North Carolina
Contract No. Idm-E1222

Gentlemen:

Reference is made to your completed exploration contract with the Government.

We sincerely regret that the work performed did not result in a certification of discovery or development under the provisions of the contract. In the absence of such certification, the Government retains no claim or lien against the property subject to the contract or any future production therefrom. We, therefore, are closing our books and records on this project. Your attention, however, is called to the provisions of the contract which require the operator to keep and preserve certain records for the period indicated.

We appreciate your interest and participation in the DMEA exploration program.

Sincerely yours,

Acting Director

Copy to:
Appalachian Sulphides, Inc.
South Strafford, Vermont

JWAlt/gla 10-7-59
cc to: Director's Reading File
Contract Adm. & Audit Division
OME Field Team, Region V (2)
Docket
Chron

43683

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 11 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

October 12, 1959

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Memorandum

To: Operating Committee, OME - Washington, D. C.

From: Executive Officer, OME - Region V - Knoxville, Tenn.

Subject: DMEA-5044 (copper-Zinc) Appalachian Sulphides, Inc., Ore Knob mine, Ashe County, N. C.

The final Field Team report is expected to be ready for transmittal during November.

Robert A. Laurence

Robert A. Laurence

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OCT 6 1959

**Memorandum**

**To:** Executive Officer, OME Field Team, Region V

**From:** Chairman, Operating Committee, OME

**Subject:** Docket No. BMEA-5044 (Copper-Zinc)
Appalachian Sulphides, Inc.
Ore Knob Mine
Ashe County, North Carolina
Contract No. Ide-81222

With reference to the cited completed contract, please advise us as to when we may expect to receive the final Field Team report. As the work under the terms of the contract was completed in March 1959, we are anxious to close our files on this project.

George C. Selfridge

**APPROVED:**

Frank D. Lamb
**Member, Bureau of Mines**

Harold Kirkemo
**Member, Geological Survey**

JWAlt/gla
10-5-59
cc to: Director's Reading File
Operating Committee
Mr. McMahone, USBM
Mr. Kirkemo, USGS
Docket
Chron

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APR 22 1959

Memorandum

To: Executive Officer, OME Field Team, Region V

From: E. D. Talbert, Acting Chief (Signed) E. D. Talbert
Division of Contract Administration and Audit

Subject: Docket No. DMEA-5044 (Copper-Zinc)
Appalachian Sulphides, Inc.
Ore Knob Mine
Ashe County, North Carolina
Contract No. Idm-81222

The original and three copies of a Report of Review in lieu of a final audit of the subject contract, as requested by your April 14 memorandum, are enclosed. As copies of the Operator's final engineering and geological report have been received by the Washington office, withholding release of this Report of Review (as mentioned in my April 17 memorandum) is no longer necessary.

If you concur with the facts as stated therein, please make the usual distribution of the Report of Review. If for any reason you do not concur, please return the original and all copies to this Division.

Enclosures

EDTalbert/ama
April 22, 1959

Copy to: Docket
Director's Reading File
CA & A Division
Mr. Talbert
Mrs. Miller

8623

A Form 7
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APR 17 1959

Memorandum

To: Executive Officer, OME Field Team, Region V

From: E. D. Talbert, Acting Chief (Signed) E. D. Talbert
Contract Administration and Audit Division

Subject: Docket No. DMRA-5044 (Copper-Zinc)
Appalachian Sulphides, Inc.
Ore Knob Mine
Ashe County, North Carolina
Contract No. Idm-K1222

Your April 14 memorandum confirms the units of work performed under the subject contract but states that the Operator's final engineering and geological report has not been received. However, the procedure promulgated by the Operating Committee's letter of January 17, 1957, to all Executive Officers provides that a report of review or a final audit certificate will not be issued without a statement from the Executive Officer that the Operator's final report has been received or waived, or the value of such report has been assessed.

Accordingly, although the project has been given an audit review, release of a report of review is being withheld pending fulfillment of this requirement.

The final (March 1959) MF-104 with attachments and invoices and drill records supporting prior vouchers, as submitted by Mrs. Miller's April 10 memorandum, are being returned to her via certified mail with a copy of this memorandum.

EDTalbert/ama
April 17, 1959

Copy to: Docket
Director's Reading File
CA & A Division
Mrs. Miller w/enclosures

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 2-B POST OFFICE BLDG.
KNOXVILLE 2, TENN.
April 17, 1959

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Memorandum

To: Operating Committee, OME - Washington

From: Acting Executive Officer, OME - Region V

Subject: Operator's Final Report - DMEA-5044, Idm-E1222.
Ore Knob Mine, Ashe County, N.C.
Appalachian Sulphides, Inc.

Transmitted are the original and two copies of the subject final report.

V. J. Lynch

z

RECEIVED
APR 17 1959
U. S. Geological Survey
Geologic Division
Knoxville, Tenn.

APR 30 1959
O.M.E.

APPALACHIAN SULPHIDES, INC.

ORE KNOB MINE

FINAL REPORT D.M.E.A. DOCKET NO. 5044

OPERATOR'S FINAL REPORT

The program consisted of 12 surface diamond drill holes totaling 16,971 feet, and collecting 19 core samples for assay.

Diamond drilling was utilized to search for vein structure to the northeast and southwest of the known ore shoot. Drill holes N41, N42, and N45 were drilled through a projected target zone northeast of the present workings. No significant zones of sulphide mineralization was found, however zones of quartz hornblende-actinolite gneiss were intersected at or near the projected target. It appears likely that these intersection of quartz hornblende-actinolite gneiss are a continuation of a similar zone that is found near the bottom of the explored ore shoot. Drill holes N39, N40, N43, N44, N46, N47, N48, N49, and N50 were drilled to cut vein structure to the southwest of the known limits of the ore shoot. All holes cut at least one zone of mineralization that projects along the same plane as the known ore shoot. Only one hole N46 intersected ore grade material. Hole N46 assayed 2.51% copper over 3.5 feet however this is considered only possible marginal ore. Holes N43 an N47 were drilled from the same section and were from 200 to 300 feet above and below N46: neither intersected mineralization approaching ore grade. Therefore, it appears unlikely from the existing data that any addition to the present ore reserve can be made. However, it appears likely that the company will extend at least one drift in that direction. Hole N44 intersected two weak mineralized zones near the projected target. These two zones were localized in quartz hornblende-actinolite gneiss similar to that found near the bottom of the explored ore shoot and in holes N41, N42, and N45. This may be significant in that the known ore shoot is largely above the hornblende-actionlite gneiss. Therefore, further drilling and exploration should be concentrated either above or below the quartz hornblende-actinolite gneiss horizon.

A list of the holes drilled and intersections obtained along with a plan and long section map showing drill hole location and intersections is attached.

STATEMENT OF COSTS OF DRILLING PROGRAM

| | | Paid By Appalachian Sulphides | Paid By D.M.E.A. | Total Cost |
|---|---|---|---|---|
| 1 | Drilling | $ 26,094.38 | $ 26,094.37 | $ 52,188.75 |
| 2 | Incidental Expense | 1,442.54 | 1,442.53 | 2,885.07 |
| 3 | Assaying | 9.50 | 9.50 | 19.00 |
| 4 | Tro-Pari Tests | 477.08 | 477.08 | 954.17 |
| | Total: | $ 28,023.51 | $ 28,023.48 | $ 56,046.99 |

Submitted,
APPALACHIAN SULPHIDES, INC.

Dewey S. Kirstein

Dewey S. Kirstein
Geologist

APPALACHIAN SULPHIDES, INC.
D.M.E.A. DOCKET NO. 5044-IDM #1222
DIAMOND DRILL HOLE DATA

| No. | Section | Offset Baseline | Dip at Collar | Bearing | Elevation | Length of Hole | Elevation of Intersection | Core Length | Grade % Cu. | Horizontal Thickness | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 39 | 3600W | 681.5 S | -74°N | N 30°W | 3145.06 | 1431 | 2050 feet<br>2025 " | 7.0<br>1.5 | 0.25<br>0.60 | 8.5<br>1.9 | South Vein<br>North Vein |
| N40 | 3600W | 1161.0 S | -73°N | N 35°W | 3073.41 | 1776 | 2490 "<br>1735 "<br>1670 " | 37.0<br>10.0<br>3.5 | 0.14<br>0.20<br>0.53 | 37.0<br>13.0<br>4.5 | Upper Vein<br>South Vein<br>North Vein |
| N41 | 1000E | 658.5 S | -75°N | N 35°W | 3117.65 | 1400 | 2315 | 34.0 | | | Quartz hornblende-actinolite gneiss |
| N42 | 1000E | 1138.7 S | -75°N | N 35°W | 3028.87 | 1493 | 1960 | 9.0 | | | Quartz hornblende-actinolite gneiss |
| N43 | 3600W | 476.1 S | -77°N | N 35°W | 3119.92 | 1300 | 2235<br>2185 | 8.0<br>3.0 | Tr.<br>0.25 | 8.0<br>3.0 | South Vein<br>North Vein |
| N44 | 3595.5W | 1784.2 S | -77°N | N 35°W | 3149.29 | 2302 | 1445<br>1447 | 4.5<br>2.5 | 0.23<br>0.18 | 7.0<br>5.0 | South Vein<br>North Vein |
| N45 | 200W | 1570.58S | -77°N | N 35°W | 3037.53 | 2000 | 1555 | 61.0 | | | Quartz hornblende-actinolite gneiss |
| N46 | 3600W | 294.0 S | -70°N | N 30°W | 3176.70 | 997 | 2449 | 3.5 | 2.51 | 2.3 | Massive Sulphide Vein |
| N47 | 3600W | 294.0 S | -50°N | N 30°W | 3176.70 | 836 | 2715 | 0.5 | Tr. | 0.4 | Zone Very Silicious |
| N48 | 4400W | 334.0 S | -75°N | N 30°W | 3208.53 | 1196 | 2397 | 0.3 | Tr. | 0.3 | 20% Sulphides - Largely pyrrhotite |
| N49 | 4322W | 549.0 S | -78°N | N 40°W | 3228.85 | 1347 | 2142 | 1.0<br>1.2 | 0.28<br>2.00 | 0.9<br>1.0 | 2.2 Foot Zone of Mineralized breccia |
| N50 | 4400W | 154.0 S | -75°N | N 30°W | 3180.23 | 893 | 2560 | 0.2 | Tr. | 0.2 | Zone very silicious |

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APR 17 1959
U. S. Geological Survey
Geologic Division
Knoxville, Tenn.

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 2-B POST OFFICE BLDG.
KNOXVILLE 2, TENN.

April 14, 1959

RECEIVED
EXTRA COPY
O. M. E.
4/16

Memorandum

To: Mr. E. D. Talbot, OME Contract Administration

From: Executive Officer, OME - Region V - Knoxville

Subject: DMEA-5044, Idm-E1222(Cu,Pb,Zn) Ore Knob Mine, Ashe County, N. C. Appalachian Sulphides, Inc.

Work on the subject contract has been completed.

The following units of work have been acceptably performed, as verified by our Field Examiners:

16,971 feet of diamond drilling was completed in 12 drill holes (interim reports show a total of 16,972 feet drilled; a check on drill hole logs indicates a total of 893 feet in Hole No.50, rather than 894 feet shown in the interim report of March 12).

Tro-Pari surveys were made of all 12 holes.

A total of 19 assays were made on core samples.

The Operator's final engineering and geological report has not yet been received.

Robert A. Laurence

VJL/sm
cc
Opr. Com-2
Lynch
Files
Finance Office

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 2-B POST OFFICE BLDG.
KNOXVILLE 2, TENN.

March 5, 1959

Memorandum

To: Operating Committee, OME - Washington

From: Executive Officer, OME - Region V - Knoxville, Tenn.

Subject: Signed Amendment No.1 - DMEA-5044, Idm-E1222
Appalachian Sulphides, Inc. (copper-zinc)
Ore Knob Mine, Ashe County, North Carolina

Attached are the Government and Audit copies of the subject amendment received in this office to day.

The usual distribution of the other copies has been made.

Robert A. Laurence

Robert A. Laurence

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February 26, 1959

Appalachian Sulphides, Inc.

Jefferson, North Carolina

Attention: Mr. E. L. Tenney
Accountant

Gentlemen:

Reference is made to your February 20th letter regarding payment on your January voucher covering contract Idm-K1222, Docket No. DMPA-5044.

In error, we disallowed 2 of the 302 feet claimed over the 2000 foot level. The description of work portion of the contract's Exhibit "A" states the depths of holes as "Varying from approximately 900 feet to approximately 2,300 feet." In the estimated costs portion of the Exhibit "A" an estimate of 300 feet is indicated for depths in excess of 2,000 feet, and Article 6(a) of the contract provides that under Category (1) only the total amount of the category and the estimated cost of each unit are maximums. The disallowed 2 feet will be adjusted on your next voucher.

The contract provides for payment of footage over the 2000 foot level of $4.55 per foot, however, the contract also prohibits payment in excess over invoiced costs. Therefore, the rate of $4.35 per foot is correct and just.

Very truly yours,

Helen R. Miller
Administrative Assistant

/hbm
Copies to V. J. Lynch
H. A. Lawrence
Jay L. Chambers
Morris Files
Day Files

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FEB 20 [illegible]

Mrs. Helen R. Miller
Personal Assistant
Bureau of Mines, Region V
P. O. Box 217
Norris, Tennessee

Re: Docket No. DMEA-9044 (Copper-Zinc)
Appalachian Sulphides, Inc.
Contract No. Idm-X1222

Dear Mrs. Miller:

By letter dated February 18, 1959, you advised the referenced Operator that its January 1959 MF-304 was being processed for payment after disallowance of $69.44 for costs claimed in excess of the invoiced amount and for footage in excess of the contract maximum.

This Division concurs with your disallowance for the excess over invoiced costs. However, the disallowance for excess footage does not appear to be proper.

The description of work portion of the contract's Exhibit "A" states the depths of holes as "varying from approximately 900 feet to approximately 2,300 feet". In the estimated costs portion of the Exhibit "A" an estimate of 300 feet @ $4.55/ft. is indicated for depths in excess of 2,000 feet and Article 6(a) of the contract provides that under Category (1) only the total amount of the category and the estimated cost of each unit are maximums.

Sincerely yours,

(Signed) J. L. Chambers

Jay L. Chambers
Contract Administration
and Audit Division

EDTalbert/GMcC
February 20, 1959

cc: Docket
Director's Reading File
Mr. Chambers
OME Field Team, Region V

8623

APPALACHIAN SULPHIDES, INC.
SOUTH STRAFFORD
VERMONT

Telephone - South Strafford 5-2411

January 27, 1959

RA COPY
O. M. S.
D JA 59
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United States Department of the Interior
Defense Minerals Exploration Administration
Washington 25, D. C.

Dear Sirs:

According to our records there is an unpaid balance of $213.50 due from D. M. E. A. representing the Government's 50% share of certain additional accepted costs under DMEA #4746, Contract No. IdmE-11. We enclose a photocopy of the report or review by E. B. Talbot, auditor, dated January 20, 1958 in which this item was approved for payment if claimed by us. The amount was included in our amended final report which we filed after receipt of auditor's report or review.

Orig. went to O.C.O. To send to Reg. V

In connection with our annual audit we shall appreciate your informing our accountants, Smith, Batchelder, Smith, Rugg and Darling, Norwich, Vermont, whether your records are in agreement and that the amount ultimately will be paid.

Very truly yours,

Clarence B. Benson

Clarence B. Benson
Asst. Treasurer & Vt. Manager

CBB/hw

Encl.

cc: William C. Rugg, Norwich, Vermont

Mr. George C. Selfridge

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O. M. E.
RECEIVED MAR 5 1959

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GEORGE C. SELFRIDGE
CHAIRMAN OPERATING COMMITTEE
OFFICE MINERALS EXPLORATION

REURTEL MARCH 3 RE DMEA 5044

OPERATOR DELAYED SIGNING AMENDMENT NO. 1 J BUT WILL SIGN AND RETURN IT TODAY. WE WILL FORWARD IT WHEN RECEIVED.

RE OUR MEMO FEB. 20. FOOTAGE WILL BE EXHAUSTED WITHOUT DRILLING ANY HOLES ON SEC. 2800 W THEREFORE NO CHANGE IN EXCLUDED AREA IS NECESSARY.

V. J. LYB XX LYNCH

Norris, Tenn.

BUREAU OF PRISONS
MAIL ROOM
WASHINGTON, D. C.

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MAR 3 1959

WRGRISWOLD, Rm 4444, Ext. 3669

T E L E T Y P E

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
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Office of Minerals Expl. Div. of
Base Metals
1490108 - Salaries and
Expenses, Office of Minerals Exploration,
Interior, 1959.

Date:

To: Mr. Robert A. Laurence, Executive Officer, OME Field Team, Region V, Room 2-B, Knoxville, Tennessee

Re Docket DMEA-5044, Appalachian Sulphides, Inc., Contract Idm-E1222, we have not received executed copies of Amendment No. 1 forwarded to you November 21, 1958. Re your memo February 20, 1958, no amendment is necessary for change in footage categories. We will prepare amendment for change of boundary of excluded area when advised as to Amendment No. 1.

George C. Selfridge

Chairman, Operating Committee

WRGriswold/er 3/2/59
CC: Docket
Dir Read File
Op. Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
Chron.
Confirmation to Region V

43683

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION

ROOM 2-B POST OFFICE BLDG.
KNOXVILLE 2, TENN.

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February 20, 1959

Memorandum

To: Operating Committee, OME, Washington, D. C.

From: Field Team, OME, Region V, Knoxville, Tennessee

Subject: Docket No. DMEA-5044, Contract No. Idm-E1222 (Copper-Zinc)
Appalachian Sulphides, Inc., Jefferson, North Carolina
Ore Knob Mine, Ashe County, North Carolina

Enclosed is a copy of a letter from Appalachian Sulphides, requesting a change in footage categories and an amendment to the contract to permit moving the west boundary of the excluded area 400 feet eastward. ?

The requested change in the footage categories is recommended in order to get the most out of the remaining footage. If an amendment to make this change is necessary, please prepare one.

Permission to move the west boundary of the excluded area 400 feet to the east is also recommended. The drilling on Section 2800 W will be done to determine whether the main ore body reverses its general direction of plunge and swings upward to connect with the mineralization ($3\frac{1}{2}$' with $2\frac{1}{2}$% Cu) encountered in Hole N-46 on Section 3600 W; or, whether Hole N-46 may have penetrated an entirely separate ore shoot.

V. J. Lynch
Acting Executive Officer

Helmuth Wedow, Jr.
Helmuth Wedow, Jr.
Geologist
U. S. Geological Survey

Enclosure

APPALACHIAN SULPHIDES, INC.
JEFFERSON
NORTH CAROLINA

TELEPHONE - [redacted]
Nathans Creek 3-2311

February 17, 1959

OFFICIAL FILE COPY
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Mr. Robert A. Laurence, Executive Officer
OME Region V
Room 2-B, Post Office Building
Knoxville, Tennessee

Re: DMEA 5044

Dear Mr. Laurence:

It is now probable that any additional drilling on this project should be done with holes on the order of 500-1000 feet in depth. With completion of the current hole (N 49) we will have exhausted our available footage in the 0-1000 foot categories, but will have some excess footage in the over 1000 foot categories.

Can an amendment be processed on this contract which will transfer this over 1000 footage to under 1000 footage? Please consider this letter an application for such an amendment.

Our hole N 48 went to 1196', and N 49 should go to about 1300.

If it can be arranged, we would also like to pull in the west boundary of the excepted area from Section 3000W to 2600W, to permit possible drilling on Section 2800W.

Yours very truly,

APPALACHIAN SULPHIDES, INC.

Philip Eckman

Philip Eckman
Mine Manager

PE/cs

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FEB 1 9 1959
U. S. Geological Survey
Geologic Division
Knoxville, Tenn.

OFFICIAL FILE COPY

11-19-58 Griswold 500
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NOV 21 1958

Mr. Robert A. Laurence
Executive Officer
OME Field Team, Region V
Room 2-B, Post Office Bldg.
Knoxville 2, Tennessee

Re: Docket No. DMEA-5044 (Copper-Zinc)
Appalachian Sulphides, Inc.
Ore Knob Mine
Ashe County, North Carolina
Contract No. Idm-E1222

Dear Mr. Laurence:

As recommended in your November 5, 1958, memorandum, we have prepared a proposed Amendment No. 1 to the cited contract. The original and four copies are enclosed, all of which have been signed by the Acting Director, for the Government. Also, enclosed are two extra copies for the use of the Field Team.

We note from our copy of your November 10 letter to the Operator, that there is some uncertainty regarding the location of a proposed hole. However, to avoid delay, we have prepared a generalized amendment. Since the project deals with inclined holes the significant element is not the location of the hole collar but instead is the point of intersection with the target.

If the amendment meets with your approval, kindly present it to the Operator for approval and signature and, when completed, distribute the copies in the usual manner. In the event that the amendment is not satisfactory and cannot be amended within your delegated authority, return all copies with your recommendations concerning any modifications.

Sincerely yours,

George C. Selfridge (esf)

ACTING Chairman, Operating Committee

Enclosures
APPROVED:

Richard H. Mote (esf)
Member, Bureau of Mines

N. E. Nelson (esf)
Member, Geological Survey

WRGriswold/er 11-19-58
Copy to: Docket
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Op. Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
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November 19, 1958

Memorandum for the Docket

From: Chief, Division of Base Metals

Subject: Justification for Amendment No. 1 on Docket No. DMEA-5044, Appalachian Sulphides, Inc., Ore Knob Mine, Ashe County, North Carolina, Contract No. ldm-E1222, Copper-Zinc.

On November 3, 1958, the Operator requested an amendment permitting holes to be collared near each other, as long as the target intersections were a reasonable distance apart. By memorandum of November 5th the Field Team approved.

Judging by the November 10th Field Team letter to the Operator, there is some confusion regarding the location of a specific hole. Neverthless, we see no reason why a generalized amendment cannot be granted. The contract provided that no hole could be drilled at a distance closer than 200 feet to another; however, since these are inclined holes, the hole collar locations are of little importance as long as the target intersection points are well spaced.

W. R. Griswold

WRG/er
Copy to: Docket
Dir Read File
Chron.

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 2-B POST OFFICE BLDG.
KNOXVILLE 2, TENN.

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November 18, 1958

Memorandum

To: Operating Committee, OME - Washington

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

Subject: DMEA-5044, Idm-E1222(copper-zinc) Appalachian Sulphides, Inc. Jefferson, North Carolina

Enclosed are two copies of a letter from the Operator, correcting an error in their earlier letter in which approval of a new drill-hole site was requested.

Although this letter indicates that the new hole will not require an amendment because of its location, we are still of the opinion that an amendment permitting the Operator to drill more than one hole from a single site, or to drill from a wedge in a previous hole, is desirable. As long as the target intersections are a proper distance apart, there should be no restriction on the collar location.

Robert A. Laurence

Robert A. Laurence
Executive Officer, OME
Field Team, Region V

Wm. A. Beck

Wm. A. Beck, for V. J. Lynch
Member, Bureau of Mines

APPALACHIAN SULPHIDES, INC.
JEFFERSON
NORTH CAROLINA

TELEPHONE - [redacted]
Nathans Creek 3-2311

November 19, 1958

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Mr. Robert A. Laurence, Executive Officer
Office of Minerals Exploration
Room 2-B, Post Office Building
Knoxville 2, Tennessee

Re: DMEA-5044, Idm-E1222 (copper-zinc)
Ore Knob Mine, Ashe County, N. C.

Dear Mr. Laurence:

Your letter of November 10th received and in the absence of Mr. Eckman, I am writing to advise that there was a typographical error and should have read, intersection at elevation 2250 on Section 3350 west. However, we are moving the set up to position 200 feet north of hole N 39 and drilling with approximately the same dip as N 39 with the same target in mind which would eliminate any change in contract.

Enclosed please find four copies of monthly report plus attachments as per your request.

Yours very truly,

APPALACHIAN SULPHIDES, INC.

H. R. Fowlie

HRF:cs

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 2-B POST OFFICE BLDG.
KNOXVILLE 2, TENN.

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November 10, 1958

Mr. Philip Eckman, Manager
Appalachian Sulphides, Inc.
Jefferson, North Carolina

Re: DMEA-5044, Idm-K2222(copper-zinc)
Ore Knob Mine, Ashe County, N.C.

Dear Mr. Eckman:

Your letter of November 3, received while I was out of town last week, was referred to the Washington office on November 5, for appropriate action. As the Field Team is not authorized to make such amendments, I can not give you a definite approval at this time, but we will advise you as soon as word is received.

However, may I point out that there is either a typographical error in your letter of November 3, or a misunderstanding as to the target of the proposed hole. Your letter states that you plan an intersection at elevation 2250 on Section 2000W. Messrs. Medow and Shirley were of the opinion that this intersection was to be more or less directly above the N39 intersection, and therefore at about Section 3200W. Any intersection east of 3100W would fall within the excluded area or within 100 feet of it.

Your letter of November 7 and progress report have been received. As it is necessary to send these reports to both the Washington office and the fiscal office at Norris, Tennessee we need five copies of each monthly report, whether or not there is a voucher for expenses. Will you please send me, at your earliest convenience, four more copies of the report and attachments?

Sincerely yours,

Robert A. Laurence
Executive Officer, OME
Field Team, Region V

RAL/mm
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Shirley

Form 7
(56)

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November 12, 1958

Memorandum

To: Associate Solicitor, Division of Mineral Resources

From: Chief, Division of Base Metals

Subject: Preparation of Amendment No. 1 for Docket No. DMEA-5044, Appalachian Sulphides, Inc., Ore Knob Mine, Ashe County, North Carolina, Contract No. Idm-E1222, Copper-Zinc.

Will you kindly prepare an Amendment No. 1 to the cited contract which will make the following change:

The fifth paragraph of Exhibit "A" is deleted and in its place we use the following:

"No hole may be drilled so that its intersection with the target zone is closer than 200 feet to the target zone intersection of another hole."

This amendment to be effective as of November 3, 1958.

W. R. Griswold

W. R. Griswold

WRG/er
Copy to: Docket
Dir. Read.File
Chron.

8623

November 10, 1958

Memorandum for Docket No. DMEA-5044

From: W. R. Griswold, Chief, Base Metals Division

Subject: Justification for Amendment No. 1 and Telephone Conversation for Docket No. DMEA-5044, Appalachian Sulphides, Inc., Ore Knob Mine, Ashe County, North Carolina, Contract No. Idm-E1222, Copper-Zinc.

On this date the undersigned phoned Mr. Laurence, Executive Officer, OME Field Team, Region V, in Knoxville, regarding the November 5th memorandum of Wm A. Beck and the November 3rd letter of the Operator.

Mr. Laurence stated that on the second line of the second paragraph of the Operator's letter, the "Section 2000 W" is a typographical error, it should read "Section 3000' W."

Mr. Laurence and Mr. Wedow both deel that the proposed hole is logical and desirable. The theory seems reasonable to the undersigned and an enabling amendment will be prepared.

W R Griswold

W. R. Griswold

WRG/er
Copy to: Docket
Dir. Read.File
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 2-B POST OFFICE BLDG.
KNOXVILLE 2, TENN.

November 5, 1958

OFFICIAL FILE COPY
O. M. E.
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Memorandum

To: Operating Committee, OME - Washington

From: Wm. A. Beck, Mining Engineer, OME Field Office, Reg. V

Subject: DMEA-5044, Idm-E1222 (copper-zinc) Ore Knob Mine, Ashe County, N. C. Appalachian Sulphides, Inc,.

Today a letter was received in this office from Philip Eckman, Mine Manager of the subject Corporation, requesting permission to drill a hole adjacent to Hole N-39 and at a flatter dip. Copy of this letter is attached.

In the Field Examiners interim report on their inspection of October 22-23, 1958, they mentioned this and recommended the contract be amended if necessary, to permit drilling more than one hole from any site but at different bearings and/or inclinations.

As Mr. Laurence and Mr. Lynch are both out of town and the Operator stated the hole will be collared in a week or ten days this request is being sent on to you.

Mr. Eckman is being advised that his letter is being referred to you for any action you deem necessary.

Wm. A. Beck

Wm. A. Beck

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 2-B POST OFFICE BLDG.
KNOXVILLE 2, TENN.

November 5, 1958

Mr. Philip Eckman, Manager
Appalachian Sulphides, Inc.
Jefferson, North Carolina

Re: DMEA-5044 (copper-zinc)
Ore Knob Mine, Ashe County, N.C.
Contract Idm-E1222

Dear Mr. Eckman:

Your letter of November 3, 1958 to Robert A. Laurence is being referred to our Washington office.

Drilling a hole at approximately the same location as N39 will require an amendment to the contract and no action can be taken by this office. You will be sent an amendment to the contract for signature if they deem it advisable.

Very truly yours,

Wm. A. Beck, for V. J. Lynch
Member, Bureau of Mines

WAB/sm
cc
Opr. Com-2
Lynch
Shirley
Files

APPALACHIAN SULPHIDES, INC.
JEFFERSON
NORTH CAROLINA

TELEPHONE - [redacted]
Nathans Creek 3-2311

November 3, 1958

Mr. Robert A. Laurence, Executive Officer
Office of Minerals Exploration
Room 2-B, Post Office Building
Knoxville 2, Tennessee

Re: Docket No. DMEA - 5044

Dear Mr. Laurence:

In this exploration project we have completed the first hole, N 39 and obtained an intersection at Section 3355 W, elevation 2025. Because of the steep dip at the collar of the hole, and the direction of gneissosity in the rock, the hole migrated east of its planned target area, which was at Section 3600 W, elevation 2000.

One of our next holes in this project will be planned for an intersection on Section 3350 2000 W, at elevation 2250. In order to obtain this intersection we think it best to collar it at the same place as N 39, but with a flatter dip (65°). This would give the hole a greater horizontal component, and possibly keep it straighter. The matter has been discussed with Mr. Wedow and Mr. Shirley of your office.

The difficulty is that although the planned target of this hole is some 350 feet from the intersection in N 40, its collar would only be a foot or so away.

Would this hole be permissible under our contract? A prompt reply will be appreciated, as the hole may be collared in a week to ten days time.

Yours very truly,

APPALACHIAN SULPHIDES, INC.

Philip Eckman

Philip Eckman
Mine Manager

RECEIVED
NOV 5 - 1958

PE/cs

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

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OCT 3 1958

Mr. Philip Eckman, Mine Manager
Appalachian Sulphides, Inc.
Jefferson, North Carolina

Re: Docket No. DMEA-5044 (Copper-Zinc)
Appalachian Sulphides, Inc.
Ore Knob Mine
Ashe County, North Carolina
Contract No. Idm-E1222

Dear Mr. Eckman:

We have your letter of September 26, 1958, with your comments on the proposed OME regulations. We appreciate having these comments and you may be sure they will be given full consideration before the final regulations are promulgated.

We have noted your remarks that costs allowed under the contract vary from those submitted in your application. With reference to your statement "the DMEA office did not allow the actual contract price for our drilling" we should like to call your attention to paragraph 4(a) of the application form which states "Describe fully the proposed exploration project giving individual footages and sizes of openings for each item of work."

In your application you stated "4(a) The exploration project comprises a total of 17,000 feet of diamond core drilling in eleven holes." Based upon your own statement, the contract provides for the stipulated core drilling footage, at prices quoted by the Longyear Company.

With regard to incidental costs allowed under the contract, they are in line with those approved for other projects of a generally similar nature. The following modifications were made on your estimates:

8623

1. Surveying of drill holes was estimated at $300.00 per hole. Our experience with other projects indicated that a reasonable allowance would be twenty hours per hole (at $8.00 per hour).

2. Geologist's time was estimated at fifty per cent, to log the core of two holes per month. This was reduced to twenty-five per cent.

3. The time of an engineer and helper was estimated at twenty per cent, to locate two holes monthly. This was reduced to ten per cent.

Sincerely yours,

C. O. Mittendorf, (for)

ACTING Director

WRGriswold/er 10-2-58
Copy to: Docket
Dir. Read File
Op. Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Chron.

5044

APPALACHIAN SULPHIDES, INC.
JEFFERSON
NORTH CAROLINA

TELEPHONE ~~XXXXXXXXXXXXXXXX~~
Nathans Creek 3-2311

DMEA
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September 26, 1958

Director,
Office of Minerals Exploration,
Washington 25, D. C.

Dear Sir:

This Company has in effect a DMEA contract arranged through your Knoxville office, and we have received from it a copy of the proposed new OME regulations with an invitation for our comments.

We strongly object to Section 4 (b), and in fact if we understand it properly this clause will largely destroy the value of the whole program.

It is a reasonable guess that 75% of the better quality projects under this program would normally be undertaken by well financed companies, which can obtain bank loans for any undertaking they may require. The reason they do not undertake more exploration projects is not because they cannot pay for them out of their own funds, or funds otherwise obtained, but because they know the chances for success are slim, and they cannot justify the expenditure to their shareholders.

It must be realized by those who write the OME regulations that the purpose is to lessen the risk of mineral exploration and therefore to make it attractive enough that it will be undertaken by those who are best able and most competent to do it - the exploration departments of well financed mining companies. The taxpayers of the country will benefit from any discoveries made, and they must share the risk. The "Pauper's Oath" requirement of Section 4 (b) will defeat this objective and only ensure that projects brought to OME, and on which taxpayer's money will be spent, will be those of least merit directed by those least capable of doing so.

We strongly recommend that Section 4 (b) be struck out of the new Act.

Our DMEA contract was approved and signed by an officer of our Company, and I, of course, realize that its terms are an obligation we must accept. However, I am bound to say that I object to the disallowance of the legitimate charges against this project set out in our original application.

Our application defined a contract price for the drilling, which was the best we were able to obtain from among three proposals, and a total cost of 46.3 cents per foot for incidental costs of surveying the holes, assaying, core boxes, technical direction, etc. This figure is not excessive, in fact it is an underestimation. However, the DMEA office did not allow the actual contract price for our drilling, and allowed only 28.5 cents per foot for incidental costs.

17¢ average surveying

As a matter of principle, we believe DMEA should pay the 50% of project costs which Congress has authorized, which it is not doing in our case.

These comments are meant to be constructive, and are offered with the best of good will. We greatly appreciate the processing of our DMEA application by your office before the June 30th deadline, and the fine cooperation we have received from the highly competent staff of your Knoxville office.

Yours very truly,

APPALACHIAN SULPHIDES, INC.

Philip Eckman

Philip Eckman
Mine Manager

PE/cs

cc: Mr. Robert A. Laurence, Executive Officer,
Region V.

OFFICIAL FILE COPY
DMEA
RECEIVED OCT 11 1958

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September 26, 1958

Mr. Philip Eckman, Mine Engineer
Appalachian Sulphides, Inc.
Jefferson, North Carolina

Re: DMEA-5044 (Copper-Zinc)
Ore Knob Mine
Ashe County, North Carolina
Contract No. IGm-K1222

Dear Mr. Eckman:

Replying to your letter of September 23:

1. We cannot approve the desired locations of two more holes on Section 3600 W., without an amendment which would have to be approved in Washington. Exhibit "A", paragraph 5, provides a minimum spacing of 200 feet, and these holes will be closer than 200 feet. Consideration will be given to the proposed amendment after completion of the first three holes in Section 3600 W. and thorough study of the results.

2. We are agreeable to drilling two holes on Section 1000 E., at your locations 6 and 8 of the revised (8/26/58) plan, these holes to be approximately 900 and 1500 feet deep, respectively. Consideration of the other holes on Section 1000 E. will be given after completion of these two.

3. We will make our next visit to Ore Knob on Friday, October 10, and will be glad to discuss the above as well as the proposed underground drilling with you at that time. We will arrive at your office around 8:30 on that morning. Please advise me, in case that is not a convenient time.

Sincerely yours,

Robert A. Laurence
Executive Officer
Region V

RAL/mg
cc - Operating Committee (2)
Mr. V. J. Lynch
Mr. L. E. Shirley
File

APPALACHIAN SULPHIDES, INC.
JEFFERSON
NORTH CAROLINA

TELEPHONE -
Nathans Creek 3-2311

September 23, 1958

Mr. Robert A. Laurence, Executive Officer
DMRA Region V
Room 13, Post Office Building
Knoxville 2, Tennessee

Dear Mr. Laurence:

In reply to your letter of September 12, we would like to obtain approval now if possible, on our revised drilling layout, and offer the following explanation.

1. As to the drilling west of the mine area - The original layout contemplated drilling three holes on Section 3600 W, and essentially three on Section 4400 W, spaced vertically on five to six hundred foot centers.

The three holes on Section 3600 W are to be drilled. However, there exists a possibility that these holes could be blank, or cut only a very weak zone, and yet a mineable orebody could occur between them. They are 500 feet apart vertically, and the known orebody has an apparent vertical height of only 200 feet on Section 100 E, for example. We therefore now believe that if these first three holes are blank it would be better to drill two additional holes on this section for intersections at elevation 2000 and 1500 rather than to move over to Section 4400 W. This drilling would then, so far as we are concerned at least, practically rule out the west extension of the orebody beyond this section.

We ask your approval of this change now, contingent upon drawing weak intersections or blanks in the first three holes. If these holes cut ore the situation will be radically changed, and may require a reversion to something approximating the original layout.

2. As to the drilling east of the mine area - The original drilling showed two holes on Section 400 E, spaced 900 feet apart vertically, and one on Section 1600 E.

It is the opinion of our Consulting Geologist that just as the drilling at the west end of the mine should be concentrated on one section to eliminate any possibility of missing the extension of the known orebody, so also the drilling at the east end of the mine should be confined to one section, and spaced more closely to provide a thorough test of this area. It is his opinion that the drilling as now laid out is too widely spaced, and could well miss an orebody lying under and with a parallel rake to that now known.

RECEIVED
SEP 25 1958
U. S. Geological Survey
Geologic Division
Knoxville, Tenn.

We therefore ask your approval to change this drilling to the layout shown on the Plan dated August 11, 1958, with the holes to be drilled in the sequence shown.

3. As to the proposed drilling from underground - I believe this proposal could best be discussed if and when a meeting can be arranged at which you or your representative and Dr. Buffam could both be present.

We would appreciate receiving your consideration and approval of the other two changes.

Yours very truly,

APPALACHIAN SULPHIDES, INC.

Philip Eckman

Philip Eckman
Mine Manager

PE/cs

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

DMEA
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September 12, 1958

Memorandum

To: Operating Committee, DMEA - Washington

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

Subject: DMEA-5044, Idm-E1222 (copper-zinc) Ore Knob Mine, Ashe County, N. C. Appalachiam Sulphides, Inc. Operators

Reference is made to your letter of September 8, 1958.

Mr. Wedow and Mr. Shirley met with Mr. Eckman at the mine on September 10 and discussed the Operator's requested changes.

It was agreed that (1) drilling would continue at holes 6, 7 and 8, which were on the original plan (2) Mr. Eckman will submit a geologic justification for any changes desired by him and Mr. Buffam, and (3) for the time being, at least, request for the underground drilling is withdrawn.

It was explained to the Operator that the agreed costs for drilling cannot be changed. However, while it may be "picayunish," as you state, we think the estimated cost of overburden drilling, as shown in the Longyear bid, should have been taken into account, in arriving at the agreed unit cost of drilling.

Wedging of the holes does not seem to be a practical approach to providing the new intersections which Mr. Buffam has suggested.

Robert A. Laurence

Robert A. Laurence, Executive Officer
DMEA Field Team, Region V

V. J. Lynch

V. J. Lynch, Member
Bureau of Mines

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

September 12, 1958

OFFICIAL FILE COPY
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RECEIVED
DATE | INITIAL | CODE

Mr. Philip Eckman, Mine Manager
Appalachian Sulphides, Inc.
Jefferson, North Carolina

Re: DMEA-5044, Idm-E1222(copper-zinc)
Ore Knob Mine, Ashe County, N.C.
Appalachian Sulphides, Inc.
Operators.

Dear Mr. Eckman:

Following the recent visit of Mr. Wedow and Mr. Shirley to Ore Knob, it is our understanding that you will drill holes nos. 6, 7 and 8, which were in the original plan. If there is then a desire to change the pattern, a request for such change, with geological justification, will be submitted to the Field Team for consideration. Also, if you desire to change some of the drilling to underground locations, it will be necessary to amend the part of the contract which excludes the present mine area from the project, and also to indicate how such a change will provide a better intersection of the target at the desired locations than surface holes would.

As Mr. Wedow and Mr. Shirley explained to you, we cannot amend the contract to change the amount of any agreed fixed unit costs.

Sincerely yours,

Robert A. Laurence
Executive Officer, DMEA
Field Team, Region V

RAL/am
cc
Opr. Com-2
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Shirley
Files

DMEA Form 7
(12-56)

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SEP 8 1958

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

Re: Docket No. DMEA-5044 (Copper-Zinc)
Appalachian Sulphides, Inc.
Ore Knob Mine
Ashe County, North Carolina
Contract No. Idm-E1222

Dear Mr. Laurence:

We have your August 26 memorandum, with enclosures, covering the cited project.

The request of the Operator for revision of the Contract costs cannot be considered. We have reviewed its application carefully and no mention was made of the need for overburden drilling. Quite to the contrary, the application states (page 8, 4(a)) "The exploration project comprises a total of 17,000 feet of diamond core drilling in eleven holes."

We view the Operator's contention as picayunish. Its letter says "We believe that the amount of assistance should be ---- at least on the Longyear bid as it actually was." Let us assume an average overburden depth of one hundred feet and let us assume an added cost (by Longyear bid) of 25 cents per foot. Thus we have 1,100 times 25 cents or $275.00. The Government contribution to such a sum would have been $137.50.

With regard to the proposed changes in the drill hole pattern, we cannot comment without having Field Team recommendations. However, since their proposed first fence is roughly the same as the originally proposed holes 6, 7 and 8, we have no objection to this phase. In due time let us have your ideas pertaining to additional work. Any underground drilling in excluded areas would, of course, be for the Operator's own account.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

APPROVED:

P. F. Yopes (GCS)
Member, Bureau of Mines

Thor H. Kiilsgaard (GCS)
Member, Geological Survey

WRGriswold/izm (9-3-58)
9-4-58 cc: Admr.'s Reading File
Operating Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS

P.S. Could the proposed deep holes be wedged to save footage?

8623

5044

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September 5, 1958

Memorandum

To: V. J. Lynch, Member DMEA Field Team, ~~Knoxville~~, Tenn.

From: Stanley A. Feitler, Mining Engineer (DMEA) Knoxville

Subject: Appalachian Sulphides, Inc. Ore Knob Mine, Ashe County, North Carolina

The Ore Knob Mine was visited August 22, 1958 with D. H. Amos, Geologist, U. S. Geological Survey, L. E. Shirley, Mining Engineer, U. S. Bureau of Mines and Dr. Roy Chowdbury of the Geological Survey of India.

The Field Examiners approved the Company's proposal to start drilling under DMEA-5044 with Hole No.6. The hole has been staked out and the drilling equipment is to be moved in August 29, 1958.

Mr. Philip Eckman, manager, accompanied the party on a tour of the mine and mill.

Chalcopyrite occurs in a vein from less than one foot to 30 feet wide. Near surface the vein is principally quartz with little sulphides and dips steeply. Sulphides increase with depth and the vein becomes ore composed of pyrrhotite, chalcopyrite and pyrite. The dip flattens from 80° south near surface to 65° south on the 700 foot level. The ore body rakes 20° southwest. Wall rock is quartz-mica gneiss.

A conventional shrinkage system is in use but considerable difficulty has resulted from "setting" and bridging of the broken rock in the stopes. Draw points are being located closer together and other unspecified steps are being taken to overcome the difficulties encountered in drawing the ore from the stopes.

A flotation mill composed of two 400-ton per day units is operating at half capacity.

The surface plant and mill are excellent for neatness and arrangement. The mine is less so.

Copper is the principal metal. Recovery of gold and silver has been at the rate of 0.006 ounces and 0.1 ounces per ton of ore mined, respectively.

Stanley A. Feitler

SAF/sm
cc

Opr. Com-2
Lynch
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UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

August 26, 1958

ORIGINAL FILE COPY
DMEA
RECEIVED AUG 28 1958

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Memorandum

To: Operating Committee, DMEA - Washington

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

Subject: DMEA-5044, Idm-E1222 (copper-zinc) Ore Knob Mine, Ashe County, North Carolina. Appalachian Sulphides, Inc. Operators.

Enclosed is the original and two copies of a letter from the Operator of the subject contract suggesting certain changes in the diamond drilling pattern and suggesting an increase in the cost per foot of diamond drilling.

The attached map shows the locations of the drill holes as proposed by the Operators. This drill pattern is almost a complete change from the pattern outlined in the contract. We recommend that the Operator be permitted to start drilling on proposed D.D.H. No. 1, and continue drilling on this fence of holes (their D.D.H's 2,3,4, and 5) provided each hole is warranted by the results of the previous drilling. We recommend holding off on the proposed holes 6, 7, 8, and 9 until the Field Team can discuss this drilling with the Operator and his consulting geologist.

Drilling of the two holes from underground might save some drilling footage but parts of both holes would have to be drilled in the excluded area. This change would probably require an amendment.

The Operator's discussion on drilling costs is self explanatory and we have no comments to make.

If any of the suggested changes are granted and amendments are required, please prepare the necessary papers.

V. J. Lynch

V. J. Lynch, Acting
Executive Officer, DMEA
Region V.

Helmuth Wedow, Jr.

Helmuth Wedow, Jr. Geologist
Geological Survey

Medow / Reynolds / Laurence


APPALACHIAN SULPHIDES, INC.
JEFFERSON
NORTH CAROLINA

TELEPHONE ~~XXXXXXXXXXXXXXXX~~
Nathans Creek 3-2311


August 22, 1958


OFFICIAL FILE COPY
DMEA
RECEIVED AUG 28 1958
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Mr. Robert A. Laurence, Executive Officer
DMEA, Region V
Room 13, Post Office Building
Knoxville 2, Tennessee

Dear Mr. Laurence:

We enclose a print showing the location of 9 diamond drill holes we now propose to put down under our DMEA Contract No. ldm-E1222.

You will note some change in the pattern of the drilling from that under which our original application was filed. These changes have been recommended by the new Consulting Geologist to this Company, Dr. B.S.W. Buffam. The purpose is to confine the drilling to one section both east and west of the known orebody, and to space the holes close enough on each section to ensure that any extension of the ore would be intersected. The two holes previously proposed to be vertically under the orebody are to be replaced by underground drilling.

The new D.D.H. No. 1 is the same as the old D.D.H. No. 6, and drilling on it should start about August 30th, according to the contractor Sprague and Henwood, Inc.

We trust the new drilling line-up will meet with DMEA approval. Please let us know if there are any objections.

We note that our assistance is based on a contract cost per foot of $2.75 for depths of 0 to 500 feet. We submitted no such low bid on the drilling. The Longyear bid, on which the amount of assistance was based, called for $3.00 per foot in overburden to 100 feet, $3.25 per foot in overburden from 100 to 150 feet, and $2.75 per foot from top of ledge to 500 feet, and it contained a rider that any increase in wages paid to the drillers would be passed along to us. Because of this we have given the drilling to Sprague and Henwood, Inc. at a slightly higher but firm price bid. It is as follows:

| | |
|---|---|
| 0 - 500 feet | $2.75 |
| 500 - 1000 feet | 3.10 |
| 1000 - 1500 feet | 3.60 |
| 1500 - 2000 feet | 4.00 |
| 2000 - 2500 feet | 4.35 |

We believe the amount of assistance should be based on this bid, or at least on the Longyear bid as it actually was.

We will write again with information as to when the drilling actually starts.

Yours very truly,
APPALACHIAN SULPHIDES, INC.

Philip Eckman

Philip Eckman
Mine Manager


RECEIVED
AUG 25 1958
U. S. Geological Survey
Geologic Division
Knoxville, Tenn.


PE/cs

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

OFFICIAL FILE COPY
DMEA

August 26, 1958

Mr. Philip Eckman,
Mine Manager
Appalachian Sulphides, Inc.
Jefferson, North Carolina

Re: DMEA-5044, Idm-E1222(copper-zinc)
Appalachian Sulphides, Inc.
Ore Knob Mine, Ashe County, N.C.

Dear Mr. Eckman:

This is in reply to your letter of August 22, in regard to certain suggested changes in the drilling pattern and drilling costs pertaining to the referenced exploration contract.

It is definitely stated in the contract, Exhibit "A", paragraph 2, that the locations of any of the drill holes may be changed, if warranted by the results of previous drilling and with prior approval of the Government. However, it may not be the intention of this clause of the contract to permit a complete change in the drill pattern as suggested in your letter. This matter will be referred to the Washington Office of DMEA for consideration.

In order to get the exploration work started, we suggest that you begin drilling at the location of D.D.H. No.6 which you say is the same as the location of your suggested D.D.H. No. 1.

To change holes Nos. 4 and 5 to underground drilling would probably require an amendment to the contract as it is definitely stated in the contract that all holes shall be drilled from the surface.

The Field Team has no authority to change any item of the contract. Therefore your questions about diamond drilling costs are also being referred to the Washington office for any action it may care to take.

We would suggest a meeting of the Field Team, yourself and Mr. Buffam as soon as practicable to discuss the suggested changes in the drilling pattern.

We would appreciate having another copy of the map showing the suggested hole locations.

Very truly yours,

V. J. Lynch, Acting Executive Officer
DMEA Field Team, Region V

VJL/zm
cc
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IN REPLY REFER TO:

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

July 7, 1958
Re: DMEA 5044
Appalachian Sulfides, Inc.
Ore Knob Mine
Ashe County, N. C.
Appl. Est. $75,629.66
Rec'd Est. $59,312.00 Copper-Zinc

Memorandum

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

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

Subject: Review of Field Team Report

The applicant requested assistance in exploring the projected down-dip, rake, and strike extensions of the Ore Knob deposit, by 11 diamond drill holes, totalling 17,000 feet.

The ore reserves as estimated by the applicant Dec. 31, 1957, were 1,162,700 tons averaging 2.63% copper. The orebody as known is from a few inches to 32 feet wide and has been traced by mine workings and core drilling for 3,300 feet. The orebody has a definite rake of 20° to the southwest, and a dip at surface of 80° to the southeast. Around the 700-foot level, the dip flattens to about 65°.

It is expected that the proposed work will increase the ore reserves. The examiners and Field Team recommend a work program essentially as proposed by the applicant.

A contract was forwarded to the applicant June 25, 1958.

This written concurrence with the recommendations of the examiners and Field Team is then a matter of form only.

N. E. Nelson

N. E. Nelson

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

July 3, 1958

Memorandum

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

From: Commodity Specialist, Branch of Base Metals

Subject: Review of Field Examination Report, Docket No. DMEA 5044, (copper) Appalachian Sulphides, Inc., Ore Knob Mine, Ashe County, North Carolina, $59,312

The Field Team recommends approval of the applicant's proposed exploration program consisting of 17,000 feet of diamond drilling which will test a favorable target area. The project is expected to develop ore reserves of more than one million tons containing 2.63 percent copper.

I concur in the Field Team's recommendation.

A. D. McMahon

A. D. McMahon

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

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JUL 2 1958

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

Re: Docket No. DMEA-5044 (Copper-Zinc)
Appalachian Sulphides, Inc.
Ore Knob Mine
Ashe County, North Carolina
Contract No. Idm-81222

Dear Mr. Laurence:

With reference to your memorandum of June 6, 1958, we are enclosing the Finance Office and Field Team copies of an executed contract for the cited project. An extra copy (unsigned) and two additional extra copies (minus the contract form) are also enclosed for the Field Team use.

We might point out that, under the caption of "Excluded Land" only the presently known ores and their extensions are actually excluded. For example, if the project drilling should discover new ore bodies which might extend into the so-called "excluded area", all of such ore bodies would be subject to the contract.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

Enclosures
APPROVED:

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

N. E. Nelson (GCS)
Member, Geological Survey

WRGriswold/er 7/1/58
Copy to: Docket
Admr R File
Op. Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
Chron.

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
REGION V

EASTERN
EXPERIMENT STATION

COLLEGE PARK, MARYLAND

June 30, 1958

Memorandum

To: Willis G. Griswold, Chief, Base Metals Division, DMEA

From: Mine Examination and Exploration Engineer

Subject: DMEA 5044 (Copper, zinc), Appalachian Sulphides, Inc.
Ore Knob Mine, Ashe County, North Carolina

Referring to our telephone conversation of this morning. Herewith is forwarded the original and two (2) copies of the subject application which I received in this mornings mail.

H. L. Burmeister

Enclosure:

As noted above

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Reviewed by
DMEA OPERATING COMMITTEE
7-7-58
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

June 26, 1958

Memorandum

To: Operating Committee, DMEA, Washington, D. C.

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

Subject: Docket No. DMEA-5044 (Copper-Zinc)
Appalachian Sulphides, Inc., Jefferson, North Carolina
Ore Knob Mine, Ashe County, North Carolina

Enclosed are the original and two copies of a field examination report on the subject application. To save time and travel, this report was written from data gathered on a recent trip to the Ore Knob mine before the application had been filed.

We consider the possibility for discovery of a significant ore deposit to be very good, and recommend approval of a contract as outlined in the report. The Applicant's maps, submitted with the application, are adequate for use as part of the contract.

Robert A. Laurence
Robert A. Laurence
Executive Officer

V. J. Lynch
V. J. Lynch, Member
Bureau of Mines

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Enclosures 3

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Reviewed by
DMEA OPERATING COMMITTEE
7-7-58
(date)

ON-SITE Report.

UNITED STATES

DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

FIELD EXAMINATION REPORT, REGION V

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DMEA-5044 (Copper-Zinc), ORE KNOB MINE
Ashe County, North Carolina

Robert A. Laurence, Geologist
U. S. Geological Survey

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

Reviewed by
DMEA OPERATING COMMITTEE
7-7-58
(date)

June 26, 1958

FIELD EXAMINATION REPORT

DMEA-5044 (Copper-Zinc), ORE KNOB MINE
Ashe County, North Carolina

Applicant: Appalachian Sulphides, Inc., Route 1, Jefferson, N. C.

## SUMMARY

A favorable exploration target is present at Ore Knob, where $1\frac{1}{4}$ million tons of 2.6% copper are proven, and where geologic conditions favor extensions in the rake direction to the southwest, and possibly also down the dip. Approval of the application is recommended.

## INTRODUCTION

No formal examination was made. However, on May 28, 1958, A. R. Kinkel, R. A. Laurence, and Helmuth Wedow, Jr., of the Geological Survey spent a half day underground at the Ore Knob mine, and several hours at the mine office studying maps and sections. They were accompanied by Philip Eckman, Mine Manager, and Dewey Kirstein, Geologist, of Appalachian Sulphides, Inc. This was nine days before the application was received.

The Ore Knob mine is in Ashe County, North Carolina eleven miles east of Jefferson, North Carolina. The property is crossed by State Highway 88, which is hard surfaced. Access is good throughout the year.

The Applicant has discovered and developed an important ore body at Ore Knob, which it is now mining. This Applicant has successfully completed two earlier DMEA contracts (DMA-1526X and DMEA-4746), both in Vermont. The Applicant has a competent staff to conduct the proposed exploration.

Applicant's property rights

As shown on the Applicant's property map, the area proposed for drilling is controlled by the Applicant, either by fee-simple ownership, or mineral-right ownership. It is our understanding that, in some cases, a small token royalty is paid to former owners of mineral rights.

Attention is directed to the small wedge of land between Highway 88 and the old road near the west edge of the proposed project area. The owner of this small tract refuses to sell or lease either surface or mineral rights.

The area of the mine, as designated on the map, above elevation 1700, should be excluded from the project area.

Description of property

Existing mine workings and surface plant are adequately described in the application. At present, the mill is being operated at half capacity, due to the depressed market condition. Copper concentrate is shipped to Phelps-Dodge Corporation; pyrite and pyrrhotite concentrate is being stockpiled.

Geology and Ore Reserves

Geology of the deposit is adequately described in U. S. Geological Survey Professional Paper 179 and in a preliminary (unpublished) report by G. H. Espenshade, dated January 10, 1943.

The ore-body is a vein-like body, whose strike is essentially parallel to the foliation of the country rock. Dip is nearly vertical at the surface, flattening markedly below the 700 level. There is a pronounced rake or plunge of the ore shoot to the southwest.

We have no data on which to calculate ore reserves, other than that submitted with the application. The Applicant's estimate (1,162,700 tons @ 2.63% Cu) is considered to be accurate.

Proposed Drilling

The Applicant proposes a series of angle drill holes to intersect the ore-body outside the excluded block which includes the present mine. We agree with the approximate locations of these holes as shown on the maps and sections, but we wish to emphasize that the contract should provide sufficient flexibility to change the location, bearing and inclination of any hole with Government approval. Incidentally, with the limited travel funds expected for fiscal year 1959, many of these approvals may have to be given over the telephone without having seen the latest cores at the time.

It has been suggested that holes 4 and 5 should be moved to the south, because (on the plan) they approach too closely to the edge of excluded block. However, as shown on the section, they will bottom at 215 feet and 370 feet respectively below the bottom of the excluded block (elevation 1700) and therefore do not need to be moved. If these are to be -80° holes, they will not be as long (in projection) as shown on the Applicant's plan map, and their bottoms will be well to the south of the excluded block anyway.

However, holes 9, 10 and 11 should be shifted to a fence which would be 125 feet east of the site shown for hole 11, or approximately at 4275 W, so as to be more than 100 feet from the small wedge of property not controlled by the Applicant.

## RECOMMENDATIONS

We recommend approval of a contract authorizing 17,000 feet of diamond drilling (AX or larger) at approximate locations shown on the map. Estimated costs are as follows:

| | | |
|---|---|---|
| **Actual Costs (Maximum):** | | |
| Contract drilling, 17,000 ft (detailed schedule of maximums according to Longyear bid) | | $53,340.00 |
| Surveying holes, 11 @ $160 (in accordance with Longyear bid) | | 1,760.00 |
| Core boxes, 240 @ $2/each | | 480.00 |
| Assays (Cu, Zn), 100 samples @ $2 each | | 200.00 |
| **Fixed Unit Costs:** | | |
| Incidental allowance @ 20.8¢/ft (Includes these items: | | 3,532.00 |
| Geologist, Engineer, Helper | $2760.00 | |
| Drafting and stenographic material | 100.00 | |
| Accountant, Stenographer | 435.00 | |
| Workmens Compensation, etc. | 237.00 | |
| | $3532.00 ) | |
| Total | | $59,312.00 |
| Government's Share | | $29,656.00 |

Robert A. Laurence, Geologist
U. S. Geological Survey

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

APPALACHIAN SULPHIDES, INC.
SOUTH STRAFFORD
VERMONT

Telephone - South Strafford 5-2411

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RECEIVED JUN 30 1958

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June 27, 1958

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

Attention: Mr. C. O. Mittendorf, Administrator

Re: Docket No. DMEA-5044 (Copper-Zinc)
Contract No. Idm-E1222
Ore Knob Mine
Ashe County, North Carolina

Dear Mr. Mittendorf:

We return to you herewith the original and three (3) copies of the long form contract dated 25 June 1958 for the above exploration project, which I have signed on behalf of Appalachian Sulphides, Inc., and impressed with the Company seal. We have retained the "Operator's Copy" of the contract for our files, as instructed in your letter.

Also, enclosed is a certified extract of a resolution adopted at a meeting of the Board of Directors of Appalachian Sulphides, Inc., authorizing me to execute the contract on behalf of the Company.

Unfortunately, there is an error in the typing of my initials in the resolution. Since there is not time enough to return the resolution to the Company's Secretary in Toronto for correction, I am attaching the original of the Secretary's letter of transmittal addressed to me and dated June 25, 1958, which shows my correct initials. I trust this will cover the typographical error satisfactorily.

Please note that the Company's Toronto address has been changed since the date of our application, and the present address is:

55 Yonge Street - Suite 1107
Toronto 1, Ontario, Canada

We wish to express our sincere appreciation for the fine cooperation we have received from you and your organization in the prompt processing of our application and the contract.

Very truly yours,

C. B. Benson

C. B. Benson
Assistant Treasurer

Excerpt from Mr. Mittendorf's diary, 6/25/58:

After signing the Appalachian Sulphides contract (DMEA-5044), I phoned Benson at South Strafford to make sure he preferred to have the documents mailed instead of coming to Washington to sign them. He felt that if they were mailed today they would reach him by Friday, the 27th.

He said he had not yet received the authorization from Toronto to sign the contract in behalf of the company, but he understands that it was mailed yesterday. He said the "big shots" from Toronto are due to arrive at South Strafford sometime tomorrow.

He was highly appreciative of our efforts in this case.

SUITE 1107
55 YONGE STREET
TORONTO 1, CANADA
EMpire 8-2376

June 25, 1958.

OFFICIAL FILE COPY
DMEA
RECEIVED JUN 30 1958
DATE | INITIALS | CODE

C. B. Benson, Esq.,
Appalachian Sulphides, Inc.,
South Strafford, Vermont.

Dear Mr. Benson,

Enclosed you will find a certified extract of a resolution adopted at a meeting of the Board of Directors of Appalachian Sulphides, Inc., which was held on June 24th, 1958, authorizing you to execute the agreement with D.M.E.A. on behalf of the Company.

Yours very truly,

APPALACHIAN SULPHIDES, INC.

G. Gilchrist

Secretary

Enclosure
GG.C

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

| Date | Surname | Code |
|---|---|---|
| 6/24 | Griswold | 500 |
| 6/24 | Talbut | 800 |
| 6/25 | Selbridge | 130 |
| 6/25 | Lamb | 130 |
| 6/25 | Kilsgaard | 130 |
| " | Green | 110 |
| " | Gottesday | 100 |
| 6/26 | C | 220 |
| | | 500 |

JUN 25 1958

Mr. Clarence B. Benson
Assistant Treasurer
Appalachian Sulphides, Inc.
South Strafford, Vermont

Re: Docket No. DMEA-5044 (Copper-Zinc)
Ore Knob Mine
Ashe County, North Carolina

Dear Mr. Benson:

With reference to the application of your company for Government assistance in an exploration project on the cited property, dated June 3, 1958, we are enclosing the original and four copies of a proposed long-form contract, which have been signed by the Administrator, for the Government. The complete contract consists of the form (MF-200), Annex I (two pages), Annex II (one page), Exhibit "A" (three pages), and two maps.

If the proposed contract meets with your approval, please sign all copies, retain the one marked "Operator's Copy" for your files, and return the rest to us. Please be advised that the signed copies must be returned to us in an envelope post marked not later than June 30, 1958, otherwise, the proposed contract cannot become effective. If possible, also provide us with a copy of your authorization to sign in behalf of your company.

In the event that you do not approve of any of the proposed contract provisions, kindly return all copies to us, unsigned.

Sincerely yours,

Administrator
WRGriswold/er 6/24/58
Copy to: Docket
Admr R File
Op. Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Chron.

Enclosure

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

| Date | Surname | Code |
|---|---|---|
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June 24, 1958

Memorandum for the Docket

From: Director, Division of Base Metals

Subject: Phone Conversation about Docket No. DMEA-5044, Appalachian Sulphides, Inc., Ore Knob Mine, Ashe County, North Carolina, Copper-Zinc.

The subject application has received only a condensed Field Team approval, Mr. Laurence advises by phone (June 23, 1958) that a full Field Team favorable report will be forwarded.

Commodity members McMahon and Williams have stated verbally they are favorably inclined. Furthermore, Mr. Arthur Kinkel, who was present at the time of the field examination, states that he believes a project is warranted. He has discussed the project fully with McMahon and Williams.

W. R. Griswold

W. R. Griswold

WRG/er

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SOLICITOR
WASHINGTON 25, D. C.

June 23, 1958

Memorandum

To: Administrator, DMEA
Through: Director, Div. of Base Metals

From: Associate Solicitor, Division of Mineral Resources

Subject: DMEA-5044, Appalachian Sulphides, Inc.

As requested in Mr. Griswold's memorandum, dated June 19, 1958, we have prepared the attached contract.

The two maps referred to in the Contract are required to be attached to the Contract prior to execution. In this regard, the excluded land area on the property plan map should be outlined in red, since Annex I so describes it.

It will be noted in Annex I that 290 (plus) acres of land are subject to a 5 cents per ton royalty for which no Consents to Lien and Subordination Agreements have been submitted. In view of the small amount of the royalty and since the Operator owns the minerals, you may consider it appropriate not to require the lien instruments in this case.

Robert P. Dwyer

Attachments

APPALACHIAN SULPHIDES, INC.
JEFFERSON
NORTH CAROLINA

TELEPHONE - WEST JEFFERSON 4061

June 21, 1958.

OFFICIAL FILE COPY
DMEA
RECEIVED JUN 23 1958

| DATE | INITIALS | CODE |
|---|---|---|
| 6/23 | C | 220 |
| 6/23 | ~~WPS~~ | 500 |
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Defense Minerals Exploration Administration,
Department of the Interior,
Washington 25, D. C.

Re: Docket No. DMEA - 5044

Gentlemen:

Further to our letter of June 16th, we note that a mistake was made in adding the new estimated total cost of the program.

The correct figure should be $61,029.66, not $59,561,54 as shown in that letter.

Yours very truly,

APPALACHIAN SULPHIDES, INC

Philip Eckman

Philip Eckman
Mine Manager

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

| Date | Surname | Code |
|---|---|---|
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| | | |

June 19, 1958.

Memorandum

To: Associate Solicitor, Division of Mineral Resources.

From: Director, Division of Base Metals

Subject: Preparation of Contract for Docket No. DMEA-5044 (Copper-Zinc), Appalachian Sulphides, Inc., Ore Knob Mine, Ashe County, North Carolina.

Will you kindly prepare a long form contract for the cited project. A draft of the contract, Annex I, Exhibit "A", and two maps are attached to this memorandum.

W. R. Griswold

W. R. Griswold

8623

APPALACHIAN SULPHIDES, INC.
JEFFERSON
NORTH CAROLINA

TELEPHONE - WEST JEFFERSON 4061

June 16, 1958

OFFICIAL FILE COPY
DMEA
RECEIVED JUN 18 1958

| DATE | | CODE |
|---|---|---|
| 6/18 | J.G. | 225 |
| 6/18 | W.R. | 500 |

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

RE: Docket No. DMEA -5044

Gentlemen:

Further to our application for exploration assistance dated June 3, 1958, we now enclose two additional copies each of various drawings, and four copies each of three contractor's bids for the diamond drilling.

The bid enclosed from E. J. Longyear Company is substantially lower than that received from Spargue and Henwood, Inc., and would result in a total estimated cost for the drilling contract of $56,465.00, rather than $71,065.00 as shown in our original application. The total estimated cost of our program is therefore estimated to be $59,561.54, rather than $75,629.66 as stated in our application.

We hope very much that our application will receive approval before the June 30th deadline.

Yours very truly,

APPALACHIAN SULPHIDES, INC.

Philip Eckman

Philip Eckman
Mine Manager

PE/cs
Enclosures

OFFICIAL FILE COPY
DMEA
RECEIVED JUN 12 1958

| DATE | NOTES | CODE |
|---|---|---|
| 6/12 | Sig. | 225 |
| 6/12 | Corres. | 500 |

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

June 12, 1958

Memorandum

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

From: Commodity Specialist, Branch of Base Metals

Subject: Review of application, Docket No. DMEA 5044 (copper), Appalachian Sulphides, Inc., Ore Knob Mine, Ashe County, North Carolina. $75,629.66

The applicant seeks Government assistance in an exploration program consisting of 17,000 feet of diamond drilling in eleven holes. The drilling is designed to intersect extensions of the known ore zone. The estimated unit costs for drilling and technical and other services appear reasonable.

The Executive Officer of the Field Team states that an adequate examination report can be written from a recent visit to the property by examiners when the proposed exploration was reviewed and discussed with the company's mine manager and geologist. It is understood that the drilling project was favorably considered by the examiners and that their report will recommend a definite exploration program for contract.

A. D. McMahon

A. D. McMahon

Attachment

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

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

IN REPLY REFER TO:

OFFICIAL FILE COPY
DMEA
RECEIVED JUN 12 1958

| DATE | | |
|---|---|---|
| 6/13 | C | 220 |
| 6-13 | WPB | 500 |

Memorandum

June 12, 1958

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

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

Subject: Review of application, DMEA 5044 (copper), Appalachian Sulphides, Inc., Ore Knob mine, Ashe County, North Carolina.

The applicant proposes to explore for down-dip and strike extensions of the well known Ore Knob sulfide deposit. The proposed project would consist of a total of 17,000 feet of diamond core drilling in eleven holes. Total estimated cost of the project is $75,630.

An exploration drilling project on the Ore Knob property would appear to have a good chance of discovering additional ore reserves. The Field Team, Region V, states that U. S. Geol. Survey personnel were on the property on May 28, 1958 and that an examination report could be prepared without additional field work. I recommend that the Field Team be asked to submit such a report.

W. P. Williams

W. P. Williams

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

June 9, 1958

Appalachian Sulphides, Inc.
Route 1,
Jefferson, North Carolina

Subject: DMEA-5044

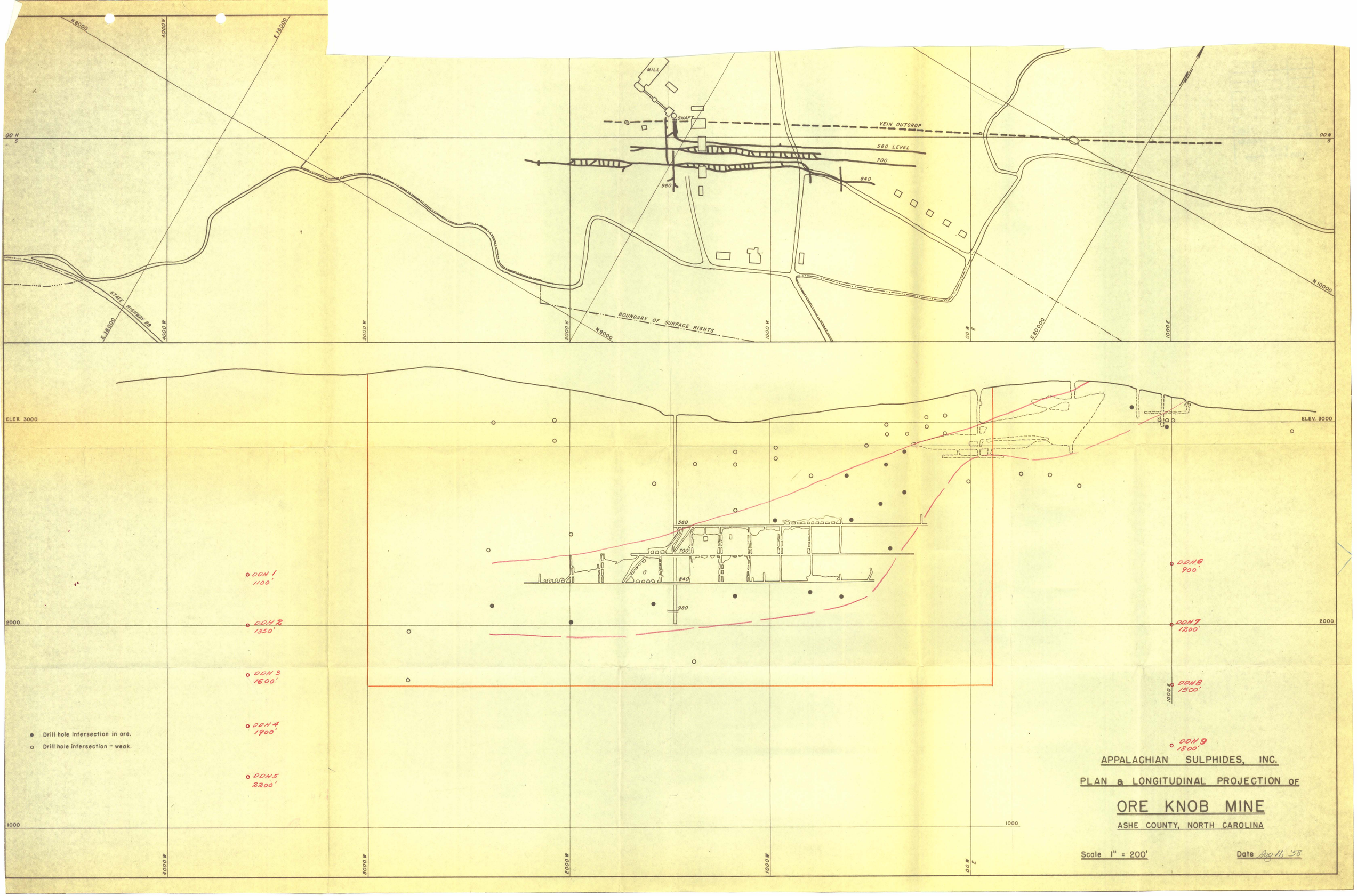
Gentlemen:

Your application for exploration assistance, dated June 3, 1958 submitted to our office at Knoxville, Tennessee has been assigned Docket Number DMEA-5044 and referred to the Base Metals Division in the Washington office. Kindly identify all future correspondence relating to your application by this Docket Number.

Sincerely yours,

Allen S. Dakan, Director
Operations Control and
Statistics Division

Copy to: Region V.




APPALACHIAN SULPHIDES, INC.

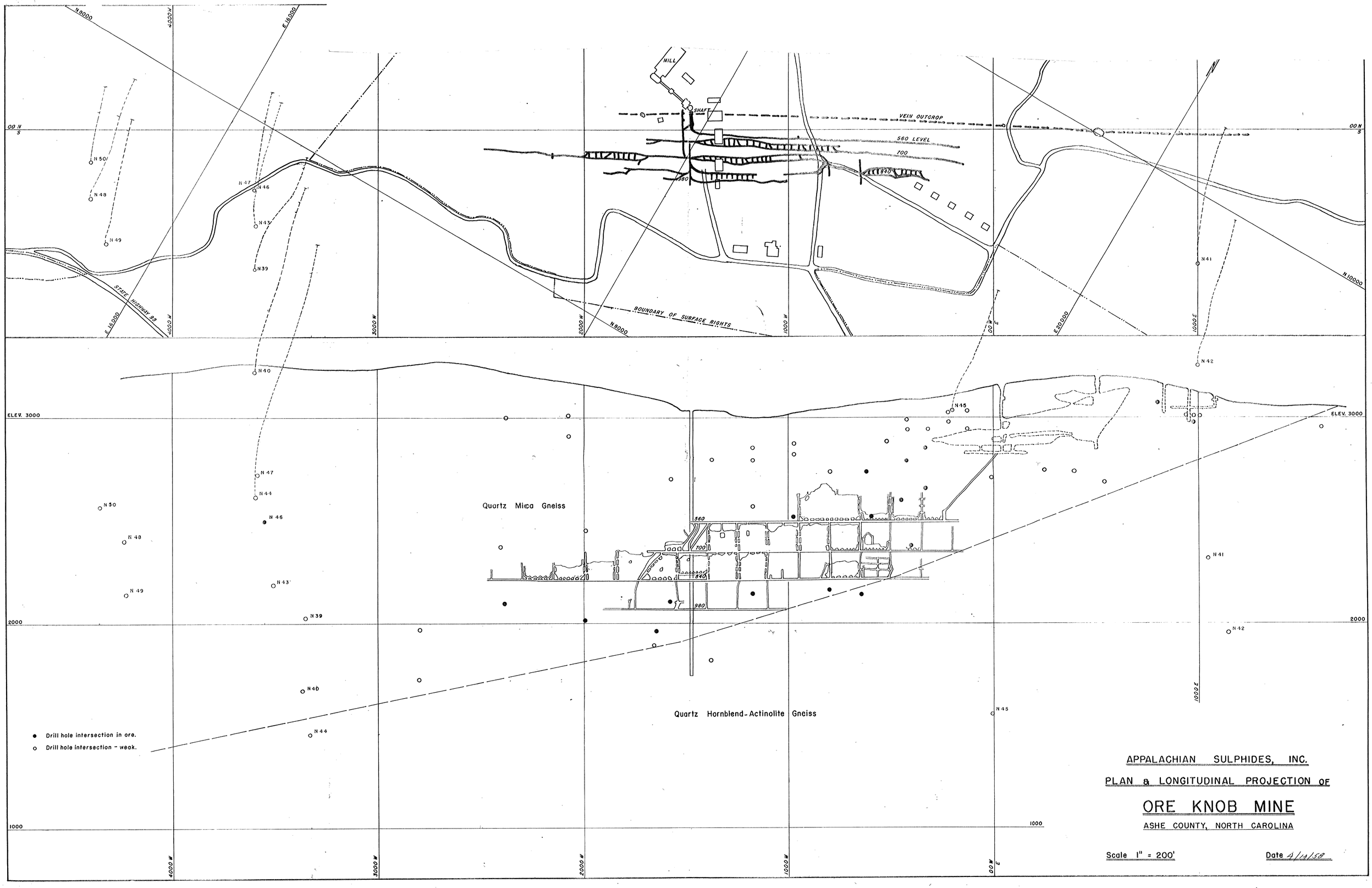
PLAN & LONGITUDINAL PROJECTION OF

# ORE KNOB MINE

ASHE COUNTY, NORTH CAROLINA

Scale 1" = 200'

Date Aug 11, '58




APPALACHIAN SULPHIDES, INC.

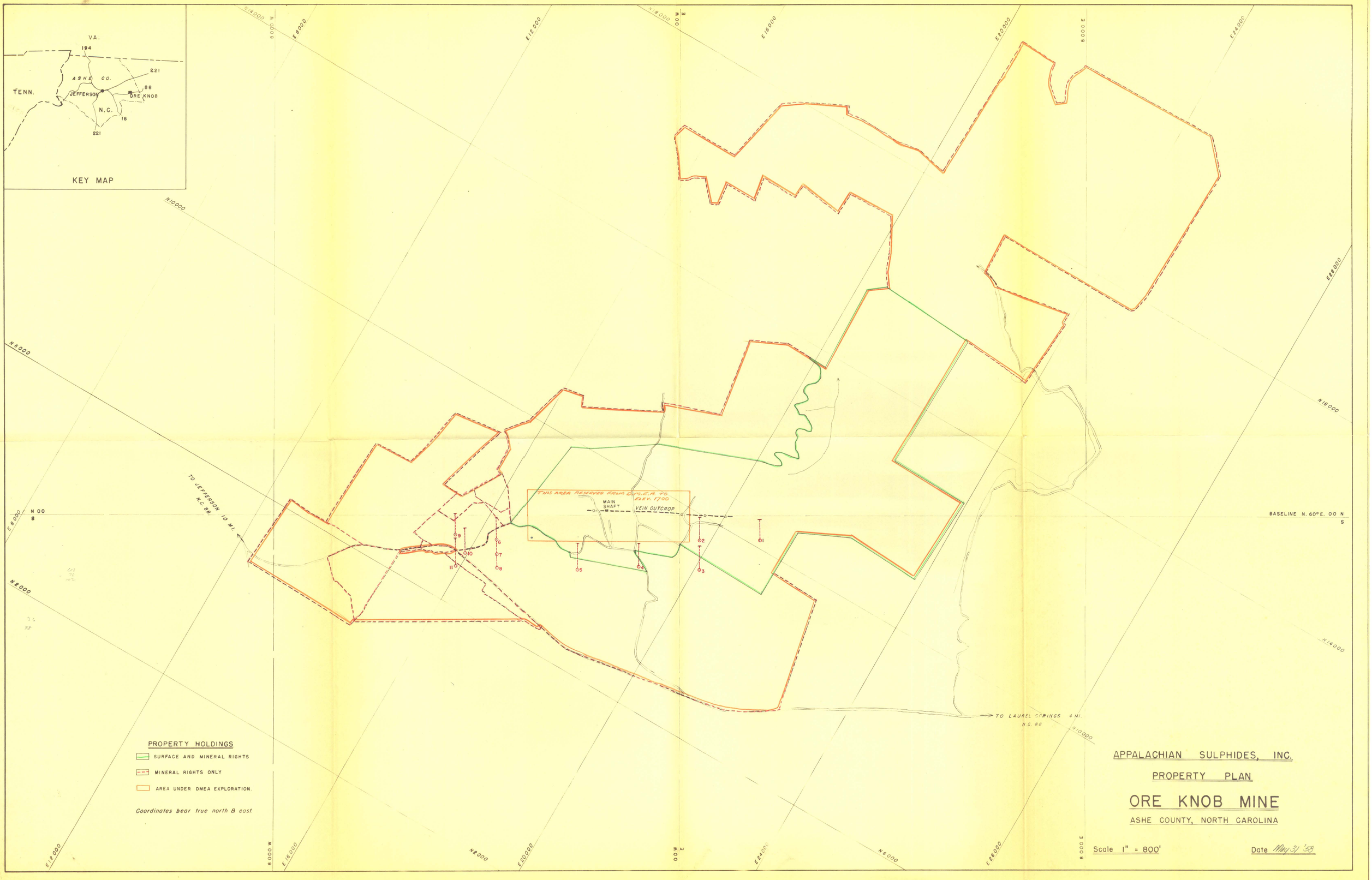
PLAN & LONGITUDINAL PROJECTION OF

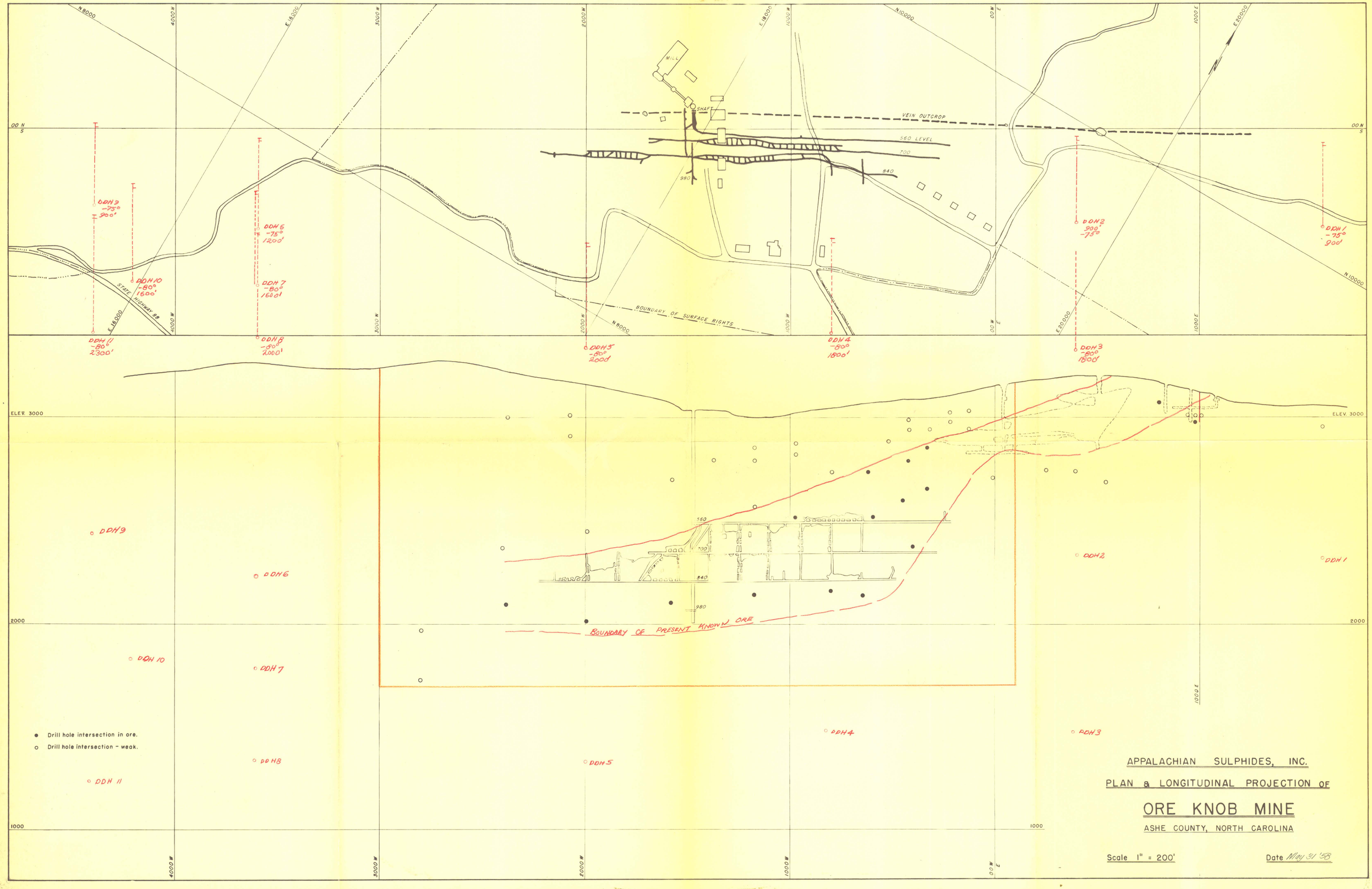
# ORE KNOB MINE

ASHE COUNTY, NORTH CAROLINA

Scale 1" = 200'

Date 4/14/58


VA.
194
ASHE CO.
221
88
TENN.
JEFFERSON
ORE KNOB
N.C.
16
221
KEY MAP
N14000
E8000
E12000
N18000
E16000
E20000
8000 E
E24000
N10000
E28000
N6000
N16000
TO JEFFERSON 10 MI. N.C. 88
THIS AREA RESERVED FROM D.M.E.A. TO. ELEV. 1700
MAIN SHAFT
VEIN OUTCROP
E8000
N00 S
BASELINE N. 60° E. 00 N S
N2000
N14000
TO LAUREL SPRINGS 4 MI. N.C. 88
N10000
PROPERTY HOLDINGS
SURFACE AND MINERAL RIGHTS
MINERAL RIGHTS ONLY
AREA UNDER DMEA EXPLORATION.
Coordinates bear true north & east.
E12000
8000 W
E16000
N2000
E20000
3000 W
E24000
N6000
E28000
8000 E
APPALACHIAN SULPHIDES, INC.
PROPERTY PLAN
ORE KNOB MINE
ASHE COUNTY, NORTH CAROLINA
Scale 1" = 800'
Date May 31 '58




APPALACHIAN SULPHIDES, INC.

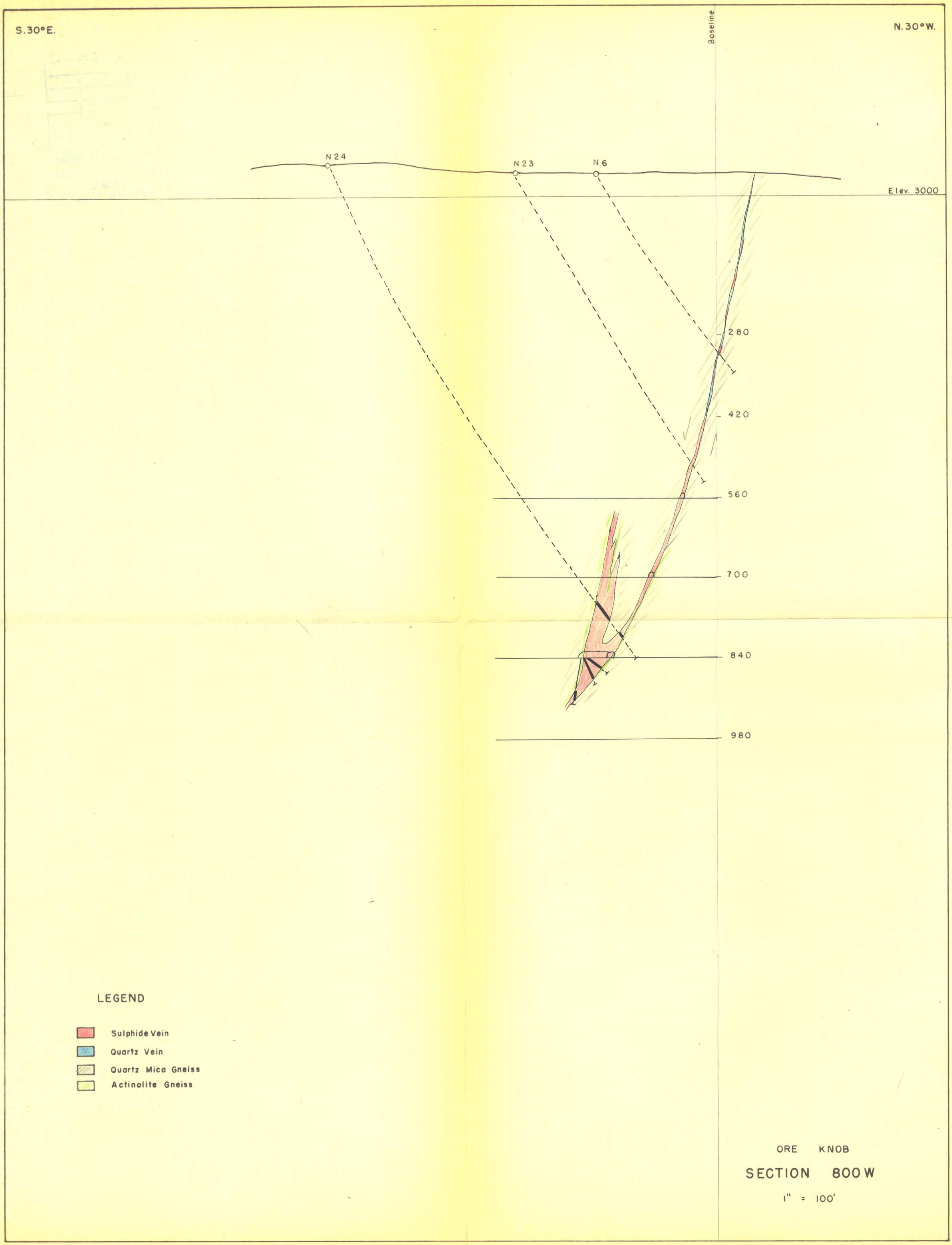
PLAN & LONGITUDINAL PROJECTION OF

# ORE KNOB MINE

ASHE COUNTY, NORTH CAROLINA

Scale 1" = 200'

Date May 31 '58


S.30°E.
N.30°W.
Baseline
N24
N23
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Elev. 3000
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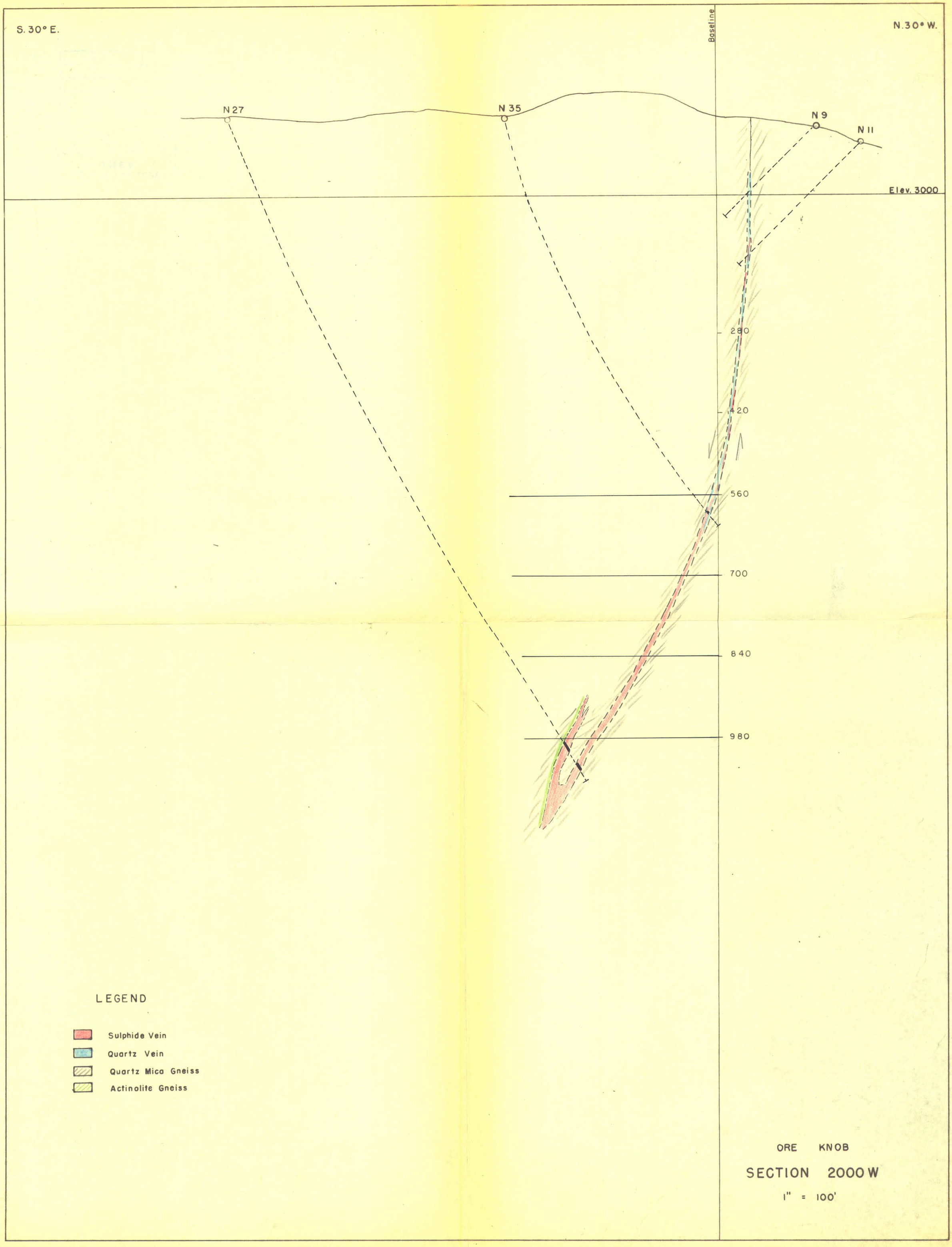
LEGEND
Sulphide Vein
Quartz Vein
Quartz Mica Gneiss
Actinolite Gneiss
ORE KNOB
SECTION 800W
1" = 100'


S. 30° E.
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N 35
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Elev. 3000
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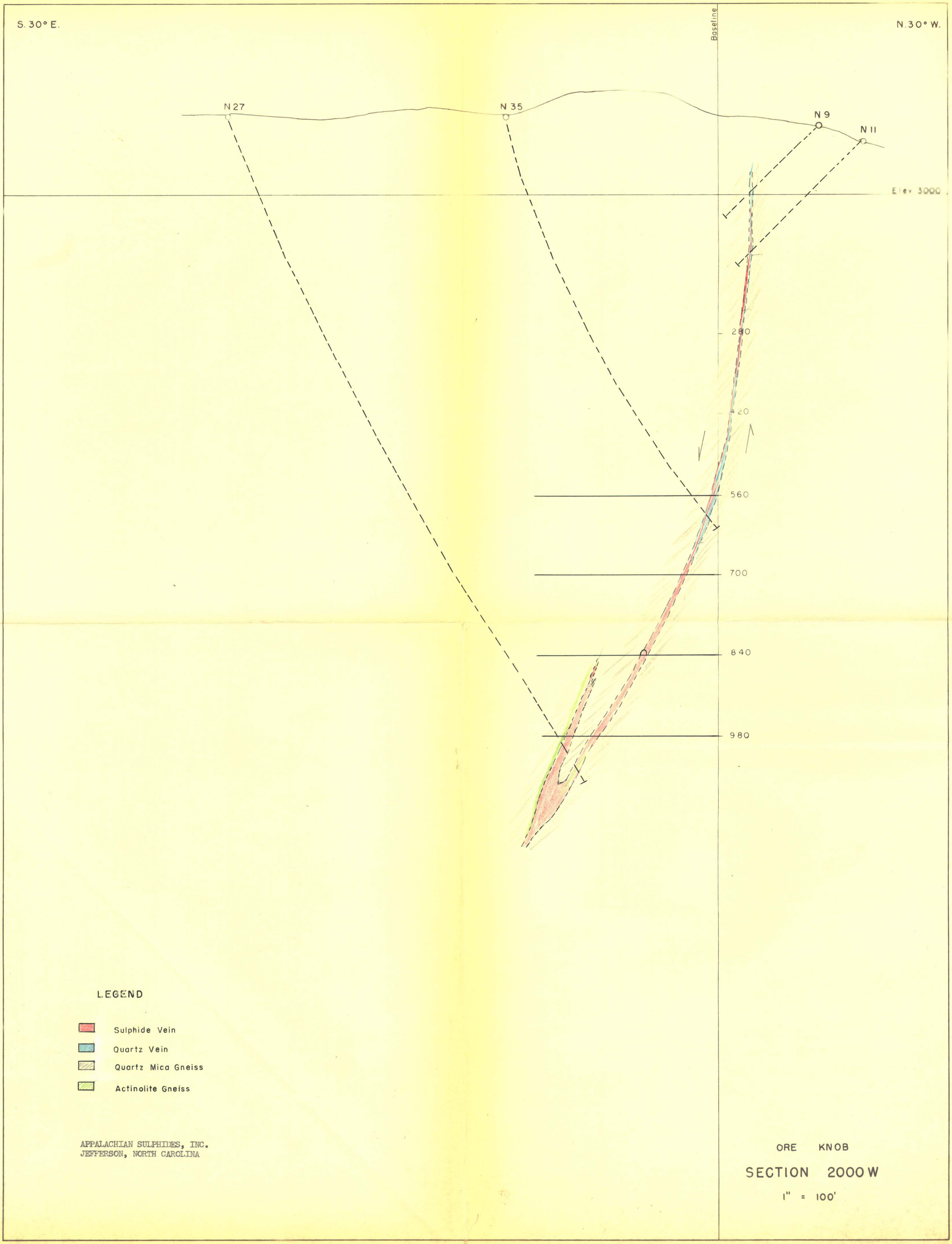
LEGEND
Sulphide Vein
Quartz Vein
Quartz Mica Gneiss
Actinolite Gneiss
ORE KNOB
SECTION 2000 W
1" = 100'


S. 30° E.
N. 30° W.
Baseline
N 27
N 35
N 9
N 11
Elev 3000
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420
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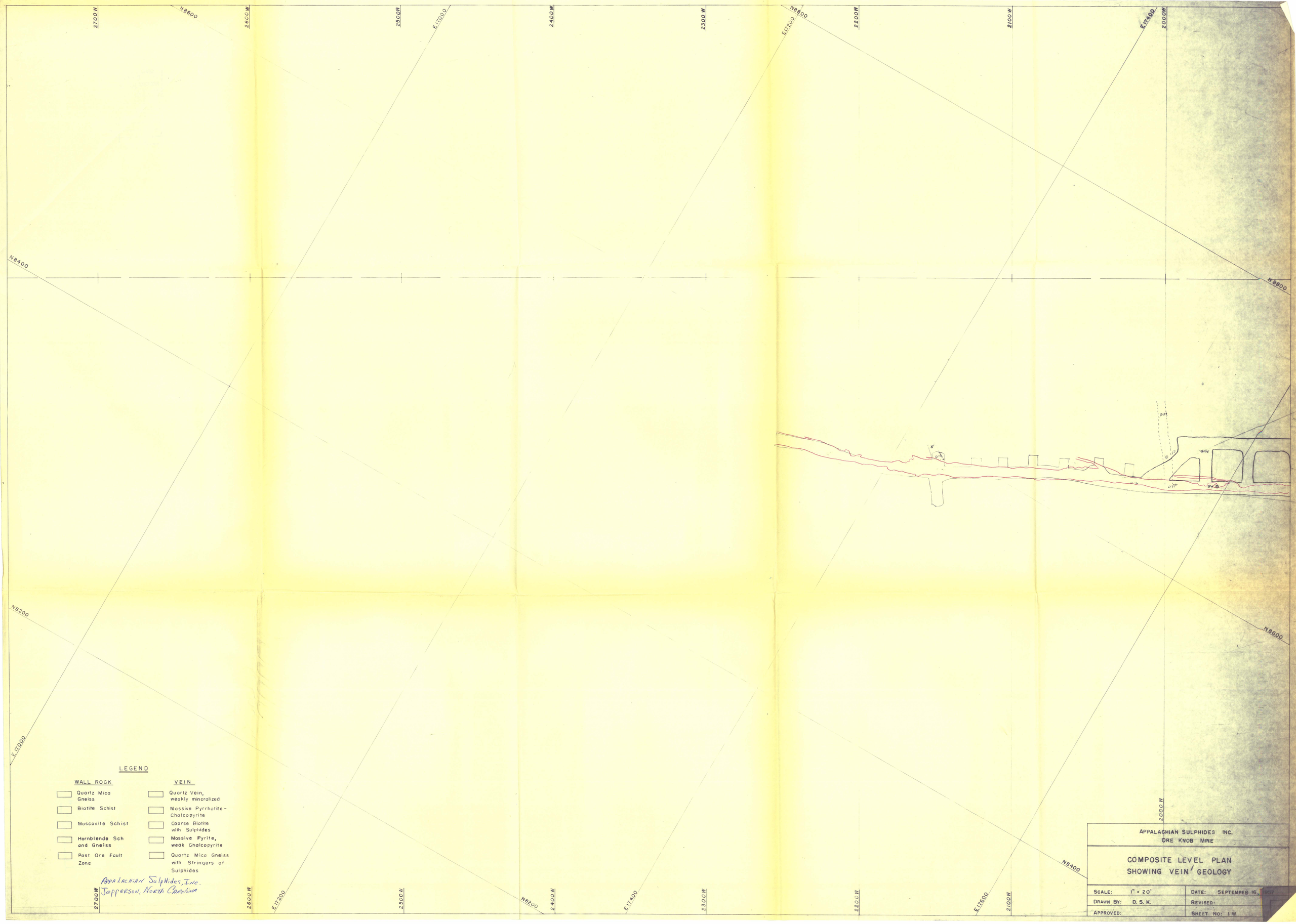
700
840
980
LEGEND
Sulphide Vein
Quartz Vein
Quartz Mica Gneiss
Actinolite Gneiss
APPALACHIAN SULPHIDES, INC.
JEFFERSON, NORTH CAROLINA
ORE KNOB
SECTION 2000 W
1" = 100'


2700 W
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E17000
2400 W
2300 W
N8800
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2200 W
2100 W
E17400
2000 W
N8400
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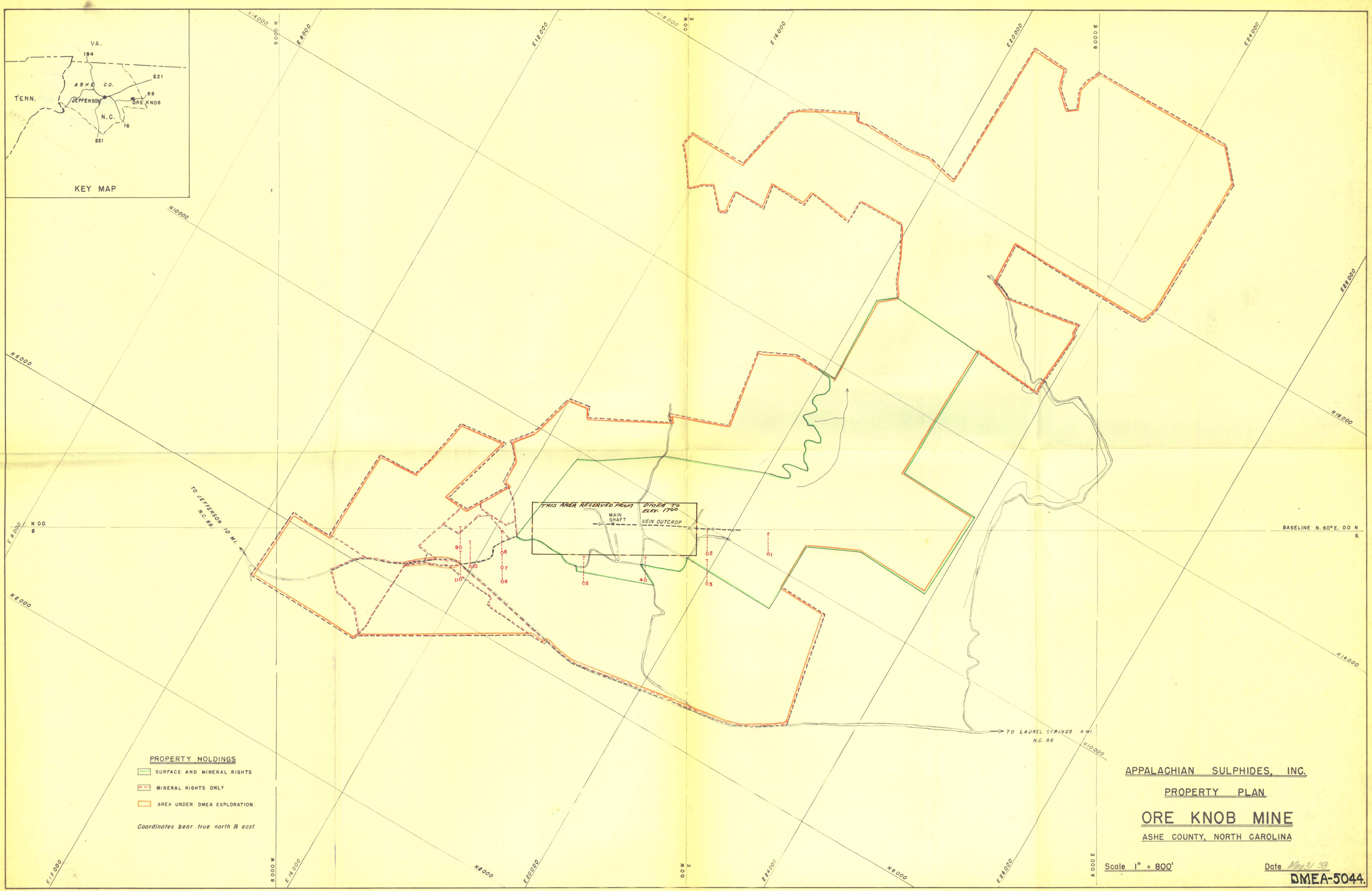
N8200
N8600
E17000
N8400
2000 W
LEGEND
WALL ROCK
Quartz Mica Gneiss
Biotite Schist
Muscovite Schist
Hornblende Sch and Gneiss
Post Ore Fault Zone
VEIN
Quartz Vein, weakly mineralized
Massive Pyrrhotite-Chalcopyrite
Coarse Biotite with Sulphides
Massive Pyrite, weak Chalcopyrite
Quartz Mica Gneiss with Stringers of Sulphides
Appalachian Sulphides, Inc.
Jefferson, North Carolina
2700 W
2600 W
E17200
2500 W
N8200
2400 W
E17400
2300 W
2200 W
E17600
2100 W
APPALACHIAN SULPHIDES INC.
ORE KNOB MINE
COMPOSITE LEVEL PLAN
SHOWING VEIN GEOLOGY
SCALE: 1" = 20'
DATE: SEPTEMBER 16, 1957
DRAWN BY: D. S. K.
REVISED:
APPROVED:
SHEET NO: 1 W


VA.
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ASHE CO.
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TENN.
JEFFERSON
ORE KNOB
N.C.
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KEY MAP
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E
E24000
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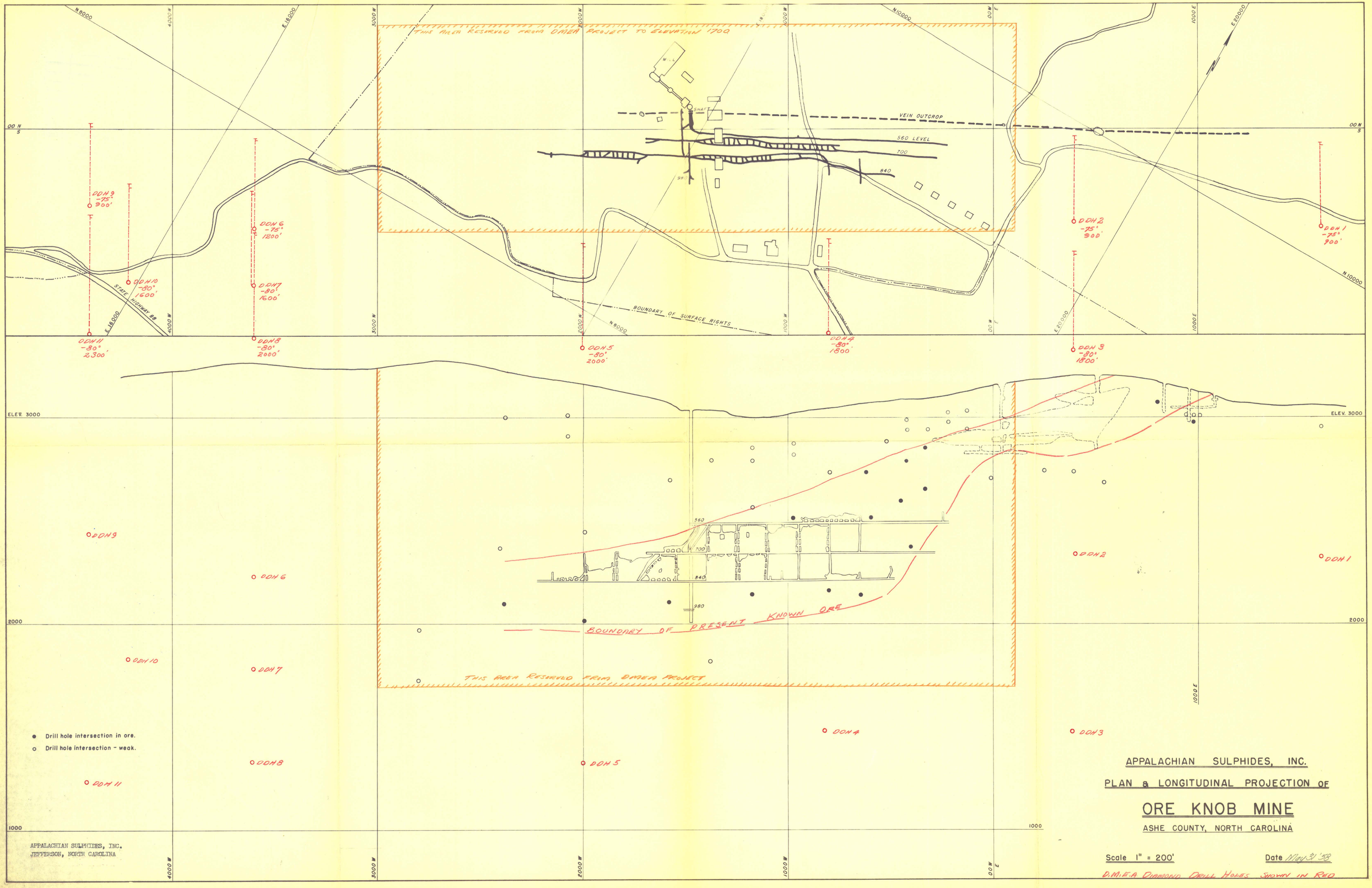
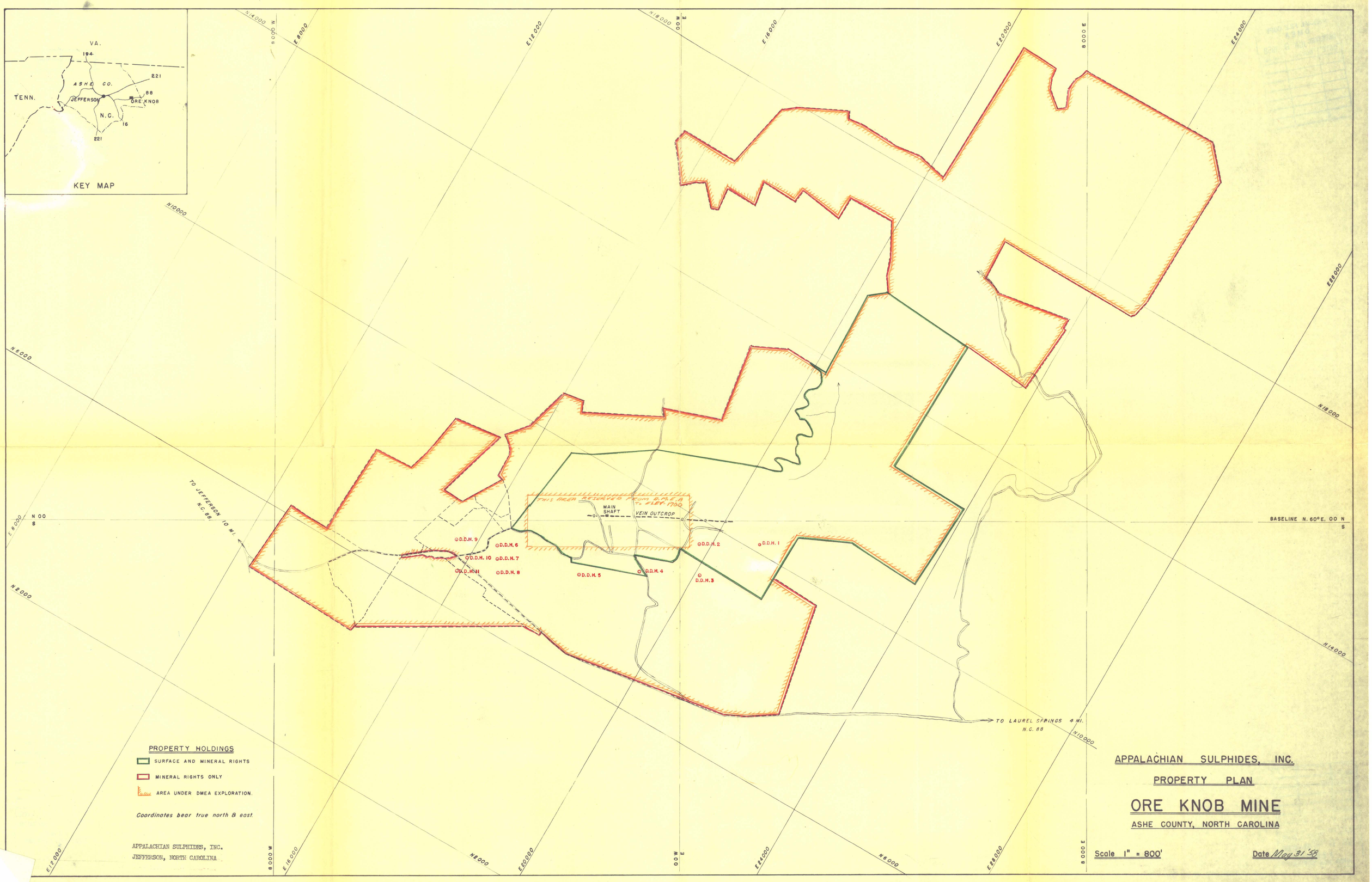
8000 E
TO JEFFERSON 10 MI.
N.C. 88
THIS AREA RESERVED FROM DMEA TO ELEV. 1700
MAIN SHAFT
VEIN OUTCROP
BASELINE N. 60° E. 00 N
S.
TO LAUREL SPRINGS 4 MI.
N.C. 88
PROPERTY HOLDINGS
SURFACE AND MINERAL RIGHTS
MINERAL RIGHTS ONLY
AREA UNDER DMEA EXPLORATION.
Coordinates bear true north & east.
APPALACHIAN SULPHIDES, INC.
PROPERTY PLAN
ORE KNOB MINE
ASHE COUNTY, NORTH CAROLINA
Scale 1" = 800'
Date May 31 '53
DMEA-5044.


THIS AREA RESERVED FROM DMEA PROJECT TO ELEVATION 1700
VEIN OUTCROP
560 LEVEL
700
840
980
SHAFT
MILL
BOUNDARY OF SURFACE RIGHTS
STATE HIGHWAY 88
DDH 9 -75° 900'
DDH 10 -80° 1600'
DDH 11 -80° 2300'
DDH 6 -75° 1200'
DDH 7 -80° 1600'
DDH 8 -80° 2000'
DDH 5 -80° 2000'
DDH 4 -80° 1800'
DDH 2 -75° 900'
DDH 3 -80° 1800'
DDH 1 -75° 900'
ELEV. 3000
2000
1000
BOUNDARY OF PRESENT KNOWN ORE
THIS AREA RESERVED FROM DMEA PROJECT
Drill hole intersection in ore.
Drill hole intersection - weak.
APPALACHIAN SULPHIDES, INC.
JEFFERSON, NORTH CAROLINA
APPALACHIAN SULPHIDES, INC.
PLAN & LONGITUDINAL PROJECTION OF
ORE KNOB MINE
ASHE COUNTY, NORTH CAROLINA
Scale 1" = 200'
Date May 31 '58
D.M.E.A. DIAMOND DRILL HOLES SHOWN IN RED


VA.
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ASHE CO.
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TENN.
JEFFERSON
ORE KNOB
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KEY MAP
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E8000
E12000
N18000
E16000
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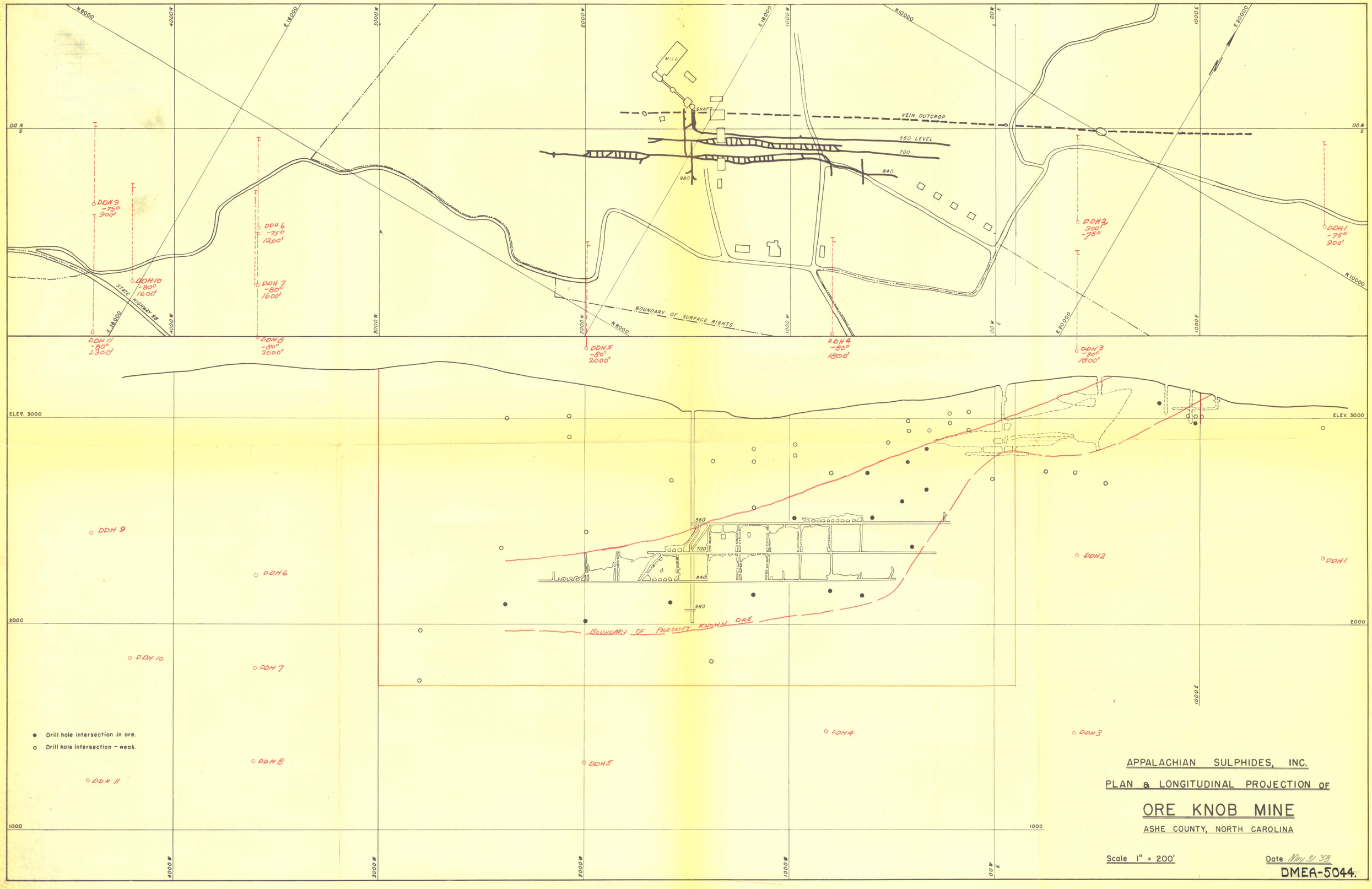
S
BASELINE N. 60° E. 00 N
S
TO JEFFERSON 10 MI.
N.C. 88
THIS AREA RESERVED FROM D.M.E.R. TO ELEV. 1700
MAIN SHAFT
VEIN OUTCROP
D.D.H. 9
D.D.H. 6
D.D.H. 10
D.D.H. 7
D.D.H. 11
D.D.H. 8
D.D.H. 5
D.D.H. 4
D.D.H. 3
D.D.H. 2
D.D.H. 1
TO LAUREL SPRINGS 4 MI.
N.C. 88
8000 W
00 W
8000 E
E12000
E16000
E20000
E24000
E28000
N2000
N6000
PROPERTY HOLDINGS
SURFACE AND MINERAL RIGHTS
MINERAL RIGHTS ONLY
AREA UNDER DMEA EXPLORATION.
Coordinates bear true north & east.
APPALACHIAN SULPHIDES, INC.
JEFFERSON, NORTH CAROLINA
APPALACHIAN SULPHIDES, INC.
PROPERTY PLAN
ORE KNOB MINE
ASHE COUNTY, NORTH CAROLINA
Scale 1" = 800'
Date May 31 '58




APPALACHIAN SULPHIDES, INC.

PLAN & LONGITUDINAL PROJECTION OF

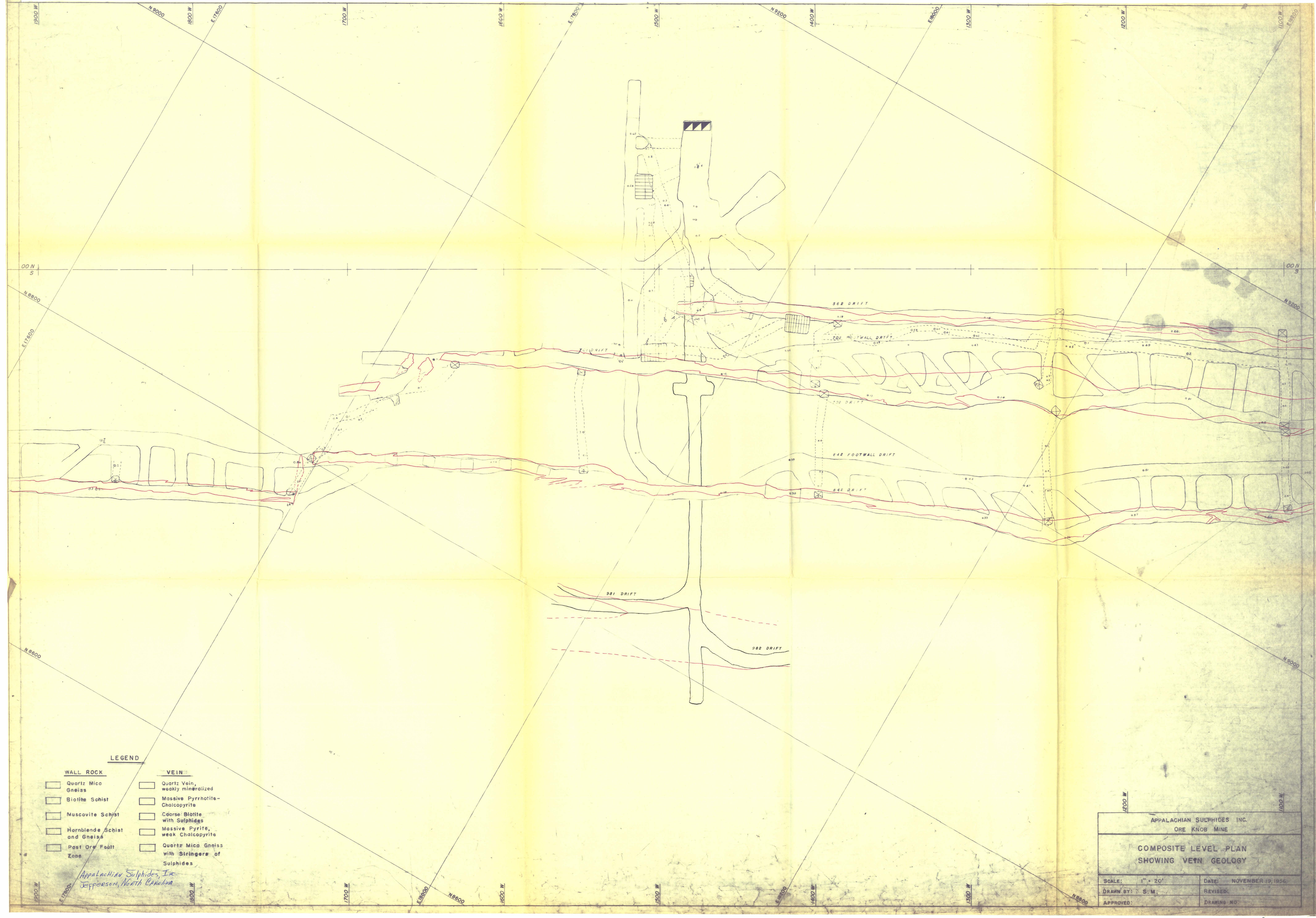
# ORE KNOB MINE

ASHE COUNTY, NORTH CAROLINA

Scale 1" = 200'

Date May 31 '58

DMEA-5044.


1900 W.
1800 W.
1700 W.
1600 W.
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00 N
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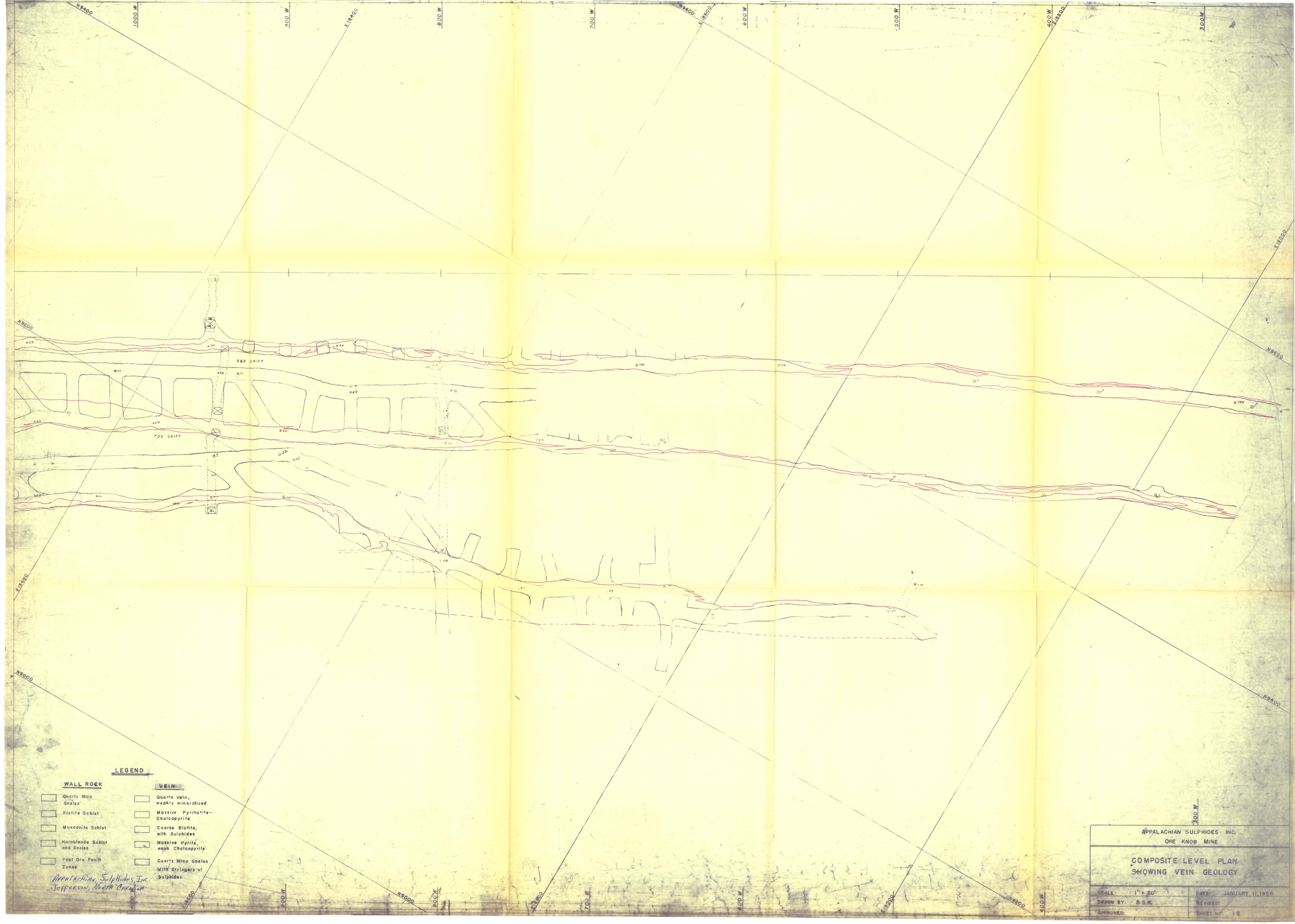
562 DRIFT
702 FWALL DRIFT
702 DRIFT
642 FOOTWALL DRIFT
642 DRIFT
981 DRIFT
982 DRIFT
LEGEND
WALL ROCK
Quartz Mica Gneiss
Biotite Schist
Muscovite Schist
Hornblende Schist and Gneiss
Post Ore Fault Zone
VEIN
Quartz Vein, weakly mineralized
Massive Pyrrhotite-Chalcopyrite
Coarse Biotite with Sulphides
Massive Pyrite, weak Chalcopyrite
Quartz Mica Gneiss with Stringers of Sulphides
Appalachian Sulphides, Inc.
Jefferson, North Carolina
APPALACHIAN SULPHIDES INC.
ORE KNOB MINE
COMPOSITE LEVEL PLAN
SHOWING VEIN GEOLOGY
SCALE: 1" = 20'
DATE: NOVEMBER 19, 1956
DRAWN BY: S. M.
REVISED:
APPROVED:
DRAWING NO.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1000 W
900 W
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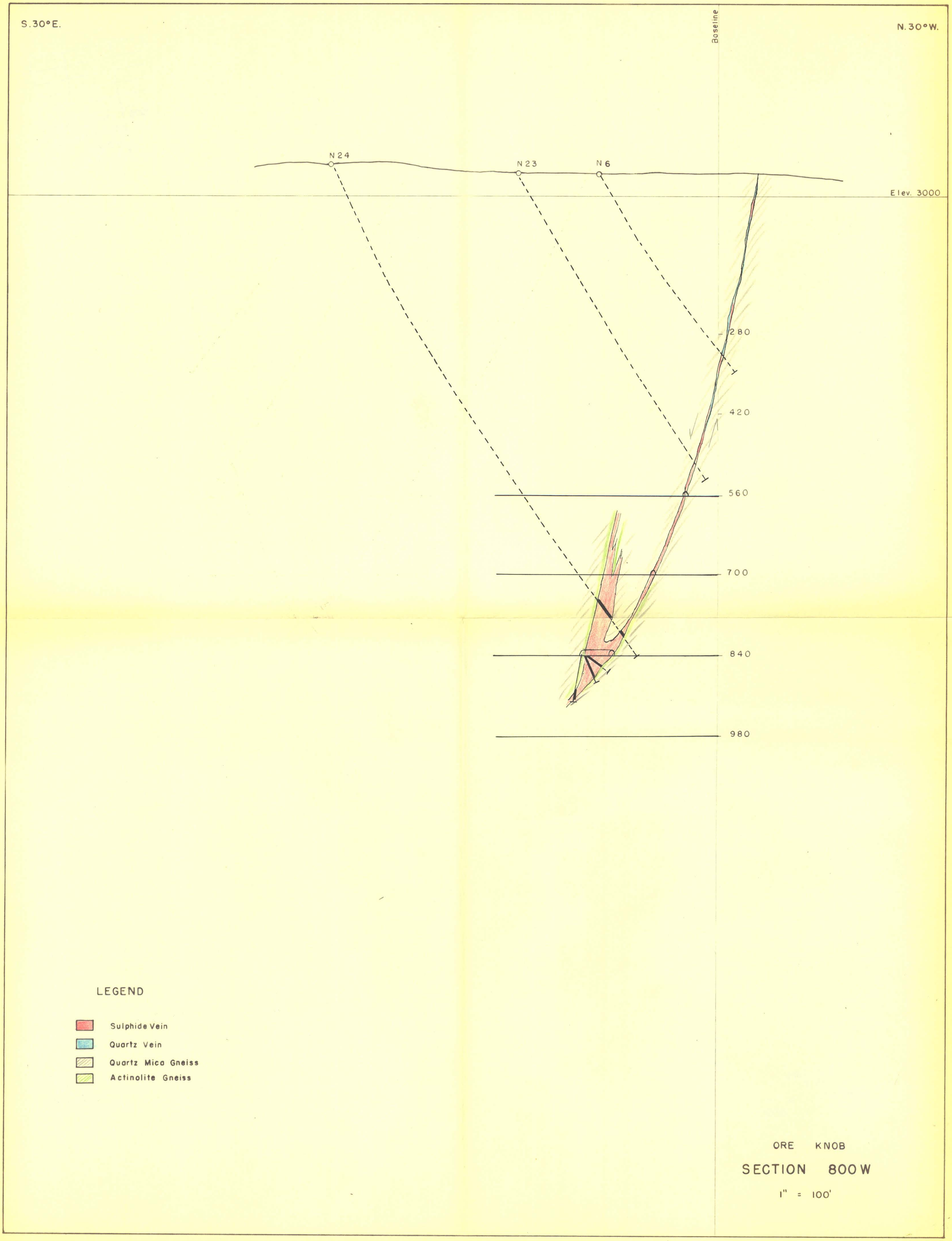
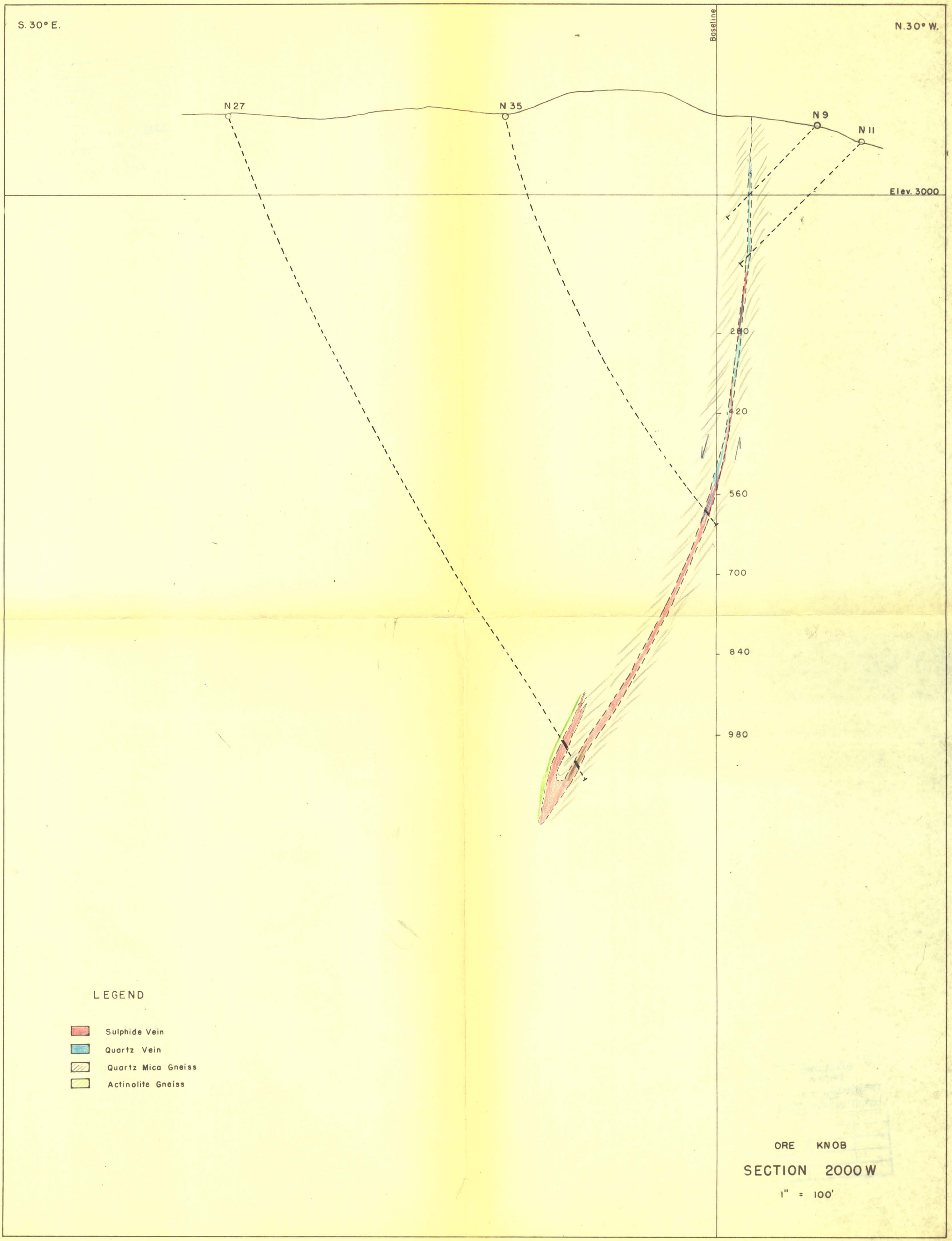
800 W
700 W
E18500
600 W
500 W
400 W
E18600
300 W
E18000
N9500
N9200
562 DRIFT
702 DRIFT
E18300
N9000
N9400
LEGEND
WALL ROCK
Quartz Mica Gneiss
Biotite Schist
Muscovite Schist
Hornblende Schist and Gneiss
Post Ore Fault Zones
VEIN
Quartz Vein, weakly mineralized
Massive Pyrrhotite-Chalcopyrite
Coarse Biotite, with Sulphides
Massive Pyrite, weak Chalcopyrite
Quartz Mica Gneiss With Stringers of Sulphides
Appalachian Sulphides, Inc.
Jefferson, North Carolina
APPALACHIAN SULPHIDES INC.
ORE KNOB MINE
COMPOSITE LEVEL PLAN
SHOWING VEIN GEOLOGY
SCALE: 1" = 20'
DRAWN BY: D.S.K.
APPROVED:
DATE: JANUARY 11, 1956
REVISED:
SHEET NO: 1 E


S.30°E.
N.30°W.
Baseline
N24
N23
N6
Elev. 3000
280
420
560
700
840
980
LEGEND
Sulphide Vein
Quartz Vein
Quartz Mica Gneiss
Actinolite Gneiss
ORE KNOB
SECTION 800W
1" = 100'


S. 30° E.
N. 30° W.
Baseline
N 27
N 35
N 9
N 11
Elev. 3000
280
420
560
700
840
980
LEGEND
Sulphide Vein
Quartz Vein
Quartz Mica Gneiss
Actinolite Gneiss
ORE KNOB
SECTION 2000 W
1" = 100'