Docket copy

EXPLORATION PROJECT CONTRACT
ATTWOOD COPPER MINES, LIMITED
DOCKET NO. DMEA-2985

RESCISSION OF EXPLORATION PROJECT CONTRACT

It is agreed this 16th day of July, 1954, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, and Attwood Copper Mines, Limited, parties to that certain Exploration Project Contract Idm-E599 (Docket No. DMEA-2985), dated September 17, 1953, hereinafter called the "Contract," that the Contract is hereby revoked, cancelled, and rescinded as of September 17, 1953, before any work has been performed or any costs have been incurred thereunder, without any obligation whatever one party to the other, the same as if the Contract had never been entered into.

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By C O Mitchendon
Administrator, Defense Minerals
Exploration Administration

ATTWOOD COPPER MINES, LIMITED

By Leonard F Kidd
President

Butin
Hollund
Talbot
Hedges
Guild
Selfridge
Wm
signed
J E Johnson

Docket Copy 28 1954

EXPLORATION PROJECT CONTRACT
ATTWOOD COPPER MINES LIMITED
DOCKET NO. DMEA-2935

AMENDMENT NO. 1

It is agreed this 6th day of January, 1954, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, and Attwood Copper Mines Limited, that Exploration Project Contract Idm-E599, Docket No. DMEA-2985, dated September 17, 1953, is amended, effective September 17, 1953, as follows:

1. In Article 3 of the contract, delete "within 90 days from the date of this contract" and substitute "not later than May 17, 1954"; and in the same article, delete "24 months" and substitute "32 months".

2. In Articles 9 and 10, delete the period "10 years" and substitute the period "11 years".

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

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By C. D. Mitchell
Administrator, Defense
Minerals Exploration
Administration

Robin Hoffland
Chandler

ATTWOOD COPPER MINES LIMITED

By [illegible]

[illegible]

MF-100
(June 1951)
(Revised Feb. 1952)

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED

DOCKET NO. DME-[illegible]

COMMODITY Copper

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

Docket Copy
Idm-E599

EXPLORATION PROJECT CONTRACT[1]

IT IS AGREED this 17th day of September, 1953, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and[2] Attwood Copper Mines Limited
Suite 1008 330 Bay Street
Toronto Ontario, Canada

hereinafter called the "Operator," as follows: As set forth in Annexes I, II and III attached hereto and made a part thereof

ARTICLE 1. *Authority for contract.*—This agreement is entered into under the authority of the Defense Production Act of 1950, as amended, pursuant to DMEA Order 1 entitled "Government Aid in Defense Exploration Projects."

ARTICLE 2. *Operator's property rights.*—With respect to that certain land situated in the State of Washington County of Ferry, described as follows:[3] set forth in Annex I

the Operator represents and undertakes:[4]

(*a*) That the Operator is the owner, in possession and entitled to possession, and that the property is subject ~~only~~ to the following claims, liens, or encumbrances ~~as to each of which the subordination agreement is attached~~ of those claims so listed in Annex I

(*b*) That the Operator is ~~a lessee~~ an optionee in possession and entitled to possession, and the Owner's Consent to Lien is attached. of those claims so listed in Annex I

The Operator shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of the exploration project without any allowance for the use, rental value, depreciation, depletion, or other cost of acquiring, owning, or holding possession thereof.

ARTICLE 3. *Exploration project.*—The Operator, within 90 days from the date of this contract shall commence work on a project of exploration for[5] Copper

in or upon the described land; and shall bring the project to completion within a period of 24 months from the date of this contract. The work to be performed is more fully described in Exhibit "A" attached hereto, which, with any maps or drawings thereto attached, are made a part of this contract. The Government will contribute to the cost of this work as hereafter provided.

ARTICLE 4. *Performance of the work.*—(*a*) *Operator's responsibility.* The work shall be performed efficiently, expertly, in a workmanlike manner, in accordance with good mining standards and State regulations for health and safety and for workmens' compensation and employers' liability insurance, with suitable and adequate equipment, materials, and labor, to bring the project to completion within the time fixed. To the extent specified in Exhibit "A," attached hereto, the work may be performed by independent contractor or contractors; and work not specified in Exhibit "A" for performance by independent contractor may nevertheless be so performed upon amendment of Exhibit "A," as agreed to by the parties, to state the work to be so performed and the estimated unit costs thereof, as provided hereafter.

(*b*) *Independent contracts.*—Any independent contract for the performance of work shall be on a unit-price basis (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved), or on some basis that will indicate the amount due for work performed at any stage of the work to be performed under such independent contract. The Government shall not be nor be considered to be a party to any such independent contract, and the Government's right to terminate the exploration project contract under any of its provisions shall not in any manner be affected by reason of any such independent contract. If the reference in Exhibit "A" to any such independent contract states that the Government's approval thereof is required, the Government may refuse to participate in the cost thereof unless and until it has given its written approval of the independent contract.

(*c*) *Government may inspect.*—The Government shall have the right to enter and observe and inspect the work at all reasonable times, and the Operator shall provide the Government with all available means for doing so. The Government may consult with and advise the Operator on all phases of the work.

ARTICLE 5. *Estimated costs of the project.*—A statement of the estimated cost of the project is set forth in Exhibit "A," attached hereto. Except insofar as any item of requirement or the estimated cost thereof set forth in Exhibit "A" is there or elsewhere designated as an "allowable maximum," such items of requirement and of related cost are estimates only, and may be exceeded to the extent that the Government may from time to time approve for the most economic and beneficial performance of the work within the limitation of the total aggregate estimate of costs. The Government's approval of any such excess over the estimate for an item of requirement or related cost will be signified by its approval and payment of any invoice or voucher for payment which expressly calls attention to such excess. Items expressly designated in Exhibit "A" or elsewhere as "allowable maximum," and the total aggregate estimated cost are limitations, and any excess therein will be for the sole account of the Operator in which the Government will not participate.

ARTICLE 6. *Allowable costs of the project.*—(*a*) The costs of the project in which the Government will participate are limited to the following: [illegible]

(1) *Independent contracts.*—Payments to independent contractors under independent contracts listed in Exhibit "A." The estimated cost of any work to be performed under an independent contract is or shall be included in the estimate of costs in Exhibit "A" in terms of the estimated numbers of units of work to be performed, the estimated amount to be paid per unit, and the estimated total amount to be paid to the independent contractor, and such estimates shall be allowable maximums above which the Government will not contribute. Regardless of the provisions of any such independent contract, the Government will participate in the payments to the independent contractor only on account of work actually performed and that conforms with the provisions of the 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 and necessary. No such independent contract shall have the effect of increasing the estimated total cost of the exploration project contract nor the maximum amount which the Government will pay as provided in the exploration project contract.

(2) *Labor, supervision, consultants.*—Labor, supervision and technical services (including engineering and geological consultants), a schedule of which is included in the estimate of costs set forth in Exhibit "A." The requirements and related estimated costs for supervision and technical services are allowable maximums.

(3) *Operating materials and supplies.*—Necessary materials and supplies including items of equipment costing less than $50.00 each, and power, water, and fuel, a schedule of which is included in the estimate of costs in Exhibit "A."

(4) *Operating equipment.*—Any operating equipment to be rented or purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or the allowable depreciation, as the case may be, a schedule of which is included in Exhibit "A." Any items listed as owned and to be furnished by the Operator, and related ~~initial~~ allowable depreciation, are allowable maximums.

(5) *Rehabilitation and repairs.*—Any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and to be devoted to the purposes of the exploration contract, a schedule of which is included in the estimate of costs set forth in Exhibit "A." These items are allowable maximums.

(6) *New buildings, improvements, installations.*—Any necessary buildings, fixed improvements, or installations to be purchased, installed, or constructed for the purposes of the exploration work, with the estimated cost of each, a schedule of which is included in the estimate of costs in Exhibit "A." All of these items are allowable maximums.

(7) *Miscellaneous.*—Repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance and payroll taxes.

(8) *Contingencies.*—Such other necessary, reasonable direct costs of performing the exploration work, within the limit of the total aggregate estimate of costs, whether or not included in any schedule of costs in Exhibit "A," as may be approved by the Government in the course of the work, as indicated by its approval and payment of invoices and vouchers.

[1] If sufficient space is not provided in any blank, use an extra sheet of paper and refer to it in the blank.
[2] State name, address, and nature of organization if any.
[3] Give legal description or enough to identify the property, particularly excluding any land or interest therein to which the Government's lien is not to attach or the production from which is not to be subject to the Government's percentage royalty.
[4] Strike out the provision not applicable.
[5] Name of mineral or minerals.

(*b*) The Government's payments in all cases will be based on actual, necessary costs (including contract unit prices) incurred not in excess of any "allowable maximum," and not in excess of the fixed percentage of the total aggregate estimated cost. Costs will be considered to be incurred only as they are or become due and payable.

(*c*) 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 this contract, shall be allowed as costs of the project in which the Government will participate.

ARTICLE 7. *Reports, accounts, audits.*—(*a*) *Progress reports.* The Operators shall provide the Government with monthly reports of work performed and costs (including contract unit prices) incurred under the contract, in quintuplicate (five copies), upon forms provided by the Government. These progress reports shall be certified by the Operator, and shall constitute both the Operator's invoice of costs incurred on the project during the period covered by the report and his voucher for repayment by the Government, unless the Government requires the use of a standard voucher form with invoice attached. Progress reports shall include surface and/or underground engineering-geological maps or sketches showing the progress of the exploration, with assay-reports on samples taken concurrently with the advance in mineralized ground.

(*b*) *Final report.*—Upon completion of the exploration work or termination of the contract the Operator shall provide the Government with an adequate geological and engineering report, in quintuplicate (five copies), including an estimate of ore reserves resulting from the exploration work.

(*c*) Compliance with requirements.—If, in the opinion of the Government, any of the Operator's reports are insufficient or incomplete, the Government may procure the making or completion of such reports and attachments as an expense of the exploration work; and the Government may withhold approval and payment of any vouchers depending upon insufficient or incomplete reports.

(*d*) *Accounts and audits.*—The Operator shall keep suitable records and accounts of operations, which the Government may inspect and audit at any time. The Government may at any time require an audit of the Operator's records and accounts by a certified public accountant, the cost thereof to be treated as a cost of the project. The Operator shall keep and preserve said records and accounts for at least 3 years after the completion of the project or the termination of this contract. Upon the completion of the project or termination of the contract the Operator shall render a final account as provided in Article 12.

ARTICLE 8. *Payments by the Government.*—(*a*) The Government will pay ____50____ percent of the allowable costs incurred, as they accrue, in an aggregate total amount not in excess of $54,593.05____, which is ____50__ percent of $__109,196.10____________, the agreed, estimated total cost of the project in which the Government will participate; *Provided,* that until the Operator's final report and final accounting have been rendered to the Government, 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 ten (10) percent of the maximum total which the Government might have been called upon to pay under the terms of the contract.

(*b*) The Government may make any payment or payments direct to independent contractors and to suppliers, for the account of the Operator, rather than to the Operator.

ARTICLE 9. *Repayment by Operator.*—(*a*) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than 6 months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows: **See Annex II substituted for that part of 9(a) preceding the colon**

(1) One and one-half (1½) percent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) percent of any such net amounts, plus one-half (½) percent of such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) percent of such net amounts.

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

(*b*) As here used, "net smelter returns," "net concentrator returns," and "other net amounts realized from the sale or other disposition," mean gross revenue from sales; or if not sold, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income-tax determination.

(*c*) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(*d*) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

ARTICLE 10. *Assignment, transfer, or loss of Operator's interest.*—Without the written consent of the Government, the Operator shall not assign or otherwise transfer or hypothecate this contract or any rights thereunder. The Operator shall not make any voluntary nor permit any involuntary transfer or conveyance of the Operator's rights in the land described in Article 2, without making suitable provision for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof; *Provided,* that mere failure by the Operator to maintain the Operator's rights in the land, without any consideration running to the Operator other than relief from the cost of maintaining such rights (as by surrender of a leasehold, failure to perform assessment work, or failure to exercise an option), coupled with complete abandonment by the Operator of all interest in or operations on the land for a period of 10 years from the date of this contract, shall not constitute such a transfer or conveyance. Should the Operator make or permit any transfer or conveyance in violation of this provision, the Operator shall be and remain liable for payment to the Government of the same amounts, at the same times, as would have been paid under the terms of the percentage royalty on production. If for any reason the net smelter returns, net concentrator returns, or other net amounts realized from the sale or other disposition of such production are not available as a means of measuring the amount of the Operator's liability, the amount thereof shall be estimated as well as may be, and in the event of dispute as to such estimates, the determination thereof by the Administrator of Defense Minerals Exploration Administration or by his successor shall be final and binding upon the Operator.

ARTICLE 11. *Title to and disposition of property.*—All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator 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 at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

ARTICLE 12. *Termination and completion.*—The Government may, at any time, by written notice to the Operator, terminate this contract: (*a*) If the Operator fails to provide his share of the money necessary to prosecute operations pursuant to the terms of the contract; (*b*) if the Operator, in the opinion of the Government, fails to prosecute operations pursuant to the terms of the contract; or (*c*) if in the opinion of the Government, operations up to the time of the notice have not indicated the probability of making any worth while discovery and in the opinion of the Government further operations are not justified. Upon the completion of the project or any termination of the contract the Operator shall dispose of any remaining materials, supplies, facilities, buildings, fixtures, and equipment in which the Government has an interest, for the joint account of the Operator and the Government in the proportion of their respective interests; shall render to the Government a full and final accounting of his operations under the contract and his expenditures of money; and shall pay to the Government its pro rata share of any money remaining.

ARTICLE 13. *Changes and added provisions.* To the extent that costs are set forth in Exhibit A as agreed unit costs, they are in lieu of the actual costs that would otherwise be allowable costs of the project as provided in Article 6(a) of the contract form.

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

ATTWOOD COPPER MINES LIMITED
(Operator)

By Howard F. Kidd
President

By Frank E. Johnson
ACTING Administrator, Defense Minerals Exploration Administration

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]

EXPLORATION PROJECT CONTRACT
ATTWOOD COPPER MINES LIMITED
DOCKET NO. DMEA-2985

ANNEX I

In Sections 1, 2, and 3, T. 40 N., R. 33 E., Willamette Meridian, as shown on attached map entitled "Attwood Copper Mines Limited Claim Map - Lone Star Properties - Docket No. DMEA-2985," the Operator is the owner of the following claims:

Patented Claims	Patent No.
Arthur Jr.	1031
Black Diamond	1031
Carter	1031
Houck	1031
Mother Lode	1031
Pauline Fr.	1031
Primrose Fr.	1031
Shonee	1031
Snowstorm	1031
Walter	1031
Lone Star	349
Shonee No. 2	531
Helen	570
Prytis	607

Unpatented Claims	Book No.	Page No.
Washington No. 1	12	130
Washington No. 2	12	130
Bob	12	155
Bill	12	155
Clint	12	155
Ted	12	155
Van	12	161
Vance	12	161
Woert	12	161

and the optionee of the following claims:

Unpatented Claims	Book No.	Page No.
Santa Fee Fr.	11	424

Patented Claims	Patent No.
Santa Fee	555
Sunset	679
Sunrise	679

EXPLORATION PROJECT CONTRACT
ATLWOOD COPPER MINES LIMITED
DOCKET NO. [illegible]

DEPARTMENT OF THE INTERIOR
Bureau of Mines Administration
RECEIVED
OCT [illegible] 1958

ANNEX II

The following provisions are in lieu of all of paragraph (a) of Article 9 which precedes the colon:

If the Government considers that a discovery or development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after a sufficient, complete, final report and final account referred to in the contract 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. The Operator, or his successor in interest, shall pay to the Government a royalty on all minerals mined or produced from the land described in Article 2, 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 of discovery or development, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first, unless the Government waives its right to a royalty; or (2) if the Government makes a certification of discovery or development, for 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. Said royalty shall be a percentage of the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production (including any bonuses), in whatever form disposed of, including ore, concentrates, or metal, as follows:

EXPLORATION PROJECT CONTRACT
ATTWOOD COPPER MINES LIMITED
DOCKET NO. DMEA-295

ANNEX III

Materials and Supplies. For the purpose of determining the Government's interest in materials or supplies remaining upon any termination of the work, they shall be considered in groups or categories (such as pipe, or explosives, or rails, or drill steel), and if the original cost of the remaining unexpended portion of any such group or category exceeded $50, the Government shall have an interest therein as provided in Article 11 of the contract form.

Equities in Equipment. Unless expressly permitted by provisions in Exhibit "A", the operator shall not procure equipment or any other item under a rental-purchase agreement, an installment-purchase agreement, any agreement which creates or builds up an equity or interest in the thing procured which can be converted to legal title only by further payment or some other consideration, or any agreement other than for straight rental or cash purchase and delivery.

Preservation of Property. Until the final disposal of any equipment or other property in which the Government has an interest or equity, the operator shall preserve and protect same for the mutual best interests of the parties, any reasonable and necessary cost thereof to be treated as an allowable cost of the exploration work to which the Government will contribute.

EXPLORATION PROJECT CONTRACT
ATTWOOD COPPER MINES LIMITED
DOCKET NO. DMEA-2985

EXHIBIT "A"

Description of the Work

The purpose of this project is to explore the Lone Star Mine for copper.

As indicated on the attached map entitled "Attwood Copper Mines Limited - DMEA-2985 - Diagrammatic Geologic Map Showing Proposed Exploration, Lone Star Mine, Ferry County, Wash.", the following work shall be performed:

1. The preparatory work shall consist of repairing the road, preparing the portal and dump site with a bulldozer, constructing a bridge across the creek from the road to the portal, installing a switch and dump track, building and equipping a bunkhouse-cookhouse, and erecting a compressor house-work shop.

2. Diamond drill 250 feet from the face of the adit, whose portal is at co-ordinates 4700 N., 5096 E., at location designated as No. 2 on the map. This drilling will consist of two holes fanned to the east and west at negative angles to check the ore zone below that area.

3. Diamond drill 600 feet from surface from the outcrop at co-ordinates 4430 N., 4940 E., at location designated as No. 3 on the map. These holes will be fanned to the north at negative angles to test the ore zone in that area.

4. Rehabilitate and enlarge 184 feet of adit, whose portal is at co-ordinates 4265 N., 4710 E., at location designated as No. 4 on the map. The minimum size of enlarged adit shall be 5 feet by 7 feet.

5. Drift and crosscut, in cross section a minimum size of 5 feet by 7 feet in the clear, 2,200 feet on the 3765-foot adit level, at location designated as No. 5 on the map, to explore the mineralized zone areund the nose of the "plunging anticline." From the drift, crosscuts are to be driven to test the thickness of the zone and to serve as drill sites for lower-level diamond drilling.

6 Where necessary, not in excess of 660 feet of crosscuts and drift shall be timbered with standard drift sets

7. Diamond drill 1,650 feet off of the 3,765 foot adit level, from the drift drilled upward to test the thickness of the ore, and/or from the face of the crosscuts to test the zone below the adit level.

8. Sampling and assaying shall be performed where necessary in the drift and crosscuts.

The location, direction and length of the drift and crosscuts and the size, location, direction, length and inclination of the diamond drill holes shall meet with the approval of the Government.

Estimated Costs of the Project

AGREED UNIT COSTS

Diamond drilling (Items 2 and 3) 850 ft. @ $6.85/ft.	$5,822.50	
Rehabilitate and enlarge adit (Item 4) 184 ft. @ $12.90/ft.	2,373.60	
Crosscutting and drifting (Item 5) 2,200 ft. @ $37.00/ft.	81,400.00	
Timbering where necessary (Item 6) 660 ft. @ $5.00/ft.	3,300.00	
Diamond drilling (Item 7) 1650 ft. @ $6.00/ft.	9,900.00	
Total Agreed Unit Costs		$102,796.10

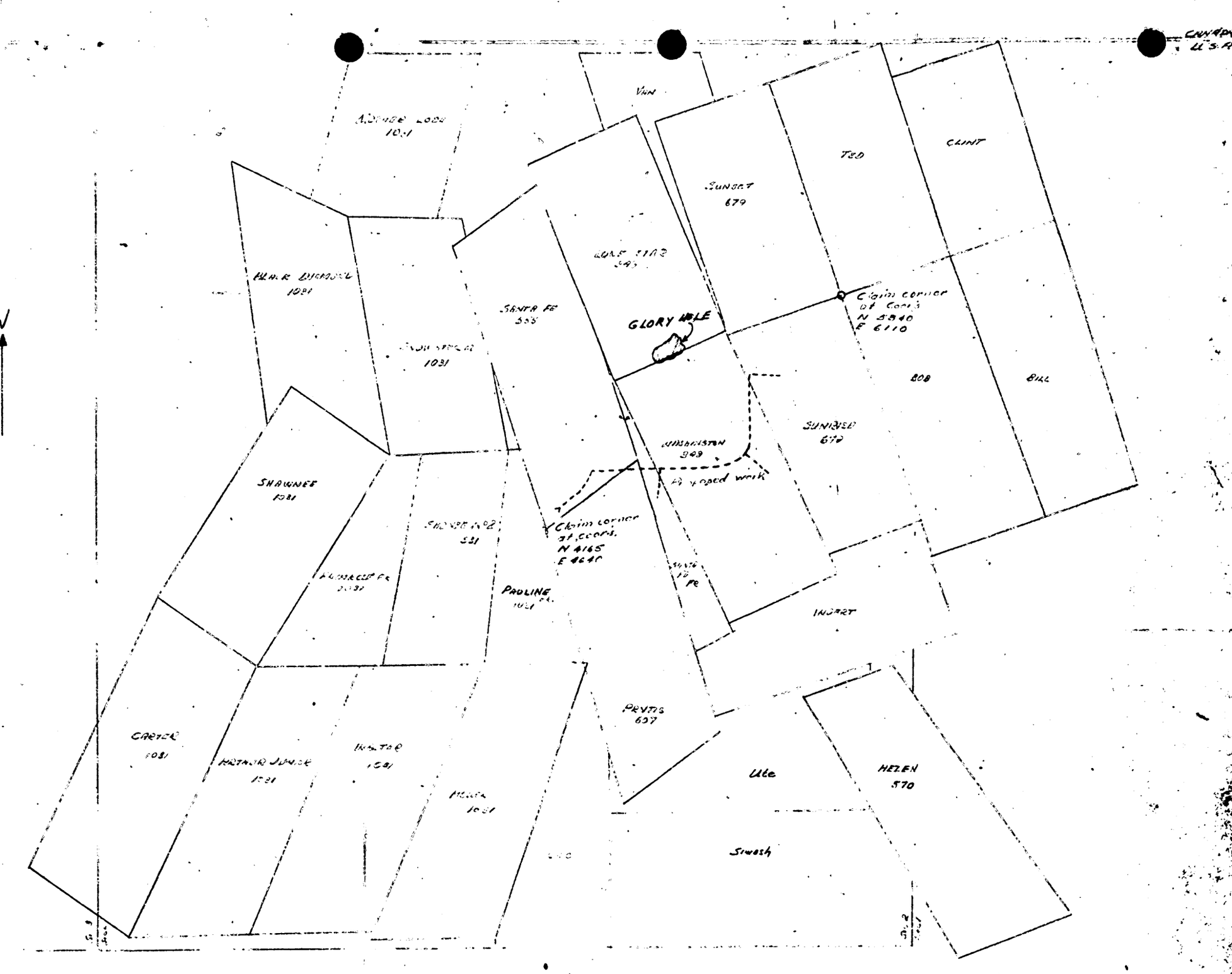
The Government will contribute to the costs of the above diamond drilling, crosscutting and drifting, timbering and rehabilitating and enlarging of adit, on the basis of these agreed estimated unit costs for units of work actually performed, in lieu of actual costs. These agreed unit costs include all costs of this work except assaying in Item 8.

The work may be performed by independent contractor without reference to the provisions relating to independent contracts and contractors in Articles 4(a) and (b) and 6(a)(1) of the contract form.

Scheduled Actual Costs
(*Indicates allowable maximum)

Independent Contracts (Item 1)			
Repair road and prepare portal and dump site		$ 500.00*	
New buildings, improvements, installations (Item 1)			
Construct bridge across creek from road to portal 1/	$ 200.00		
Install switch and dump track 1/	300.00		
Construct Bunkhouse-cookhouse (18' x 30') 1/	2,000.00		
Construct compressor house-workshop 1/	1,800.00		
Equip and furnish bunkhouse-cookhouse 1/	800.00	5,100.00*	
Assays (Item 8)		800.00*	
Total Scheduled Actual Costs			$ 6,400.00*
Total Estimated Cost of the Project			$109,196.10*
Government Participation @ 50%			$ 54,598.05*

1/ All schedules waived but includes all costs of any kind needed to complete the work.



Attwood Copper Mines Limited
CLAIM MAP.

LONE STAR PROPERTIES

TOWNSHIP 40N

Scale 1" = 600' Docket No. DMEA-2985

MF-203
(Revised July 1, 1953)

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of Washington, County of Ferry, described as follows:1/

(as set out in annex)

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Attwood Copper Mines Limited,

(no personal liability)

hereinafter called the "Operator"; and

WHEREAS, under the provisions of said contract the Government is entitled to a percentage royalty on production (as set forth on the reverse side hereof) and to other rights and equities which do or may conflict with or be adverse to the rights of the undersigned:

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof, there is hereby granted to the Government a lien upon the land above referred to and upon any production of minerals therefrom, until said royalty is fully paid or ten years have elapsed from the date of the contract, whichever occurs first.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

4. Changes and added provisions _____

Dated this 27th day of July, 1953.

Marie L. McGowan [Seal]

_____ [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated _____, and recorded in book _____ page _____ official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

Repayment by Operator.--a. Certification.--If at any time the Government considers that a discovery or development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the final report and final account, may so certify in writing to the Operator. Such certification shall describe broadly or indicate the nature of the discovery or development.

b. Percentage royalty.--The Operator, or his successor in interest, shall pay to the Government a royalty on all minerals mined or produced from the land described in Article 2,--(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 of discovery or development, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first, unless the Government waives its right to a royalty; or (2) if the Government makes a certification of discovery or development, for a period of ten years (or other period fixed by the contract) from the date of the contract, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first. Said royalty shall be a percentage of the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, as follows:

(a) One and one-half ($1\frac{1}{2}$) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(b) One and one-half ($1\frac{1}{2}$) per cent of any such net amounts, plus one-half ($\frac{1}{2}$) per cent of such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half ($1\frac{1}{2}$) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half ($3\frac{1}{2}$) per cent.)

c. Definitions.--As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

d. Lien for Payment.--To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

e. Notice to Purchasers.--The Operator shall notify any purchaser of the production of the Government's royalty interest, and shall authorize and direct the purchaser to pay the royalty directly to the Government and to furnish the Government with copies of the settlement sheets; but failure or refusal by the purchaser to comply shall not relieve the Operator of liability to pay any royalty falling due.

f. No Obligation to Produce.--This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

ANNEX

Sante Fee - Recorded in book 11, chapter 423, official records of said county,

Sante Fee Fraction - Recorded in book 11, chapter 423, official records of said County,

Sunrise mineral claim - Lot 679,

Sunset mineral claim, Lot 679.

MF-200
(June 1951)
(Revised Feb. 1952)

DOCKET NO. DMEA 2985

COMMODITY Copper

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

Extra. Copy

Idm-E599

EXPLORATION PROJECT CONTRACT[1]

IT IS AGREED this 17th day of September, 1953, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and[2] Attwood Copper Mines Limited
Suite 1008, 330 Bay Street
Toronto, Ontario, Canada

hereinafter called the "Operator," as follows: as set forth in Annexes I, II and III, attached hereto and made a part hereof.

ARTICLE 1. *Authority for contract.*—This agreement is entered into under the authority of the Defense Production Act of 1950, as amended, pursuant to DMEA Order 1 entitled "Government Aid in Defense Exploration Projects."

ARTICLE 2. *Operator's property rights.*—With respect to that certain land situated in the State of Washington, County of Ferry, described as XXXX[3] set forth in Annex I

the Operator represents and undertakes:[4]

(*a*) That the Operator is the owner, in possession and entitled to possession, of those claims so listed in Annex I, and that the property is subject XXXX to the XXXXXX claims, liens, or encumbrances XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

(*b*) That the Operator is an optionee XXXXX, in possession and entitled to possession, of those claims so listed in Annex I, and the Owner's Consent to Lien is attached.

The Operator shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of the exploration project without any allowance for the use, rental value, depreciation, depletion, or other cost of acquiring, owning, or holding possession thereof.

ARTICLE 3. *Exploration project.*—The Operator, within ______ days from the date of this contract shall commence work on a project of exploration for[5] Copper in or upon the described land; and shall bring the project to completion within a period of 24 months from the date of this contract. The work to be performed is more fully described in Exhibit "A" attached hereto, which, with any maps or drawings thereto attached, are made a part of this contract. The Government will contribute to the cost of this work as hereafter provided.

ARTICLE 4. *Performance of the work.*—(*a*) *Operator's responsibility.* The work shall be performed efficiently, expertly, in a workmanlike manner, in accordance with good mining standards and State regulations for health and safety and for workmens' compensation and employers' liability insurance, with suitable and adequate equipment, materials, and labor, to bring the project to completion within the time fixed. To the extent specified in Exhibit "A," attached hereto, the work may be performed by independent contractor or contractors; and work not specified in Exhibit "A" for performance by independent contractor may nevertheless be so performed upon amendment of Exhibit "A," as agreed to by the parties, to state the work to be so performed and the estimated unit costs thereof, as provided hereafter.

(*b*) *Independent contracts.*—Any independent contract for the performance of work shall be on a unit-price basis (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved), or on some basis that will indicate the amount due for work performed at any stage of the work to be performed under such independent contract. The Government shall not be nor be considered to be a party to any such independent contract, and the Government's right to terminate the exploration project contract under any of its provisions shall not in any manner be affected by reason of any such independent contract. If the reference in Exhibit "A" to any such independent contract states that the Government's approval thereof is required, the Government may refuse to participate in the cost thereof unless and until it has given its written approval of the independent contract.

(*c*) *Government may inspect.*—The Government shall have the right to enter and observe and inspect the work at all reasonable times, and the Operator shall provide the Government with all available means for doing so. The Government may consult with and advise the Operator on all phases of the work.

ARTICLE 5. *Estimated costs of the project.*—A statement of the estimated cost of the project is set forth in Exhibit "A," attached hereto. Except insofar as any item of requirement or the estimated cost thereof set forth in Exhibit "A" is there or elsewhere designated as an "allowable maximum," such items of requirement and of related cost are estimates only, and may be exceeded to the extent that the Government may from time to time approve for the most economic and beneficial performance of the work within the limitation of the total aggregate estimate of costs. The Government's approval of any such excess over the estimate for an item of requirement or related cost will be signified by its approval and payment of any invoice or voucher for payment which expressly calls attention to such excess. Items expressly designated in Exhibit "A" or elsewhere as "allowable maximum," and the total aggregate estimated cost are limitations, and any excess therein will be for the sole account of the Operator in which the Government will not participate.

ARTICLE 6. *Allowable costs of the project.*—(*a*) The costs of the project in which the Government will participate are limited to the following: and also the costs referred to in Article 13.

(1) *Independent contracts.*—Payments to independent contractors under independent contracts listed in Exhibit "A." The estimated cost of any work to be performed under an independent contract is or shall be included in the estimate of costs in Exhibit "A" in terms of the estimated numbers of units of work to be performed, the estimated amount to be paid per unit, and the estimated total amount to be paid to the independent contractor, and such estimates shall be allowable maximums above which the Government will not contribute. Regardless of the provisions of any such independent contract, the Government will participate in the payments to the independent contractor only on account of work actually performed and that conforms with the provisions of the 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 and necessary. No such independent contract shall have the effect of increasing the estimated total cost of the exploration project contract nor the maximum amount which the Government will pay as provided in the exploration project contract.

(2) *Labor, supervision, consultants.*—Labor, supervision and technical services (including engineering and geological consultants), a schedule of which is included in the estimate of costs set forth in Exhibit "A." The requirements and related estimated costs for supervision and technical services are allowable maximums.

(3) *Operating materials and supplies.*—Necessary materials and supplies including items of equipment costing less than $50.00 each, and power, water, and fuel, a schedule of which is included in the estimate of costs in Exhibit "A."

(4) *Operating equipment.*—Any operating equipment to be rented or purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or the allowable depreciation, as the case may be, a schedule of which is included in Exhibit "A." Any items listed as owned and to be furnished by the Operator, and related ~~initial~~ allowable depreciation, are allowable maximums.

(5) *Rehabilitation and repairs.*—Any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and to be devoted to the purposes of the exploration contract, a schedule of which is included in the estimate of costs set forth in Exhibit "A." These items are allowable maximums.

(6) *New buildings, improvements, installations.*—Any necessary buildings, fixed improvements, or installations to be purchased, installed, or constructed for the purposes of the exploration work, with the estimated cost of each, a schedule of which is included in the estimate of costs in Exhibit "A." All of these items are allowable maximums.

(7) *Miscellaneous.*—Repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance and payroll taxes.

(8) *Contingencies.*—Such other necessary, reasonable direct costs of performing the exploration work, within the limit of the total aggregate estimate of costs, whether or not included in any schedule of costs in Exhibit "A," as may be approved by the Government in the course of the work, as indicated by its approval and payment of invoices and vouchers.

---

[1] If sufficient space is not provided in any blank, use an extra sheet of paper and refer to it in the blank.
[2] State name, address, and nature of organization if any.
[3] Give legal description or enough to identify the property, particularly excluding any land or interest therein to which the Government's lien is not to attach or the production from which is not to be subject to the Government's percentage royalty.
[4] Strike out the provision not applicable.
[5] Name of mineral or minerals.

16—66328-2

(*b*) The Government's payments in all cases will be based on actual, necessary costs (including contract unit prices) incurred not in excess of any "allowable maximum," and not in excess of the fixed percentage of the total aggregate estimated cost. Costs will be considered to be incurred only as they are or become due and payable.

(*c*) 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 this contract, shall be allowed as costs of the project in which the Government will participate.

ARTICLE 7. *Reports, accounts, audits.*—(*a*) *Progress reports.* The Operators shall provide the Government with monthly reports of work performed and costs (including contract unit prices) incurred under the contract, in quintuplicate (five copies), upon forms provided by the Government. These progress reports shall be certified by the Operator, and shall constitute both the Operator's invoice of costs incurred on the project during the period covered by the report and his voucher for repayment by the Government, unless the Government requires the use of a standard voucher form with invoice attached. Progress reports shall include surface and/or underground engineering-geological maps or sketches showing the progress of the exploration, with assay-reports on samples taken concurrently with the advance in mineralized ground.

(*b*) *Final report.*—Upon completion of the exploration work or termination of the contract the Operator shall provide the Government with an adequate geological and engineering report, in quintuplicate (five copies), including an estimate of ore reserves resulting from the exploration work.

(*c*) Compliance with requirements.—If, in the opinion of the Government, any of the Operator's reports are insufficient or incomplete, the Government may procure the making or completion of such reports and attachments as an expense of the exploration work; and the Government may withhold approval and payment of any vouchers depending upon insufficient or incomplete reports.

(*d*) *Accounts and audits.*—The Operator shall keep suitable records and accounts of operations, which the Government may inspect and audit at any time. The Government may at any time require an audit of the Operator's records and accounts by a certified public accountant, the cost thereof to be treated as a cost of the project. The Operator shall keep and preserve said records and accounts for at least 3 years after the completion of the project or the termination of this contract. Upon the completion of the project or termination of the contract the Operator shall render a final account as provided in Article 12.

ARTICLE 8. *Payments by the Government.*—(*a*) The Government will pay 50 percent of the allowable costs incurred, as they accrue, in an aggregate total amount not in excess of $54,598.05, which is 50 percent of $109,196.10, the agreed, estimated total cost of the project in which the Government will participate; *Provided,* that until the Operator's final report and final accounting have been rendered to the Government, 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 ten (10) percent of the maximum total which the Government might have been called upon to pay under the terms of the contract.

(*b*) The Government may make any payment or payments direct to independent contractors and to suppliers, for the account of the Operator, rather than to the Operator.

ARTICLE 9. *Repayment by Operator.*—(*a*) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than 6 months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows: See Annex II, substituted for that part of 9(a) preceding the colon.

(1) One and one-half (1½) percent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) percent of any such net amounts, plus one-half (½) percent of such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) percent of such net amounts.

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

(*b*) As here used, "net smelter returns," "net concentrator returns," and "other net amounts realized from the sale or other disposition," mean gross revenue from sales; or if not sold, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income-tax determination.

(*c*) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(*d*) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

ARTICLE 10. *Assignment, transfer, or loss of Operator's interest.*—Without the written consent of the Government, the Operator shall not assign or otherwise transfer or hypothecate this contract or any rights thereunder. The Operator shall not make any voluntary nor permit any involuntary transfer or conveyance of the Operator's rights in the land described in Article 2, without making suitable provision for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof; *Provided,* that mere failure by the Operator to maintain the Operator's rights in the land, without any consideration running to the Operator other than relief from the cost of maintaining such rights (as by surrender of a leasehold, failure to perform assessment work, or failure to exercise an option), coupled with complete abandonment by the Operator of all interest in or operations on the land for a period of 10 years from the date of this contract, shall not constitute such a transfer or conveyance. Should the Operator make or permit any transfer or conveyance in violation of this provision, the Operator shall be and remain liable for payment to the Government of the same amounts, at the same times, as would have been paid under the terms of the percentage royalty on production. If for any reason the net smelter returns, net concentrator returns, or other net amounts realized from the sale or other disposition of such production are not available as a means of measuring the amount of the Operator's liability, the amount thereof shall be estimated as well as may be, and in the event of dispute as to such estimates, the determination thereof by the Administrator of Defense Minerals Exploration Administration or by his successor shall be final and binding upon the Operator.

ARTICLE 11. *Title to and disposition of property.*—All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator 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 at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

ARTICLE 12. *Termination and completion.*—The Government may, at any time, by written notice to the Operator, terminate this contract: (*a*) If the Operator fails to provide his share of the money necessary to prosecute operations pursuant to the terms of the contract; (*b*) if the Operator, in the opinion of the Government, fails to prosecute operations pursuant to the terms of the contract; or (*c*) if in the opinion of the Government, operations up to the time of the notice have not indicated the probability of making any worth while discovery and in the opinion of the Government further operations are not justified. Upon the completion of the project or any termination of the contract the Operator shall dispose of any remaining materials, supplies, facilities, buildings, fixtures, and equipment in which the Government has an interest, for the joint account of the Operator and the Government in the proportion of their respective interests; shall render to the Government a full and final accounting of his operations under the contract and his expenditures of money; and shall pay to the Government its pro rata share of any money remaining.

ARTICLE 13. *Changes and added provisions.* To the extent that costs are set forth in Exhibit "A" as "agreed unit costs," they are in lieu of the actual costs that would otherwise be allowable costs of the project as provided in Article 6(a) of the contract form.

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

Frank E. Johnson

By

ACTING Administrator, Defense Minerals Exploration Administration

ATTWOOD COPPER MINES LIMITED
(Operator)

By

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—66328-1

EXPLORATION PROJECT CONTRACT
ATTWOOD COPPER MINES LIMITED
DOCKET NO. DMEA-2985

ANNEX I

In Sections 1, 2, and 3, T. 40 N., R. 33 E., Willamette Meridian, as shown on attached map entitled "Attwood Copper Mines Limited Claim Map - Lone Star Properties - Docket No. DMEA-2985," the Operator is the owner of the following claims:

Patented Claims	Patent No.
Arthur Jr.	1031
Black Diamond	1031
Carter	1031
Houck	1031
Mother Lode	1031
Pauline Fr.	1031
Primrose Fr.	1031
Shonee	1031
Snowstorm	1031
Walter	1031
Lone Star	349
Shonee No. 2	531
Helen	570
Prytis	607

Unpatented Claims	Book No.	Page No.
Washington No. 1	12	130
Washington No. 2	12	130
Bob	12	155
Bill	12	155
Clint	12	155
Ted	12	155
Van	12	161
Vance	12	161
Woert	12	161

and the optionee of the following claims:

Unpatented Claims	Book No.	Page No.
Santa Fee Fr.	11	424

Patented Claims	Patent No.
Santa Fee	555
Sunset	679
Sunrise	679

ANNEX ____

The following provisions are in lieu of all of paragraph (a) of Article ____ which precedes the colon:

If the Government considers that a discovery or development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after a sufficient, complete, final report and final account referred to in the contract 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. The Operator, or his successor in interest, shall pay to the Government a royalty on all minerals mined or produced from the land described in Article 2, 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 of discovery or development, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first, unless the Government waives its right to a royalty; or (2) if the Government makes a certification of discovery or development, for 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. Said royalty shall be a percentage of the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production (including any bonuses), in whatever form disposed of, including ore, concentrates, or metal, as follows:

ANNEX [illegible]

Materials and Supplies. For the purpose of determining the Government's interest in materials or supplies remaining upon any termination of the work, they shall be considered in groups or categories (such as pipe, or explosives, or rails, or drill steel), and if the original cost of the remaining unexpended portion of any such group or category exceeded $50, the Government shall have an interest therein as provided in Article 11 of the contract form.

Equities in Equipment. Unless expressly permitted by provisions in Exhibit "A", the operator shall not procure equipment or any other item under a rental-purchase agreement, an installment-purchase agreement, any agreement which creates or builds up an equity or interest in the thing procured which can be converted to legal title only by further payment or some other consideration, or any agreement other than for straight rental or cash purchase and delivery.

Preservation of Property. Until the final disposal of any equipment or other property in which the Government has an interest or equity, the operator shall preserve and protect same for the mutual best interests of the parties, any reasonable and necessary cost thereof to be treated as an allowable cost of the exploration work to which the Government will contribute.

EXPLORATION PROJECT CONTRACT
ATTWOOD COPPER MINES LIMITED
DOCKET NO. DMEA-2985

EXHIBIT "A"

Description of the Work

The purpose of this project is to explore the Lone Star Mine for copper.

As indicated on the attached map entitled "Attwood Copper Mines Limited - DMEA-2985 - Diagrammatic Geologic Map Showing Proposed Exploration, Lone Star Mine, Ferry County, Wash.", the following work shall be performed:

1. The preparatory work shall consist of repairing the road, preparing the portal and dump site with a bulldozer, constructing a bridge across the creek from the road to the portal, installing a switch and dump track, building and equipping a bunkhouse-cookhouse, and erecting a compressor house-work shop.

2. Diamond drill 250 feet from the face of the adit, whose portal is at co-ordinates 4700 N., 5096 E., at location designated as No. 2 on the map. This drilling will consist of two holes fanned to the east and west at negative angles to check the ore zone below that area.

3. Diamond drill 600 feet from surface from the outcrop at co-ordinates 4430 N., 4940 E., at location designated as No. 3 on the map. These holes will be fanned to the north at negative angles to test the ore zone in that area.

4. Rehabilitate and enlarge 184 feet of adit, whose portal is at co-ordinates 4265 N., 4710 E., at location designated as No. 4 on the map. The minimum size of enlarged adit shall be 5 feet by 7 feet.

5. Drift and crosscut, in cross section a minimum size of 5 feet by 7 feet in the clear, 2,200 feet on the 3765-foot adit level, at location designated as No. 5 on the map, to explore the mineralized zone around the nose of the "plunging anticline." From the drift, crosscuts are to be driven to test the thickness of the zone and to serve as drill sites for lower-level diamond drilling.

6 Where necessary, not in excess of 660 feet of crosscuts and drift shall be timbered with standard drift sets

7. Diamond drill 1,650 feet off of the 3,765 foot adit level, from the drift drilled upward to test the thickness of the ore, and/or from the face of the crosscuts to test the zone below the adit level.

8. Sampling and assaying shall be performed where necessary in the drift and crosscuts.

The location, direction and length of the drift and crosscuts and the size, location, direction, length and inclination of the diamond drill holes shall meet with the approval of the Government.

Estimated Costs of the Project

AGREED UNIT COSTS

Diamond drilling (Items 2 and 3) 850 ft. @ $6.85/ft.	$5,822.50
Rehabilitate and enlarge adit (Item 4) 184 ft. @ $12.90/ft.	2,373.60
Crosscutting and drifting (Item 5) 2,200 ft. @ $37.00/ft.	81,400.00
Timbering where necessary (Item 6) 660 ft. @ $5.00/ft.	3,300.00
Diamond drilling (Item 7) 1650 ft. @ $6.00/ft.	9,900.00
Total Agreed Unit Costs	$102,796.10

The Government will contribute to the costs of the above diamond drilling, crosscutting and drifting, timbering and rehabilitating and enlarging of adit, on the basis of these agreed estimated unit costs for units of work actually performed, in lieu of actual costs. These agreed unit costs include all costs of this work except assaying in Item 8.

The work may be performed by independent contractor without reference to the provisions relating to independent contracts and contractors in Articles 4(a) and (b) and 6(a)(1) of the contract form.

Scheduled Actual Costs
(*Indicates allowable maximum)

Independent Contracts (Item 1)			
Repair road and prepare portal and dump site		$ 500.00*	
New buildings, improvements, installations (Item 1)			
Construct bridge across creek from road to portal 1/	$ 200.00		
Install switch and dump track 1/	300.00		
Construct Bunkhouse-cookhouse (18' x 30') 1/	2,000.00		
Construct compressor house-workshop 1/	1,800.00		
Equip and furnish bunkhouse-cookhouse 1/	800.00	5,100.00*	
Assays (Item 8)		800.00*	
Total Scheduled Actual Costs			$ 6,400.00*
Total Estimated Cost of the Project			$109,196.10*
Government Participation @ 50%			$ 54,598.05*

1/ All schedules waived but includes all costs of any kind needed to complete the work.

MF-203
(Revised July 1, 1953)

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of Washington, County of Ferry, described as follows:1/

(as set out in annex)

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Attwood Copper Mines Limited,

(no personal liability)

hereinafter called the "Operator"; and

WHEREAS, under the provisions of said contract the Government is entitled to a percentage royalty on production (as set forth on the reverse side hereof) and to other rights and equities which do or may conflict with or be adverse to the rights of the undersigned:

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof, there is hereby granted to the Government a lien upon the land above referred to and upon any production of minerals therefrom, until said royalty is fully paid or ten years have elapsed from the date of the contract, whichever occurs first.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

4. Changes and added provisions

Dated this 27th day of July, 1953.

Marie L. McGowan [Seal]

[Seal]

[Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated _____, and recorded in book _____ page _____ official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

Repayment by Operator.--a. Certification.--If at any time the Government considers that a discovery or development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the final report and final account, may so certify in writing to the Operator. Such certification shall describe broadly or indicate the nature of the discovery or development.

b. Percentage royalty.--The Operator, or his successor in interest, shall pay to the Government a royalty on all minerals mined or produced from the land described in Article 2,--(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 of discovery or development, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first, unless the Government waives its right to a royalty; or (2) if the Government makes a certification of discovery or development, for a period of ten years (or other period fixed by the contract) from the date of the contract, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first. Said royalty shall be a percentage of the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, as follows:

(a) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(b) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent of such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

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

c. Definitions.--As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

d. Lien for Payment.--To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

e. Notice to Purchasers.--The Operator shall notify any purchaser of the production of the Government's royalty interest, and shall authorize and direct the purchaser to pay the royalty directly to the Government and to furnish the Government with copies of the settlement sheets; but failure or refusal by the purchaser to comply shall not relieve the Operator of liability to pay any royalty falling due.

f. No Obligation to Produce.--This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

ANNEX

Sante Fee - Recorded in book 11, chapter 423, official records of said county,

Sante Fee Fraction - Recorded in book 11, chapter 423, official records of said County,

Sunrise mineral claim - Lot 679,

Sunset mineral claim, Lot 679.

L Form 1

DEFENSE MINERALS ADMINISTRATION
Control Slip

CONTROLLED DOCUMENT

DMA Docket No. 2985

DO NOT DETACH THIS SLIP

Action on this document is recorded and controlled in Reports and Records Branch. Any movement of this document between divisions or offices of DMA or movement outside DMA must be reported to the Reports and Records Branch. Actions taken that affect status of the case must also be reported.

This document has been recorded as

EXPLORATION ASSISTANCE

Any action taken to change the type of request for assistance must be promptly reported to the Reports and Records Branch. Use DMA Form 2 for submitting these reports.

Routing Slip
CYS TO USGS, USBM REGION II

To:	Code 700	Date	4/17/53.
To:	Oper Com	Date	5-4-53
To:	Oper Com	Date	5-11-53
To:	Oper Com	Date	9-16-53
To:	Code 700	Date	9/18/53
To:	Base Metals	Date	9/18/53.
To:		Date	
To:		Date	
To:		Date	
To:		Date	
To:		Date	
To:		Date	
To:		Date	
To:		Date	

DO NOT DETACH

CONTROLLED DOCUMENT

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

August 2, 1954

Mr. George C. Selfridge, Chairman
Operating Committee, DMEA
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-2985 (Copper)
Attwood Copper Mines, Ltd.
Lone Star Mine
Ferry County, Washington
Contract No. Idm-E599

Dear Mr. Selfridge:

Enclosed are the original and two signed copies of "Rescission of Exploration Project Contract", to the cited contract.

Distribution of this document is being made in the usual manner.

Sincerely yours,

A. E. Weissenborn

A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region II

Enclosures

cc: Finance Office w/encl.
USBM (2)
Puffett

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D. C.~~
So. 157 Howard Street
Spokane 4, Washington

July 23, 1954

Mr. Desmond F. Kidd, President
Attwood Copper Mines Limited
604 - 789 West Pender Street
Vancouver, B. C.

Re: Docket No. DMEA-2985 (copper)
Attwood Copper Mines, Ltd.
Lone Star Mine
Ferry County, Washington
Contract No. 14m-E599

Dear Mr. Kidd:

Enclosed are the original and six copies of "Rescission of Exploration Project Contract" to the cited contract, which have been signed by C. G. Mittendorf, Administrator, DMEA, for the Government. Please sign all copies, retain the one marked "Operator's Copy," and return the others to this office.

Sincerely yours,

A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region II

Enclosures

cc: DMEA (2)
USBM (2)
Puffett

File Copy
Surname
J. W. Alt.
Selfridge
C. H. Johnson

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

500

Mr. A. E. Weissenborn
Executive Officer
DMEA Field Team, Region II
South 157 Howard Street
Spokane 4, Washington

Re: Docket No. DMEA-2985 (Copper)
Attwood Copper Mines, Ltd.
Lone Star Mine
Ferry County, Washington
Contract No. Idm-E599

Dear Mr. Weissenborn:

We are enclosing the original and five copies of "Rescission of Exploration Project Contract", to the cited contract, which have been signed by this office for the Government. This is in accordance with your letter of June 18, 1954.

Please present the rescission agreement to the Operator for approval and signature and, when completed, distribute the copies in the usual manner.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GHB)

JWAlt:er 7/14/54

Enclosures 6

APPROVED:

J. H. Hedges
Member, Bureau of Mines (GHB)

Philip W. Guild
Member, Geological Survey (GHB)

Copy to: Docket
Admr. R. File
Op. Committee
Base Metals
Mr. Gildersleeve
Mr. C. H. Johnson
Chron.

R.C.B.

File Copy
Surname
J.W. Alt.

UNITED STATES 500
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

July 1, 1954

Memorandum

To: Acting Assistant Solicitor, DMEA

From: Chief, Base Metals Division

Subject: Rescission agreement for Contract No. Idm-E599, Docket No. DMEA-2985, Attwood Copper Mines, Limited, Ferry County, Washington (Copper)

Will you please prepare a "Rescission of Exploration Project Contract By Agreement Before Work Is Begun" for the cited project."

Please refer to letter of June 18, 1954, from the Field Team.

W. R. Griswold

W. R. Griswold

JWAlt/bjl

Copy to: Docket
Base Metals
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

June 18, 1954

Mr. George C. Selfridge, Chairman
DMEA Operating Committee
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA 2985 (copper)
Attwood Copper Mines, Ltd.
Lone Star Mine
Ferry County, Washington
Contract No. Idm-E599

Dear Mr. Selfridge:

In a telegram from the operator, dated June 17, 1954, we were informed that he would be unable to commence project work. Work was originally to start 90 days from the date of the contract. The starting date was extended to May 17 by Amendment No. 1 and later to June 17, by agreement. Therefore, there would seem to be little possibility of the applicant doing the proposed work.

It is regrettable that project work never commenced, as we believe it would have had an opportunity for success as it presented good exploration possibilities and as it would have been under good management; however, the operator apparently was unable to finance the operation.

It is recommended that a rescission agreement be drawn and forwarded to the field for signature and distribution.

By Field Team, Region II

Wing G. Agnew, Acting Exec. Officer
U. S. Bureau of Mines

Thor H. Kiilsgaard, Acting Member
U. S. Geological Survey

cc: USBM (2)
Kiilsgaard

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

June 18, 1954

Mr. Desmond F. Kidd
844 W. Hastings Street
Vancouver 1, British Columbia

Re: Docket No. DMEA-2985 (copper)
Attwood Copper Mines, Ltd.
Lone Star Mine
Ferry County, Washington
Contract No. Idm-6555

Dear Mr. Kidd:

This will acknowledge receipt of your telegram of June 17, 1954, in which you note that you are unable to proceed with exploration work on the cited contract.

We are notifying our Washington office to prepare a recision agreement rescinding the contract. In due time this agreement will be forwarded to you for signature.

We were sorry to learn of your decision as we had hoped that proposed exploration might discover substantial amounts of copper ore; however, if, at some future date, you might find yourself financially able to proceed with the exploration project, it is suggested that you advise this office requesting that your contract be reactivated. It may be that circumstances will necessitate denial of your request, but on the other hand, there might be the possibility of your request being accepted.

By Field Team, Region II

Wing G. Agnew, Acting Executive Officer
U. S. Bureau of Mines

Thor H. Kiilsgaard, Acting Member
U. S. Geological Survey

cc: DMEA (2)
USBM (2)
Kiilsgaard

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D.C.
No. 137 Howard Street
Spokane 4, Washington

May 26, 1954

Mr. Desmond F. Kidd
604-739 West Pender Street
Vancouver 1, B. C., Canada

Re: Docket No. DMEA 2905 (copper)
Atwood Copper Mines, Ltd.
Lone Star Mine
Ferry County, Washington
Contract No. Idm-E599

Dear Mr. Kidd:

This will acknowledge receipt of your letter of May 18, 1954, in which you request an extension of 30 days from May 17, before beginning work on the cited project. The Field Team hereby agrees to your request for a 30-day extension, with the understanding that on or before June 17, you write this office describing your intentions on the starting of the project work. At that time, we shall either prepare an amendment allowing for the time extension, or else we shall recommend to the Washington office that the contract be rescinded.

DMEA

By Field Team, Region II

A. E. Weissenborn, Exec. Officer
U. S. Geological Survey

Wing G. Agnew, Member
U. S. Bureau of Mines

cc: USBM (2)
DMEA (2)
Puffett

COPY

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)

Incorporated under Part XI of the Companies Act of the Province of Ontario
Also Registered Under the Companies Act of British Columbia

Vancouver, B.C. Office
604-789 West Pender Street

Executive Office:
Suite 1008-330 Bay St., Toronto, Ont.

REGISTERED AIRMAIL

May 18, 1954

Mr. A. E. Weissenborn,
Executive Officer
U. S. Geological Survey
So. 157 Howard Street
SPOKANE 4, Washington

re: Docket No. DMEA-2985 (copper)
Attwood Copper Mines, Ltd.
Lone Star Mine
Ferry County, Washington
Contract No. Idm-E599

Dear Mr. Weissenborn:

This will answer your registered letter of the 12th postmarked at Spokane, May 14th, Vancouver May 15th, and delivered here yesterday afternoon May 17th.

We are actively interested in pursuing development at the Lone Star Mine. The Consolidated Mining and Smelting Co., examined the property and on May 5th advised us that they expected to be able to make us a proposal to undertake further development at the property. This proposal we are now awaiting. The contract with D.M.E.A. was an important factor influencing them in considering undertaking work on the Lone Star property.

We appreciate the consideration given us in our dealings with your agency. We also appreciate too that these contracts must be acted upon or terminated. If, however, an extension, say 30 days, from May 17th could be arranged it might be the deciding factor in arranging a program of development by a substantial company.

Yours sincerely,

/s/ Desmond F. Kidd
Desmond F. Kidd

DFK:c

RECEIVED
AIR MAIL
MAY 19 1954
U.S.G.S.
SPOKANE, WASH.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
~~xxxxxxxxxxxxxxxxx~~
So. 157 Howard Street
Spokane 4, Washington

May 12, 1954

Sent by registered mail

Mr. Desmond F. Kidd
844 W. Hastings Street
Vancouver 1, B. C.

Re: Docket No. DMEA-2985 (copper)
Attwood Copper Mines, Ltd.
Lone Star Mine
Ferry County, Washington
Contract No. Idm-2599

Dear Mr. Kidd:

Amendment No. 1 to the cited contract specifies that project work is to commence not later than May 17, 1954. This date will soon arrive, but we have not as yet heard from you as to your intentions regarding commencement of project work. We would appreciate, therefore, if you would inform us of your plans on this subject. If you are planning to commence the work, the starting time could possibly be delayed for a few days; however, if you are unable to commence project work in the near future or if you have decided not to do the work, we would appreciate being informed. If such is to be the case, it will be necessary to rescind the contract.

Your comments on this matter would be appreciated.

By Field Team, Region II

A. E. Weissenborn, Executive Officer
U. S. Geological Survey

Wing G. Agnew, Member
U. S. Bureau of Mines

cc: DMEA (2)
USBM (2)
Kiilsgaard

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

Department of the Interior
Defense Minerals Administration
RECEIVED
JAN 28 1954

January 25, 1954

Mr. George C. Selfridge, Chairman
Operating Committee, DMEA
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-2985 (copper)
Attwood Copper Mines, Ltd.
Lone Star Mine
Ferry County, Washington
Contract No. Idm-E599

Dear Mr. Selfridge:

Attached are the original and two signed copies of Amendment No. 1 to the above-mentioned contract.

Distribution of this amendment is being made in the usual manner.

Sincerely yours,

A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region II

Attachment

cc: Certifying Officer w/encl.
USBM (2)
Kiilsgaard

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

xxxxxxxxxxxxxxxxxxxx
So. 157 Howard Street
Spokane 4, Washington

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 16 1954

January 13, 1954

Attwood Copper Mines, Ltd.
Suite 1008, 330 Bay Street
Toronto, Ontario, Canada

Re: Docket No. DMEA-2585 (copper)
Lone Star Mine
Ferry County, Washington
Contract No. Idm-1599

Gentlemen:

Enclosed are several copies of Amendment No. 1 to the above contract which allows for an extension of the commencement date of the contract.

If the terms and conditions of this amendment meet with your approval, please sign all copies, retain that copy marked for the Operator and return the remaining copies to this office.

Sincerely yours,

A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region II

Enclosure

cc: USBM (2)
DMEA (2)
Kiilsgaard

FILE COPY
SURNAME:

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

JAN - 6 1954

Mr. . . . eissenborn
Executive Officer
DMA Field Team, Region II
South 157 Howard Street
Spokane 4, ashington

Re: Docket No. IM . 2985 (Copper)
Attwood Copper Mines Ltd.
Lone Star Mine
Ferry County, Washington
Contract No. Idm-8599

Dear Mr. Weissenborn:

We are enclosing the original and five copies of Amendment No. 1 to the above contract, signed by this office for the Government. An amendment was requested in your letter of December 15, 1953.

If the amendment meets with your approval, kindly present it to the Operator for approval and signature and, when completed, distribute 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 recommendation concerning any modification.

Sincerely yours,

George C. Selfridge (JB)
Chairman, Operating Committee

Enclosures 6

JWAlt/hmj (1-4-54)

CC to: Docket
Adm. R. File
Op. Committee
Base Metals Division
Mr. Kinkel
Mr. Bishop
Chron.

APPROVED:

J. H. Hedges
Member, Bureau of Mines (JB)

D. M. Larrabee
Member, Geological Survey (JB)

1-6-54

500 FILE COPY
SURNAME:

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

N. S. in R.R.

December 29, 1953

Memorandum

To: Chief Counsel

From: Base Metals Division

Subject: Request for amendment to allow the Operator an extension of the date for commencement of project work and for 8-month extension of completion time for contract No. Idm-E599, Docket No. DMEA 2985, Attwood Copper Mines Limited, Ferry County, Washington.

Will you please prepare Amendment No. 1 to allow the Operator an extension of the commencement date of the work of the above contract, the starting time to be changed from 90 days to not later than May 17, 1954. This amendment should also include an extension of completion time from 24 to 32 months.

Please refer to letter of December 15, 1953 from A. E. Weissenborn, Executive Officer, Region II.

/s/

J. W. Alt

JWAlt/hmj (12-29-53)
CC to: Docket
Base Metals
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

December 15, 1953

Mr. George C. Selfridge, Chairman
Operating Committee, DMEA
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-2985
Attwood Copper Mines Limited
Ferry County, Washington
Contract No. Idm-E599

Dear Mr. Selfridge:

Reference is made to the enclosed letter in which the Operator requests an extension of the date for the commencement of project work. As reasons for the delay in beginning work, the Operator refers to physical obstacles brought on by winter weather. He therefore asks for a 90-day extension of the commencement date as specified in Article 3 of the contract.

The Field Team is in accord with the Operator's request and recommends extension of the starting date. It is noted, however, that an additional 90 days would place the starting date on March 17, 1954, and it is believed this date will be too early in the season to commence operations. It is therefore suggested that the starting date be further extended to May 17, 1954, and that the termination date of the contract be consequently extended for a period of 8 months.

Permission to prepare an amendment, as described in the foregoing sentences, is hereby requested.

By Field Team, Region II

A. E. Weissenborn

A. E. Weissenborn, Exec. Officer
(U. S. Geological Survey)

S. W. Zoldok

S. W. Zoldok, Acting Member
(U. S. Bureau of Mines)

Enclosure
cc: USBM (2)
Kiilsgaard

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

[illegible] Howard Street
Spokane 4, Washington

December 7, 1953

Mr. R. H. Seraghini
Box 500
Greenwood, B. C.

re: Docket No. DMEA-[illegible] (Copper)
Ottwood Copper Mines Limited
Ferry County, Washington
Contract No. [illegible]

Dear Mr. Seraghini:

I wish to refer to your letter of November 16, 1953, in which you state that work on the Ottwood Copper Mines Limited DMEA contract will commence within a couple of weeks, and that Santa Fee is the recorded spelling of one of the Lone Star claims. I had hoped to meet Dr. Kiln at the Northwest Mining Association Convention and discuss this matter further, but although I was able to see him time did not permit any conversation.

You will recall that the spelling of two Lone Star claims was in question. These were the Santa Fee, which can now be considered as settled, and the Shanee as spelled in the application, but which is spelled Shonee on the map. Would you please advise which way this claim is recorded in the Court House so that we may correct the contract.

Sincerely yours,

Thor H. Kiilsgaard
Acting Executive Officer
DMEA Field Team, Region II

cc: DMEA (2)
USBM (2)
Kiilsgaard

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

So. 157 Howard Street
Spokane 4, Washington

September 28, 1953

Mr. George C. Selfridge, Chairman
Operating Committee, DMEA
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-2985 (Copper)
Attwood Copper Mines, Ltd.
Lone Star Mine
Ferry County, Washington

Dear Mr. Selfridge:

Enclosed are the original and two signed copies of the referenced contract. One copy has been retained by the Operator, one for the files of the Certifying Officer, and one for the files of this office.

Regarding the apparent discrepancies referred to in the fourth paragraph of the letter forwarding the contract to the field for signature, we wish to advise as follows:

(1) The correct names of the referred claims are being checked by the applicant at the courthouse. He will advise us which spelling is correct and this information will be forwarded to Washington upon receipt.

(2) The claim map attached to the contract shows only the Washington claim, which is actually the Washington No. 1 claim. In checking the survey of claims, a previous locator found that there was a possible sliver of unclaimed ground lying between the Washington and the Sunrise claim. This sliver is much like that lying between the Lone Star and the Sunset claims except that its existence could not be proved when the survey was made. Therefore, for protection, the applicant filed the Washington No. 2 claim to cover that sliver of ground between the Washington and Sunrise claims, if it should subsequently be proved such a sliver existed. As the claim map shows that the Washington and Sunrise claims adequately covered the ground, the location of the Washington No. 2 was not needed, as it was thought it might only result in confusion to reviewers of the application. In this respect, it might be said that the Washington No. 2 and the Van claims have much in common except that the Van covers unstaked ground known to exist.

10-8

(3) When the applicant took control of the property he found that while the Washington No. 2 claim had been staked to cover a possible sliver of ground between the Washington and Sunrise claims, there was some question as to whether assessment work had been adequately done on the Washington No. 2 claim. Therefore, as a means of further protection, the applicant staked the Vance claim over the Washington No. 2 claim, thereby assuring himself that any sliver which might be present would be in his control.

(4) The applicant states that all numbers on the claim map attached to the contract are patent survey numbers.

Sincerely yours,

Thor H. Kiilsgaard
For: A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region II

Enclosure

cc: USBM (2)
Kiilsgaard

FILE COPY
140 SURNAME:

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

JWAlt
Griswold
AEKane
Chambers
aEKane
Rutw
J.W.
Chambers
Selfridge

SEP 17 1953 Rewritten by:

Mr. A. E. Weissenborn
Executive Officer
DMEA Field Team, Region II
South 157 Howard Street
Spokane 4, Washington

Re: Docket No. DMEA-2985 (Copper)
Attwood Copper Mines, Ltd.
Lone Star Mine
Ferry County, Washington

Dear Mr. Weissenborn:

We are enclosing the original and five copies of the above contract, signed by this office for the Government, together with Annexes I, II, and III, Exhibit "A" (3 pages), two maps, and an Owner's Consent to Lien with Annex.

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

It will be necessary to insert in the contract, in the space provided under Article 3, the number of days from the date of the contract in which work shall commence.

Because of the following apparent discrepancies, it will also be necessary to verify all the facts set forth in Annex I, and if any changes are needed, you are authorized to make them:

(1) The claims "Shonee," "Santa Fee," and "Santa Fee Fr." are indicated on the map as "Shawnee," "Santa Fe," and "Santa Fe Fr."

(2) The application refers to the "Washington Claims Nos. 1 and 2." The map shows only one claim called the "Washington," and it is not clear whether these claims are patented or unpatented. In fact, all the claims should be reviewed to determine which are patented and which are unpatented and what the patent numbers are.

R.C.G.
9-17-53

(3) The application refers to an unpatented claim "Vance," which the map does not show at all.

(4) The application indicates the numbers after the name of the claims as survey numbers, and the map indicates them to be patent numbers. We have no way of knowing what the facts are.

Sincerely yours

George C. Selfridge

Chairman Operating Committee (JHB)

Enclosures 6

Approved:

J. H. Hedges

Member Bureau of Mines (JHB)

A. R. Kinkel, Jr.

Member, Geological Survey (JHB)

JWAlt:AEK:ep 9-15-53

Copy to: Mails & Files
Adm. Reading File
Oper. Committee
Base Metals Div. (2)
Mr. C. H. Johnson, B/Mines Rm. 3621
Mr. A. R. Kinkel, Jr., USGS, Rm. B-242-A, GSA
Mr. Hofflund
Mr. Kane
Chron.
Pending

FILE COPY
SURNAME 500

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

J. W. Alt
Winnard
Gettys
Chamberlin

Mr. A. E. Weissenborn
Executive Officer
DMEA Field Team, Region II
South 157 Howard Street
Spokane 4, Washington

Re: Docket No. DMEA 2985 (Copper)
Attwood Copper Mines, Ltd.
Lone Star Mine
Ferry County, Washington

Dear Mr. Weissenborn:

We are enclosing the original and five copies of the above contract, signed by this office for the Cove nment, together with Annexes I, II and III, Exhibit "A" (3 pages), two maps, and an Owner's Consent to Lien with Annex.

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

It will be necessary to insert in the contract, in the space provided under Article 3, the number of days from the date of the contract in which work shall commence.

Sincerely yours,

Chairman, Operating Committee

Enclosures 6
APPROVED:

Member, Bureau of Mines

Member, Geological Survey

JWAlt/hmj
(9/4/53)
CC to: Docket
Adm. R. File
Op. Committee
Base Metals Div.
Mr. Kinkel
Mr. Bishop
Chron.

FILE COPY
SURNAME:

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

500

September 14, 1953

Memorandum

To: Mr. Selfridge

From: Chief, Base Metals Division

Subject: Docket DMFA-2985, Atwood Copper Mines, Ltd, Ferry Co., Wash.

The Field Team notes on this proposed project "a striking similarity to the Boundary district near Phoenix, B. C., which produced twenty-two million tons of ore worth over a hundred million dollars."

The ore zone delineated by previous drilling appears to be plus 700 feet in length with a roughly average width of 30 feet. Since this is a pyritic ore, we may say 10 cubic feet of ore in place, per ton, or 2,100 tons of ore per dip foot.

The proposed work should span about 400 dip feet which, with favorable results, would give plus 800,000 tons. Total ore potential, with favorable exploratory results, exploring both laterally and in further depth, could increase above figure by many times.

While grade is stated to be 1.7 per cent copper and 0.035 gold, yet probably mined grade would have a normal expectancy of around 1.25 per cent. This would be due to the fact that drilling indicates much borderline material which will be a little too good to leave, but which will drag down millhead grade, though increasing tonnage.

We are dubious that a commercial and profitable operation could be set up at this time, even with present copper prices, though, of course, much would depend upon what mining costs could be obtained. An off-hand rough guess on costs would be:

Direct mining	$2.75
Direct milling	1.25
Overhead	1.00
	$5.00

Much would depend upon power costs.

On a 24-28¢ copper market, the project, at best, might be a break-even proposition. However, there does seem to exist a fair possibility for substantial ore tonnages.

WRGriswold/bjl
Copy to: Docket
Base Metals
Chron.

W. R. Griswold
W. R. Griswold

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

500

September 14, 1953

Memorandum

To: Mr. Selfridge

From: Chief, Base Metals Division

Subject: Docket DMEA-2985, Atwood Copper Mines, Ltd, Ferry Co., Wash.

The Field Team notes on this proposed project "a striking similarity to the Boundary district near Phoenix, B. C., which produced twenty-two million tons of ore worth over a hundred million dollars."

The ore zone delineated by previous drilling appears to be plus 700 feet in length with a roughly average width of 30 feet. Since this is a pyritic ore, we may say 10 cubic feet of ore in place, per ton, or 2,100 tons of ore per dip foot.

The proposed work should span about 400 dip feet which, with favorable results, would give plus 800,000 tons. Total ore potential, with favorable exploratory results, exploring both laterally and in further depth, could increase above figure by many times.

While grade is stated to be 1.7 per cent copper and 0.035 gold, yet probably mined grade would have a normal expectancy of around 1.25 per cent. This would be due to the fact that drilling indicates much borderline material which will be a little too good to leave, but which will drag down millhead grade, though increasing tonnage.

We are dubious that a commercial and profitable operation could be set up at this time, even with present copper prices, though, of course, much would depend upon what mining costs could be obtained. An off-hand rough guess on costs would be:

Direct mining	$2.75
Direct milling	1.25
Overhead	1.00
	$5.00

Much would depend upon power costs.

On a 24-28¢ copper market, the project, at best, might be a break-even proposition. However, there does seem to exist a fair possibility for substantial ore tonnages.

W. R. Griswold

W. R. Griswold

UNITED STATES
DEPARTMENT OF THE INTERIOR 500
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

September 14, 1953

Memorandum

To: Mr. Selfridge

From: Chief, Base Metals Division

Subject: Docket DMEA-2985, Atwood Copper Mines, Ltd, Ferry Co., Wash.

The Field Team notes on this proposed project "a striking similarity to the Boundary district near Phoenix, B. C., which produced twenty-two million tons of ore worth over a hundred million dollars."

The ore zone delineated by previous drilling appears to be plus 700 feet in length with a roughly average width of 30 feet. Since this is a pyritic ore, we may say 10 cubic feet of ore in place, per ton, or 2,100 tons of ore per dip foot.

The proposed work should span about 400 dip feet which, with favorable results, would give plus 800,000 tons. Total ore potential, with favorable exploratory results, exploring both laterally and in further depth, could increase above figure by many times.

While grade is stated to be 1.7 per cent copper and 0.035 gold, yet probably mined grade would have a normal expectancy of around 1.25 per cent. This would be due to the fact that drilling indicates much borderline material which will be a little too good to leave, but which will drag down millhead grade, though increasing tonnage.

We are dubious that a commercial and profitable operation could be set up at this time, even with present copper prices, though, of course, much would depend upon what mining costs could be obtained. An off-hand rough guess on costs would be:

Direct mining	$2.75
Direct milling	1.25
Overhead	1.00
	$5.00

Much would depend upon power costs.

On a 24-28¢ copper market, the project, at best, might be a break-even proposition. However, there does seem to exist a fair possibility for substantial ore tonnages.

W. R. Griswold

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
AUG 21 1953

ATTWOOD COPPER MINES LIMITED

(NO PERSONAL LIABILITY)

INCORPORATED UNDER PART XI OF THE COMPANIES ACT OF THE PROVINCE OF ONTARIO
ALSO REGISTERED UNDER THE COMPANIES ACT OF BRITISH COLUMBIA

VANCOUVER, B.C. OFFICE:
844 WEST HASTINGS STREET

EXECUTIVE OFFICE:
SUITE 1008-330 BAY ST., TORONTO, ONT.

August 19th, 1953.

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

Attention: C. O. Mittendorf
Administrator

Docket No. D.M.E.A. - 2985 (Copper)
Lone Star Mine - Boundary District
Ferry County, Washington.

Dear Sir:

We have now received back from the solicitor for Marie McGowan the eight copies of the Owners Consent to Lien - now duly executed by Marie McGowan - which we forwarded him as soon as we knew his name and address. He is John P. Raftis, Attorney-at-law, Doorman Bldg., Colville, Washington, U.S.A.

Accordingly, as requested in your letter of July 9th, we enclose herewith seven copies of the executed consent and will now appreciate your further advice as to the status of the contract as referred to in your letter of July 9th.

Your further co-operation in this matter will be much appreciated.

Yours very truly,

ATTWOOD COPPER MINES LIMITED,

F. N. Hannaford

F. N. Hannaford,
Secretary-Treasurer.

FNH/o
Encl.
cc - J. H. Amys
Bernard Reiter

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

xxxxxxxxxxxxxxxxxxx
So. 157 Howard Street
Spokane 4, Washington

August 11, 1953

Mr. R. H. Seraphim
Attwood Copper Mines, Ltd.
P. O. Box 560
Greenwood, B. C.

Re: Docket No. DMEA-2985 (Copper)
Lone Star Mine
Ferry County, Washington

Dear Mr. Seraphim:

We have recently been advised by the Washington office of DMEA that the only stumbling block remaining in the granting of a contract to your Lone Star property is a Consent to Lien agreement covering the Sunrise, Sunset, Sante Fee, and Sante Fee Fraction claims, which needs to be signed by the owners of these claims. A letter addressed to Mr. S. A. Perry, Suite 1008, 330 Bay Street, Toronto, Ontario, mentioned the need for this Consent to Lien agreement and we wonder if you have received a copy of this letter. In the event you haven't, we would suggest that you obtain a signature to this lien agreement, copies of which are enclosed, and return them to this office. We will immediately forward them to Washington, which act, we believe, will speed the drawing of the contract.

Sincerely yours,

Thor H. Kiilsgaard
Acting Executive Officer
DMEA Field Team, Region II

Enclosure

cc: DMEA (2)
USBM (2)
Kiilsgaard

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

xxxxxxxxxxxxxxxxxx
So. 157 Howard Street
Spokane 4, Washington

August 11, 1953

Mr R. N. Seraphim
Attwood Copper Mines, Ltd.
P. O. Box 560
Greenwood, B. C.

Re: Docket No. DMEA-2985 (Copper)
Lone Star Mine
Ferry County, Washington

Dear Mr. Seraphim:

We have recently been advised by the Washington office of DMEA that the only stumbling block remaining in the granting of a contract to your Lone Star property is a Consent to Lien agreement covering the Sunrise, Sunset, Sante Fee, and Sante Fee Fraction claims, which needs to be signed by the owners of these claims. A letter addressed to Mr. S. A. Perry, Suite 1008, 330 Bay Street, Toronto, Ontario, mentioned the need for this Consent to Lien agreement and we wonder if you have received a copy of this letter. In the event you haven't, we would suggest that you obtain a signature to this lien agreement, copies of which are enclosed, and return them to this office. We will immediately forward them to Washington, which act, we believe, will speed the drawing of the contract.

Sincerely yours,

Thor H. Kiilsgaard
Acting Executive Officer
DMEA Field Team, Region II

Enclosure

cc: DMEA (2)
USBM (2)
Kiilsgaard

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUL 20 1953

ATTWOOD COPPER MINES LIMITED

(NO PERSONAL LIABILITY)

INCORPORATED UNDER PART XI OF THE COMPANIES ACT OF THE PROVINCE OF ONTARIO
ALSO REGISTERED UNDER THE COMPANIES ACT OF BRITISH COLUMBIA

VANCOUVER, B.C. OFFICE,
844 WEST HASTINGS STREET

EXECUTIVE OFFICE:
SUITE 1008-330 BAY ST., TORONTO, ONT.

July 16th, 1953.

Betty

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

Attention: Mr. C. O. Mittendorf
Administrator

Gentlemen: Docket DMER - 2985 (Copper)
Lone Star Mine

We wish to make belated acknowledgment of your letter of July 9th, 1953.

With respect to the obtaining of the Owner's Consent to Lien from Marie McGowan, our solicitors Messrs. Hughes, Agar, Amys & Steen (Mr. J. H. Amys acting) - of 357 Bay Street, Toronto, Ontario have had the Lone Star matter in hand for some time and latterly have been endeavouring to clear - through Mr. Bernard Reiter of McMicken, Rupp & Schweppe, Attorneys, of 657 - 671 Colman Bldg., Seattle, Washington,- the matter of title to the claims set forth in your letter.

Pursuant to receiving your letter of July 9th, we wrote Mr. Reiter under date July 14th relative to contacting Marie McGowan.

Immediately we have reply from Mr. Reiter we shall write you further. Meanwhile we note that you are processing the company's application.

Thanking you for your co-operation in this matter,

Yours very truly,

ATTWOOD COPPER MINES LIMITED,

F. N. Hannaford

F. N. Hannaford,
Secretary-Treasurer.

FNH/o
cc - B. Reiter

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

July 13, 1953

Memorandum

To: W. R. Griswold, DMEA

From: C. H. Johnson, Bureau of Mines

Subject: DMEA-2985 (Copper) Attwood Copper Mines, Ltd., Ferry County, Washington

I have reviewed the Field Team report dated June 26, 1953 on the above-named application and agree that the deposit has a large potential tonnage and that the proposed project in general is well laid out. There are, however, several questions about it that may need to be answered:

(1) No full analysis has been made of the cost of production, but I believe the deposit would be marginal or uneconomic at the present time. It is questionable that even a 500-ton rate of operation, based on a million ton ore reserve, would repay the capital investment and return royalties and profits at present prices. This might not prohibit the DMEA from giving exploration assistance, but perhaps the question should be considered more carefully than it has been in the field team report. In this connection, it is noted that the examiners believe exploration may yield a reserve of a million tons. In this type of orebody, however, a large tonnage may have to be tied up in pillars and the recoverable tonnage would be considerably less.

(2) The field team report gives no reason for not opening or attempting to open the lowest level in the mine. It appears from the map that a long crosscut and drifts were driven to explore part of the same area that is to be explored by the proposed new crosscut and drift. If this is true, and if the ore zone already has been found to be barren or very lean at that point, the project might need to be modified considerably. In any event, it seems to me that advantage should be taken of the earlier work, if possible.

(3) The preliminary diamond drilling appears to serve no useful purpose unless the underground work is to be delayed until its results are known, yet the proposal appears to be to go ahead regardless of the diamond drill results.

(4) The computation of unit rates does not specifically include costs of bookkeeping, engineering, geological work, etc. Perhaps this is part of the $600 per month supervisory item that appears in several places. The preliminary diamond drilling and the rehabilitation work in the adit do not both need supervision at $600 per month if they are to be run simultaneously as is suggested. In the case of the crosscut and drifting, the supervisory item should be divided in half if it is later to be multiplied by two on account of two-shift operation.

The file loaned me by your office is returned herewith.

C. H. Johnson

C. H. Johnson

Attachments

Copy to - Minerals Division
Mr. Kinkel, GSA, B-242-A
C. H. Johnson
Files

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

July 13, 1953

Memorandum

To: W. R. Griswold, DMEA

From: C. H. Johnson, Bureau of Mines

Subject: DMEA-2985 (Copper) Attwood Copper Mines, Ltd., Ferry County, Washington

I have reviewed the Field Team report dated June 26, 1953 on the above-named application and agree that the deposit has a large potential tonnage and that the proposed project in general is well laid out. There are, however, several questions about it that may need to be answered:

(1) No full analysis has been made of the cost of production, but I believe the deposit would be marginal or uneconomic at the present time. It is questionable that even a 500-ton rate of operation, based on a million ton ore reserve, would repay the capital investment and return royalties and profits at present prices. This might not prohibit the DMEA from giving exploration assistance, but perhaps the question should be considered more carefully than it has been in the field team report. In this connection, it is noted that the examiners believe exploration may yield a reserve of a million tons. In this type of orebody, however, a large tonnage may have to be tied up in pillars and the recoverable tonnage would be considerably less.

(2) The field team report gives no reason for not opening or attempting to open the lowest level in the mine. It appears from the map that a long crosscut and drifts were driven to explore part of the same area that is to be explored by the proposed new crosscut and drift. If this is true, and if the ore zone already has been found to be barren or very lean at that point, the project might need to be modified considerably. In any event, it seems to me that advantage should be taken of the earlier work, if possible.

(3) The preliminary diamond drilling appears to serve no useful purpose unless the underground work is to be delayed until its results are known, yet the proposal appears to be to go ahead regardless of the diamond drill results.

(4) The computation of unit rates does not specifically include costs of bookkeeping, engineering, geological work, etc. Perhaps this is part of the $600 per month supervisory item that appears in several places. The preliminary diamond drilling and the rehabilitation work in the adit do not both need supervision at $600 per month if they are to be run simultaneously as is suggested. In the case of the crosscut and drifting, the supervisory item should be divided in half if it is later to be multiplied by two on account of two-shift operation.

The file loaned me by your office is returned herewith.

C. H. Johnson

Attachments

CHJohnson:ks

Copy to - Minerals Division
Mr. Kinkel, OKA, B-242-A
C. H. Johnson
Files

(4) The computation of unit rates does not specifically include costs of bookkeeping, engineering, geological work, etc. Perhaps this is part of the $600 per month supervisory item that appears in several places. The preliminary diamond drilling and the rehabilitation work in the adit do not both need supervision at $600 per month if they are to be run simultaneously as is suggested. In the case of the crosscut and drifting, the supervisory item should be divided in half if it is later to be multiplied by two on account of two-shift operation.

The file loaned me by your office is returned herewith.

C. H. Johnson

Attachments

CHJohnson:ks

Copy to - Minerals Division
Mr. Kinkel, GSA, B-242-A
C. H. Johnson
Files

FILE COPY
SURNAME:

140

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

JUL 9 1953

Rubin
Astone
J.W. Alt
Mimeoed

Air Mail

Mr. S. A. Perry
Vice President
Attwood Copper Mines Limited
Suite 1008 - 330 Bay Street
Toronto, Ontario, Canada

Re: Docket No. DMEA-2985 (Copper)
Lone Star Mine
Boundary District
Perry County, Washington

Dear Mr. Perry:

In reviewing your company's application for aid in a minerals exploration project, it appears that your company now owns all the claims listed in the application, except the Sunrise, Sunset, Santa Fee, and Santa Fee Fraction claims, for which four claims your company holds an option to purchase.

We require an Owner's Consent to Lien signed by Marie McGowan (the optionor of the four claims listed above), prior to executing a contract with your company. In the meantime, however, we shall continue processing your company's application.

Eight copies of the Owner's Consent to Lien are enclosed. Please return to us seven signed copies.

Sincerely yours,

C. O. Mittendorf

Administrator

Enclosures

HCRubin/ep/ema/7-8-53
cc: Mails & Files
Adm. R. File
C. O. Mittendorf
Op. Comm.
Field Team (2)
Mr. Ellis
J.L.Hofflund
H.C.Rubin
Chron.
Pending.

R.C.S. 7-9-53

IN REPLY REFER TO:

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

July 7, 1953

Memorandum

To: Mr. W. R. Griswold

From: E. L. Newcomb

Subject: Recommendation for approval

Re: DMEA-2985
Attwood Copper Property
Ferry County, Washington
$111,476.10
Copper-gold

The applicant proposes to explore downdip along the flanks of a southeastward plunging anticlinal ore structure. Previous work, including recent underground diamond drilling, has indicated that copper-gold mineralization is mainly controlled by a 30-50' shear zone along a basalt-dacite contact on this plunging fold. Ore minerals are chiefly pyrite and chalcopyrite with minor amounts of gold associated with the chalcopyrite.

The field team has recommended a project involving 184 feet of rehabilitation and enlargement of the 3765 adit, 2200 feet of crosscutting and drifting and 2500 feet of diamond drilling for approval. They consider the Company's geological mapping and extensive sampling represents a rather thorough investigation of the property. For this reason, they used the applicant's maps to check the underground geology and check sampled only three mineralized sections of two representative drill holes. The results of check samples were close enough to the applicant's assays to indicate the general accuracy of the 500 samples taken by the Company's geologists.

The Attwood Copper mine has not been in production since World War I. However, the production shipped at that time is reported to have been 36,000 tons assaying 2.60% copper, 0.032 oz. gold and 0.193 oz. silver.

On the basis of preliminary drilling in 1952, the applicant estimates ore reserves are about 200,000 tons averaging 1.73% copper and 0.036 oz. gold. This ore was delineated in a block between the 4,000 and 3,850 levels. The field team considers this estimate is conservative and that the proposed work above and below the 3765 level may delineate 1,000,000 tons of ore.

The proposed exploration has been well planned. The available data from the Company's recent drilling indicates the proposed work has a good chance of delineating a substantial tonnage of copper-gold ore.

I concur with the field team and recommend the application be approved.

E. L. Newcomb

E. L. Newcomb
Geologist

IN REPLY REFER TO:

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

July 7, 1953

Memorandum

Re: DMEA-2985
Attwood Copper Property
Ferry County, Washington
$111,476.10
Copper-gold

To: Mr. W. R. Griswold

From: E. L. Newcomb

Subject: Recommendation for approval

The applicant proposes to explore downdip along the flanks of a southeastward plunging anticlinal ore structure. Previous work, including recent underground diamond drilling, has indicated that copper-gold mineralization is mainly controlled by a 30-50 foot shear zone along a basalt-dacite contact on this plunging fold. Ore minerals are chiefly pyrite and chalcopyrite with minor amounts of gold associated with the chalcopyrite.

The field team has recommended a project involving 184 feet of rehabilitation and enlargement of the 3765 adit, 2200 feet of crosscutting and drifting and 2500 feet of diamond drilling for approval. They consider the Company's geological mapping and extensive sampling represents a rather thorough investigation of the property. For this reason, they used the applicant's maps to check the underground geology and check sampled only three mineralized sections of two representative drill holes. The results of check samples were close enough to the applicant's assays to indicate the general accuracy of the 500 samples taken by the Company's geologists.

The Attwood Copper mine has not been in production since World War I. However, the production shipped at that time is reported to have been 36,000 tons assaying 2.60% copper, 0.032 oz. gold and 0.193 oz. silver.

On the basis of preliminary drilling in 1952, the applicant estimates ore reserves are about 200,000 tons averaging 1.73% copper and 0.036 oz. gold. This ore was delineated in a block between the 4,000 and 3,850 levels. The field team considers this estimate is conservative and that the proposed work above and below the 3765 level may delineate 1,000,000 tons of ore.

The proposed exploration has been well planned. The available data from the Company's recent drilling indicates the proposed work has a good chance of delineating a substantial tonnage of copper-gold ore.

I concur with the field team and recommend the application be approved.

E. L. Newcomb
Geologist

IN REPLY REFER TO:

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

July 7, 1953

Memorandum

Re: TMA-2985
Attwood Copper Property
Ferry County, Washington
$11,476.10
Copper-gold

To: Mr. W. R. Griswold

From: E. L. Newcomb

Subject: Recommendation for approval

The applicant proposes to explore downdip along the flanks of a southeastward plunging anticlinal ore structure. Previous work, including recent underground diamond drilling, has indicated that copper-gold mineralization is mainly controlled by a 30-50 foot shear zone along a basalt-dacite contact on this plunging fold. Ore minerals are chiefly pyrite and chalcopyrite with minor amounts of gold associated with the chalcopyrite.

The field team has recommended a project involving 184 feet of rehabilitation and enlargement of the 3765 adit, 2200 feet of crosscutting and drifting and 2500 feet of diamond drilling for approval. They consider the Company's geological mapping and extensive sampling represents a rather thorough investigation of the property. For this reason, they used the applicant's maps to check the underground geology and check sampled only three mineralized sections of two representative drill holes. The results of check samples were close enough to the applicant's assays to indicate the general accuracy of the 500 samples taken by the Company's geologists.

The Attwood Copper mine has not been in production since World War I. However, the production shipped at that time is reported to have been 36,000 tons assaying 2.60% copper, 0.032 oz. gold and 0.193 oz. silver.

On the basis of preliminary drilling in 1952, the applicant estimates ore reserves are about 200,000 tons averaging 1.73% copper and 0.036 oz. gold. This ore was delineated in a block between the 4,000 and 3,850 levels. The field team considers this estimate is conservative and that the proposed work above and below the 3765 level may delineate 1,000,000 tons of ore.

The proposed exploration has been well planned. The available data from the Company's recent drilling indicates the proposed work has a good chance of delineating a substantial tonnage of copper-gold ore.

I concur with the field team and recommend the application be approved.

E. L. Newcomb
Geologist

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

June 26, 1953

Mr. George C. Selfridge, Chairman
Operating Committee, DMEA
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-2985 (copper)
Attwood Copper Property
Ferry County, Washington

Dear Mr. Selfridge:

Enclosed are four copies of the field examination report on the captioned property by T. H. Kiilsgaard and A. E. Weissenborn, U. S. Geological Survey, and T. E. Howard, U. S. Bureau of Mines, recommending approval of the proposed exploration. Six copies of a map showing proposed work and four copies of the claim map are enclosed.

It will be noted that the area included in the property is much larger than will be benefited by the exploration in which the Government will participate. We have the survey number or the book and page number for all the claims except the Ute, Siwash, and Cree. These are so remote from the project that they could be excluded from the contract.

By Field Team, Region II

A. E. Weissenborn
A. E. Weissenborn, Exec. Officer
(Geological Survey)

Thomas E Howard
T. E. Howard, Acting Member
(Bureau of Mines)

Enclosures
cc: USBM (2)
Kiilsgaard

Reviewed by
DMEA OPERATING COMMITTEE
7-3-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration
So. 157 Howard Street
Spokane 4, Washington

June 26, 1953

9/11/53

To: DMEA Field Team, Region II

From: T. H. Kiilsgaard and A. E. Weissenborn, U. S. Geological Survey, and T. E. Howard, U. S. Bureau of Mines

Subject: Docket No. DMEA-2985 (copper), Field examination of the Attwood Copper Property, Ferry County, Washington

RECOMMENDATIONS

It is recommended that the Attwood Copper Mines, Ltd., be granted a DMEA contract of $111,476.10 for work outlined in this report. To facilitate administration of the contract, it is recommended that all work be based on unit costs rather than Government participation in actual costs.

INTRODUCTION

The subject field examination of the Attwood Copper Mines property was made on June 1 and 2 by the writers, accompanied by Mr. R. H. Seraphim, geologist and company official in charge of operations. Purpose of the examination was to review company maps and assay data, to inspect the property, and to discuss the proposed exploration program.

Inasmuch as the applicant's mine workings are extensive and as Seraphim and his assistants have mapped the geology in detail, no attempt was made by field examiners to remap or sample the property. The applicant's maps were carefully studied and were compared with geologic exposures in the mine workings. As the applicant has taken more than 500 samples of the large, low-grade ore body, sampling by the examiners was confined to three samples of split drill core and these were intended to serve merely as "checks" on the applicant's sampling.

Following the examination, the applicant's proposed exploration program was discussed and certain revisions in the proposed work and costs were suggested. The revised program proposes preliminary diamond drilling to be followed by crosscutting and drifting on the 3765 level and by diamond drilling from that level. The applicant agreed to this revised program.

Reviewed by
DMEA OPERATING COMMITTEE

7-3-53
(date)

APPLICANT

The applicant is the Attwood Copper Mines, Ltd., a Canadian corporation with offices at 330 Bay Street, Suite 1008, Toronto, Ontario, Canada. The company has a field office at Greenwood, British Columbia, where the acting company official, Mr. R. H. Seraphim, maintains his residence.

LOCATION & ACCESSIBILITY

The Attwood Copper property, formerly known as the Lone Star mine, is in the extreme northern part of Ferry County, Washington, in sections 1, 2, and 3, T. 40 N., R. 33 E., Willamette Meridian. The property is comprised of a number of patented and unpatented claims (see attached claim map). The northern end lines of some of these claims border the Canadian boundary line. Some of the company holdings are across the boundary line in British Columbia, although it is not believed that these claims will be materially benefited by the proposed exploration and, therefore, should not be considered with this application.

The Attwood company office is currently at Greenwood, British Columbia, 34 miles from the mine by way of the highway extending through Curlew, Washington, to Midway, to Greenwood. If exploration at the mine is resumed, plans are to move the office into Washington, possibly to the mine site.

The Lone Star mine is accessible by following the black-topped highway northeast from Curlew to Danville for 5.2 miles, thence northwest on the gravelled, Goosmus Creek county road for 2.8 miles, thence northeast 1.4 miles at which point you leave the county road and turn north on an unfinished mountain road for 2 miles to the lower portal of the mine. The highway from Curlew to Danville follows the Kettle River and where the Goosmus Creek county road joins the highway, the altitude is about 1800 feet. From this point, however, the road climbs steadily until it reaches an altitude of about 4000 feet at the mine.

The Curlew-Danville highway is kept clear of snow during winter months as is the Goosmus Creek county road. There would be only 2 miles of road to be maintained by the company in the event they should work during winter weather. Such maintenance could be a problem during a heavy winter, as are common in the area, but would not be an impossibility.

If the proposed exploration work is undertaken, a short length of new road and a crude bridge across Goosmus Creek will be needed to connect the proposed adit site with the existing road.

PROPERTY

The property is described by Mr. D. F. Kidd, President and General Manager of Attwood Copper Mines Ltd., in an interim report accompanying the application, as follows:

In Ferry County, Washington

Lone Star	349	Patented (syn. U.S.C.F.)		1952 taxes represented paid in full.		
Washington	349	"	"	"	"	"
Prytis	607	"	"	"	"	"
Helen Lode	570	"	"	"	"	"
Shonee No. 2	531	"	"	"	"	"
Shonee	1031	"	"	"	"	"
Pauline Fr.	"	"	"	"	"	"
Carter	"	"	"	"	"	"
Arthur Jr.	"	"	"	"	"	"
Houck	"	"	"	"	"	"
Walter	"	"	"	"	"	"
Primrose Fr.	"	"	"	"	"	"
Snowstorm	"	"	"	"	"	"
Black Diamond	"	"	"	"	"	"
Mother Lode	"	"	"	"	"	"
Sunrise	679	"	"	1952 taxes pd. per Abstract of title.		
Sunset	679	"	"	"	"	" "
Santa Fee	Unpatented (i.e. located)			Abstract of Title establishes claim in good standing to June 30, 1953		
Santa Fee Fr.		"	"	) Claim represented to be		
Washington No. 1		"	"	) in good standing June 30,		
Washington No. 2		"	"	) 1953 but some doubt exists.		
Vance Lode	Unpatented			)		
Van Lode		"		) Staked by Vance Vancert		
Woert Lode		"		) and in good standing to		
Ted Lode		"		) June 30, 1953, Quit Claim		
Bod Lode		"		) Deed registered in favor		
Clint Lode		"		) of Attwood Copper Mines		
Bill Lode		"		) Limited on Dec. 12, 1952.		

As described by Kidd in the interim report, the property is much more extensive than as described in the application which is as follows:

Unpatented Claims	Book	Page
Santa Fee	11	423
Santa Fee Fr.	11	424

Unpatented Claims	Book	Page
Washington Nos. 1 & 2	12	30
Van	12	161
Vance	12	161
Woert	12	161
Ted	12	155
Clint	12	155
Bob	12	155
Bill	12	155

During the course of the field examination Mr. Seraphim was asked for a claim map of the Attwood Lone Star holdings. He drew a map, a copy of which is attached to this report, which shows the location of the proposed work in relation to the claims. It is recommended that all claims shown on this map be incorporated into the proposed contract, except possibly the Ute, Siwash, and Cree as noted below, as these claims, taken as a group, would benefit from the proposed exploration. Claims to be subjected to the contract include:

Patented Claims	Patent No.
Carter	1031
Arthur Jr.	"
Houck	"
Walter	"
Shawnee	"
Primrose Fr.	"
Shenee No. 2	"
Pauline Fr.	"
Prytis	607
Santa Fee	555
Snowstorm	1031
Black Diamond	"
Mother Lode	"
Lone Star	349
Washington	"
Sunset	679
Sunrise	"
Helen	570

Unpatented Claims	Book	Page
Van	12	161
Ted	12	155
Clint	12	155
Bob	12	155
Bill	12	155
Woert	12	161

Unpatented Claims (cont.)

Ute Siwash Cree Santa Fee Fr.	Book and page number not available. These claims are on fringe of area, are unlikely to be benefited by the exploration and could be excluded from the contract without harming the Government.

It will be noted that Kidd reports the Santa Fee as unpatented, whereas Seraphim marks it as patented with patent number 555. As Seraphim understood the purpose of the claim map, it is assumed that he is correct. It will also be noted that a number of additional unpatented claims have been included in the present claim map.

Mr. Seraphim stated that all unpatented claims had been staked in the company name and that patented claims were owned by the company.

The Lone Star mine is reported to have been originally opened by three adits, a winze, a shaft, and one level off the shaft. At the time of the examination the applicant had rehabilitated the portal of the 3955 level thereby making the mine accessible. The 3860 level was accessible by a winze from the 3955 level. The short 3900 intermediate level was accessible by way of a short raise off the south crosscut on the 3870 level. A level below the 3870 is reported to extend off the shaft but it was inaccessible.

In addition to underground workings the property has been explored by 25 diamond drill holes, drilled from the surface by former operators. Core logs and assay data from these holes are available at the company office. Location of some of these holes is shown on the attached maps.

In 1952 the applicant drilled 28 diamond drill holes from underground workings. These holes have been competently logged and the core split and assayed. Splits of the core from these holes are stored on the property and are available for inspection. Most of these holes, with assays, are plotted on the applicant's map attached herewith.

Except for one dilapidated log shack and an abandoned barn, there are no buildings on the property.

HISTORY & PRODUCTION

According to a U. S. Bureau of Mines War Minerals Report on the Lone Star and W shington mines, Ferry County, Washington, May 1945, the property was first developed by the Reservation Mining and Milling Company in 1897. This company shipped 1,700 tons of ore that assayed 3.74 percent Cu, 0.059 oz. Au, and 0.361 oz. Ag. Total

development on the property prior to 1910 comprised 2,155 feet of adits, shafts, and winzes.

In 1910 the property came under control of the British Columbia Copper Company. During the period 1910-1918, this company further explored the property with 2,220 feet of drifts, shafts, winzes, and raises, and by 3,590 feet of diamond drilling from the surface. As a result of this exploration the British Columbia Copper Company estimated ore reserves on the property as 300,000 tons assaying 2.088 percent Cu, 0.0523 oz. Au, and 0.231 oz. Ag.

From 1910-1912 several small shipments of ore were made to the smelter, but this ore proved to be inferior for direct smelting because of its high silica content. Attempts made to concentrate the ore by gravity methods are reported to have been unsuccessful. Unfortunately, flotation concentration was not available at that time.

During World War I the British Columbia Copper Company constructed a 28,560-foot cable tram from the mine to the company smelter at Boundary Falls, British Columbia, and shipped 36,000 tons of ore assaying 2.60 percent Cu, 0.032 oz. Au, and 0.193 oz. Ag to this smelter.

At the close of World War I the mine closed, reportedly because of the decline in the price of copper. The property has remained closed ever since, except for the minor rehabilitation and the underground drilling of 28 holes done by Attwoood Copper Mines during 1952.

GEOLOGY

There are no known published reports on the geology of the northern part of Ferry County, Washington. The nearest area that has been described is the region about Greenwood, British Columbia, described in Memoir 19 by O. E. LeRoy, Canada Department of Mines, Geological Survey Branch.

The surface of the Lone Star property is almost completely covered with glacial moraine and a thick stand of timber. The moraine, in places, is over 100 feet thick. Because of the glacial cover, there are few outcrops. Those rocks outcropping in the vicinity of the mine are comprised chiefly of serpentine-talcose rocks and dacite and they have been tentatively correlated with the Knob Hill formation of Carboniferous age. These rocks are reported to form a southeasterly-trending belt averaging about half a mile wide, which is bounded on both sides by granitic rocks of the Colville batholith.

Within the mine are exposures of a basaltic "dike" or sill whose thickness is unknown, which is locally known as the "black dike"; the dike does not outcrop. Where exposed in mine workings, the

basaltic "dike" is in part fresh and unaltered, although, locally, in and near zones of shearing, it has been changed to a serpentinized rock. In the main part of the mine the "dike" appears to strike roughly east and dip south but on the eastern side of the mine the "dike" attitude apparently changes to a northern strike and dips to the east. This change in attitude forms a structure comparable to a plunging anticline, in this instance plunging to the southeast. The footwall of the "black dike" is nowhere exposed, but the hanging wall is in contact with dacite. Locally this appears to be a faulted contact but apophyses of the "black dike" in the dacite attest to its intrusive character and suggest that the movement along the contact has been relatively minor. As the dacite contact is approached, the dike generally is more serpentinized, and there is more shearing which roughly parallels the contact. Masses of serpentine are common in the basalt near the contact. The basalt-dacite contact is locally sharp, although there are occasional masses of serpentinized rock in the dacite, some of which are reported to be as much as 50 feet away from the contact.

The dacite has been intensely silicified near the basalt contact until its original composition is difficult to determine. The silicified dacite with the previously mentioned included serpentinized masses has a foliation that conforms roughly with the dacite-basalt contact. It is reported that further away from the contact the dacite is relatively fresh.

Primary mineralization at the mine consists chiefly of pyrite and chalcopyrite. Minor amounts of gold are reported to be associated with the chalcopyrite. Mineralization is controlled by the sheared basalt-dacite contact; practically all of the mineralization occurring in the silicified dacite adjacent to the sheared zone, although the mineralized zone is of varying thickness and in places is as much as 50 feet thick. Local controls are apparently affected by the serpentinized masses within the dacite; higher-grade ore shoots are reported to underlie these masses. Minor amounts of copper-gold ore have been found in these serpentinized rocks and in the basalt, but for the most part these rocks are barren.

Inasmuch as copper-gold mineralization is extensive and for the most part low-grade, and as the applicant has taken more than 500 samples on the property, it was deemed unfeasible by the examiners to sample the ore-bearing area. They did, however, take 3 samples from drill hole splits to check the applicant's samples. These samples were merely pieces of the core taken at approximately regular intervals from the stored core. The results are as follows:

Drill Hole	Footage	Attwood Au	Attwood Cu	DMEA Au	DMEA Cu
No. 1	12 - 16	0.03	2.85	0.03	2.68
No. 1	29 - 33	0.055	3.30	0.09	2.60
No. 16	43.5 - 66.5				
	43.5 - 48.5	0.02	1.10		
	48.5 - 54	0.09	4.95		
	54 - 59	0.23	5.15		
	59 - 64	0.04	2.35		
	64 - 66.5	0.02	1.65		
Average	43.5 - 66.5	0.04	3.04	0.06	2.98

From a comparison of these samples, and from a comparison of the applicant's samples with those taken by the British Columbia Copper Company, it is believed that the applicant's sample data may be accepted as reliable.

The extent of the sheared basalt-dacite contact and the limits of copper-gold mineralization along the contact is unknown. That part of the contact area that has been most productive occurs on the nose of the previously described "plunging anticline." The limbs of this structure may be seen on the 3870 level and on the overlying intermediate 3900 level driven off the raise from the 3870 south crosscut (see accompanying map). From the map it may be seen that on the 3870 level, the axis of the "plunging anticline" is about at co-ordinates 4800 N., 5480 E. From this point the "plunging anticline" strikes about N. 40° W., and passes through the area where it has been mined by the Glory Hole and associated underlying workings. Ore should extend without interruption along the nose of the plunging anticline between the Glory Hole and the 3870 level, except that part of it has been eroded in a southwest-trending gulch whose center line may be traced by the indentations in the 4000 and 4100-foot contour lines. This gulch has, in effect, made two separate ore bodies out of what was originally one continuous ore body.

On the northeast limb of the "plunging anticline" the northernmost ore was mined on the 3955 level about at co-ordinates 5200 N., 5370 E. On the 3870 level a 30-foot width of ore at the eastern face of the 3870 crosscut averaged more than 2 percent copper. A drill hole from the surface, at co-ordinates 4934 N., 5656 E., is reported to have encountered ore below the 3870 level.

Ore has been mined on the southeast limb of the "plunging anticline" on and above the 3955 level as far west as the 5020 E. co-ordinate (see accompanying map). A downward diamond drill hole from the face of a short adit, whose portal is at co-ordinates 4700 N., 5096 E., encountered ore below the 3950 level. On the extreme western side of the property, west of Goosmus Creek, at co-ordinates 4980 N., 4030 E., is an abandoned inclined shaft, now flooded a short distance below the collar. On the shaft dump are serpentinized basaltic rocks and silicified dacite. Chalcopyrite and molybdenite are to be seen

in some of the dacite. It is quite probable that this mineralized showing is on the western extension of the basalt-dacite contact.

A point of interest concerning the Lone Star copper-gold property is its striking similarity to the large copper-gold deposits mined in the Boundary district near Phoenix, British Columbia, during the early part of the century. By air line these deposits are only a few miles away from the Lone Star property. Total production from the Boundary district has been reported as 22,000,000 tons with a net value of over $100,000,000.00.

ORE RESERVES

The applicant estimates ore reserves at the property as 200,000 measured tons assaying 1.73 percent Cu and 0.036 oz. Au. This block of ground has been delineated by diamond drilling and lies between the 4000 and 3850 levels. After reviewing the applicant's maps and sections, it is believed that this measurement of reserves is conservative.

PROPOSED EXPLORATION PROGRAM

As presented in the application, the applicant's proposed program consists of:

1. (a) An adit, to portal at co-ordinates 4250 N., 4775 E., elevation 3780 feet, and to be driven northeast until the ore is intersected and then to follow the ore for 1000 feet to the east.

   (b) 500 feet of crosscutting and 1000 feet of drifting in the hanging wall area, for diamond drill stations, to be followed by 10,000 feet of diamond drilling to explore the structure 250 feet vertically and 600 feet down dip below the proposed level.

2. (a) 3000 feet of diamond drilling from the surface to facilitate drifting on the ore.

3. (a) Surface mapping and resurveying of claims.

After examining the property it was decided by field examiners that the applicant's proposed program was more than was needed to adequately explore the area in which the applicant was interested. The program was, therefore, revised to include the following:

1. 250 feet of drilling from the face of the adit, whose portal is at co-ordinates 4700 N., 5096 E. This drilling will consist of two holes fanned to the east and west at negative angles to check the ore zone below that area.

2. 600 feet of diamond drilling to be drilled from the surface, from the outcrop at co-ordinates 4430 N., 4940 E. These holes will be fanned to the north at negative angles to test the ore zone in that area. These locations are the only practicable ones because of the thick glacial cover.

3. Rehabilitate 184 feet of adit, whose portal is at co-ordinates 4265 N., 4710 E. In the application, the applicant proposed to start the proposed lower level 15 feet higher in elevation and a few feet east of the portal of the existing adit. His reasons were that the extra 15 feet elevation gave added dump room and also gave more elevation between Goosmus Creek and the site of a proposed gravity-fed mill. However, it was pointed out to the applicant that it would be cheaper to rehabilitate the old drift than to drive a new one, and that there was sufficient dumping room for all muck coming from the proposed exploratory headings, and that any proposed mill site could be moved far enough down stream to give necessary elevation for such mill buildings. After some discussion, the applicant agreed to this change.

4. 2200 feet of drifting and crosscutting. This proposed work is shown on the attached map. Drifting would explore the mineralized zone around the nose of the "plunging anticline." From the drift, crosscuts would be driven to test the thickness of the zone and to serve as drill sites for lower-level diamond drilling.

5. 1650 feet of diamond drilling to be done off the 3765 level. Some of this drilling would be short holes from the drift drilled upward to test the thickness of the ore. Other drilling would be fanned from the face of the crosscuts to test the zone below the 3765 level.

Cost Estimate

(All work to be on unit cost basis)

Preparatory work - Estimated time - 1 month.

It is assumed that this work will be carried on simultaneously with the preliminary diamond drilling:

Item	Cost
1. Repair road and prepare portal and dump site, 5 days bulldozing at $100/day	$ 500.00
2. Bridge across creek from road to portal (labor and materials)	200.00

3.	Install switch and dump track (labor and materials)	$ 300.00
4.	Bunkhouse - cookhouse (18 x 30)	2,000.00
5.	Compressor house - work shop	1,800.00
6.	Furnishings for bunkhouse - cookhouse	800.00
	Total	$5,600.00

Preliminary diamond drilling - 600 feet from surface and 250 feet from adit whose portal is at co-ordinates 4700 N., 5090 E. (see attached map). Estimate is based on prices given by local drilling contractor who has done diamond drilling on the property.

	Item	Cost
1.	Mobilization	$ 300.00
2.	Underground drilling, 250 feet at $4.00/ft.	1,000.00
3.	Surface drilling, 600 feet at $5.00/ft. (EX)	3,000.00
	Reaming, casing, cementing (10 percent)	400.00
	Assays--20 at $4.00 ea.	80.00
	Supervision 1 mo. at $600	600.00
	Compressor rental, 1 wk. at $400/mo.	100.00
	Core boxes	100.00
	Compressor fuel	42.00
	Demobilization	200.00
	Total	$5,822.00

$$\frac{\$5822}{850} = \$6.85/\text{ft.}$$

Rehabilitating and enlarging adit - 184 feet of existing 6 by 3.5-foot adit to be enlarged to 7 by 5-foot adit. No timber required. Assume 12-foot advance per shift:

1. Labor and supervision - 1 shift:

2 miners at $14.34	$28.68
½ Compressor man- mechanic at $13.94	6.97
1 supervisor at $600/mo.	24.00
cook	6.00
overtime	2.96
	$68.61

$$\frac{68.61}{12} = \$5.72/\text{ft.}$$

2. Operating material and supplies:

Powder	25 lb. at $22.00/100 lbs.	$ 5.50
Caps	25 at .0216/ea.	.54
Fuse	150 feet at .0135	2.02
Steel - bits		2.00
Rail	160 lb. at $8.23/100 lbs.	13.17
Fish plates, bolts, spikes, etc.		2.70
Pipe	3" at .71/ft.	8.52
	1" at .17/ft.	2.04
	Fittings	2.00
Ties 4 at .40/ea.		1.60
Diesel fuel, gas, lub.		4.12
Vent pipe (12") 12' at 1.00/ft.		12.00
Repair parts		2.00
Misc. supplies		.50
		58.71

$\frac{58.71}{12}$ = $4.89

3. Operating equipment - to be furnished:

Item	Value	Monthly Depreciation
1 - 315 CFM Compressor	$7,000.00	$116.67
1 - Eimco 12B Mucker	3,000.00	50.00
1 - Air Trammer	2,000.00	33.33
4 - 13 cu. ft. cars	1,200.00	20.00
1 - light plant	600.00	10.00
2 - Jackhammers with legs	1,100.00	18.33
1 - Pickup truck	1,800.00	30.00
1 - 24-inch chain saw	334.00	5.57
1 - Water tank	60.00	1.00
	$17,094.00	$284.90

$\frac{\$284.90}{600 \text{ ft/mo}}$ = 0.47/ft.

4. Miscellaneous

Payroll taxes 11 percent	0.63/ft.
Contingency 10 percent	1.17
Total	$12.88
Say	12.90/ft.

Crosscutting and drifting - 2200 feet at 200 feet per month, estimated time 11 months, 4 feet/shift - 2 shifts/day, 5' by 7' in the clear:

1. Labor and Supervision for 1 shift:

2 miners at $14.34	$28.68
½ compressor man-mechanic at $13.94	6.97
½ laborer at $12.74	6.37
1 supervisor at $600/mo.	24.00
1 cook at $300/mo.	6.00
	$72.02
+ 8-1/3 percent overtime (labor)	3.51
	$75.53
$75.53/4 =	$18.88/ft.

2. Operating materials and supplies/ft:

20 lb. rail - 13-1/3 lb., at $8.35/100 lb.		$1.113
Spikes, bolts, fish plates, etc.		.222
Switches (5 for job)		.170
Ties 1/3 at .40		.133
Pipe 1800' for job		
1800' at .71/ft. (3")	$1,278.00	
1800' 1" at .17	306.00	
Fittings	316.00	
	$1,900.00	
$\frac{\$1,900}{2200 \text{ ft.}}$ =		.864
Powder 15 lbs. at $22.00/100		3.300
Caps 5 at .0216		.108
Fuse 40' at .0135		.540
Diesel fuel & gasoline		1.500
Lubricants		.150
Vent pipe		1.00
Steel - bits		1.50
Hoses 200' of 1" air hose at .95 = 190		
200' of 3/4" water hose at .90 = 180		
	370/2200	.168
Repair parts		.70
Misc. supplies, small tools		.20
		$10.86

3. Operating Equipment - To be furnished:

Item	Value	Monthly Depreciation
1 - 315 CFM Compressor	$7,000.00	$ 116.67
1 - Eimco 12B mucker	3,000.00	50.00
1 - Air trammer	2,000.00	33.33
1 - 5 H.P. blower (gas)	400.00	6.67
8 - 18 cu. ft. cars	1,500.00	25.00
1 - pump (gas driven)	300.00	5.00
1 - light plant 2.5 KW	600.00	10.00
2 - jackhammers with leg	1,100.00	18.33
1 - pickup truck	1,800.00	30.00
1 - 24-inch chain saw	334.00	5.57
2 - Air receivers	700.00	11.67
	$18,374.00	$ 312.24

$\frac{\$312.24}{200}$ = 1.56/ft.

4. Miscellaneous costs per foot:

Payroll taxes at 11 percent	$2.08
Assaying 200 at $4.00 = $800	.36
Snow removal 4 mo. at 200 = $800	.36
Total	$34.10
Contingency 10 percent	3.41
Total cost per foot (untimbered)	$37.51

Say $37.50/ft.

Extra costs for timber (7' x 5' in clear):

Assume that standing 3 sets or 15 lineal feet of timber, together with extra work entailed in breaking and mucking larger cross section is equivalent to breaking and mucking one 4-foot round in an untimbered section:

Labor and supervision	$ 75.53
Timber	36.00
	$111.53
+ 10 percent contingency	11.15
	$122.68

$$\frac{\$122.68}{15} = \$8.18/\text{ft.}$$

Say $8.00

Diamond Drilling from the 3765 level:

It is assumed that this drilling will be done after the underground work on the 3765 level is completed.

Mobilization	$ 300.00
Underground drilling (EX) 1650 feet at $4.00/ft.	6,600.00
Reaming, casing, cementing 10 percent	660.00
Assays-50 at $4.00	200.00
Supervision 2 mo. at $600	1,200.00
Compressor depreciation 2 mo. at $116.67/mo.	233.33
Pump depreciation 2 mo. at $5.00	10.00
2 Air receivers at $11.67	23.33
Core boxes, 50 at $4.00	200.00
Compressor fuel and lub.	400.00
Demobilization	200.00
	$10,026.66

$$\frac{\$10,026.66}{1650} = \$6.07/\text{ft.}$$

Say $6.00/ft.

Recapitulation

Preparatory work	$ 5,600.00 -
Preliminary diamond drilling 850 ft. at $6.85/ft.	5,822.50 - eliminate
Crosscut enlarging 184 ft. at $12.90/ft.	2,373.60 -
Crosscutting and drifting 2200 ft. at $37.50/ft.	82,500.00 -
Timbering (30 percent) 660 ft. at $8.00	5,280.00 -
Underground diamond drilling 1650 ft. at $6.00	9,900.00 -
Grand Total	$111,476.10

COMPETENCE OF APPLICANT

Mr. Seraphim, a practicing geologist, is believed capable of supervising the proposed program. It is assumed that he will be assisted by Mr. Kidd, also a practicing geologist and engineer, who reportedly has wide experience in mining operations and a personal interest in the company.

CONCLUSIONS

The Lone Star mine contains a large low-grade copper-gold deposit. There are good indications that this deposit will continue both on strike and down dip. The applicant's estimates of an ore reserve of 200,000 tons assaying 1.73 percent Cu, and 0.036 oz. Au, are believed to be conservative. Present plans of the applicant are to further explore the property to determine if an ore reserve of 1,000,000 tons can be assured. With this tonnage, plans are to construct a mill sufficiently large enough to handle a large operational tonnage at a cheap rate.

From what could be seen at the applicant's office and on the property, it is believed there is an excellent chance of delineating 1,000,000 tons of ore on the Lone Star property. The mineralized zone is wide and extensive. The grade, of course, can be determined only by exploration. Whether or not the applicant can successfully operate on the estimated grade of ore will depend upon many factors, not the least of which will be future economic conditions.

The exploration possibilities of this large low-grade copper-gold deposit are considered good. Inasmuch as the DMEA program is admirably suited for exploration of this type of deposit, the revised program, as herein presented, is heartily recommended. To justify the capital investment required to bring this property

into production, a total ore reserve of at least a million tons must be reasonably assured. The suggested program, if successful, will provide this assurance.

Enclosures

Distribution:
DMEA (4)
USBM (5)
USGS (SRO)
Docket
Kiilsgaard

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

June 25, 1953

Mr. George C. Selfridge, Chairman
Operating Committee, DMEA
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-2963 (copper)
Attwood Copper Property
Ferry County, Washington

Dear Mr. Selfridge:

Enclosed are four copies of the field examination report on the captioned property by T. M. Killsgaard and A. E. Weissenborn, U. S. Geological Survey, and T. E. Howard, U. S. Bureau of Mines, recommending approval of the proposed exploration. Six copies of a map showing proposed work and four copies of the claim map are enclosed.

It will be noted that the area included in the property is much larger than will be benefited by the exploration in which the Government will participate. We have the survey number or the book and page number for all the claims except the Ute, Kiwash, and Cree. These are so remote from the project that they could be excluded from the contract.

By Field Team, Region II

A. E. Weissenborn, Exec. Officer
(Geological Survey)

T. E. Howard, Acting Member
(Bureau of Mines)

Enclosures
cc: DMEA (2)
Killsgaard

Reviewed by
DMEA OPERATING COMMITTEE
7-3-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration
So. 157 Howard Street
Spokane 4, Washington

June 26, 1953

To: DMEA Field Team, Region II

From: T. H. Kiilsgaard and A. E. Weissenborn, U. S. Geological Survey, and T. E. Howard, U. S. Bureau of Mines

Subject: Docket No. DMEA-2985 (copper), Field examination of the Attwood Copper Property, Ferry County, Washington

RECOMMENDATIONS

It is recommended that the Attwood Copper Mines, Ltd., be granted a DMEA contract of $111,476.10 for work outlined in this report. To facilitate administration of the contract, it is recommended that all work be based on unit costs rather than Government participation in actual costs.

INTRODUCTION

The subject field examination of the Attwood Copper Mines property was made on June 1 and 2 by the writers, accompanied by Mr. R. H. Seraphim, geologist and company official in charge of operations. Purpose of the examination was to review company maps and assay data, to inspect the property, and to discuss the proposed exploration program.

Inasmuch as the applicant's mine workings are extensive and as Seraphim and his assistants have mapped the geology in detail, no attempt was made by field examiners to remap or sample the property. The applicant's maps were carefully studied and were compared with geologic exposures in the mine workings. As the applicant has taken more than 500 samples of the large, low-grade ore body, sampling by the examiners was confined to three samples of split drill core and these were intended to serve merely as "checks" on the applicant's sampling.

Following the examination, the applicant's proposed exploration program was discussed and certain revisions in the proposed work and costs were suggested. The revised program proposes preliminary diamond drilling to be followed by crosscutting and drifting on the 3765 level and by diamond drilling from that level. The applicant agreed to this revised program.

Reviewed by
DMEA OPERATING COMMITTEE
7-3-53
(date)

APPLICANT

The applicant is the Attwood Copper Mines, Ltd., a Canadian corporation with offices at 330 Bay Street, Suite 1008, Toronto, Ontario, Canada. The company has a field office at Greenwood, British Columbia, where the acting company official, Mr. R. E. Seraphim, maintains his residence.

LOCATION & ACCESSIBILITY

The Attwood Copper property, formerly known as the Lone Star mine, is in the extreme northern part of Ferry County, Washington, in sections 1, 2, and 3, T. 40 N., R. 33 E., Willamette Meridian. The property is comprised of a number of patented and unpatented claims (see attached claim map). The northern end lines of some of these claims border the Canadian boundary line. Some of the company holdings are across the boundary line in British Columbia, although it is not believed that these claims will be materially benefited by the proposed exploration and, therefore, should not be considered with this application.

The Attwood company office is currently at Greenwood, British Columbia, 34 miles from the mine by way of the highway extending through Curlew, Washington, to Midway, to Greenwood. If exploration at the mine is resumed, plans are to move the office into Washington, possibly to the mine site.

The Lone Star mine is accessible by following the blacktopped highway northeast from Curlew to Danville for 5.2 miles, thence northwest on the gravelled, Goosmus Creek county road for 2.8 miles, thence northeast 1.4 miles at which point you leave the county road and turn north on an unfinished mountain road for 2 miles to the lower portal of the mine. The highway from Curlew to Danville follows the Kettle River and where the Goosmus Creek county road joins the highway, the altitude is about 1800 feet. From this point, however, the road climbs steadily until it reaches an altitude of about 4000 feet at the mine.

The Curlew-Danville highway is kept clear of snow during winter months as is the Goosmus Creek county road. There would be only 2 miles of road to be maintained by the company in the event they should work during winter weather. Such maintenance could be a problem during a heavy winter, as are common in the area, but would not be an impossibility.

If the proposed exploration work is undertaken, a short length of new road and a crude bridge across Goosmus Creek will be needed to connect the proposed adit site with the existing road.

PROPERTY

The property is described by Mr. D. F. Kidd, President and General Manager of Attwood Copper Mines Ltd., in an interim report accompanying the application, as follows:

In Ferry County, Washington

Lone Star	349	Patented (syn. U.S.C.F.)		1952 taxes represented paid in full.			
Washington	349	"	"	"	"	"	
Prytis	607	"	"	"	"	"	
Helen Lode	570	"	"	"	"	"	
Shonee No. 2	531	"	"	"	"	"	
Shonee	1031	"	"	"	"	"	
Pauline Fr.	"	"	"	"	"	"	
Carter	"	"	"	"	"	"	
Arthur Jr.	"	"	"	"	"	"	
Houck	"	"	"	"	"	"	
Walter	"	"	"	"	"	"	
Primrose Fr.	"	"	"	"	"	"	
Snowstorm	"	"	"	"	"	"	
Black Diamond	"	"	"	"	"	"	
Mother Lode	"	"	"	"	"	"	
Sunrise	679	"	"	1952 taxes pd. per Abstract of title.			
Sunset	679	"	"	"	"	"	"
Santa Fee	Unpatented (i.e. located)			Abstract of Title establishes claim in good standing to June 30, 1953			
Santa Fee Fr.	"	"		Claim represented to be in good standing June 30, 1953 but some doubt exists.			
Washington No. 1	"	"					
Washington No. 2	"	"					
Vance Lode	Unpatented			Staked by Vance Vancert and in good standing to June 30, 1953, Quit Claim Deed registered in favor of Attwood Copper Mines Limited on Dec. 12, 1952.			
Van Lode	"						
Woert Lode	"						
Ted Lode	"						
Bod Lode	"						
Clint Lode	"						
Bill Lode	"						

As described by Kidd in the interim report, the property is much more extensive than as described in the application which is as follows:

Unpatented Claims	Book	Page
Santa Fee	11	423
Santa Fee Fr.	11	424

Unpatented Claims	Book	Page
Washington Nos. 1 & 2	12	30
Van	12	161
Vance	12	161
Woert	12	161
Ted	12	155
Clint	12	155
Bob	12	155
Bill	12	155

During the course of the field examination Mr. Seraphim was asked for a claim map of the Attwood Lone Star holdings. He drew a map, a copy of which is attached to this report, which shows the location of the proposed work in relation to the claims. It is recommended that all claims shown on this map be incorporated into the proposed contract, except possibly the Ute, Siwash, and Cree as noted below, as these claims, taken as a group, would benefit from the proposed exploration. Claims to be subjected to the contract include:

Patented Claims	Patent No.
Carter	1031
Arthur Jr.	"
Houck	"
Walter	"
Shawnee	"
Primrose Fr.	"
Shonee No. 2	"
Pauline Fr.	"
Prytis	607
Santa Fee	555
Snowstorm	1031
Black Diamond	"
Mother Lode	"
Lone Star	349
Washington	"
Sunset	679
Sunrise	"
Helen	570

Unpatented Claims

Van
Ted
Clint
Bob
Bill
Woert

Unpatented Claims (cont.)

Ute Siwash Cree	Book and page number not available. These claims are on fringe of area, are unlikely to be benefited by the exploration and could be excluded from the contract without harming the Government.

Santa Fee Fr.

It will be noted that Kidd reports the Santa Fee as unpatented, whereas Seraphim marks it as patented with patent number 555. As Seraphim understood the purpose of the claim map, it is assumed that he is correct. It will also be noted that a number of additional unpatented claims have been included in the present claim map.

Mr. Seraphim stated that all unpatented claims had been staked in the company name and that patented claims were owned by the company.

The Lone Star mine is reported to have been originally opened by three adits, a winze, a shaft, and one level off the shaft. At the time of the examination the applicant had rehabilitated the portal of the 3955 level thereby making the mine accessible. The 3860 level was accessible by a winze from the 3955 level. The short 3900 intermediate level was accessible by way of a short raise off the south crosscut on the 3870 level. A level below the 3870 is reported to extend off the shaft but it was inaccessible.

In addition to underground workings the property has been explored by 25 diamond drill holes, drilled from the surface by former operators. Core logs and assay data from these holes are available at the company office. Location of some of these holes is shown on the attached maps.

In 1952 the applicant drilled 28 diamond drill holes from underground workings. These holes have been competently logged and the core split and assayed. Splits of the core from these holes are stored on the property and are available for inspection. Most of these holes, with assays, are plotted on the applicant's map attached herewith.

Except for one dilapidated log shack and an abandoned barn, there are no buildings on the property.

HISTORY & PRODUCTION

According to a U. S. Bureau of Mines War Minerals Report on the Lone Star and W shington mines, Ferry County, Washington, May 1945, the property was first developed by the Reservation Mining and Milling Company in 1897. This company shipped 1,700 tons of ore that assayed 3.74 percent Cu, 0.059 oz. Au, and 0.361 oz. Ag. Total

development on the property prior to 1910 comprised 2,155 feet of adits, shafts, and winzes.

In 1910 the property came under control of the British Columbia Copper Company. During the period 1910-1918, this company further explored the property with 2,220 feet of drifts, shafts, winzes, and raises, and by 3,590 feet of diamond drilling from the surface. As a result of this exploration the British Columbia Copper Company estimated ore reserves on the property as 300,000 tons assaying 2.088 percent Cu, 0.0523 oz. Au, and 0.231 oz. Ag.

From 1910-1912 several small shipments of ore were made to the smelter, but this ore proved to be inferior for direct smelting because of its high silica content. Attempts made to concentrate the ore by gravity methods are reported to have been unsuccessful. Unfortunately, flotation concentration was not available at that time.

During World War I the British Columbia Copper Company constructed a 28,560-foot cable tram from the mine to the company smelter at Boundary Falls, British Columbia, and shipped 36,000 tons of ore assaying 2.60 percent Cu, 0.032 oz. Au, and 0.193 oz. Ag to this smelter.

At the close of World War I the mine closed, reportedly because of the decline in the price of copper. The property has remained closed ever since, except for the minor rehabilitation and the underground drilling of 28 holes done by Attwoood Copper Mines during 1952.

GEOLOGY

There are no known published reports on the geology of the northern part of Ferry County, Washington. The nearest area that has been described is the region about Greenwood, British Columbia, described in Memoir 19 by O. E. LeRoy, Canada Department of Mines, Geological Survey Branch.

The surface of the Lone Star property is almost completely covered with glacial moraine and a thick stand of timber. The moraine, in places, is over 100 feet thick. Because of the glacial cover, there are few outcrops. Those rocks outcropping in the vicinity of the mine are comprised chiefly of serpentine-talcose rocks and dacite and they have been tentatively correlated with the Knob Hill formation of Carboniferous age. These rocks are reported to form a southeasterly-trending belt averaging about half a mile wide, which is bounded on both sides by granitic rocks of the Colville batholith.

Within the mine are exposures of a basaltic "dike" or sill whose thickness is unknown, which is locally known as the "black dike"; the dike does not outcrop. Where exposed in mine workings, the

basaltic "dike" is in part fresh and unaltered, although, locally, in and near zones of shearing, it has been changed to a serpentinized rock. In the main part of the mine the "dike" appears to strike roughly east and dip south but on the eastern side of the mine the "dike" attitude apparently changes to a northern strike and dips to the east. This change in attitude forms a structure comparable to a plunging anticline, in this instance plunging to the southeast. The footwall of the "black dike" is nowhere exposed, but the hanging wall is in contact with dacite. Locally this appears to be a faulted contact but apophyses of the "black dike" in the dacite attest to its intrusive character and suggest that the movement along the contact has been relatively minor. As the dacite contact is approached, the dike generally is more serpentinized, and there is more shearing which roughly parallels the contact. Masses of serpentine are common in the basalt near the contact. The basalt-dacite contact is locally sharp, although there are occasional masses of serpentinized rock in the dacite, some of which are reported to be as much as 50 feet away from the contact.

The dacite has been intensely silicified near the basalt contact until its original composition is difficult to determine. The silicified dacite with the previously mentioned included serpentinized masses has a foliation that conforms roughly with the dacite-basalt contact. It is reported that further away from the contact the dacite is relatively fresh.

Primary mineralization at the mine consists chiefly of pyrite and chalcopyrite. Minor amounts of gold are reported to be associated with the chalcopyrite. Mineralization is controlled by the sheared basalt-dacite contact; practically all of the mineralization occurring in the silicified dacite adjacent to the sheared zone, although the mineralized zone is of varying thickness and in places is as much as 50 feet thick. Local controls are apparently affected by the serpentinized masses within the dacite; higher-grade ore shoots are reported to underlie these masses. Minor amounts of copper-gold ore have been found in these serpentinized rocks and in the basalt, but for the most part these rocks are barren.

Inasmuch as copper-gold mineralization is extensive and for the most part low-grade, and as the applicant has taken more than 500 samples on the property, it was deemed unfeasible by the examiners to sample the ore-bearing area. They did, however, take 3 samples from drill hole splits to check the applicant's samples. These samples were merely pieces of the core taken at approximately regular intervals from the stored core. The results are as follows:

Drill Hole	Footage	Attwood Au	Attwood Cu	DMEA Au	DMEA Cu
No. 1	12 - 16	0.03	2.85	0.03	2.68
No. 1	29 - 33	0.055	3.30	0.09	2.60
No. 16	43.5 - 66.5				
	43.5 - 48.5	0.02	1.10		
	48.5 - 54	0.09	4.95		
	54 - 59	0.23	5.15		
	59 - 64	0.04	2.35		
	64 - 66.5	0.02	1.65		
Average	43.5 - 66.5	0.04	3.04	0.06	2.98

From a comparison of these samples, and from a comparison of the applicant's samples with those taken by the British Columbia Copper Company, it is believed that the applicant's sample data may be accepted as reliable.

The extent of the sheared basalt-dacite contact and the limits of copper-gold mineralization along the contact is unknown. That part of the contact area that has been most productive occurs on the nose of the previously described "plunging anticline." The limbs of this structure may be seen on the 3870 level and on the overlying intermediate 3900 level driven off the raise from the 3870 south crosscut (see accompanying map). From the map it may be seen that on the 3870 level, the axis of the "plunging anticline" is about at co-ordinates 4800 N., 5480 E. From this point the "plunging anticline" strikes about N. 40° W., and passes through the area where it has been mined by the Glory Hole and associated underlying workings. Ore should extend without interruption along the nose of the plunging anticline between the Glory Hole and the 3870 level, except that part of it has been eroded in a southwest-trending gulch whose center line may be traced by the indentations in the 4000 and 4100-foot contour lines. This gulch has, in effect, made two separate ore bodies out of what was originally one continuous ore body.

On the northeast limb of the "plunging anticline" the northernmost ore was mined on the 3955 level about at co-ordinates 5200 N., 5370 E. On the 3870 level a 30-foot width of ore at the eastern face of the 3870 crosscut averaged more than 2 percent copper. A drill hole from the surface, at co-ordinates 4934 N., 5656 E., is reported to have encountered ore below the 3870 level.

Ore has been mined on the southeast limb of the "plunging anticline" on and above the 3955 level as far west as the 5020 E. co-ordinate (see accompanying map). A downward diamond drill hole from the face of a short adit, whose portal is at co-ordinates 4700 N., 5096 E., encountered ore below the 3950 level. On the extreme western side of the property, west of Goosmus Creek, at co-ordinates 4980 N., 4030 E., is an abandoned inclined shaft, now flooded a short distance below the collar. On the shaft dump are serpentinized basaltic rocks and silicified dacite. Chalcopyrite and molybdenite are to be seen

in some of the dacite. It is quite probable that this mineralized showing is on the western extension of the basalt-dacite contact.

A point of interest concerning the Lone Star copper-gold property is its striking similarity to the large copper-gold deposits mined in the Boundary district near Phoenix, British Columbia, during the early part of the century. By air line these deposits are only a few miles away from the Lone Star property. Total production from the Boundary district has been reported as 22,000,000 tons with a net value of over $100,000,000.00.

ORE RESERVES

The applicant estimates ore reserves at the property as 200,000 measured tons assaying 1.73 percent Cu and 0.036 oz. Au. This block of ground has been delineated by diamond drilling and lies between the 4000 and 3850 levels. After reviewing the applicant's maps and sections, it is believed that this measurement of reserves is conservative.

PROPOSED EXPLORATION PROGRAM

As presented in the application, the applicant's proposed program consists of:

1. (a) An adit, to portal at co-ordinates 4250 N., 4775 E., elevation 3780 feet, and to be driven northeast until the ore is intersected and then to follow the ore for 1000 feet to the east.

   (b) 500 feet of crosscutting and 1000 feet of drifting in the hanging wall area, for diamond drill stations, to be followed by 10,000 feet of diamond drilling to explore the structure 250 feet vertically and 600 feet down dip below the proposed level.

2. (a) 3000 feet of diamond drilling from the surface to facilitate drifting on the ore.

3. (a) Surface mapping and resurveying of claims.

After examining the property it was decided by field examiners that the applicant's proposed program was more than was needed to adequately explore the area in which the applicant was interested. The program was, therefore, revised to include the following:

1. 250 feet of drilling from the face of the adit, whose portal is at co-ordinates 4700 N., 5096 E. This drilling will consist of two holes fanned to the east and west at negative angles to check the ore zone below that area.

2. 600 feet of diamond drilling to be drilled from the surface, from the outcrop at co-ordinates 4430 N., 4940 E. These holes will be fanned to the north at negative angles to test the ore zone in that area. These locations are the only practicable ones because of the thick glacial cover.

3. Rehabilitate 184 feet of adit, whose portal is at co-ordinates 4265 N., 4710 E. In the application, the applicant proposed to start the proposed lower level 15 feet higher in elevation and a few feet east of the portal of the existing adit. His reasons were that the extra 15 feet elevation gave added dump room and also gave more elevation between Goosmus Creek and the site of a proposed gravity-fed mill. However, it was pointed out to the applicant that it would be cheaper to rehabilitate the old drift than to drive a new one, and that there was sufficient dumping room for all muck coming from the proposed exploratory headings, and that any proposed mill site could be moved far enough down stream to give necessary elevation for such mill buildings. After some discussion, the applicant agreed to this change.

4. 2200 feet of drifting and crosscutting. This proposed work is shown on the attached map. Drifting would explore the mineralized zone around the nose of the "plunging anticline." From the drift, crosscuts would be driven to test the thickness of the zone and to serve as drill sites for lower-level diamond drilling.

5. 1650 feet of diamond drilling to be done off the 3765 level. Some of this drilling would be short holes from the drift drilled upward to test the thickness of the ore. Other drilling would be fanned from the face of the crosscuts to test the zone below the 3765 level.

Cost Estimate

(All work to be on unit cost basis)

Preparatory work - Estimated time - 1 month.

It is assumed that this work will be carried on simultaneously with the preliminary diamond drilling:

Item	Cost
1. Repair road and prepare portal and dump site, 5 days bulldozing at $100/day	$ 500.00
2. Bridge across creek from road to portal (labor and materials)	200.00

3.	Install switch and dump track (labor and materials)	$ 300.00
4.	Bunkhouse - cookhouse (18 x 30)	2,000.00
5.	Compressor house - work shop	1,800.00
6.	Furnishings for bunkhouse - cookhouse	800.00
	Total	$5,600.00

Preliminary diamond drilling - 600 feet from surface and 250 feet from adit whose portal is at co-ordinates 4700 N., 5090 E. (see attached map). Estimate is based on prices given by local drilling contractor who has done diamond drilling on the property.

	Item	Cost
1.	Mobilization	$ 300.00
2.	Underground drilling, 250 feet at $4.00/ft.	1,000.00
3.	Surface drilling, 600 feet at $5.00/ft. (EX)	3,000.00
	Reaming, casing, cementing (10 percent)	400.00
	Assays--20 at $4.00 ea.	80.00
	Supervision 1 mo. at $600	600.00
	Compressor rental, 1 wk. at $400/mo.	100.00
	Core boxes	100.00
	Compressor fuel	42.00
	Demobilization	200.00
	Total	$5,822.00

$$\frac{\$5822}{850} = \$6.85/\text{ft.}$$

Rehabilitating and enlarging adit - 184 feet of existing 6 by 3.5-foot adit to be enlarged to 7 by 5-foot adit. No timber required. Assume 12-foot advance per shift:

1. Labor and supervision - 1 shift:

2 miners at $14.34	$28.68
½ Compressor man- mechanic at $13.94	6.97
1 supervisor at $600/mo.	24.00
cook	6.00
overtime	2.96
	$68.61

$$\frac{68.61}{12} = \$5.72/\text{ft.}$$

2. Operating material and supplies:

Powder	25 lb. at $22.00/100 lbs.	$ 5.50
Caps	25 at .0216/ea.	.54
Fuse	150 feet at .0135	2.02
Steel - bits		2.00
Rail	160 lb. at $8.23/100 lbs.	13.17
Fish plates, bolts, spikes, etc.		2.70
Pipe	3" at .71/ft.	8.52
	1" at .17/ft.	2.04
	Fittings	2.00
Ties 4 at .40/ea.		1.60
Diesel fuel, gas, lub.		4.12
Vent pipe (12") 12' at 1.00/ft.		12.00
Repair parts		2.00
Misc. supplies		.50
		58.71

$\frac{58.71}{12}$ = $4.89

3. Operating equipment - to be furnished:

Item	Value	Monthly Depreciation
1 - 315 CFM Compressor	$7,000.00	$116.67
1 - Eimco 12B Mucker	3,000.00	50.00
1 - Air Trammer	2,000.00	33.33
4 - 13 cu. ft. cars	1,200.00	20.00
1 - light plant	600.00	10.00
2 - Jackhammers with legs	1,100.00	18.33
1 - Pickup truck	1,800.00	30.00
1 - 24-inch chain saw	334.00	5.57
1 - Water tank	60.00	1.00
	$17,094.00	$284.90

$\frac{\$284.90}{600 \text{ ft/mo}}$ = 0.47/ft.

4. Miscellaneous

Payroll taxes 11 percent	0.63/ft.
Contingency 10 percent	1.17
Total	$12.88
Say	12.90/ft.

Crosscutting and drifting - 2200 feet at 200 feet per month, estimated time 11 months, 4 feet/shift - 2 shifts/day, 5' by 7' in the clear:

1. Labor and Supervision for 1 shift:

2 miners at $14.34	$28.68
½ compressor man-mechanic at $13.94	6.97
½ laborer at $12.74	6.37
1 supervisor at $600/mo.	24.00
1 cook at $300/mo.	6.00
	$72.02
+ 8-1/3 percent overtime (labor)	3.51
	$75.53
$75.53/4 =	$18.88/ft.

2. Operating materials and supplies/ft:

20 lb. rail - 13-1/3 lb., at $8.35/100 lb.		$1.113
Spikes, bolts, fish plates, etc.		.222
Switches (5 for job)		.170
Ties 1/3 at .40		.133
Pipe 1800' for job		
1800' at .71/ft. (3")	$1,278.00	
1800' 1" at .17	306.00	
Fittings	316.00	
	$1,900.00	
$\frac{\$1,900}{2200 \text{ ft.}}$ =		.864
Powder 15 lbs. at $22.00/100		3.300
Caps 5 at .0216		.108
Fuse 40' at .0135		.540
Diesel fuel & gasoline		1.500
Lubricants		.150
Vent pipe		1.00
Steel - bits		1.50
Hoses 200' of 1" air hose at .95 = 190		
200' of 3/4" water hose at .90 = 180		
	370/2200	.168
Repair parts		.70
Misc. supplies, small tools		.20
		$10.86

3. Operating Equipment - To be furnished:

Item	Value	Monthly Depreciation
1 - 315 CFM Compressor	$7,000.00	$ 116.67
1 - Eimco 12B mucker	3,000.00	50.00
1 - Air trammer	2,000.00	33.33
1 - 5 H.P. blower (gas)	400.00	6.67
8 - 18 cu. ft. cars	1,500.00	25.00
1 - pump (gas driven)	300.00	5.00
1 - light plant 2.5 KW	600.00	10.00
2 - jackhammers with leg	1,100.00	18.33
1 - pickup truck	1,800.00	30.00
1 - 24-inch chain saw	334.00	5.57
2 - Air receivers	700.00	11.67
	$18,374.00	$ 312.24

$\frac{\$312.24}{200}$ = 1.56/ft.

4. Miscellaneous costs per foot:

Payroll taxes at 11 percent	$2.08
Assaying 200 at $4.00 = $800	.36
Snow removal 4 mo. at 200 = $800	.36
Total	$34.10
Contingency 10 percent	3.41
Total cost per foot (untimbered)	$37.51

Say $37.50/ft.

Extra costs for timber (7' x 5' in clear):

Assume that standing 3 sets or 15 lineal feet of timber, together with extra work entailed in breaking and mucking larger cross section is equivalent to breaking and mucking one 4-foot round in an untimbered section:

Labor and supervision	$ 75.53
Timber	36.00
	$111.53
+ 10 percent contingency	11.15
	$122.68

$$\frac{\$122.68}{15} = \$8.18/\text{ft.}$$

Say $8.00

Diamond Drilling from the 3765 level:

It is assumed that this drilling will be done after the underground work on the 3765 level is completed.

Mobilization	$ 300.00
Underground drilling (EX) 1650 feet at $4.00/ft.	6,600.00
Reaming, casing, cementing 10 percent	660.00
Assays-50 at $4.00	200.00
Supervision 2 mo. at $600	1,200.00
Compressor depreciation 2 mo. at $116.67/mo.	233.33
Pump depreciation 2 mo. at $5.00	10.00
2 Air receivers at $11.67	23.33
Core boxes, 50 at $4.00	200.00
Compressor fuel and lub.	400.00
Demobilization	200.00
	$10,026.66

$$\frac{\$10,026.66}{1650} = \$6.07/\text{ft.}$$

Say $6.00/ft.

Recapitulation

Preparatory work	$ 5,600.00
Preliminary diamond drilling 850 ft. at $6.85/ft.	5,822.50
Crosscut enlarging 184 ft. at $12.90/ft.	2,373.60
Crosscutting and drifting 2200 ft. at $37.50/ft.	82,500.00
Timbering (30 percent) 660 ft. at $8.00	5,280.00
Underground diamond drilling 1650 ft. at $6.00	9,900.00
Grand Total	$111,476.10

COMPETENCE OF APPLICANT

Mr. Seraphim, a practicing geologist, is believed capable of supervising the proposed program. It is assumed that he will be assisted by Mr. Kidd, also a practicing geologist and engineer, who reportedly has wide experience in mining operations and a personal interest in the company.

CONCLUSIONS

The Lone Star mine contains a large low-grade copper-gold deposit. There are good indications that this deposit will continue both on strike and down dip. The applicant's estimates of an ore reserve of 200,000 tons assaying 1.73 percent Cu, and 0.036 oz. Au, are believed to be conservative. Present plans of the applicant are to further explore the property to determine if an ore reserve of 1,000,000 tons can be assured. With this tonnage, plans are to construct a mill sufficiently large enough to handle a large operational tonnage at a cheap rate.

From what could be seen at the applicant's office and on the property, it is believed there is an excellent chance of delineating 1,000,000 tons of ore on the Lone Star property. The mineralized zone is wide and extensive. The grade, of course, can be determined only by exploration. Whether or not the applicant can successfully operate on the estimated grade of ore will depend upon many factors, not the least of which will be future economic conditions.

The exploration possibilities of this large low-grade copper-gold deposit are considered good. Inasmuch as the DMEA program is admirably suited for exploration of this type of deposit, the revised program, as herein presented, is heartily recommended. To justify the capital investment required to bring this property

into production, a total ore reserve of at least a million tons must be reasonably assured. The suggested program, if successful, will provide this assurance.

Enclosures

Distribution:
DMEA (4)
USBM (5)
USGS (SRO)
Docket
Killsgaard

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D. C.~~
So. 157 Howard Street
Spokane 4, Washington

May 27, 1953

JUN 1 1953

Mr. R. H. Seraphim
Attwood Copper Mines Limited
Box 560
Greenwood, B. C.

Dear Mr. Seraphim:

This will acknowledge receipt of your letter of May 25. DMEA examiners will leave Spokane on the morning of June 1 and proceed to Greenwood, B. C. Upon arrival we shall contact you by phone at the number you have given us--Greenwood 5M.

Please do not make reservations for us at the Windsor Hotel as it will be necessary for us to obtain special permission from Washington, D. C., to stay overnight in Canada.

Sincerely yours,

Thor H. Kiilsgaard
For: A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region II

cc: DMEA (2)
USBM (2)
Kiilsgaard

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
~~XXXXXXXXXXXXXXXXX~~
So. 157 Howard Street
Spokane 4, Washington

May 27, 1953

Mr. R. H. Seraphim
Attwood Copper Mines Limited
Box 560
Greenwood, B. C.

Dear Mr. Seraphim:

This will acknowledge receipt of your letter of May 25. DMEA examiners will leave Spokane on the morning of June 1 and proceed to Greenwood, B. C. Upon arrival we shall contact you by phone at the number you have given us--Greenwood 5M.

Please do not make reservations for us at the Windsor Hotel as it will be necessary for us to obtain special permission from Washington, D. C., to stay overnight in Canada.

Sincerely yours,

Thor H. Kiilsgaard
For: A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region II

cc: DMEA (2)
USBM (2)
Kiilsgaard

700
FILE COPY
SURNAME:

Schmidt
Martin
Johnson

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

May 12 1953

Mr. [illegible] Eisenborn
Executive Officer, Region II
DMEA Field Team
South 157 Howard Street
Spokane 8, Washington

Re: Docket No. [illegible]A-2975 (Copper)
Attwood Copper Mines Limited
Home Star Mine
Boundary District
Ferry County, Washington

Dear Mr. Eisenborn:

The above-docketed application was transferred to your office on May 5, 1953, for a field examination, at which time the comments of Mr. [illegible] H. Johnson of the Bureau of Mines, dated April 28, and Mr. [illegible] Hawkins of the Geological Survey, dated April 24, 1953, were transmitted to you.

Enclosed are two copies of further comments by Mr. C. H. Johnson of the Bureau of Mines, for your information.

Sincerely yours,

W. S. Martin
ACTING Chairman, Operating Committee (JHB)

Enclosures (2)

Copy to:

J. H. Hedges
Director, Bureau of Mines (JHB)

T. P. Thayer
Member, Geological Survey (JHB)

GLAult/FSSchmidt/gla 5-11-53
cc to: Adm. Reading File
Operating Committee J.C. 5/12/53
Docket
DMEA Field Team, Region II
Messrs. CHJohnson, Rm. 3621
ARHinkel, Jr., Rm. B-242A GSA
Ellis
Schmidt

5/4/53 gla

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

April 30, 1953

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 4 1953

Memorandum

To: E. W. Ellis, DMEA

From: C. H. Johnson, Bureau of Mines

Subject: DMEA-2985 (Copper), Attwood Copper Mines Ltd., Lone Star mine, Ferry County, Washington

I have looked over reports in the Bureau of Mines Mt. Weather file on the Lone Star mine, and find that they do not contribute much to the consideration of the above-named application. The Bureau of Mines made a study of the property in 1943 based largely on prior private reports rather than field examination, and at that time gave favorable consideration to a small preliminary exploration project to consist of diamond drilling from the surface. The work was not done. It is interesting, however, to note that Bureau engineers, on the basis of the scanty information available to them, made an estimate at that time of ore reserves slightly larger than the reserves estimated by the present Applicant. Our engineers' estimate at that time was 250,000 tons of indicated ore containing 1.9 copper, 0.05 ounces of gold and 0.2 ounces of silver per ton.

In September 1943 the Bureau of Mines made some ore-dressing tests on a sack of ore. The analysis of a representative head sample was 2.82 copper, 0.21 of which was in oxidized form, 0.06 gold and 0.23 silver. It was found possible to make an over-all recovery of 92 percent of the copper and 92 percent of the gold by flotation at a fairly coarse grind.

C. H. Johnson

C. H. Johnson

Copy to - Mr. Kinkel, GSA
Minerals Division
C. H. Johnson
Files

FILE COPY
SURNAME:

Docket
Schmidt
Ellis
Kubel
Hedges
Selfridge
Fehrmann

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

MAY 5 1953

Mr. S. A. Perry, Vice-President
Attwood Copper Mines Limited
Suite 1008-330 Bay Street
Toronto, Ontario, Canada

Re: Docket No. DMEA-2955 (Copper)
Lone Star Mine
Boundary District
Ferry County, Washington

Dear Mr. Perry:

The application for assistance in exploring your property, under the above captioned docket number, has been reviewed by the Rare and Miscellaneous Metals Division of the Defense Minerals Exploration Administration. Your application has been referred for a field examination to the Executive Officer of Region II at the following address:

Mr. A. F. Weissenborn
Executive Officer, Region II
DMEA Field Team
South 157 Howard Street
Spokane 8, Washington

The Regional Office will contact you at the earliest opportunity in regard to your project.

Sincerely yours

C. O. Mittendorf

Administrator

FFSchmidt/eef 4/30/53

cc to: Adm. Reading File
Docket
Messrs. Ellis
Schmidt

DMEA Field Team, Region II (2)

5-5-53

FILE COPY
SURNAME:

Schmidt
Ellis
Selfridge
Hedges

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

Mr. A. L. Weissenborn
Executive Officer
DMEA Field Team, Region II
South 157 Howard Street
Spokane 8, Washington

MAY 5 1953

Re: Docket No. DMEA-2905 (Copper)
Atlanco Copper Mines Limited
Lone Star Mine
Boundary District
Ferry County, Washington

Dear Mr. Weissenborn:

The subject application is referred to you for a field examination. It will be noted that there are a number of arithmetical errors on page 7 (a) of the so-called "Interim Report on Lone Star Mine" by Mr. D. F. Kidd. The recoverable value of the ore, based on the assumptions made, should be 7.9% instead of 8.50.

The Applicant is a Canadian Company, but since the property is located in this country the application will be considered.

It would appear that the nature of this proposed work might border on being development work. It is difficult to understand what work is proposed or its relationship to a favorable geological target from this application or the accompanying volumineous maps. While the application is lacking in data, the indications are that the property is sufficiently important to merit the consideration of a possible exploration project.

Enclosed are the comments of Mr. C. H. Johnson of the Bureau of Mines dated April 20 and Mr. A. R. Kinkel of the Geological Survey dated April 22, 1953.

A copy of subject application was forwarded to you under date of April 17.

Sincerely yours,

George C. Selfridge (2/6)
Chairman, Operating Committee

Enclosures 2
APPROVED:

J. H. Hedges
Member, Bureau of Mines (2/5)

A. R. Kinkel, Jr.
Member, Geological Survey (2/5)

FFSchmidt/eaf 4/30/53
cc to: Adm. Reading File
Oper. Committee
Docket
Members. CHJohnson, Room 3621
ARKinkel Jr. Room D-2428 GSA
Mr. Ellis
Mr. Schmidt

JH. 5-5-53

4/22/53 gla

IN REPLY REFER TO:

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

2. copies forwarded to Rec. Team

April 22, 1953

Memorandum

To: Mr. E. Wm. Ellis

From: E. L. Newcomb

Subject: Recommendation for denial

Re: DMEA-2985
Lone Star Mine
Boundary District
Ferry County, Washington
$319,196.88
Copper

The applicant proposes to drive a 500-foot adit easterly from 3780-foot elevation to intersect the downdip extension of a known ore-bearing structure, and then to drift 1000 feet in the hanging wall of the vein. In addition, 13,000 feet of surface and underground diamond drilling are planned to explore 250 feet below the proposed adit and the ground west of present known ore.

The Lone Star mine is on the northern boundary of Ferry County, near the Canadian border, and is considered to represent an extension of the Boundary district of British Columbia. Past production in the Boundary district is reported to have been worth about $100,000,000.

The old Lone Star workings consist of 4,000 feet of shaft and drifts on 3 adit levels. About 3,000 feet of these workings have been made accessible by the present operator. In addition to reopening the property, the applicant has sampled the workings and has drilled 28 holes underground. The recent drilling, which was based on underground mapping and the results from 25 holes drilled by a previous operator, has delineated 200,000 tons of ore averaging 1.73% copper, and .036 oz. of gold, according to the operator. About 40,000 tons of direct smelting ore were mined at the Lone Star mine between 1908-1918. There has been no further production reported since 1918.

The property lies in a southeasterly trending belt of serpentine-talc and dacite rocks. Mineralization is believed to be controlled by a shear zone 50 feet wide in dacite near the hanging wall of a south-dipping basic dike.

The 200,000 tons of reserves, estimated by the applicant, are located between the 4,000 and 3,850-foot (elevations) levels. Although no exploration work has been done below the 3870 level, the vein on the 3870 level is strongly mineralized and can reasonably

[illegible] exploration [illegible] clear [illegible] Johnson 4/21

be expected to extend down to the proposed 3780 adit level.

The maps supplied by the applicant are inadequate, particularly in that they do not show the location of the proposed exploration. The work proposed is too extensive (and too expensive) but some form of exploration down-dip from the continuous ore-bearing structure appears justified to increase the ore reserves sufficiently to justify mining. I recommend that the application be referred to the field to see if an adequate but less extensive exploration program could be laid out.

Edward L. Newcomb

Edward L. Newcomb
Geologist

4/22/53 gla

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

2 copies forwarded to Field Team

April 20, 1953

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
APR 21 1953

Memorandum

To: E. W. Ellis, DMEA

From: C. H. Johnson, Bureau of Mines

Subject: DMEA-2985 (Copper), Attwood Copper Mines Ltd., Lone Star mine, Ferry County, Washington

I have reviewed the above-named application and recommend referral to the Field Team for investigation and recommendation.

Applicant appears to have carried out a fairly extensive and systematic program of mapping, sampling and exploration in the past two years. However, insufficient maps and details are presented to permit any checking here of the estimated reserves. Applicant claims to have about 200,000 tons of reserve proved, averaging 1.7% copper and 0.04 ounces of gold per ton, which might be increased to as much as 700,000 tons by the proposed exploration. The Applicant estimates that ore of grade such as this would return $8.50 per ton net smelter to pay for mining, milling and capital costs. Neither the economic angle nor the merits of the layout for exploration can be appraised here from the data submitted. In fact, the application does not include a map of the work to be done. Applicant proposes to carry out 3,000 feet of crosscutting and drifting plus 10,000 feet of underground drilling and 2,000 feet of surface drilling at a total cost of $319,000. Many of the costs seem to me to be excessive. It also may be that if a good geologic target exists, much less expensive means may be found to explore.

The Bureau of Mines has a report on this property in its Mt. Weather files for which I have sent. However, it does not appear desirable to delay Field Team referral for that reason. The material at Mt. Weather will be available also at Spokane.

DMEA may wish to look further into the proposed method of financing as I judge Applicant intends to sell stock to meet his share of the expenses.

The application is returned herewith.

C. H. Johnson

C. H. Johnson

Attachment

Copy to - Mr. Kinkel, USGS - Room 4234
C. H. Johnson

Minerals Division Files

April 17, 1953

Mr. Desmond F. Kidd
Attwood Copper Mines Limited
Suite 1008, 330 Bay Street
Toronto, Ontario, Canada

Subject: DMEA-2985
Re: Exploration Assistance
Lone Star Mine

My dear Mr. Kidd:

The receipt of your application dated March 16, 1953 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number and referred to the Rare and Miscellaneous Metals Division.

Kindly refer to DMEA-2985 in any future correspondence relating to your application.

Sincerely yours,

ROBERT E. ADAMS

Robert E. Adams, Chief
Operations Control and
Statistics Division

ATTWOOD COPPER MINES LIMITED

(NO PERSONAL LIABILITY)

INCORPORATED UNDER PART XI OF THE COMPANIES ACT OF THE PROVINCE OF ONTARIO
ALSO REGISTERED UNDER THE COMPANIES ACT OF BRITISH COLUMBIA

VANCOUVER, B.C. OFFICE,
844 WEST HASTINGS STREET

EXECUTIVE OFFICE:
SUITE 1008-330 BAY ST., TORONTO, ONT.

April 9, 1953.

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
APR 16 1953

Dear Sirs:

We enclose application for aid in an exploration project pursuant to DMEA Order 1, under the Defence Production Act 1950 as amended.

We trust you will find this application and the supplemental data enclosed therewith in order, and we may receive a favourable decision on this application shortly.

You will observe under paragraph 3 (d) of the application that we have referred to an attached Option Agreement. Rather than asking the Optionor, St. Eugene Mining Corporation Limited, to consent to execute formal owners consent to lien form M.F.203, we decided to take up the option, and you may kindly note that we have now received from St. Eugene Mining Corporation Limited statutory Warranty Deeds duly executed and notarized on this date, conveying and warranting to this company the properties listed in the Option Agreement attached to the Application. We are forthwith forwarding these Warranty Deeds with Abstracts of Title and other title papers to our agent at Seattle, Mr. Bernard Reiter of McMicken, Rupp & Schweppe, Attorneys, with instructions to register the same as soon as possible and to report to us as soon as this company is the registered owner of such properties free of encumbrance. You will observe that the undersigned's interest in the Sunrise, Sunset, Santa Fee and Santa Fee Fraction claims is subject insofar as a one-half interest in the Sunrise and Sunset claims and insofar as a whole interest in Santa Fee and Santa Fee Fraction claims, to an Option Agreement, dated June 10, 1952, pursuant to which one, Marie McGowan, is entitled to ~~receive certain~~ cash sums before turning over title. The transfer of title is presently in escrow at the National Bank of Commerce of Seattle at Colville, Washington, to be delivered up to us on payment. At the present moment, $2,100.00 remains unpaid to Mrs. McGowan, but, of course, the payments are up-to-date under the Option Agreement.

Other than for this minor outstanding interest, the undersigned is the owner of the property. If this outstanding interest causes any embarrassment to you in granting this application, please advise, in which event we can arrange, no doubt, to pay up the balance owing to Mrs. McGowan in a lump sum.

Yours very truly,

ATTWOOD COPPER MINES LIMITED,

S. A. Perry,
Vice-President.

SAP/c
Encl.

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved
Budget Bureau No. 42-R1035.2.

Defense Minerals Administration
RECEIVED
APR 16 1953

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. DMEA-2985
Metal or Mineral
Date Received 4-16-53
Estimated Cost
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Attwood Copper Mines Limited (No Personal Liability)
Suite 1008, 330 Bay Street,
Toronto, Ontario, Canada
Authorized to do business Washington State

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized.

(*c*) If a corporation, add to above statement, titles, names and addresses of officers.

(*d*) If a partnership, add to the above statement the names and addresses of all partners.

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract See attached Interim Report, page 1.

(*b*) State any mine name by which the property is known. "Lone Star" Mine.

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise
See Introduction to attached Interim Report.

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property. See copy of attached Option Agreement.

(*e*) If you own the land, describe any liens or encumbrances on it

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. See attached list.

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes. See attached report

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. See attached report

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you.

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points.

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power. See attached report

16—66551-1

5. *The exploration project.*—(*a*) State the mineral or minerals for which you will to explore Chalcopyrite (copper)

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc. See attached sheet

(*c*) The work will start within 1 days and be completed within 12 months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations. See attached sheet

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project:

(*a*) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.).

(*b*) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants.

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel.

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be.

(*e*) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project.

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project.

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes.

(*h*) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above.

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*) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)? Yes

(*b*) How do you propose to furnish your share of the costs?

[X] Money [ ] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper.

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.

Dated March 16th, 1953

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)
(Applicant)

By (Desmond F. Kidd)

President & General Manager

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

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)

Suite 1008, 330 Bay Street
Toronto, Ontario

3 (f)

Unpatented Claims	Book	Page
SANTA FEE	11	423
SANTA FEE FR.	11	424
WASHINGTON Nos. 1 & 2	12	30
VAN	12	161
VANCE	12	161
WOERT	12	161
TED	12	155
CLINT	12	155
BOB	12	155
BILL	12	155

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)
Suite 1008, 330 Bay St., Toronto, Ontario.

5 (b)

The workings are shown on the maps with the accompanying Interim Report. The Company proposes:-

1. A drift easterly from Goosmus Creek, with portal at 4250N, 4775 E., Elev. 3780, to attain approximately 100 ft. mine depth on the structure. This drift will intersect the downward projection of known ore at footage 500, and continue on the projected structure for 1,000 feet, (the plan length of the structure known from present workings.)

   Five hundred feet of cross-cutting and one thousand feet of drifting in the hanging wall are proposed for diamond drill stations. Diamond drilling, totalling 10,000 feet, would explore the structure for 250 feet vertically, some 600 feet down the dip, below the proposed lower tunnel.

2. Diamond drilling from surface, a total of 3,000 ft. to explore the structure west of known ore, and near surface. This will facilitate drifting on ore.

3. Map surface in detail and re-survey claims and surrounding ground. Mineralized outcrops will be investigated.

5 (d) Attwood Copper Mines Limited has worked for two years on a program of detailed geological mapping, co-ordinated with geophysics and bigeochemistry, and followed by diamond drilling, in a search for copper ores, in the neighbouring "Boundary Camp", near Greenwood, B. C. The Company has been moderately successful.

The programme will be directed by Dr. D. F. Kidd, President and General Manager of Attwood Copper Mines Limited; Vice-President and General Manager of Mastodon Zinc Mines Limited; ($2,000,000. plant recently completed), Director and Consulting Engineer, Highland-Bell Limited (silver mine producing 750,000 oz. annually), Consulting Mining Geologist, Vancouver, B. C.

R. H. Seraphim, Ph. D (Geol.M.I.T.) has been in charge of field work in the "Boundary Camp". He has had 12 years' experience in mining, mine exploration and development of British Columbia mining properties. He would superintend the proposed operation.

C. D. R. Dahlstrom, Ph. D. (Geol. Princeton) has been Chief Geologist on the Attwood project and would continue on the Lone Star project.

The latter two men have applied to the U.S. Imigration for permission to work in Washington State.

ATTWOOD COPPER MINES LIMITED
(No personal liability)

Suite 1008, 330 Bay St.,
Toronto, Ontario.

6 (a) Independent Contracts				
Diamond Drilling				
Estimate on 2000 feet of surface drilling at 6.00/foot		$ 12,000.00		
Estimate on 10,000 feet of underground drilling at 5.00/foot		50,000.00	$	62,000.00
6 (b) Labour, Supervision, Consultants				
Miner's Contract (Tunnelling)				
Estimate on 3,000 feet of drift and crosscut at 15.00/foot	$ 45,000.00			
Allow $500. per foot for switches, exploratory crosscuts, diamond drill stations	7,500.00	52,500.00		
Salaries and Wages				
Superintendent - 1 year at	8,100.00			
Geologist " " "	7,200.00			
Foreman " " "	7,200.00			
Surveyor " " "	5,000.00			
2 Compressor men each 300 days @ $15./day	9,000.00			
1 Cat operator 300 days at $20/day	6,000.00			
2 labourers " " $15./day	9,000.00	51,500.00		
		104,000.00		
1 Cook and helper at $1/man day each		6,000.00		110,000.00
6 (c) Operating Materials and Supplies				
Track & Fittings				
Rail - 60,000 lb. @ 8.35/100	5,010.00			
10 switches @ $75. each	750.00			
Jim crow	36.00			
20 cases spikes @ 10.75	215.00			
5 kegs track bolts @ $50.	250.00			
1500 fish plates @ 30¢	450.00	6,711.00		
Pipe & Fittings				
3500 ft. 3" pipe @ 92.70/100	3,244.50			
" " 1" " @ 20.56/100	719.60			
200 only 3" nipples @ 42.78/100	85.56			
25 " " couplings @ 163.70/100	40.92			
10 " " T's @ 195.20/100	19.52			
Forward	4,110.10	6,711.00		172,000.00

ATTWOOD COPPER MINES LIMITED
(No personal liability)

Forwarded	$ 4,110.10	6,711.00	172,000.00
Pipe & Fittings cont'd			
10 only 3" L's @ 180.00/100	18.00		
5 " 3" Valves @ 35.00	175.00		
Assorted plugs, reducers, etc.	100.00		
200 only 1" nipples @ 10.46/100	20.92		
25 " " couplings @ 23.00/100	5.75		
10 " T's @ 36.48/100	3.65		
10 " L's @ 30.00/100	3.00		
5 " valves @ 6.00	30.00		
Assorted plugs, etc.	25.00	4,491.42	
Explosives			
80,000 lbs powder @ 25.00/100	20,000.00		
150,000 ft. fuse @ 13.50/1000	1,950.00		
15,000 caps @ 21.60/1000	324.00		
1,500 lighters @ 13.85/1000	20.78	22,294.78	
Miscellaneous			
1 doz. shovels @ 2.20	26.40		
1 " picks @ 1.95	23.40		
½ " 8# hammers @ 3.57	21.42		
½ " Scaling bars @ 10.00(est.)	60.00		
½ " drive socket set	10.70		
½ " 18" pipe wrenches @ 3.78	22.68		
2 12" crescents @ 4.00	8.00		
Assorted small tools, hack saws, etc.	25.00		
1 500# anvil	40.00		
1 bench vise (estimate)	25.00		
1 forge (Buffalo)	41.00		
2 Pickup tongs @ 2.50	5.00		
2 forge tongs @ 2.35	4.70		
½ doz. assorted blacksmith's hammers @ 2.50	15.00		
Coal for blacksmith	20.00		
3,000 # carbide @ 2.70/100 (est.)	81.00		
25 carbide lamps @ 1.50 (est.)	37.50	466.80	
Fuel, etc.			
Gas & oil on Jeep use (est.) $50/mo. for 12 mos.	600.00		
Fuel oil - 30,000 gal. diesel @ 16.5	4,950.00		
Lube oil - 400 " @ 78¢	312.00		
Fuel tank - (estimate)	100.00		
Estimated cost of electricity installation	1,000.00		
Estimated cost of water rights	680.00	7,642.00	
Forward		$ 41,606.00	$ 172,000.00

ATTWOOD COPPER MINES LIMITED
(No personal liability)

	Forwarded		$ 41,606.00	$ 172,000.00
	Camp Supplies			
	20 bunk beds @ 15.00	300.00		
	20 mattresses @ 15.00	300.00		
	5 air tight heaters @ 10.00	50.00		
	1 Cook stove @ 400.00	400.00		
	Miscellaneous cooking utensils, pots, pans, tubs, kettles, etc.	50.00		
	Crockery	50.00		
	Cutlery	25.00	1,175.00	
	First Aid Supplies			
	Supplies, stretcher, etc.(est.)		100.00	42,881.00
6 (d)	Operating Equipment			
	1 600 c.f.m. Chicago Pneumatic Portable Compressor		14,200.00	
	2 2½' x 7' air receivers		716.00	
	1 Wisconsin gas driven pump		320.00	
	2 Fairbanks-Morse air driven pump @ 207.00		414.00	
	1 Eimco 21 Mucking Machine		4,535.00	
	1 Mancha trammer		3,605.00	
	Extra battery box		390.00	
	2 25 volt batteries		2,250.00	
	1 3 KW charging unit		1,035.00	
	freight on same		100.00	
	4 2-ton mine cars @ 500.		2,000.00	
	2500 ft. of 12" vent tube @ 61.20/50 ft.		3,060.00	
	1 5 h.p. blower		390.00	
	3 Copco Jack-leg drifters @ 543.00		1,629.00	
	250 pcs steel average $20.		5,000.00	
	Grinding eqpt. for same		185.00	
	1 D-4 cat with angle blade & winch		10,515.00	
	Cable for same		500.00	
	1 4 wheel Jeep with heater, insurance, tax, etc.		2,000.00	
	1 24" Disston chain saw		334.00	53,178.00
6 (e)	Rehabilitation and Repairs			Nil
6(f)	New Buildings, Improvements, Installations			
	Estimated cost 1 frame bunkhouse 18' x 30'		2,000.00	
	Estimated Cost 1 office building 16' x 20'		1,500.00	
	Estimated Cost 1 Compressor house-work shop 16 x 30'		2,000.00	
	Estimated cost ¼ mi. road to proposed portal		1,000.00	
	Assorted lumber for general use 5,000 ft @ 65/1000		325.00	
	Assorted nails for general use		25.00	6,850.00
	Forward			274,909.00

ATTWOOD COPPER MINES LIMITED
(No personal liability)

Forwarded			274,909.00
6 (g) Miscellaneous			
Freight: Est. Freight of equipment to mine from Spokane, Kellogg, etc.		5,000.00	
Analyses: Est. analyses 1000 samples @ 4.00		4,000.00	
Accounting: Est. Cost of accounting		4,000.00	
Taxes & Levies:			
(a) Federal Social Security on Wages	.015		
(b) Washington Unemployment Compensation	.027		
(c) Federal Unemployment Comp.	.003		
	.0450		
Industrial Insurance	.0950		
Medical Aid	.0175		
Tunneling and general wages $104,000. @	.1575	16,380.00	
Cook:			
As above 1st three a, b, & c.	.0450		
Industrial Ins.	.0056		
Medical Aid	.0025		
	.0531		
Applied to $6,000. @ .0531		318.60	
Washington Service Tax on wages and supplies for mining 214,881 @	.005	1,074.40	
Washington Surtax 20% of above		214.88	
Operating Equipment Repairs		3,300.00	34,287.88
			309,196.88
6 (h) Contingencies			
Contingencies			10,000.00
GRAND TOTAL			$ 319,196.88

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)

Suite 1008, 330 Bay Street
Toronto, Ontario

7 (b)

As at February 28th, Draper, Dobie & Co., 330 Bay Street, Toronto, Ontario, holds options on 1,399,750 Treasury shares of the Company to net the Treasury $1,074,875, if these options are exercised. Draper, Dobie & Co., or their assignees will exercise sufficient of these options as needed to supply the Company with funds to pay its share of the cost of the proposed programme.

M E M O R A N D U M of A G R E E M E N T made this

First day of SEPTEMBER, One Thousand Nine Hundred and Fifty-Two (1952.)

B e t w e e n :

ST. EUGENE MINING CORPORATION LIMITED
(Non-Personal Liability),
hereinafter called -

"THE OPTIONOR" OF THE FIRST PART;

- and -

ATTWOOD COPPER MINES LIMITED
(No Personal Liability),
hereinafter called -

"THE OPTIONEE" OF THE SECOND PART.

W H E R E A S the Optionor owns or controls by options the following Mining Claims situated in Ferry County, in the State of Washington:

LONE STAR CLAIM Survey No. 349,
WASHINGTON CLAIM Survey No. 349,
PRYTIS CLAIM Survey No. 607,
HELEN LODE No. 570,
SHONEE NO. 2 Claim No. 531,
SHONEE, PAULINE FR.
CARTER, ARTHUR JR.,
HOUCK, WALTER,
PRIMROSE FR.,
SNOW STORM,
MOTHER LODE - Survey No. 1031,
SUNRISE MINERAL CLAIM - Lot 679,
SUNSET MINERAL CLAIM - Lot 679,
THE WASHINGTON NO. 1,
THE WASHINGTON No. 2,
SANTA FEE,
SANTA FEE FR.,
BLACK DIAMOND,

AND WHEREAS the said Lone Star, Washington and Prytis Claims are subject to a royalty or charge of ten cents (10¢) per ton of ore mined, up to an aggregate of $22,000.00 and also to the terms of a certain Agreement in writing dated March 1st,1944, all as more particularly set forth in Mining Deed No. 99587;

AND WHEREAS the Mining Claims above described as "HELEN LODE" to "MOTHER LODE" inclusive, are owned or contolled by the Optionor under a Contract for Treasurer's Deed dated July 30th,1943, and bearing No. 395, and there remains owing and unpaid thereunder and due November 1st., next, a final payment of $243.20 with interest of $14.59;

AND WHEREAS the Optionor's interest in the aforesaid Sunrise, Sunset, Santa Fee and Santa Fee Fr. Claims, is subject insofar as a half (1/2) interest in the Sunrise and Sunset Claims, and insofar as the whole interest in the Santa Fee and Santa Fee Fr. Claims is concerned, to an Option Agreement in writing dated June 10th,1952, between the Optioner and Marie McGowan, whereunder Two Thousand Eight Hundred Dollars ($2,800,00) is payable to the said McGowan in accordance with the terms thereof at the rate of One Hundred Dollars ($100.00) on the 17th of each month;

AND WHEREAS the Optionor has entered into a Timber Sale Contract in writing dated March 12th,1951, with The Hill Lumber Company of the dead timber and the merchantable live timber as therein defined for a period of two (2) years, upon the area of the Mineral Claims above

described as "LONE STAR" to "MOTHER LODE" inclusive thereunder, and the Optionor has agreed to include the area of the said Sunset and Sunrise Claims under the circumstances therein set forth;

AND WHEREAS the ownership and interest of the Optionor in the said Mineral Claims is hereinafter referred to as "Lone Star Property and Adjoining Claims";

AND WHEREAS the Optionor is desirous of selling the said Lone Star Property and Adjoining Claims and the Optionee is desirous of acquiring an option which will permit it or its nominees or assigns to examine and develop the possibilities of the said Lone Star Property and Adjoining Claims;

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the premises and of the sum of One Dollar (the receipt of which is hereby acknowledged by the Optionor) the Optionor hereby gives to the Optionee its nominees or assigns until the first day of September, 1953, the sole and exclusive option to purchase free from encumbrances, except those as hereinbefore referred to in the recitals hereto, the Lone Star Property and Adjoining Claims situate about six (6) miles south of Phoenix, B.C., in what is known as the "Boundary District" situated in Ferry County, in the State of Washington, as more particularly described in the recitals hereto, together with all improvements, buildings and appurtenances, timber and water rights situate thereon or appertaining thereto, together with the Mining Equipment situated thereon, if any,

at and for the following consideration:

200,000 fully paid and non-assessable shares of the capital stock of the Optionee deliverable on the exercise of the option hereby granted to the Optionee to purchase the said Lone Star Property and Adjoining Claims.

IT IS AGREED between the Parties hereto that the said share consideration payable to the Optionor upon the exercise of this Option may be escrowed with the Escrow Agent holding in escrow Vendor stock of the Optionee subject to the same terms of escrow and release or alienation.

IT IS FURTHER AGREED between the Parties hereto that upon the exercise of the said Option rights hereby granted, the Optionee will afford to the Optionor the right to participate up to Twenty Five per cent (25%) in any future financing by the Optionee.

In the event of the Optionee not exercising its rights under this Option Agreement, then the said Lone Star Property and Adjoining Claims shall revert to the Optionor free and clear of this Agreement and all claims, right, title and interest of the Optionee.

The Optionee and any person, or persons authorized by it shall be entitled from and after the date hereof, and at all times

during the currency hereof, to immediate possession of the said Lone Star Property and Adjoining Claims, with full right to survey, examine, sample, explore, develop, diamond drill, work and/or mine the same, or some or any of them, and to erect buildings and install machinery and/or plant, on or in connection therewith, and to remove any samples of ore incidental to such work without any objection to account to the Optionor, except as hereinafter stated.

The Optionee agrees that, prior to the exercising of this Option, it will pay for all work done, or machinery or plant installed by or on its behalf upon the said Lone Star Property and Adjoining Claims, and for any material supplied in connection with the same, and will indemnify the Optionor against any claims or liens for wages or materials in eonnection with work done on or material supplied in connection therewith, and the Optionee further agrees during the currency of this Option to maintain the said Lone Star Property and Adjoining Claims in good standing by performing any necessary work or by paying any charges with which the said Property and Claims or any of them shall be assessed during the said period, and without limiting the generality of the foregoing, will pay the instalment due November 1st., 1952, hereinbefore recited and the monthly instalments hereinbefore recited as they become dueiduring the currency of this Option and upon exercise of this Option assume the royalty obligations hereinbefore recited of the Optionor.

The Optionor agrees that the said Lone Star property and

adjoining claims are not subject to any lien, charge or encumbrance, other than heinbefore recited and referred to.

The Optionor further agrees that it shall not extend the terms of the Timber Sale Contract hereinbefore recited without the approval in writing of the Optionee, and furthermore, that if and when requested by the Optionee, it will assign to the Optionee all sums received thereunder from The Hill Lumber Company for timber cut during the term of this Option Agreement.

The Optionee agrees that in the event of abandonment of its rights hereunder, it will without expense supply to the Optionor all information as to the said Lone Star property and adjoining claims in its possession, including inspection of diamond drill cores and assays.

It is DISTINCTLY UNDERSTOOD and AGREED that this is an Option only and nothing herein contained, nor the expenditure of any money, nor performance of any act hereunder shall obligate the Optionee to deliver any shares hereunder or making the Optionee liable in any way to the Optionor, other than expressly herein stated, and that in the event of the Optionee abandoning the said Option and the said Lone Star property and adjoining claims, it may remove therefrom anything put there by it capable of being removed; that the Option hereby given shall be open for acceptance up to FOUR o'clock p.m., on the first day of September, 1953, and may be accepted by a letter mailed postage prepaid and registered and addressed to the Optionor, at Suite 2810, 25 King Street West, Toronto.

The terms and conditions hereof shall be binding upon and enure to the benefit of the Optionor and the Optionee, together with their successors and assigns.

This Agreement may be executed in several parts and such parts together shall constitute one agreement as if all parties thereto have signed the same.

IN WITNESS WHEREOF the Parties hereto have hereunto affixed their respective Corporate Seals duly attested by the hands of their respective proper Officers in that behalf.

ST. EUGENE MINING CORPORATION LIMITED
(Non-Personal Liability)

Per: (Seal)
(Sgd) A.J. Anderson
(Sgd) G. N. Woodroffe,
Secretary

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)

Per
(Sgd) Desmond F. Kidd (Seal)
(Sgd) S. A. Perry

INTERIM REPORT ON LONE STAR MINE

Ferry Co., Washington.

Summary:

The property lies at 4000' feet elevation in rolling sub-mountainous country. The Kettle River lies 5 miles distant and 2000 feet below. A paved highway and a railway lie in the Kettle valley. The property is optioned from the St. Eugene Mining Company. Some additional ground has been located. Overburden up to 100 feet thick mantles almost all the surface. In the mine a shallow nose in a low dipping basic dike forms the main ore control. The ore occurs on this nose and for some distance down its limbs. It plunges flatly southeast. The ore mineral is chalcopyrite. High gold values are invariably associated with high copper values.

Some 40,000 tons of direct smelting ore were produced prior to 1915. Four thousand feet of workings were driven, of which 3000 feet have been made accessible.

The property has been re-opened, re-surveyed, and the geology has been mapped. Where significant ore remained re-sampling has been done where possible. Twenty-eight drill holes from underground have been completed. Between the 4000 and 3850 foot levels 200,000 tons of copper ore grading 1.73% copper and .036 oz. gold have been proven. This block of ground once contained as well 40,000 tons now mined and 60,000 tons eroded by a gully which cuts the ore body. Thus originally this 150 foot interval contained 300,000 tons or 2000 tons to the vertical foot. A single ore intersection which might extend the zone 250 feet is not figured into the reserve at all.

Making certain assumptions, principal of which is a 30¢ lb. price for copper, the ore has a net value at the portal of $8.50 per ton.

I recommend depth development of this ore to 3500 feet elevation by a crosscut and drift on the ore at 3750 feet and by underground drilling from H. W. crosscuts. The total cost of this program is $200,000.00. If the

ore body extends down undiminished it should prove enough tonnage to warrant production plans on at least a 500 ton daily basis.

INTERIM REPORT ON LONE STAR MINE

Ferry Co., Washington.

By: D. F. Kidd (P. Eng.)*

Introduction:

The Lone Star mine is at the extreme north end of Ferry Co., in north central Washington. It adjoins and might be considered a southerly extension of the Boundary District of British Columbia. This district in the first two decades of this century produced 22,000,000 tons of ore with a net value of over $100,000,000. The Boundary camp has been inactive since 1920. The Lone Star mine, between 1908 and 1918 shipped 40,000 tons to the Greenwood, B. C. Copper Smelter. It has lain untouched from 1918 to 1952, when it was optioned by Attwood Copper Mines Limited, an Ontario company.

Access:

The property lies at 4,000 feet elevation in rolling sub-mountainous country rising to rounded summits of up to 5500 feet elevation. It lies within a loop of the Kettle River between where that stream leaves British Columbia at Midway and re-enters Canada 27 miles downstream near Grand Forks, B. C. The stream has a general elevation of 2000 feet. The property is five miles back from the river up gently rolling open slopes and 2000 feet above it.

The nearest town in Washington is Curlew, on the Kettle river, 10 miles from Lone Star. Paved highways and a branch line of the Great Northern Railway run along the Kettle River.

* The writer is an interested party being a shareholder in Attwood Copper Mines Limited.

TITLE:

The property and its titles as of this date may be summarized as follows:-

In Ferry Co., Wash.

LONE STAR	349	Patented (syn.U.S.C.G.)	1952 taxes represented paid in full.
WASHINGTON	349	"	ditto
PRYTIS	607	"	"
HELEN LODE	570	"	"
SHONEE #2	531	"	"
SHONEE	1031	"	"
PAULINE FR.	1031	"	"
CARTER	1031	"	"
ARTHUR JR.	1031	"	"
HOUCK	1031	"	"
WALTER	1031	"	"
PRIMROSE FR.	1031	"	"
SNOWSTORM	1031	"	"
BLACK DIAMOND	1031	"	"
MOTHER LODE	1031	"	"
SUNRISE	679	"	1952 taxes pd.per Abstract of Title
SUNSET	679	"	ditto
SANTA FEE		Unpatented (i.e.located)	Abstract of Title establishes claim in good standing to June 30/53)
SANTA FEE Fr.		"	
WASHINGTON #1		"	Claim represented to be in good standing to June 30/53 but some doubt exists
WASHINGTON #2		"	
VANCE LODE		Unpatented	Staked by Vance Vanwcert and in good standing to June 30/53
VAN LODE		"	
WOERT LODE		"	Quit Claim Deed registered in favour of Attwood Copper Mines Limited on Dec.12, 1952
TED LODE		"	
BOB LODE		"	
CLINT LODE		"	
BILL LODE			

In B. C. adjoining the above

BOUNDARY No. 1		Staked claim	Expiry date - May 16/53
BOUNDARY No. 2		"	"
RICHMOND Fr.	Lot #2918	Lease No.1003	May 30/53
NEW ST.MAURICE	" 682	" " 1004	"
ST. JOSEPH	" 2919	" " 1005	"

Further ground southeast of the property is in process of being acquired.

Attwood Copper Mines Limited is licensed to do business in the State of Washington.

Timber and Water:

Timber for mining purposes exists on the claims. It is doubtful if there is enough timber on the claims to warrant a sawmill to cut all lumber required for construction to production. The district however is well wooded at higher elevations and there are several small sawmills nearby. It is believed lumber requirements can be met locally at comparatively reasonable prices.

There is just sufficient running water on the property at seasons of minimum flow to maintain a small camp. I doubt if there is enough for milling purposes. Water rights on Kettle River have not been investigated but there seems to be an abundant unused flow available.

Mill tailings storage sites are available.

GEOLOGY:

The surface of the property is almost completely covered with gravelly drift, in places up to 100 feet thick. Almost nothing is known of the surface geology in the immediate vicinity of the mine.

The property lies in a southeasterly trending belt of serpentine-talc rocks and dacite averaging 1/2 mile wide. This belt is bounded on each side by intermediate intrusives, about a quartz diorite, of batholithic dimensions.

Within the mine, the principal rocks are dacite, serpentine, and a basic intrusive, apparently a dike, 200 or more feet thick, dipping southeasterly. The accessible workings nowhere reach the dike footwall. Dacite and lenses of serpentine overlie the dike. No original structures have been found. Foliation, however, is common. Although it dips southeasterly, like the dike, the foliation does not everywhere conform to the dike contact.

A shallow nose, dipping southeasterly on the back of the dike is roughly reflected in the dacite foliation. Within the limits of the mine the dike hanging-wall changes from a north strike and easterly dip to a westerly strike and southerly dip. The ore found occurs principally on the nose and some distance down the limbs of this structure.

Pronounced shearing and fracturing occurs at the dike contact and sub-parallel bands of shearing and serpentinization occur for up to 50 feet away from the contact. Copper-gold mineralization is associated with this shearing.

The ore is principally in sheared dacite near the dike contact. The copper mineral is chalcopyrite. The only other metallic is pyrite. The gold values appear to be associated with the chalcopyrite.

WORKINGS AND DRILLING:

The property was originally opened by three adits, a shaft and a winze, plus one level off the shaft. Subsequently 25 diamond drill holes were completed from surface through the heavy overburden. Thus the mine was prepared for production and an aerial tram was built 5½ miles to the Boundary Falls smelter. Underground workings total 4,000 feet, 1,000 ft., of which is not accessible.

Some 40,000 tons of direct smelting ore were produced. The property shut down with the closure of the Boundary Falls smelter.

September 1st, 1952, the property was optioned by Attwood Copper Mines Limited. A programme of re-surveying, geological mapping, re-sampling (where possible) and diamond drilling was instituted and has been carried on to date. All accessible workings have been examined. Twenty-eight drill holes from underground have been completed.

Tonnage of Ore:

Workings have been sampled by generous channel samples following standard conservative practice. All samples are weighted for length. No sample values were cut since the values are visible. Drill core is all E X diameter and has been split for sampling. The cores

and reject splits are stored systematically at the property. All assaying has been done by J. R. Williams & Son, Licenced Assayers of Vancouver. They are retaining pulp splits from all samples run.

Ore tonnage calculations have been from 50 ft. interval vertical sections in part East-West sections, and in part North-South sections. Sections rather than plans were used because dips are commonly less than 45°. Ore on each section was projected 25 feet on each side of the section. The ore blocks, though shown separately on the sections, are in reality in two bodies interrupted only by erosion across a gully.

The tonnage measured of 200,000 lies between the 4,000 and 3,850 levels. A study of the sections will show only the most conservative extensions to known ore intersections. Actually the figure given is a minimum for this block of ground. In this 150 ft. vertical interval not only is 200,000 tons of ore proved, but 40,000 tons have been mined, and 60,000 eroded in the gully cutting the body. Thus, at one time, 150 foot contained at least 300,000 tons, or 2,000 tons per vertical foot.

No weight has been given in these estimates to Hole No. 28 some 200 feet west on the zone from the west end of the proven ore south of the gully. If ore were proved to extend to this point the tonnage estimate might have to be revised upward by as much as 25%.

No ore has been looked for below the 3870 level.

Of the ore tonnage proven some 50,000 tons north of the gully can be won by surface stripping. A possible additional 50,000 tons of lower grade could be recovered in this operation from old workings only partly worked. This last possible 50,000 tons is not taken into this ore estimate.

VALUATION OF ORE:

Values in the ore are in copper and gold. A copper-gold concentrate should be produced. The nearest smelter handling this type of concentrate is the Tacoma Smelter of the American Smelting & Refining Co. I assume 90% recovery of both copper and gold in a 28% copper concentrate.

In the present unsettled state of United States domestic copper price policies it is difficult to arrive at a fair price for copper. It seems possible that a sales contract may be negotiated at a sufficient price to warrant placing the property in production. I understand contracts have recently been negotiated at 30¢ and therefore this figure will be used.

To add to the uncertainty, no smelter schedules are published at the Tacoma smelter. A 1950 semi-open schedule will be used on the assumption that increases since that date might be offset by savings in a negotiated contract. Making due allowance for these several uncertainties, the net value calculation is as follows:-

To date Grade 1.72% Cu. and .034 Au.

Assume 90% recovery and gold in Cu. conc.

Assume 28% Cu. Conc.

Conc. ratio $\frac{1.72 \times 9}{10}$ $\frac{1.648}{28}$ = $\frac{1}{17}$

If 1.72% ore carried .034 Au.

28% conc. should carry $\frac{28}{1.72} \times .034$ = .552 oz.

@ 30/ Cu. and $35 gold, value should be

at Tacoma

Copper pay for 100% less one unit less 2.75¢

= 27% @ 30¢ - 2.75¢

= 540 lb. @ 27.25¢ = $147.15

Gold pay for all at 91.92% of $35

= .552 x 91.92% x $35 = 17.50 $164.65

Estimated Freight 7.00

Treatment 15.00 22.00

Net Smelter Return per T. Conc. $142.25

Net Value of Ore at portal = $ 8.50

The net value of the mine ore then is $8.50 at the portal if these necessary assumptions are correct.

I roughly estimate that in an ore body of this size, even allowing for low dip, overall exploration, mining and milling costs should not exceed $5.00 per ton. In my opinion the search for extensions of this ore is warranted.

PROPOSED DEVELOPMENT

Three alternatives are possible in the next stage of development:-

(1) A drift can be driven at 3750' elevation to intersect the downward projection of the ore to that level. This could later be used in mining. From this drift drives could be made into the hanging wall for drill stations to explore below 3750' to the 3600' elevation. If the ore body extends down undiminished, this should then provide enough ore to warrant production. Under this programme 3,000 feet of adit and 50 drill holes, totalling 10,000 feet at least would be needed.

(2) The main drift could be at 3750 elevation but along the line of the drill hole stations rather than along the ore itself. This programme would require less adit, only 2,000 feet, but more drilling, since a line of flat holes at 3750 elevation would be needed. I estimate 2,000 feet of driving and 18,000 feet of drilling. A hanging wall tunnel is of no use for extraction and gives little geological information.

(3) The drilling could be done from surface with no adit driven. The overburden is known to be deep, perhaps averaging 50 feet. The holes would average 150 feet longer each. Delays and difficulties in this type of drilling are probable. I estimate an extra 7,500 feet of drilling would be needed. It is difficult to figure the cost of reaching bedrock with 50 holes, but a figure of $25,000 seems a fair guess. This scheme would provide no workings for mining and the least amount of geological information.

I recommend that the project be undertaken and that Scheme 1 be followed. The principal reason for preferring this scheme is that it will furnish the maximum amount of information useful in reaching at a decision to go into production.

D. F. Kidd

Vancouver, B. C.
February 27, 1953

SCHEDULE OF ORE BLOCKS

North Body as taken from the E-W assay sections, assuming 25 ft. on each side of section line, and using 12 c.f. per ton.

Section:	Block	Strike length:	Dip length	Av. width	Tons	Grade Au.	Grade Cu.
5250N	1	50	60	18	4,500	.132	2.42
	2	50	60	5	1,250	.05	2.10
	3	50	65	16	4,300	.06	1.58
5200N	4	50	120	12	6,000	.048	2.22
	5	50	70	17	4,950	.09	1.90
5150N	6	50	90	20	7,500	.038	1.80
	7	50	25	15	1,500	.04	1.77
5100N	8	50	80	15	5,000	.035	1.45
5050N	9	50	55	25	5,750	.045	1.50
	10	50	45	55	10,300	.03	2.10
5000 N	11	50	60	15	3,750	.04	1.32
Total and weighted average for North ore body					54,800	.052	1.85

South Body - E-W

A. From E-W assay sections assuming 25' each side section line and extending to the interior winze at 4775 N

Section	Block	Strike length	Dip length	Av. width	Tons	Grade Au.	Cu.
4950N	12	50	70	25	7,300	.03	1.60
	13	50	30	20	2,500	.04	2.00
	14	50	50	30	6,250	.02	1.70
	15	50	50	12	2,500	.02	1.60
4900N	16	50	60	24	6,000	.03	1.60
	17	50	120	30	15,000	.02	2.00
	18	50	60	14	3,500	.02	1.60
4850N	19	50	50	20	4,170	.088	3.1
	20	50	70	25	7,300	.03	1.6
	21	50	80	12	4,000	.07	2.5
	22	50	75	20	6,250	.04	1.1
4800N	23	50	50	20	4,170	.015	1.24
	24	50	50	15	3,100	.026	2.10
	25	50	55	25	5,750	.015	1.43
	26	50	100	35	15,000	.02	1.36
	27	50	80	14	4,700	.046	3.08
	28	50	70	8	2,300	.12	1.80

South Body - as taken from N-S assay sections, south of 4775N assuming 25 ft. on each side of section line, and using a factor of 12 c.f. per ton.

5500E	29	50	50	18	3,750	.062	2.8
	30	50	38	36	5,700	.012	1.3
5450E	31	50	80	40	13,300	.012	1.20
	32	50	35	20	2,900	.02	1.60
5400	33	50	45	20	3,750	.03	1.45
	34	50	40	18	3,000	.015	1.07
	35	50	20	5	400	.03	1.60
	36	50	50	10	2,080	.03	1.36
	37	50	65	12	3,250	.03	2.20
	38	50	40	20	3,300	.02	1.60
5350	39	50	80	12	4,000	.02	1.29
Total and weighted average for South ore body as delimited to date					145,230	.028	1.69%
Grand total					200,000	.035	1.73%

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved
Budget Bureau No. 42-R1035.2.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
APR 16 1953

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. DMEA-2985
Metal or Mineral
Date Received 4-16-53
Estimated Cost
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Attwood Copper Mines Limited (No Personal Liability)
Suite 1008, 330 Bay Street,
Toronto, Ontario. Canada
Authorized to do business Washington State

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized.

(*c*) If a corporation, add to above statement, titles, names and addresses of officers.

(*d*) If a partnership, add to the above statement the names and addresses of all partners.

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract See attached Interim Report, page 1.

(*b*) State any mine name by which the property is known. "Lone Star" Mine.

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise
See Introduction to attached Interim Report.

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property. See copy of attached Option Agreement.

(*e*) If you own the land, describe any liens or encumbrances on it

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. See attached list.

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes. See attached report

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. See attached report

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you.

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points.

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power. See attached report

16—66551-1

Chalcopyrite

5. (Copper) *ration project.*—State the mineral or minerals for which you sh to explore .....

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc. See attached sheet 1 12

(*c*) The work will start within ..... days and be completed within ..... months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the proposed exploration project, and also that of the person or persons who will supervise the operations. See attached sheet

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project:

(*a*) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.).

(*b*) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants.

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel.

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be.

(*e*) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project.

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project.

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes.

(*h*) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above.

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*) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)? Yes

(*b*) How do you propose to furnish your share of the costs?

[X] Money [ ] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper.

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.

Dated March 16th, 1953

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)

(Applicant)

By (Desmond F. Kidd)
President & General Manager

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

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)

Suite 1008, 330 Bay Street
Toronto, Ontario

3 (f)

Unpatented Claims	Book	Page
SANTA FEE	11	423
SANTA FEE FR.	11	424
WASHINGTON Nos. 1 & 2	12	30
VAN	12	161
VANCE	12	161
WOERT	12	161
TED	12	155
CLINT	12	155
BOB	12	155
BILL	12	155

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)
Suite 1008, 330 Bay St., Toronto, Ontario.

5 (b)

The workings are shown on the maps with the accompanying Interim Report. The Company proposes:-

1. A drift easterly from Goosmus Creek, with portal at 4250N, 4775 E., Elev. 3780, to attain approximately 100 ft. mine depth on the structure. This drift will intersect the downward projection of known ore at footage 500, and continue on the projected structure for 1,000 feet, (the plan length of the structure known from present workings.)

   Five hundred feet of cross-cutting and one thousand feet of drifting in the hanging wall are proposed for diamond drill stations. Diamond drilling, totalling 10,000 feet, would explore the structure for 250 feet vertically, some 600 feet down the dip, below the proposed lower tunnel.

2. Diamond drilling from surface, a total of 3,000 ft. to explore the structure west of known ore, and near surface. This will facilitate drifting on ore.

3. Map surface in detail and re-survey claims and surrounding ground. Mineralized outcrops will be investigated.

5 (d) Attwood Copper Mines Limited has worked for two years on a program of detailed geological mapping, co-ordinated with geophysics and bigeochemistry, and followed by diamond drilling, in a search for copper ores, in the neighbouring "Boundary Camp", near Greenwood, B. C. The Company has been moderately successful.

The programme will be directed by Dr. D. F. Kidd, President and General Manager of Attwood Copper Mines Limited; Vice-President and General Manager of Mastodon Zinc Mines Limited; ($2,000,000. plant recently completed), Director and Consulting Engineer, Highland-Bell Limited (silver mine producing 750,000 oz. annually), Consulting Mining Geologist, Vancouver, B. C.

R. H. Seraphim, Ph. D (Geol.M.I.T.) has been in charge of field work in the "Boundary Camp". He has had 12 years' experience in mining, mine exploration and development of British Columbia mining properties. He would superintend the proposed operation.

C. D. R. Dahlstrom, Ph. D. (Geol. Princeton) has been Chief Geologist on the Attwood project and would continue on the Lone Star project.

The latter two men have applied to the U.S. Imigration for permission to work in Washington State.

ATTWOOD COPPER MINES LIMITED
(No personal liability)

Suite 1008, 330 Bay St.,
Toronto, Ontario.

6 (a) Independent Contracts				
Diamond Drilling				
Estimate on 2000 feet of surface drilling at 6.00/foot		$ 12,000.00		
Estimate on 10,000 feet of underground drilling at 5.00/foot		50,000.00	$	62,000.00
6 (b) Labour, Supervision, Consultants				
Miner's Contract (Tunnelling)				
Estimate on 3,000 feet of drift and crosscut at 15.00/foot	$ 45,000.00			
Allow $500. per foot for switches, exploratory crosscuts, diamond drill stations	7,500.00	52,500.00		
Salaries and Wages				
Superintendent - 1 year at	8,100.00			
Geologist " " "	7,200.00			
Foreman " " "	7,200.00			
Surveyor " " "	5,000.00			
2 Compressor men each 300 days @ $15./day	9,000.00			
1 Cat operator 300 days at $20/day	6,000.00			
2 labourers " " $15./day	9,000.00	51,500.00		
		104,000.00		
1 Cook and helper at $1/man day each		6,000.00		110,000.00
6 (c) Operating Materials and Supplies				
Track & Fittings				
Rail - 60,000 lb. @ 8.35/100	5,010.00			
10 switches @ $75. each	750.00			
Jim crow	36.00			
20 cases spikes @ 10.75	215.00			
5 kegs track bolts @ $50.	250.00			
1500 fish plates @ 30¢	450.00	6,711.00		
Pipe & Fittings				
3500 ft. 3" pipe @ 92.70/100	3,244.50			
" " 1" " @ 20.56/100	719.60			
200 only 3" nipples @ 42.78/100	85.56			
25 " " couplings @ 163.70/100	40.92			
10 " " T's @ 195.20/100	19.52			
Forward	4,110.10	6,711.00		172,000.00

ATTWOOD COPPER MINES LIMITED
(No personal liability)

Forwarded	$ 4,110.10	6,711.00	172,000.00
Pipe & Fittings cont'd			
10 only 3" L's @ 180.00/100	18.00		
5 " 3" Valves @ 35.00	175.00		
Assorted plugs, reducers, etc.	100.00		
200 only 1" nipples @ 10.46/100	20.92		
25 " " couplings @ 23.00/100	5.75		
10 " T's @ 36.48/100	3.65		
10 " L's @ 30.00/100	3.00		
5 " valves @ 6.00	30.00		
Assorted plugs, etc.	25.00	4,491.42	
Explosives			
80,000 lbs powder @ 25.00/100	20,000.00		
150,000 ft. fuse @ 13.50/1000	1,950.00		
15,000 caps @ 21.60/1000	324.00		
1,500 lighters @ 13.85/1000	20.78	22,294.78	
Miscellaneous			
1 doz. shovels @ 2.20	26.40		
1 " picks @ 1.95	23.40		
½ " 8# hammers @ 3.57	21.42		
½ " Scaling bars @ 10.00(est.)	60.00		
½ " drive socket set	10.70		
½ " 18" pipe wrenches @ 3.78	22.68		
2 12" crescents @ 4.00	8.00		
Assorted small tools, hack saws, etc.	25.00		
1 500# anvil	40.00		
1 bench vise (estimate)	25.00		
1 forge (Buffalo)	41.00		
2 Pickup tongs @ 2.50	5.00		
2 forge tongs @ 2.35	4.70		
½ doz. assorted blacksmith's hammers @ 2.50	15.00		
Coal for blacksmith	20.00		
3,000 # carbide @ 2.70/100 (est.)	81.00		
25 carbide lamps @ 1.50 (est.)	37.50	466.80	
Fuel, etc.			
Gas & oil on Jeep use (est.) $50/mo. for 12 mos.	600.00		
Fuel oil - 30,000 gal. diesel @ 16.5	4,950.00		
Lube oil - 400 " @ 78¢	312.00		
Fuel tank - (estimate)	100.00		
Estimated cost of electricity installation	1,000.00		
Estimated cost of water rights	680.00	7,642.00	
Forward		$ 41,606.00	$ 172,000.00

[illegible]TWOOD COPPER MINES LIMITED
(No personal liability)

	Forwarded		$ 41,606.00	$ 172,000.00
	Camp Supplies			
	20 bunk beds @ 15.00	300.00		
	20 mattresses @ 15.00	300.00		
	5 air tight heaters @ 10.00	50.00		
	1 Cook stove @ 400.00	400.00		
	Miscellaneous cooking utensils, pots, pans, tubs, kettles, etc.	50.00		
	Crockery	50.00		
	Cutlery	25.00	1,175.00	
	First Aid Supplies			
	Supplies, stretcher, etc.(est.)		100.00	42,881.00
6 (d)	**Operating Equipment**			
	1 600 c.f.m. Chicago Pneumatic Portable Compressor		14,200.00	
	2 2½' x 7' air receivers		716.00	
	1 Wisconsin gas driven pump		320.00	
	2 Fairbanks-Morse air driven pump @ 207.00		414.00	
	1 Eimco 21 Mucking Machine		4,535.00	
	1 Mancha trammer		3,605.00	
	Extra battery box		390.00	
	2 25 volt batteries		2,250.00	
	1 3 KW charging unit		1,035.00	
	freight on same		100.00	
	4 2-ton mine cars @ 500.		2,000.00	
	2500 ft. of 12" vent tube @ 61.20/50 ft.		3,060.00	
	1 5 h.p. blower		390.00	
	3 Copco Jack-leg drifters @ 543.00		1,629.00	
	250 pcs steel average $20.		5,000.00	
	Grinding eqpt. for same		185.00	
	1 D-4 cat with angle blade & winch		10,515.00	
	Cable for same		500.00	
	1 4 wheel Jeep with heater, insurance, tax, etc.		2,000.00	
	1 24" Disston chain saw		334.00	53,178.00
6 (e)	**Rehabilitation and Repairs**			Nil
6(f)	**New Buildings, Improvements, Installations**			
	Estimated cost 1 frame bunkhouse 18' x 30'		2,000.00	
	Estimated Cost 1 office building 16' x 20'		1,500.00	
	Estimated Cost 1 Compressor house-work shop 16 x 30'		2,000.00	
	Estimated cost ¼ mi. road to proposed portal		1,000.00	
	Assorted lumber for general use 5,000 ft @ 65/1000		325.00	
	Assorted nails for general use		25.00	6,850.00
	Forward			274,909.00

ATTWOOD COPPER MINES LIMITED
(No personal liability)

Forwarded			274,909.00
6 (g) **Miscellaneous**			
Freight: Est. Freight of equipment to mine from Spokane, Kellogg, etc.		5,000.00	
Analyses: Est. analyses 1000 samples @ 4.00		4,000.00	
Accounting: Est. Cost of accounting		4,000.00	
Taxes & Levies:			
(a) Federal Social Security on Wages	.015		
(b) Washington Unemployment Compensation	.027		
(c) Federal Unemployment Comp.	.003		
	.0450		
Industrial Insurance	.0950		
Medical Aid	.0175		
Tunneling and general wages $104,000. @	.1575	16,380.00	
Cook:			
As above 1st three a,b,& c.	.0450		
Industrial Ins.	.0056		
Medical Aid	.0025		
	.0531		
Applied to $6,000. @ .0531		318.60	
Washington Service Tax on wages and supplies for mining 214,881 @	.005	1,074.40	
Washington Surtax 20% of above		214.88	
Operating Equipment Repairs		3,300.00	34,287.88
			309,196.88
6 (h) **Contingencies**			
Contingencies			10,000.00
GRAND TOTAL			$ 319,196.88

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)

Suite 1008, 330 Bay Street
Toronto, Ontario

7 (b)

As at February 28th, Draper, Dobie & Co., 330 Bay Street, Toronto, Ontario, holds options on 1,399,750 Treasury shares of the Company to net the Treasury $1,074,875, if these options are exercised. Draper, Dobie & Co., or their assignees will exercise sufficient of these options as needed to supply the Company with funds to pay its share of the cost of the proposed programme.

MEMORANDUM of AGREEMENT made this

First day of SEPTEMBER, One Thousand Nine Hundred and Fifty-Two (1952.)

Between:

ST. EUGENE MINING CORPORATION LIMITED
(Non-Personal Liability),
hereinafter called -

"THE OPTIONOR" OF THE FIRST PART;

- and -

ATTWOOD COPPER MINES LIMITED
(No Personal Liability),
hereinafter called -

"THE OPTIONEE" OF THE SECOND PART.

WHEREAS the Optionor owns or controls by options the following Mining Claims situated in Ferry County, in the State of Washington:

LONE STAR CLAIM Survey No. 349,
WASHINGTON CLAIM Survey No. 349,
PRYTIS CLAIM Survey No. 607,
HELEN LODE No. 570,
SHONEE NO. 2 Claim No. 531,
SHONEE, PAULINE FR.
CARTER, ARTHUR JR.,
HOUCK, WALTER,
PRIMROSE FR.,
SNOW STORM,
MOTHER LODE - Survey No. 1031,
SUNRISE MINERAL CLAIM - Lot 679,
SUNSET MINERAL CLAIM - Lot 679,
THE WASHINGTON NO. 1,
THE WASHINGTON No. 2,
SANTA FEE,
SANTA FEE FR.,
BLACK DIAMOND,

AND WHEREAS the said Lone Star, Washington and Prytis Claims are subject to a royalty or charge of ten cents (10¢) per ton of ore mined, up to an aggregate of $22,000.00 and also to the terms of a certain Agreement in writing dated March 1st,1944, all as more particularly set forth in Mining Deed No. 99587;

AND WHEREAS the Mining Claims above described as "HELEN LODE" to "MOTHER LODE" inclusive, are owned or contolled by the Optionor under a Contract for Treasurer's Deed dated July 30th,1943, and bearing No. 395, and there remains owing and unpaid thereunder and due November 1st., next, a final payment of $243.20 with interest of $14.59;

AND WHEREAS the Optionor's interest in the aforesaid Sunrise, Sunset, Santa Fee and Santa Fee Fr. Claims, is subject insofar as a half (1/2) interest in the Sunrise and Sunset Claims, and insofar as the whole interest in the Santa Fee and Santa Fee Fr. Claims is concerned, to an Option Agreement in writing dated June 10th,1952, between the Optioner and Marie McGowan, whereunder Two Thousand Eight Hundred Dollars ($2,800,00) is payable to the said McGowan in accordance with the terms thereof at the rate of One Hundred Dollars ($100.00) on the 17th of each month;

AND WHEREAS the Optionor has entered into a Timber Sale Contract in writing dated March 12th,1951, with The Hill Lumber Company of the dead timber and the merchantable live timber as therein defined for a period of two (2) years, upon the area of the Mineral Claims above

described as "LONE STAR" to "MOTHER LODE" inclusive thereunder, and the Optionor has agreed to include the area of the said Sunset and Sunrise Claims under the circumstances therein set forth;

AND WHEREAS the ownership and interest of the Optionor in the said Mineral Claims is hereinafter referred to as "Lone Star Property and Adjoining Claims";

AND WHEREAS the Optionor is desirous of selling the said Lone Star Property and Adjoining Claims and the Optionee is desirous of acquiring an option which will permit it or its nominees or assigns to examine and develop the possibilities of the said Lone Star Property and Adjoining Claims;

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the premises and of the sum of One Dollar (the receipt of which is hereby acknowledged by the Optionor) the Optionor hereby gives to the Optionee its nominees or assigns until the first day of September, 1953, the sole and exclusive option to purchase free from encumbrances, except those as hereinbefore referred to in the recitals hereto, the Lone Star Property and Adjoining Claims situate about six (6) miles south of Phoenix, B.C., in what is known as the "Boundary District" situated in Ferry County, in the State of Washington, as more particularly described in the recitals hereto, together with all improvements, buildings and appurtenances, timber and water rights situate thereon or appertaining thereto, together with the Mining Equipment situated thereon, if any,

at and for the following consideration:

200,000 fully paid and non-assessable shares of the capital stock of the Optionee deliverable on the exercise of the option hereby granted to the Optionee to purchase the said Lone Star Property and Adjoining Claims.

IT IS AGREED between the Parties hereto that the said share consideration payable to the Optionor upon the exercise of this Option may be escrowed with the Escrow Agent holding in escrow Vendor stock of the Optionee subject to the same terms of escrow and release or alienation.

IT IS FURTHER AGREED between the Parties hereto that upon the exercise of the said Option rights hereby granted, the Optionee will afford to the Optionor the right to participate up to Twenty Five per cent (25%) in any future financing by the Optionee.

In the event of the Optionee not exercising its rights under this Option Agreement, then the said Lone Star Property and Adjoining Claims shall revert to the Optionor free and clear of this Agreement and all claims, right, title and interest of the Optionee.

The Optionee and any person or persons authorized by it shall be entitled from and after the date hereof, and at all times

during the currency hereof, to immediate possession of the said Lone Star Property and Adjoining Claims, with full right to survey, examine, sample, explore, develop, diamond drill, work and/or mine the same, or some or any of them, and to erect buildings and install machinery and/or plant, on or in connection therewith, and to remove any samples of ore incidental to such work without any objection to account to the Optionor, except as hereinafter stated.

The Optionee agrees that, prior to the exercising of this Option, it will pay for all work done, or machinery or plant installed by or on its behalf upon the said Lone Star Property and Adjoining Claims, and for any material supplied in connection with the same, and will indemnify the Optionor against any claims or liens for wages or materials in eonnection with work done on or material supplied in connection therewith, and the Optionee further agrees during the currency of this Option to maintain the said Lone Star Property and Adjoining Claims in good standing by performing any necessary work or by paying any charges with which the said Property and Claims or any of them shall be assessed during the said period, and without limiting the generality of the foregoing, will pay the instalment due November 1st., 1952, hereinbefore recited and the monthly instalments hereinbefore recited as they become due during the currency of this Option and upon exercise of this Option assume the royalty obligations hereinbefore recited of the Optionor.

The Optionor agrees that the said Lone Star property and

adjoining claims are not subject to any lien, charge or encumbrance, other than heinbefore recited and referred to.

The Optionor further agrees that it shall not extend the terms of the Timber Sale Contract hereinbefore recited without the approval in writing of the Optionee, and furthermore, that if and when requested by the Optionee, it will assign to the Optionee all sums received thereunder from The Hill Lumber Company for timber cut during the term of this Option Agreement.

The Optionee agrees that in the event of abandonment of its rights hereunder, it will without expense supply to the Optionor all information as to the said Lone Star property and adjoining claims in its possession, including inspection of diamond drill cores and assays.

It is DISTINCTLY UNDERSTOOD and AGREED that this is an Option only and nothing herein contained, nor the expenditure of any money, nor performance of any act hereunder shall obligate the Optionee to deliver any shares hereunder or making the Optionee liable in any way to the Optionor, other than expressly herein stated, and that in the event of the Optionee abandoning the said Option and the said Lone Star property and adjoining claims, it may remove therefrom anything put there by it capable of being removed; that the Option hereby given shall be open for acceptance up to FOUR o'clock p.m., on the first day of September, 1953, and may be accepted by a letter mailed postage prepaid and registered and addressed to the Optionor, at Suite 2810, 25 King Street West, Toronto.

The terms and conditions hereof shall be binding upon and enure to the benefit of the Optionor and the Optionee, together with their successors and assigns.

This Agreement may be executed in several parts and such parts together shall constitute one agreement as if all parties thereto have signed the same.

IN WITNESS WHEREOF the Parties hereto have hereunto affixed their respective Corporate Seals duly attested by the hands of their respective proper Officers in that behalf.

ST. EUGENE MINING CORPORATION LIMITED
(Non-Personal Liability)

Per: (Seal)
(Sgd) A.J. Anderson
(Sgd) G. N. Woodroffe,
Secretary

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)

Per
(Sgd) Desmond F. Kidd (Seal)

(Sgd) S. A. Perry

INTERIM REPORT ON LONE STAR MINE

Ferry Co., Washington.

Summary:

The property lies at 4000' feet elevation in rolling sub-mountainous country. The Kettle River lies 5 miles distant and 2000 feet below. A paved highway and a railway lie in the Kettle valley. The property is optioned from the St. Eugene Mining Company. Some additional ground has been located. Overburden up to 100 feet thick mantles almost all the surface. In the mine a shallow nose in a low dipping basic dike forms the main ore control. The ore occurs on this nose and for some distance down its limbs. It plunges flatly southeast. The ore mineral is chalcopyrite. High gold values are invariably associated with high copper values.

Some 40,000 tons of direct smelting ore were produced prior to 1915. Four thousand feet of workings were driven, of which 3000 feet have been made accessible.

The property has been re-opened, re-surveyed, and the geology has been mapped. Where significant ore remained re-sampling has been done where possible. Twenty-eight drill holes from underground have been completed. Between the 4000 and 3850 foot levels 200,000 tons of copper ore grading 1.73% copper and .036 oz. gold have been proven. This block of ground once contained as well 40,000 tons now mined and 60,000 tons eroded by a gully which cuts the ore body. Thus originally this 150 foot interval contained 300,000 tons or 2000 tons to the vertical foot. A single ore intersection which might extend the zone 250 feet is not figured into the reserve at all.

Making certain assumptions, principal of which is a 30¢ lb. price for copper, the ore has a net value at the portal of $8.50 per ton.

I recommend depth development of this ore to 3500 feet elevation by a crosscut and drift on the ore at 3750 feet and by underground drilling from H. W. crosscuts. The total cost of this program is $200,000.00. If the

ore body extends down undiminished it should prove enough tonnage to warrant production plans on at least a 500 ton daily basis.

INTERIM REPORT ON LONE STAR MINE

Ferry Co., Washington.

By: D. F. Kidd (P. Eng.)*

Introduction:

The Lone Star mine is at the extreme north end of Ferry Co., in north central Washington. It adjoins and might be considered a southerly extension of the Boundary District of British Columbia. This district in the first two decades of this century produced 22,000,000 tons of ore with a net value of over $100,000,000. The Boundary camp has been inactive since 1920. The Lone Star mine, between 1908 and 1918 shipped 40,000 tons to the Greenwood, B. C. Copper Smelter. It has lain untouched from 1918 to 1952, when it was optioned by Attwood Copper Mines Limited, an Ontario company.

Access:

The property lies at 4,000 feet elevation in rolling sub-mountainous country rising to rounded summits of up to 5500 feet elevation. It lies within a loop of the Kettle River between where that stream leaves British Columbia at Midway and re-enters Canada 27 miles downstream near Grand Forks, B. C. The stream has a general elevation of 2000 feet. The property is five miles back from the river up gently rolling open slopes and 2000 feet above it.

The nearest town in Washington is Curlew, on the Kettle river, 10 miles from Lone Star. Paved highways and a branch line of the Great Northern Railway run along the Kettle River.

* The writer is an interested party being a shareholder in Attwood Copper Mines Limited.

TITLE:

The property and its titles as of this date may be summarized as follows:-

In Ferry Co., Wash.

LONE STAR	349	Patented (syn.U.S.C.G.)	1952 taxes represented paid in full.
WASHINGTON	349	"	ditto
PRYTIS	607	"	"
HELEN LODE	570	"	"
SHONEE #2	531	"	"
SHONEE	1031	"	"
PAULINE FR.	1031	"	"
CARTER	1031	"	"
ARTHUR JR.	1031	"	"
HOUCK	1031	"	"
WALTER	1031	"	"
PRIMROSE FR.	1031	"	"
SNOWSTORM	1031	"	"
BLACK DIAMOND	1031	"	"
MOTHER LODE	1031	"	"
SUNRISE	679	"	1952 taxes pd.per Abstract of Title
SUNSET	679	"	ditto
SANTA FEE		Unpatented (i.e.located)	Abstract of Title establishes claim in good standing to June 30/53)
SANTA FEE Fr.		"	
WASHINGTON #1		"	Claim represented to be in good standing to June 30/53 but some doubt exists
WASHINGTON #2		"	
VANCE LODE		Unpatented	Staked by Vance Vanwcert and in good standing to June 30/53
VAN LODE		"	
WOERT LODE		"	Quit Claim Deed registered in favour of Attwood Copper Mines Limited on Dec.12, 1952
TED LODE		"	
BOB LODE		"	
CLINT LODE		"	
BILL LODE			

In B. C. adjoining the above

BOUNDARY No. 1		Staked claim	Expiry date - May 16/53
BOUNDARY No. 2		"	"
RICHMOND Fr.	Lot #2918	Lease No.1003	May 30/53
NEW ST.MAURICE	" 682	" " 1004	"
ST. JOSEPH	" 2919	" " 1005	"

Further ground southeast of the property is in process of being acquired.

Attwood Copper Mines Limited is licensed to do business in the State of Washington.

Timber and Water:

Timber for mining purposes exists on the claims. It is doubtful if there is enough timber on the claims to warrant a sawmill to cut all lumber required for construction to production. The district however is well wooded at higher elevations and there are several small sawmills nearby. It is believed lumber requirements can be met locally at comparatively reasonable prices.

There is just sufficient running water on the property at seasons of minimum flow to maintain a small camp. I doubt if there is enough for milling purposes. Water rights on Kettle River have not been investigated but there seems to be an abundant unused flow available.

Mill tailings storage sites are available.

GEOLOGY:

The surface of the property is almost completely covered with gravelly drift, in places up to 100 feet thick. Almost nothing is known of the surface geology in the immediate vicinity of the mine.

The property lies in a southeasterly trending belt of serpentine-talc rocks and dacite averaging 1/2 mile wide. This belt is bounded on each side by intermediate intrusives, about a quartz diorite, of batholithic dimensions.

Within the mine, the principal rocks are dacite, serpentine, and a basic intrusive, apparently a dike, 200 or more feet thick, dipping southeasterly. The accessible workings nowhere reach the dike footwall. Dacite and lenses of serpentine overlie the dike. No original structures have been found. Foliation, however, is common. Although it dips southeasterly, like the dike, the foliation does not everywhere conform to the dike contact.

A shallow nose, dipping southeasterly on the back of the dike is roughly reflected in the dacite foliation. Within the limits of the mine the dike hanging-wall changes from a north strike and easterly dip to a westerly strike and southerly dip. The ore found occurs principally on the nose and some distance down the limbs of this structure.

Pronounced shearing and fracturing occurs at the dike contact and sub-parallel bands of shearing and serpentinization occur for up to 50 feet away from the contact. Copper-gold mineralization is associated with this shearing.

The ore is principally in sheared dacite near the dike contact. The copper mineral is chalcopyrite. The only other metallic is pyrite. The gold values appear to be associated with the chalcopyrite.

WORKINGS AND DRILLING:

The property was originally opened by three adits, a shaft and a winze, plus one level off the shaft. Subsequently 25 diamond drill holes were completed from surface through the heavy overburden. Thus the mine was prepared for production and an aerial tram was built 5¼ miles to the Boundary Falls smelter. Underground workings total 4,000 feet, 1,000 ft., of which is not accessible.

Some 40,000 tons of direct smelting ore were produced. The property shut down with the closure of the Boundary Falls smelter.

September 1st, 1952, the property was optioned by Attwood Copper Mines Limited. A programme of re-surveying, geological mapping, re-sampling (where possible) and diamond drilling was instituted and has been carried on to date. All accessible workings have been examined. Twenty-eight drill holes from underground have been completed.

Tonnage of Ore:

Workings have been sampled by generous channel samples following standard conservative practice. All samples are weighted for length. No sample values were cut since the values are visible. Drill core is all E X diameter and has been split for sampling. The cores

and reject splits are stored systematically at the property. All assaying has been done by J. R. Williams & Son, Licenced Assayers of Vancouver. They are retaining pulp splits from all samples run.

Ore tonnage calculations have been from 50 ft. interval vertical sections in part East-West sections, and in part North-South sections. Sections rather than plans were used because dips are commonly less than 45°. Ore on each section was projected 25 feet on each side of the section. The ore blocks, though shown separately on the sections, are in reality in two bodies interrupted only by erosion across a gully.

The tonnage measured of 200,000 lies between the 4,000 and 3,850 levels. A study of the sections will show only the most conservative extensions to known ore intersections. Actually the figure given is a minimum for this block of ground. In this 150 ft. vertical interval not only is 200,000 tons of ore proved, but 40,000 tons have been mined, and 60,000 eroded in the gully cutting the body. Thus, at one time, 150 foot contained at least 300,000 tons, or 2,000 tons per vertical foot.

No weight has been given in these estimates to Hole No. 28 some 200 feet west on the zone from the west end of the proven ore south of the gully. If ore were proved to extend to this point the tonnage estimate might have to be revised upward by as much as 25%.

No ore has been looked for below the 3870 level.

Of the ore tonnage proven some 50,000 tons north of the gully can be won by surface stripping. A possible additional 50,000 tons of lower grade could be recovered in this operation from old workings only partly worked. This last possible 50,000 tons is not taken into this ore estimate.

VALUATION OF ORE:

Values in the ore are in copper and gold. A copper-gold concentrate should be produced. The nearest smelter handling this type of concentrate is the Tacoma Smelter of the American Smelting & Refining Co. I assume 90% recovery of both copper and gold in a 28% copper concentrate.

In the present unsettled state of United States domestic copper price policies it is difficult to arrive at a fair price for copper. It seems possible that a sales contract may be negotiated at a sufficient price to warrant placing the property in production. I understand contracts have recently been negotiated at 30¢ and therefore this figure will be used.

To add to the uncertainty, no smelter schedules are published at the Tacoma smelter. A 1950 semi-open schedule will be used on the assumption that increases since that date might be offset by savings in a negotiated contract. Making due allowance for these several uncertainties, the net value calculation is as follows:-

To date Grade 1.72% Cu. and .034 Au.

Assume 90% recovery and gold in Cu. conc.

Assume 28% Cu. Conc.

Conc. ratio $\frac{1.72 \times 9}{10}$ $\frac{1.648}{28}$ = $\frac{1}{17}$

If 1.72% ore carried .034 Au.

28% conc. should carry $\frac{28 \times .034}{1.72}$ = .552 oz.

@ 30/ Cu. and $35 gold, value should be

at Tacoma

Copper pay for 100% less one unit less 2.75¢

= 27% @ 30¢ - 2.75¢

= 540 lb. @ 27.25¢ = $147.15

Gold pay for all at 91.92% of $35

= .552 x 91.92% x $35 = 17.50 $164.65

Estimated Freight 7.00

Treatment 15.00 22.00

Net Smelter Return per T. Conc. $142.25

Net Value of Ore at portal = $ 8.50

The net value of the mine ore then is $8.50 at the portal if these necessary assumptions are correct.

I roughly estimate that in an ore body of this size, even allowing for low dip, overall exploration, mining and milling costs should not exceed $5.00 per ton. In my opinion the search for extensions of this ore is warranted.

PROPOSED DEVELOPMENT

Three alternatives are possible in the next stage of development:-

(1) A drift can be driven at 3750' elevation to intersect the downward projection of the ore to that level. This could later be used in mining. From this drift drives could be made into the hanging wall for drill stations to explore below 3750' to the 3600' elevation. If the ore body extends down undiminished, this should then provide enough ore to warrant production. Under this programme 3,000 feet of adit and 50 drill holes, totalling 10,000 feet at least would be needed.

(2) The main drift could be at 3750 elevation but along the line of the drill hole stations rather than along the ore itself. This programme would require less adit, only 2,000 feet, but more drilling, since a line of flat holes at 3750 elevation would be needed. I estimate 2,000 feet of driving and 18,000 feet of drilling. A hanging wall tunnel is of no use for extraction and gives little geological information.

(3) The drilling could be done from surface with no adit driven. The overburden is known to be deep, perhaps averaging 50 feet. The holes would average 150 feet longer each. Delays and difficulties in this type of drilling are probable. I estimate an extra 7,500 feet of drilling would be needed. It is difficult to figure the cost of reaching bedrock with 50 holes, but a figure of $25,000 seems a fair guess. This scheme would provide no workings for mining and the least amount of geological information.

I recommend that the project be undertaken and that Scheme 1 be followed. The principal reason for preferring this scheme is that it will furnish the maximum amount of information useful in reaching at a decision to go into production.

D. F. Kidd

Vancouver, B. C.
February 27, 1953

SCHEDULE OF ORE BLOCKS

North Body as taken from the E-W assay sections, assuming 25 ft. on each side of section line, and using 12 c.f. per ton.

Section:	Block	Strike length:	Dip length	Av. width	Tons	Grade Au.	Grade Cu.
5250N	1	50	60	18	4,500	.132	2.42
	2	50	60	5	1,250	.05	2.10
	3	50	65	16	4,300	.06	1.53
5200N	4	50	120	12	6,000	.048	2.22
	5	50	70	17	4,950	.09	1.90
5150N	6	50	90	20	7,500	.038	1.80
	7	50	25	15	1,500	.04	1.77
5100N	8	50	80	15	5,000	.035	1.45
5050N	9	50	55	25	5,750	.045	1.50
	10	50	45	55	10,300	.03	2.10
5000 N	11	50	60	15	3,750	.04	1.32
Total and weighted average for North ore body					54,800	.052	1.85

South Body - E-W

A. From E-W assay sections assuming 25' each side section line and extending to the interior winze at 4775 N

Section	Block	Strike length	Dip length	Av. width	Tons	Grade Au.	Cu.
4950N	12	50	70	25	7,300	.03	1.60
	13	50	30	20	2,500	.04	2.00
	14	50	50	30	6,250	.02	1.70
	15	50	50	12	2,500	.02	1.60
4900N	16	50	60	24	6,000	.03	1.60
	17	50	120	30	15,000	.02	2.00
	18	50	60	14	3,500	.02	1.60
4850N	19	50	50	20	4,170	.088	3.1
	20	50	70	25	7,300	.03	1.6
	21	50	80	12	4,000	.07	2.5
	22	50	75	20	6,250	.04	1.1
4800N	23	50	50	20	4,170	.015	1.24
	24	50	50	15	3,100	.026	2.10
	25	50	55	25	5,750	.015	1.43
	26	50	100	35	15,000	.02	1.36
	27	50	80	14	4,700	.046	3.08
	28	50	70	8	2,300	.12	1.80

South Body - as taken from N-S assay sections, south of 4775N assuming 25 ft. on each side of section line, and using a factor of 12 c.f. per ton.

5500E	29	50	50	18	3,750	.062	2.8
	30	50	38	36	5,700	.012	1.3
5450E	31	50	80	40	13,300	.012	1.20
	32	50	35	20	2,900	.02	1.60
5400	33	50	45	20	3,750	.03	1.45
	34	50	40	18	3,000	.015	1.07
	35	50	20	5	400	.03	1.60
	36	50	50	10	2,080	.03	1.36
	37	50	65	12	3,250	.03	2.20
	38	50	40	20	3,300	.02	1.60
5350	39	50	80	12	4,000	.02	1.29
Total and weighted average for South ore body as delimited to date					145,230	.028	1.69%
Grand total					200,000	.035	1.73%

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved, Budget Bureau No. 42-R1035.2.

Defense Minerals Administration
RECEIVED
APR 16 1953

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. DMEA-2985
Metal or Mineral
Date Received 4-16-53
Estimated Cost
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Attwood Copper Mines Limited (No Personal Liability)
Suite 1008, 330 Bay Street,
Toronto, Ontario, Canada
Authorized to do business Washington State

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized.

(*c*) If a corporation, add to above statement, titles, names and addresses of officers.

(*d*) If a partnership, add to the above statement the names and addresses of all partners.

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract See attached Interim Report, page 1.

(*b*) State any mine name by which the property is known. "Lone Star" Mine.

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise See Introduction to attached Interim Report.

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property. See copy of attached Option Agreement.

(*e*) If you own the land, describe any liens or encumbrances on it

(*f*) If the land consists of recorded mining claims, add to the description above, the book and page numbers for each recorded location notice. See attached list.

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities, if any, in such operations. Also describe accessibility of mine workings for examination purposes. See attached report

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. See attached report

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you.

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points. See attached report

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power.

16—66551-1

5. *The exploration project.*—(a) State the mineral or minerals for which you wish to explore Chalcopyrite (copper)

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc. See attached sheet

(*c*) The work will start within 1 days and be completed within 12 months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations. See attached sheet

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project:

(*a*) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.).

(*b*) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants.

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel.

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be.

(*e*) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project.

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project.

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes.

(*h*) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above.

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*) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)? Yes

(*b*) How do you propose to furnish your share of the costs?

[X] Money [ ] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper.

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.

Dated March 16th, 1953

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)
(Applicant)

By (Desmond F. Kidd)

President & General Manager

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

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)

Suite 1008, 330 Bay Street
Toronto, Ontario

3 (f)

Unpatented Claims	Book	Page
SANTA FEE	11	423
SANTA FEE FR.	11	424
WASHINGTON Nos. 1 & 2	12	30
VAN	12	161
VANCE	12	161
WOERT	12	161
TED	12	155
CLINT	12	155
BOB	12	155
BILL	12	155

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)
Suite 1008, 330 Bay St., Toronto, Ontario.

5 (b)

The workings are shown on the maps with the accompanying Interim Report. The Company proposes:-

1. A drift easterly from Goosmus Creek, with portal at 4250N, 4775 E., Elev. 3780, to attain approximately 100 ft. mine depth on the structure. This drift will intersect the downward projection of known ore at footage 500, and continue on the projected structure for 1,000 feet, (the plan length of the structure known from present workings.)
   Five hundred feet of cross-cutting and one thousand feet of drifting in the hanging wall are proposed for diamond drill stations. Diamond drilling, totalling 10,000 feet, would explore the structure for 250 feet vertically, some 600 feet down the dip, below the proposed lower tunnel.

2. Diamond drilling from surface, a total of 3,000 ft. to explore the structure west of known ore, and near surface. This will facilitate drifting on ore.

3. Map surface in detail and re-survey claims and surrounding ground. Mineralized outcrops will be investigated.

5 (d) Attwood Copper Mines Limited has worked for two years on a program of detailed geological mapping, co-ordinated with geophysics and bigeochemistry, and followed by diamond drilling, in a search for copper ores, in the neighbouring "Boundary Camp", near Greenwood, B. C. The Company has been moderately successful.

The programme will be directed by Dr. D. F. Kidd, President and General Manager of Attwood Copper Mines Limited; Vice-President and General Manager of Mastodon Zinc Mines Limited; ($2,000,000. plant recently completed), Director and Consulting Engineer, Highland-Bell Limited (silver mine producing 750,000 oz. annually), Consulting Mining Geologist, Vancouver, B. C.

R. H. Seraphim, Ph. D (Geol.M.I.T.) has been in charge of field work in the "Boundary Camp". He has had 12 years' experience in mining, mine exploration and development of British Columbia mining properties. He would superintend the proposed operation.

C. D. R. Dahlstrom, Ph. D. (Geol. Princeton) has been Chief Geologist on the Attwood project and would continue on the Lone Star project.

The latter two men have applied to the U.S. Imigration for permission to work in Washington State.

ATTWOOD COPPER MINES LIMITED
(No personal liability)

Suite 1008, 330 Bay St.,
Toronto, Ontario.

6 (a)	**Independent Contracts**			
	Diamond Drilling			
	Estimate on 2000 feet of surface drilling at 6.00/foot		$ 12,000.00	
	Estimate on 10,000 feet of underground drilling at 5.00/foot		50,000.00	$ 62,000.00
6 (b)	**Labour, Supervision, Consultants**			
	Miner's Contract (Tunnelling)			
	Estimate on 3,000 feet of drift and crosscut at 15.00/foot	$ 45,000.00		
	Allow $500. per foot for switches, exploratory crosscuts, diamond drill stations	7,500.00	52,500.00	
	Salaries and Wages			
	Superintendent - 1 year at	8,100.00		
	Geologist " " "	7,200.00		
	Foreman " " "	7,200.00		
	Surveyor " " "	5,000.00		
	2 Compressor men each 300 days @ $15./day	9,000.00		
	1 Cat operator 300 days at $20/day	6,000.00		
	2 labourers " " $15./day	9,000.00	51,500.00	
			104,000.00	
	1 Cook and helper at $1/man day each		6,000.00	110,000.00
6 (c)	**Operating Materials and Supplies**			
	Track & Fittings			
	Rail - 60,000 lb. @ 8.35/100	5,010.00		
	10 switches @ $75. each	750.00		
	Jim crow	36.00		
	20 cases spikes @ 10.75	215.00		
	5 kegs track bolts @ $50.	250.00		
	1500 fish plates @ 30¢	450.00	6,711.00	
	Pipe & Fittings			
	3500 ft. 3" pipe @ 92.70/100	3,244.50		
	" " 1" " @ 20.56/100	719.60		
	200 only 3" nipples @ 42.78/100	85.56		
	25 " " couplings @ 163.70/100	40.92		
	10 " " T's @ 195.20/100	19.52		
	Forward	4,110.10	6,711.00	172,000.00

ATTWOOD COPPER MINES LIMITED
(No personal liability)

Forwarded	$ 4,110.10	6,711.00	172,000.00
Pipe & Fittings cont'd			
10 only 3" L's @ 180.00/100	18.00		
5 " 3" Valves @ 35.00	175.00		
Assorted plugs, reducers, etc.	100.00		
200 only 1" nipples @ 10.46/100	20.92		
25 " " couplings @ 23.00/100	5.75		
10 " T's @ 36.48/100	3.65		
10 " L's @ 30.00/100	3.00		
5 " valves @ 6.00	30.00		
Assorted plugs, etc.	25.00	4,491.42	
Explosives			
80,000 lbs powder @ 25.00/100	20,000.00		
150,000 ft. fuse @ 13.50/1000	1,950.00		
15,000 caps @ 21.60/1000	324.00		
1,500 lighters @ 13.85/1000	20.78	22,294.78	
Miscellaneous			
1 doz. shovels @ 2.20	26.40		
1 " picks @ 1.95	23.40		
½ " 8# hammers @ 3.57	21.42		
½ " Scaling bars @ 10.00(est.)	60.00		
½ " drive socket set	10.70		
½ " 18" pipe wrenches @ 3.78	22.68		
2 12" crescents @ 4.00	8.00		
Assorted small tools, hack saws, etc.	25.00		
1 500# anvil	40.00		
1 bench vise (estimate)	25.00		
1 forge (Buffalo)	41.00		
2 Pickup tongs @ 2.50	5.00		
2 forge tongs @ 2.35	4.70		
½ doz. assorted blacksmith's hammers @ 2.50	15.00		
Coal for blacksmith	20.00		
3,000 # carbide @ 2.70/100 (est.)	81.00		
25 carbide lamps @ 1.50 (est.)	37.50	466.80	
Fuel, etc.			
Gas & oil on Jeep use (est.) $50/mo. for 12 mos.	600.00		
Fuel oil - 30,000 gal. diesel @ 16.5	4,950.00		
Lube oil - 400 " @ 78¢	312.00		
Fuel tank - (estimate)	100.00		
Estimated cost of electricity installation	1,000.00		
Estimated cost of water rights	680.00	7,642.00	
Forward		$ 41,606.00	$ 172,000.00

[illegible]TWOOD COPPER MINES LIMITED
(No personal liability)

	Forwarded		$ 41,606.00	$ 172,000.00
	Camp Supplies			
	20 bunk beds @ 15.00	300.00		
	20 mattresses @ 15.00	300.00		
	5 air tight heaters @ 10.00	50.00		
	1 Cook stove @ 400.00	400.00		
	Miscellaneous cooking utensils, pots, pans, tubs, kettles, etc.	50.00		
	Crockery	50.00		
	Cutlery	25.00	1,175.00	
	First Aid Supplies			
	Supplies, stretcher, etc.(est.)		100.00	42,881.00
6 (d)	**Operating Equipment**			
	1 600 c.f.m. Chicago Pneumatic Portable Compressor		14,200.00	
	2 2½' x 7' air receivers		716.00	
	1 Wisconsin gas driven pump		320.00	
	2 Fairbanks-Morse air driven pump @ 207.00		414.00	
	1 Eimco 21 Mucking Machine		4,535.00	
	1 Mancha trammer		3,605.00	
	Extra battery box		390.00	
	2 25 volt batteries		2,250.00	
	1 3 KW charging unit		1,035.00	
	freight on same		100.00	
	4 2-ton mine cars @ 500.		2,000.00	
	2500 ft. of 12" vent tube @ 61.20/50 ft.		3,060.00	
	1 5 h.p. blower		390.00	
	3 Copco Jack-leg drifters @ 543.00		1,629.00	
	250 pcs steel average $20.		5,000.00	
	Grinding eqpt. for same		185.00	
	1 D-4 cat with angle blade & winch		10,515.00	
	Cable for same		500.00	
	1 4 wheel Jeep with heater, insurance, tax, etc.		2,000.00	
	1 24" Disston chain saw		334.00	53,178.00
6 (e)	**Rehabilitation and Repairs**			Nil
6(f)	**New Buildings, Improvements, Installations**			
	Estimated cost 1 frame bunkhouse 18' x 30'		2,000.00	
	Estimated Cost 1 office building 16' x 20'		1,500.00	
	Estimated Cost 1 Compressor house-work shop 16 x 30'		2,000.00	
	Estimated cost ¼ mi. road to proposed portal		1,000.00	
	Assorted lumber for general use 5,000 ft @ 65/1000		325.00	
	Assorted nails for general use		25.00	6,850.00
	Forward			274,909.00

ATTWOOD COPPER MINES LIMITED
(No personal liability)

Forwarded			274,909.00
6 (g) Miscellaneous			
Freight: Est. Freight of equipment to mine from Spokane, Kellogg, etc.		5,000.00	
Analyses: Est. analyses 1000 samples @ 4.00		4,000.00	
Accounting: Est. Cost of accounting		4,000.00	
Taxes & Levies:			
(a) Federal Social Security on Wages	.015		
(b) Washington Unemployment Compensation	.027		
(c) Federal Unemployment Comp.	.003		
	.0450		
Industrial Insurance	.0950		
Medical Aid	.0175		
Tunneling and general wages $104,000. @	.1575	16,380.00	
Cook:			
As above 1st three a, b, & c.	.0450		
Industrial Ins.	.0056		
Medical Aid	.0025		
	.0531		
Applied to $6,000. @ .0531		318.60	
Washington Service Tax on wages and supplies for mining 214,881 @	.005	1,074.40	
Washington Surtax 20% of above		214.88	
Operating Equipment Repairs		3,300.00	34,287.88
			309,196.88
6 (h) Contingencies			
Contingencies			10,000.00
GRAND TOTAL			$ 319,196.88

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)

Suite 1008, 330 Bay Street
Toronto, Ontario

7 (b)

As at February 28th, Draper, Dobie & Co., 330 Bay Street, Toronto, Ontario, holds options on 1,399,750 Treasury shares of the Company to net the Treasury $1,074,875, if these options are exercised. Draper, Dobie & Co., or their assignees will exercise sufficient of these options as needed to supply the Company with funds to pay its share of the cost of the proposed programme.

M E M O R A N D U M of A G R E E M E N T made this

First day of SEPTEMBER, One Thousand Nine Hundred and Fifty-Two (1952.)

B e t w e e n :

ST. EUGENE MINING CORPORATION LIMITED
(Non-Personal Liability),
hereinafter called -

"THE OPTIONOR" OF THE FIRST PART;

- and -

ATTWOOD COPPER MINES LIMITED
(No Personal Liability),
hereinafter called -

"THE OPTIONEE" OF THE SECOND PART.

W H E R E A S the Optionor owns or controls by options the following Mining Claims situated in Ferry County, in the State of Washington:

LONE STAR CLAIM Survey No. 349,
WASHINGTON CLAIM Survey No. 349,
PRYTIS CLAIM Survey No. 607,
HELEN LODE No. 570,
SHONEE NO. 2 Claim No. 531,
SHONEE, PAULINE FR.
CARTER, ARTHUR JR.,
HOUCK, WALTER,
PRIMROSE FR.,
SNOW STORM,
MOTHER LODE - Survey No. 1031,
SUNRISE MINERAL CLAIM - Lot 679,
SUNSET MINERAL CLAIM - Lot 679,
THE WASHINGTON NO. 1,
THE WASHINGTON No. 2,
SANTA FEE,
SANTA FEE FR.,
BLACK DIAMOND,

AND WHEREAS the said Lone Star, Washington and Prytis Claims are subject to a royalty or charge of ten cents (10¢) per ton of ore mined, up to an aggregate of $22,000.00 and also to the terms of a certain Agreement in writing dated March 1st,1944, all as more particularly set forth in Mining Deed No. 99587;

AND WHEREAS the Mining Claims above described as "HELEN LODE" to "MOTHER LODE" inclusive, are owned or contolled by the Optionor under a Contract for Treasurer's Deed dated July 30th,1943, and bearing No. 395, and there remains owing and unpaid thereunder and due November 1st., next, a final payment of $243.20 with interest of $14.59;

AND WHEREAS the Optionor's interest in the aforesaid Sunrise, Sunset, Santa Fee and Santa Fee Fr. Claims, is subject insofar as a half (1/2) interest in the Sunrise and Sunset Claims, and insofar as the whole interest in the Santa Fee and Santa Fee Fr. Claims is concerned, to an Option Agreement in writing dated June 10th,1952, between the Optioner and Marie McGowan, whereunder Two Thousand Eight Hundred Dollars ($2,800,00) is payable to the said McGowan in accordance with the terms thereof at the rate of One Hundred Dollars ($100.00) on the 17th of each month;

AND WHEREAS the Optionor has entered into a Timber Sale Contract in writing dated March 12th,1951, with The Hill Lumber Company of the dead timber and the merchantable live timber as therein defined for a period of two (2) years, upon the area of the Mineral Claims above

described as "LONE STAR" to "MOTHER LODE" inclusive thereunder, and the Optionor has agreed to include the area of the said Sunset and Sunrise Claims under the circumstances therein set forth;

AND WHEREAS the ownership and interest of the Optionor in the said Mineral Claims is hereinafter referred to as "Lone Star Property and Adjoining Claims";

AND WHEREAS the Optionor is desirous of selling the said Lone Star Property and Adjoining Claims and the Optionee is desirous of acquiring an option which will permit it or its nominees or assigns to examine and develop the possibilities of the said Lone Star Property and Adjoining Claims;

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the premises and of the sum of One Dollar (the receipt of which is hereby acknowledged by the Optionor) the Optionor hereby gives to the Optionee its nominees or assigns until the first day of September, 1953, the sole and exclusive option to purchase free from encumbrances, except those as hereinbefore referred to in the recitals hereto, the Lone Star Property and Adjoining Claims situate about six (6) miles south of Phoenix, B.C., in what is known as the "Boundary District" situated in Ferry County, in the State of Washington, as more particularly described in the recitals hereto, together with all improvements, buildings and appurtenances, timber and water rights situate thereon or appertaining thereto, together with the Mining Equipment situated thereon, if any,

at and for the following consideration:

200,000 fully paid and non-assessable shares of the capital stock of the Optionee deliverable on the exercise of the option hereby granted to the Optionee to purchase the said Lone Star Property and Adjoining Claims.

IT IS AGREED between the Parties hereto that the said share consideration payable to the Optionor upon the exercise of this Option may be escrowed with the Escrow Agent holding in escrow Vendor stock of the Optionee subject to the same terms of escrow and release or alienation.

IT IS FURTHER AGREED between the Parties hereto that upon the exercise of the said Option rights hereby granted, the Optionee will afford to the Optionor the right to participate up to Twenty Five per cent (25%) in any future financing by the Optionee.

In the event of the Optionee not exercising its rights under this Option Agreement, then the said Lone Star Property and Adjoining Claims shall revert to the Optionor free and clear of this Agreement and all claims, right, title and interest of the Optionee.

The Optionee and any person or persons authorized by it shall be entitled from and after the date hereof, and at all times

during the currency hereof, to immediate possession of the said Lone Star Property and Adjoining Claims, with full right to survey, examine, sample, explore, develop, diamond drill, work and/or mine the same, or some or any of them, and to erect buildings and install machinery and/or plant, on or in connection therewith, and to remove any samples of ore incidental to such work without any objection to account to the Optionor, except as hereinafter stated.

The Optionee agrees that, prior to the exercising of this Option, it will pay for all work done, or machinery or plant installed by or on its behalf upon the said Lone Star Property and Adjoining Claims, and for any material supplied in connection with the same, and will indemnify the Optionor against any claims or liens for wages or materials in connection with work done on or material supplied in connection therewith, and the Optionee further agrees during the currency of this Option to maintain the said Lone Star Property and Adjoining Claims in good standing by performing any necessary work or by paying any charges with which the said Property and Claims or any of them shall be assessed during the said period, and without limiting the generality of the foregoing, will pay the instalment due November 1st., 1952, hereinbefore recited and the monthly instalments hereinbefore recited as they become due during the currency of this Option and upon exercise of this Option assume the royalty obligations hereinbefore recited of the Optionor.

The Optionor agrees that the said Lone Star property and

adjoining claims are not subject to any lien, charge or encumbrance, other than heinbefore recited and referred to.

The Optionor further agrees that it shall not extend the terms of the Timber Sale Contract hereinbefore recited without the approval in writing of the Optionee, and furthermore, that if and when requested by the Optionee, it will assign to the Optionee all sums received thereunder from The Hill Lumber Company for timber cut during the term of this Option Agreement.

The Optionee agrees that in the event of abandonment of its rights hereunder, it will without expense supply to the Optionor all information as to the said Lone Star property and adjoining claims in its possession, including inspection of diamond drill cores and assays.

It is DISTINCTLY UNDERSTOOD and AGREED that this is an Option only and nothing herein contained, nor the expenditure of any money, nor performance of any act hereunder shall obligate the Optionee to deliver any shares hereunder or making the Optionee liable in any way to the Optionor, other than expressly herein stated, and that in the event of the Optionee abandoning the said Option and the said Lone Star property and adjoining claims, it may remove therefrom anything put there by it capable of being removed; that the Option hereby given shall be open for acceptance up to FOUR o'clock p.m., on the first day of September, 1953, and may be accepted by a letter mailed postage prepaid and registered and addressed to the Optionor, at Suite 2810, 25 King Street West, Toronto.

The terms and conditions hereof shall be binding upon and enure to the benefit of the Optionor and the Optionee, together with their successors and assigns.

This Agreement may be executed in several parts and such parts together shall constitute one agreement as if all parties thereto have signed the same.

IN WITNESS WHEREOF the Parties hereto have hereunto affixed their respective Corporate Seals duly attested by the hands of their respective proper Officers in that behalf.

ST. EUGENE MINING CORPORATION LIMITED
(Non-Personal Liability)

Per: (Seal)
(Sgd) A.J. Anderson
(Sgd) G. N. Woodroffe,
Secretary

ATTWOOD COPPER MINES LIMITED
(No Personal Liability)

Per
(Sgd) Desmond F. Kidd (Seal)
(Sgd) S. A. Perry

INTERIM REPORT ON LONE STAR MINE

Ferry Co., Washington.

Summary:

The property lies at 4000' feet elevation in rolling sub-mountainous country. The Kettle River lies 5 miles distant and 2000 feet below. A paved highway and a railway lie in the Kettle valley. The property is optioned from the St. Eugene Mining Company. Some additional ground has been located. Overburden up to 100 feet thick mantles almost all the surface. In the mine a shallow nose in a low dipping basic dike forms the main ore control. The ore occurs on this nose and for some distance down its limbs. It plunges flatly southeast. The ore mineral is chalcopyrite. High gold values are invariably associated with high copper values.

Some 40,000 tons of direct smelting ore were produced prior to 1915. Four thousand feet of workings were driven, of which 3000 feet have been made accessible.

The property has been re-opened, re-surveyed, and the geology has been mapped. Where significant ore remained re-sampling has been done where possible. Twenty-eight drill holes from underground have been completed. Between the 4000 and 3850 foot levels 200,000 tons of copper ore grading 1.73% copper and .036 oz. gold have been proven. This block of ground once contained as well 40,000 tons now mined and 60,000 tons eroded by a gully which cuts the ore body. Thus originally this 150 foot interval contained 300,000 tons or 2000 tons to the vertical foot. A single ore intersection which might extend the zone 250 feet is not figured into the reserve at all.

Making certain assumptions, principal of which is a 30¢ lb. price for copper, the ore has a net value at the portal of $8.50 per ton.

I recommend depth development of this ore to 3500 feet elevation by a crosscut and drift on the ore at 3750 feet and by underground drilling from H. W. crosscuts. The total cost of this program is $200,000.00. If the

ore body extends down undiminished it should prove enough tonnage to warrant production plans on at least a 500 ton daily basis.

INTERIM REPORT ON LONE STAR MINE

Ferry Co., Washington.

By: D. F. Kidd (P. Eng.)*

Introduction:

The Lone Star mine is at the extreme north end of Ferry Co., in north central Washington. It adjoins and might be considered a southerly extension of the Boundary District of British Columbia. This district in the first two decades of this century produced 22,000,000 tons of ore with a net value of over $100,000,000. The Boundary camp has been inactive since 1920. The Lone Star mine, between 1908 and 1918 shipped 40,000 tons to the Greenwood, B. C. Copper Smelter. It has lain untouched from 1918 to 1952, when it was optioned by Attwood Copper Mines Limited, an Ontario company.

Access:

The property lies at 4,000 feet elevation in rolling sub-mountainous country rising to rounded summits of up to 5500 feet elevation. It lies within a loop of the Kettle River between where that stream leaves British Columbia at Midway and re-enters Canada 27 miles downstream near Grand Forks, B. C. The stream has a general elevation of 2000 feet. The property is five miles back from the river up gently rolling open slopes and 2000 feet above it.

The nearest town in Washington is Curlew, on the Kettle river, 10 miles from Lone Star. Paved highways and a branch line of the Great Northern Railway run along the Kettle River.

* The writer is an interested party being a shareholder in Attwood Copper Mines Limited.

TITLE:

The property and its titles as of this date may be summarized as follows:-

In Ferry Co., Wash.

LONE STAR	349	Patented (syn.U.S.C.G.)	1952 taxes represented paid in full.
WASHINGTON	349	"	ditto
PRYTIS	607	"	"
HELEN LODE	570	"	"
SHONEE #2	531	"	"
SHONEE	1031	"	"
PAULINE FR.	1031	"	"
CARTER	1031	"	"
ARTHUR JR.	1031	"	"
HOUCK	1031	"	"
WALTER	1031	"	"
PRIMROSE FR.	1031	"	"
SNOWSTORM	1031	"	"
BLACK DIAMOND	1031	"	"
MOTHER LODE	1031	"	"
SUNRISE	679	"	1952 taxes pd.per Abstract of Title
SUNSET	679	"	ditto
SANTA FEE		Unpatented (i.e.located)	Abstract of Title establishes claim in good standing to June 30/53)
SANTA FEE Fr.		"	
WASHINGTON #1		"	Claim represented to be in good standing to June 30/53 but some doubt exists
WASHINGTON #2		"	
VANCE LODE		Unpatented	Staked by Vance Vanwcert and in good standing to June 30/53
VAN LODE		"	
WOERT LODE		"	Quit Claim Deed registered in favour of Attwood Copper Mines Limited on Dec.12, 1952
TED LODE		"	
BOB LODE		"	
CLINT LODE		"	
BILL LODE			

In B. C. adjoining the above

BOUNDARY No. 1		Staked claim	Expiry date - May 16/53
BOUNDARY No. 2		"	"
RICHMOND Fr.	Lot #2918	Lease No.1003	May 30/53
NEW ST.MAURICE	" 682	" " 1004	"
ST. JOSEPH	" 2919	" " 1005	"

Further ground southeast of the property is in process of being acquired.

Attwood Copper Mines Limited is licensed to do business in the State of Washington.

Timber and Water:

Timber for mining purposes exists on the claims. It is doubtful if there is enough timber on the claims to warrant a sawmill to cut all lumber required for construction to production. The district however is well wooded at higher elevations and there are several small sawmills nearby. It is believed lumber requirements can be met locally at comparatively reasonable prices.

There is just sufficient running water on the property at seasons of minimum flow to maintain a small camp. I doubt if there is enough for milling purposes. Water rights on Kettle River have not been investigated but there seems to be an abundant unused flow available.

Mill tailings storage sites are available.

GEOLOGY:

The surface of the property is almost completely covered with gravelly drift, in places up to 100 feet thick. Almost nothing is known of the surface geology in the immediate vicinity of the mine.

The property lies in a southeasterly trending belt of serpentine-talc rocks and dacite averaging 1/2 mile wide. This belt is bounded on each side by intermediate intrusives, about a quartz diorite, of batholithic dimensions.

Within the mine, the principal rocks are dacite, serpentine, and a basic intrusive, apparently a dike, 200 or more feet thick, dipping southeasterly. The accessible workings nowhere reach the dike footwall. Dacite and lenses of serpentine overlie the dike. No original structures have been found. Foliation, however, is common. Although it dips southeasterly, like the dike, the foliation does not everywhere conform to the dike contact.

A shallow nose, dipping southeasterly on the back of the dike is roughly reflected in the dacite foliation. Within the limits of the mine the dike hanging-wall changes from a north strike and easterly dip to a westerly strike and southerly dip. The ore found occurs principally on the nose and some distance down the limbs of this structure.

Pronounced shearing and fracturing occurs at the dike contact and sub-parallel bands of shearing and serpentinization occur for up to 50 feet away from the contact. Copper-gold mineralization is associated with this shearing.

The ore is principally in sheared dacite near the dike contact. The copper mineral is chalcopyrite. The only other metallic is pyrite. The gold values appear to be associated with the chalcopyrite.

WORKINGS AND DRILLING:

The property was originally opened by three adits, a shaft and a winze, plus one level off the shaft. Subsequently 25 diamond drill holes were completed from surface through the heavy overburden. Thus the mine was prepared for production and an aerial tram was built 5½ miles to the Boundary Falls smelter. Underground workings total 4,000 feet, 1,000 ft., of which is not accessible.

Some 40,000 tons of direct smelting ore were produced. The property shut down with the closure of the Boundary Falls smelter.

September 1st, 1952, the property was optioned by Attwood Copper Mines Limited. A programme of re-surveying, geological mapping, re-sampling (where possible) and diamond drilling was instituted and has been carried on to date. All accessible workings have been examined. Twenty-eight drill holes from underground have been completed.

Tonnage of Ore:

Workings have been sampled by generous channel samples following standard conservative practice. All samples are weighted for length. No sample values were cut since the values are visible. Drill core is all E X diameter and has been split for sampling. The cores

and reject splits are stored systematically at the property. All assaying has been done by J. R. Williams & Son, Licenced Assayers of Vancouver. They are retaining pulp splits from all samples run.

Ore tonnage calculations have been from 50 ft. interval vertical sections in part East-West sections, and in part North-South sections. Sections rather than plans were used because dips are commonly less than 45°. Ore on each section was projected 25 feet on each side of the section. The ore blocks, though shown separately on the sections, are in reality in two bodies interrupted only by erosion across a gully.

The tonnage measured of 200,000 lies between the 4,000 and 3,850 levels. A study of the sections will show only the most conservative extensions to known ore intersections. Actually the figure given is a minimum for this block of ground. In this 150 ft. vertical interval not only is 200,000 tons of ore proved, but 40,000 tons have been mined, and 60,000 eroded in the gully cutting the body. Thus, at one time, 150 foot contained at least 300,000 tons, or 2,000 tons per vertical foot.

No weight has been given in these estimates to Hole No. 28 some 200 feet west on the zone from the west end of the proven ore south of the gully. If ore were proved to extend to this point the tonnage estimate might have to be revised upward by as much as 25%.

No ore has been looked for below the 3870 level.

Of the ore tonnage proven some 50,000 tons north of the gully can be won by surface stripping. A possible additional 50,000 tons of lower grade could be recovered in this operation from old workings only partly worked. This last possible 50,000 tons is not taken into this ore estimate.

VALUATION OF ORE:

Values in the ore are in copper and gold. A copper-gold concentrate should be produced. The nearest smelter handling this type of concentrate is the Tacoma Smelter of the American Smelting & Refining Co. I assume 90% recovery of both copper and gold in a 28% copper concentrate.

In the present unsettled state of United States domestic copper price policies it is difficult to arrive at a fair price for copper. It seems possible that a sales contract may be negotiated at a sufficient price to warrant placing the property in production. I understand contracts have recently been negotiated at 30¢ and therefore this figure will be used.

To add to the uncertainty, no smelter schedules are published at the Tacoma smelter. A 1950 semi-open schedule will be used on the assumption that increases since that date might be offset by savings in a negotiated contract. Making due allowance for these several uncertainties, the net value calculation is as follows:-

To date Grade 1.72% Cu. and .034 Au.

Assume 90% recovery and gold in Cu. conc.

Assume 28% Cu. Conc.

Conc. ratio $\frac{1.72 \times 9}{10}$ $\frac{1.648}{28}$ = $\frac{1}{17}$

If 1.72% ore carried .034 Au.

28% conc. should carry $\frac{28}{1.72} \times .034$ = .552 oz.

@ 30/ Cu. and $35 gold, value should be

at Tacoma

Copper pay for 100% less one unit less 2.75¢

= 27% @ 30¢ - 2.75¢

= 540 lb. @ 27.25¢ = $147.15

Gold pay for all at 91.92% of $35

= .552 x 91.92% x $35 = 17.50 $164.65

Estimated Freight 7.00

Treatment 15.00 22.00

Net Smelter Return per T. Conc. $142.25

Net Value of Ore at portal = $ 8.50

The net value of the mine ore then is $8.50 at the portal if these necessary assumptions are correct.

I roughly estimate that in an ore body of this size, even allowing for low dip, overall exploration, mining and milling costs should not exceed $5.00 per ton. In my opinion the search for extensions of this ore is warranted.

PROPOSED DEVELOPMENT

Three alternatives are possible in the next stage of development:-

(1) A drift can be driven at 3750' elevation to intersect the downward projection of the ore to that level. This could later be used in mining. From this drift drives could be made into the hanging wall for drill stations to explore below 3750' to the 3600' elevation. If the ore body extends down undiminished, this should then provide enough ore to warrant production. Under this programme 3,000 feet of adit and 50 drill holes, totalling 10,000 feet at least would be needed.

(2) The main drift could be at 3750 elevation but along the line of the drill hole stations rather than along the ore itself. This programme would require less adit, only 2,000 feet, but more drilling, since a line of flat holes at 3750 elevation would be needed. I estimate 2,000 feet of driving and 18,000 feet of drilling. A hanging wall tunnel is of no use for extraction and gives little geological information.

(3) The drilling could be done from surface with no adit driven. The overburden is known to be deep, perhaps averaging 50 feet. The holes would average 150 feet longer each. Delays and difficulties in this type of drilling are probable. I estimate an extra 7,500 feet of drilling would be needed. It is difficult to figure the cost of reaching bedrock with 50 holes, but a figure of $25,000 seems a fair guess. This scheme would provide no workings for mining and the least amount of geological information.

I recommend that the project be undertaken and that Scheme 1 be followed. The principal reason for preferring this scheme is that it will furnish the maximum amount of information useful in reaching at a decision to go into production.

D. F. Kidd

Vancouver, B. C.
February 27, 1953

SCHEDULE OF ORE BLOCKS

North Body as taken from the E-W assay sections, assuming 25 ft. on each side of section line, and using 12 c.f. per ton.

Section:	Block	Strike length:	Dip length	Av. width	Tons	Grade Au.	Grade Cu.
5250N	1	50	60	18	4,500	.132	2.42
	2	50	60	5	1,250	.05	2.10
	3	50	65	16	4,300	.06	1.58
5200N	4	50	120	12	6,000	.048	2.22
	5	50	70	17	4,950	.09	1.90
5150N	6	50	90	20	7,500	.038	1.80
	7	50	25	15	1,500	.04	1.77
5100N	8	50	80	15	5,000	.035	1.45
5050N	9	50	55	25	5,750	.045	1.50
	10	50	45	55	10,300	.03	2.10
5000 N	11	50	60	15	3,750	.04	1.32
Total and weighted average for North ore body					54,800	.052	1.85

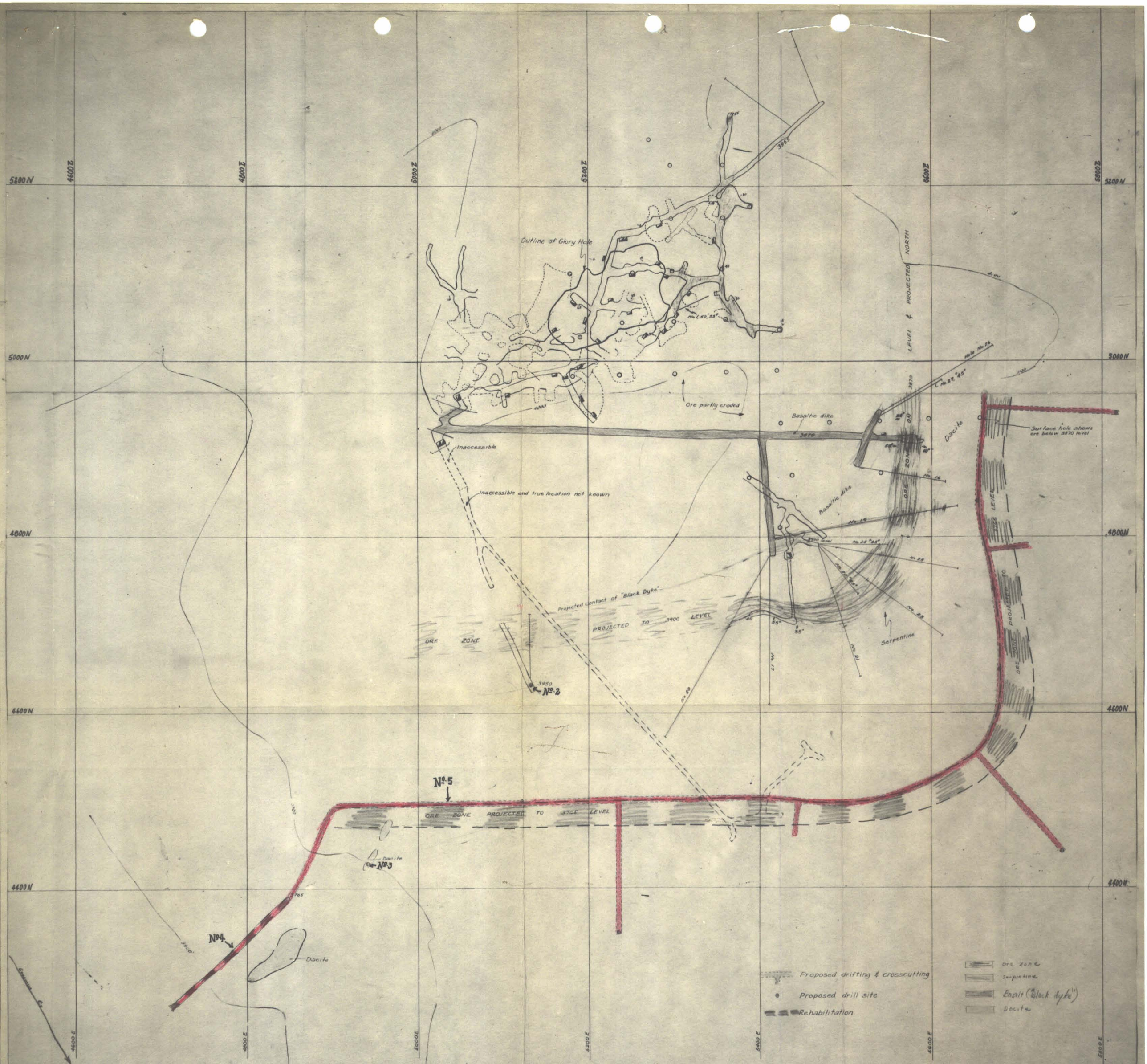
South Body - E-W

A. From E-W assay sections assuming 25' each side section line and extending to the interior winze at 4775 N

Section	Block	Strike length	Dip length	Av. width	Tons	Grade Au.	Grade Cu.
4950N	12	50	70	25	7,300	.03	1.60
	13	50	30	20	2,500	.04	2.00
	14	50	50	30	6,250	.02	1.70
	15	50	50	12	2,500	.02	1.60
4900N	16	50	60	24	6,000	.03	1.60
	17	50	120	30	15,000	.02	2.00
	18	50	60	14	3,500	.02	1.60
4850N	19	50	50	20	4,170	.088	3.1
	20	50	70	25	7,300	.03	1.6
	21	50	80	12	4,000	.07	2.5
	22	50	75	20	6,250	.04	1.1
4800N	23	50	50	20	4,170	.015	1.24
	24	50	50	15	3,100	.026	2.10
	25	50	55	25	5,750	.015	1.43
	26	50	100	35	15,000	.02	1.36
	27	50	80	14	4,700	.046	3.08
	28	50	70	8	2,300	.12	1.80

South Body - as taken from N-S assay sections, south of 4775N assuming 25 ft. on each side of section line, and using a factor of 12 c.f. per ton.

5500E	29	50	50	18	3,750	.062	2.8
	30	50	38	36	5,700	.012	1.3
5450E	31	50	80	40	13,300	.012	1.20
	32	50	35	20	2,900	.02	1.60
5400	33	50	45	20	3,750	.03	1.45
	34	50	40	18	3,000	.015	1.07
	35	50	20	5	400	.03	1.60
	36	50	50	10	2,080	.03	1.36
	37	50	65	12	3,250	.03	2.20
	38	50	40	20	3,300	.02	1.60
5350	39	50	80	12	4,000	.02	1.29
Total and weighted average for South ore body as delimited to date					145,230	.028	1.69%
Grand total					200,000	.035	1.73%



Attwood Copper Mines Limited DMEA-2985

DIAGRAMMATIC GEOLOGIC MAP SHOWING PROPOSED EXPLORATION, LONE STAR MINE, FERRY COUNTY, WASH.

1" = ~~40~~ 80'