DMEA Form 9
Rev. 6/57

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration

OFFICIAL DOCKET FILE Idm-E NO._____ DMEA NO. 4051.

Application
- [ ] Denied
- [x] Withdrawn

Contract
- [ ] Terminated - Not Certified
- [ ] Terminated - Certified
- [ ] Cancelled
- [ ] Royalty Agreement

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

Folder No. 1:

Left Side

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

Right Side

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

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

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

Additional Folders:

Left Side

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

Right Side

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

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

Folders No. _____: Settlement Sheets

Folders No. _____: Drill Logs

Folders No. _____: Royalty material

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

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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 4051
Metal or Mineral Lead-Zinc-Copper
Date Received 11-8-55
Estimated Cost $609,370.00
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: ROLAND F. BEERS, INC. P. O. Box 1015, Troy, New York, acting as Agent for a group of individuals and firms known as THE AMERICAN SYNDICATE.

(*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. (See Attachment A)

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

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

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 120,000 acres, more or less, of lands leased or optioned in St. Lawrence and Jefferson Counties, New York State, recorded in books and page numbers as shown on Attachment B hereto.

(*b*) State any mine name by which the property is known. None.

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise Lessee and/or purchaser under contract.

(*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 Attachment C)

(*e*) If you own the land, describe any liens or encumbrances on it None.

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. None.

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 Attachment D)

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. None.

(*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. (See Attachment D)

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

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

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore Lead, zinc, pyrite, copper, and associated rare metals.

(*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 Attachment D)

(*c*) The work will start within 90 days and be completed within 48 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 Attachment E)

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: (Attach. F)

(*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.). (See Attachment F)

(*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. (See Attachment F)

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

(*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. (See Attachment F)

(*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. (See Attachment F)

(*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. (Attach. F)

(*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. (See Attachment F)

(*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. (See Attachment F)

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. (See Attachment G)

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 November 8, 1955, 1955

ROLAND F. BEERS, INC.
(Applicant)

By Roland F. Beers President

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

Dr. Bro...

In long tube:

1 Geol. map of N. W. Adirondack Area (colored topo Quads.).
1 Geol. map of N. Ill. & E. Iowa (ozalid colored).
1 Geol. map of Tri-State Area (sepia colored).
1 Lease map of Tri-State Area (Sepia).
1 Mineral map w/prospects of Tri-State Area (Sepia).
1 Flight map for Helocopter & fixed wing craft (Sepia).
1 Lansing-Dodge mineral holdings map (unable to obtain copies).

In short tube:

6 Lease maps of Tri-State Area (ozalid colored)
6 Mineral w/prospects map of Tri-State Area (ozlid).
1 Geol. map of Tri-State Area (ozlid colored).
1 Temporary lease overlay of Adirondack Area (Tracing).
6 Temporary lease overlay of Adirondack Area (ozalid).
1 EM Flight Areas of Adirondack Area. (tracing).
2 EM Flight Areas of Adirondack Area. (ozalid).
1 Grenville marble belt of Adirondack Area. (tracing).
1 Grenville marble belt of Adirondack Area. (ozalid)

In envelope:

Lease Forms of Tri-State Area (Phostats).
A-1, A-2, & A-3
B-1
C-1
One with no numbers.

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ATTACHMENT A

ROLAND F. BEERS, INC.
P.O. Box 1015
Troy, New York

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1. (b) Corporation, State of New York.

(c) Roland F. Beers, President and Treasurer,
465 Pinewoods Avenue, Troy, New York
Helen C. Beers, Vice President,
465 Pinewoods Avenue, Troy, New York
Frank A. McNamee, Jr., Secretary,
75 State Street, Albany, New York

(d) Members of Syndicate:

Basic Refractories, Inc., 845 Hanna Building, Cleveland, Ohio.
Victor Bator, 30 E. 72nd Street, New York, N.Y.
Roland F. Beers, 465 Pinewoods Ave., Troy, N.Y.
Eugene F. Connally, 471 Second Ave., Troy, N.Y.
James R. Dunn, 840 Whitney Drive, Schenectady, N.Y.
C. Emory Lochner, 75 State Street, Albany, N.Y.
Shepard W. Lowman, P. O. Box 876, Troy, N.Y.
W. W. MacGregor, 98 First St., Troy, N.Y.
Baldwin Maull, P. O. Box 2006, Buffalo, N.Y.
John N. Schiff, 52 William St., New York, N.Y.
South Texas Development Co., 100 State St., Albany, N.Y.
John Stevenson, 60 Wall St., New York, N.Y.
Wytex Oil Corporation, 100 State St., Albany, N.Y.

ATTACHMENT C

ROLAND F. BEERS, INC.
P. O. Box 1015
Troy, New York

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3. (d) Sample form of lease-royalty contract attached hereto.

MINING LEASE

DATED:

To

ROBERT S. MARKS

LANDS IN

SEC. TOWN RANGE

County of

State of

ROLAND F. BEERS, INC.
P. O. Box 1015
Troy, New York

ATTACHMENT C

MINING LEASE

THIS AGREEMENT, made and entered into this day of , 19 ,

by and between

of County, State of

of the first part, hereinafter referred to as Lessor, and ROBERT S. MARKS of Greensburg, Pennsylvania, acting as authorized agent for a group of individuals acting in their own behalf and identified with this agreement as THE AMERICAN SYNDICATE, party of the second part, hereinafter referred to as Lessee.

WITNESSETH:

GRANT OF LEASE

That Lessor, for and in consideration of the sum of One Dollar ($1.00) to _____ in hand well, and truly paid by the Lessee, the receipt whereof is hereby acknowledged, and of the rents, covenants and conditions herein agreed to be paid, kept and performed by Lessee, has leased and let and does hereby lease and let unto Lessee for prospecting and mining purposes only, the following described premises owned by Lessor and situated in _____ Township, _____ County, ,

to wit:

which lands are herein referred to as The "Leased Premises."

thereon and the removal and transportation of the ores or products therefrom, together with any and all easements or rights of access held by Lessor providing ingress and egress to said premises over the lands of others.

(5) Closing. If said evidence of title shall show said Lessor to be seized of a good and marketable record title to said Premises, then within _____ days after receipt thereof Lessee shall pay to Lessor the purchase price of said Premises or part thereof against the coincidental delivery by Lessor to Lessee of the deed to said Premises as provided in the preceding subparagraph (4).

(6) Defects in Title. In the event said evidence of title shall show defects, then Lessee shall so advise Lessor in writing within _____ days after receipt of said title evidence and Lessor shall have _____ days thereafter in which to cure and correct such defects and submit satisfactory evidence thereof to Lessee and the time for closing shall be extended for a further period of _____ days after the submission of such evidence; and if such evidence shall not be satisfactory or if Lessor shall decline or be unable to cure or correct said defects, then Lessee at its sole option shall have the right to either decline to conclude the purchase or may accept the title and deed tendered by Lessor.

(7) In the event that said option is exercised with reference to any part of said Premises, then upon acceptance by the Lessee of the title tendered by Lessor and payment therefor in accordance with the foregoing provisions, the lease, of which this paragraph is a part, shall terminate, and neither Lessor nor Lessee shall have any other or further liability hereunder.

B. In the event that Lessee does not elect to exercise the right to purchase set forth in Paragraph A above, it shall

(1) notify the Lessor and furnish Lessor with copies of its maps, drilling records and other engineering data pertaining to investigation and examination of the Premises; and

(2) cause all drill holes, pits and other openings made by it in the Premises during the course of the investigation and examination to be filled in so as to restore the Premises as nearly as possible to the condition that they were prior to the investigation and examination.

Further, in the event that Lessee fails to notify Lessor that it does not elect to exercise the right to purchase prior to the expiration of said term, this Agreement shall nevertheless terminate except for Lessee's obligation to furnish its maps, drilling records and other engineering data as aforesaid.

OBLIGATIONS OF LESSEE

6. ADVANCE ROYALTIES AND WORK REQUIREMENTS

The parties mutually agree that Lessee, except as herein otherwise provided, each year during the life of this agreement beginning _____, 19____, (hereinafter referred to as "work year") shall:

A. Perform mining work on the premises, or

B. Drill exploratory core holes, or,

C. Prospect geophysically or geochemically, or,

D. Pay the sum of _____ on or before the expiration of any work year during which Lessee has not performed either A. B. or C. such payment to be considered advance royalty against subsequent royalties provided for in Paragraph 10 of this lease; provided, however, that if Lessee terminates this lease prior to the expiration of any work year, Lessee shall pay Lessor _____ for each month during such work year that this lease was in force and effect. It is understood and agreed, however, that alternatives B, C and D shall only be applicable during the first four work years of this lease, i.e. up to _____.

E. It is further agreed that in the event that the _____ _____ market shall at any time during the life of this lease drop below _____ cents per pound, Lessee may discontinue work of any kind or payments in lieu thereof under this lease until the said price equals or exceeds _____ cents per pound, but such cessation of work shall not exceed a period of four (4) years at any one time.

7. MINIMIZE DAMAGES TO PREMISES

Lessee shall cover or case all prospect holes, and shall do no more damage to crops on said land than may be necessary and shall pay all damage to growing crops while prospecting. In case the parties hereto shall not be able to agree upon the amount or extent of such damage, the same shall be de-

RIGHTS GRANTED TO LESSEE

1. EXPLORATION AND MINING RIGHTS

This agreement is intended to and does lease, let and demise exclusively to Lessee all and every prospecting and mining right and privilege in and upon said lands, together with the privilege of erecting and installing any and all machinery and equipment necessary or convenient in mining, processing and marketing the ore, and Lessee shall have the right to remove the same at the expiration of this lease, or within six (6) months thereafter.

2. RIGHT OF ENTRY AND SURFACE RIGHTS

This lease conveys such surface land rights as are necessary for prospecting for, developing and operating any mine or mines in said land, or operating mills on said land. Lessee shall have the right of way to and from any place where prospecting, mining or milling operations are carried on, and the public highway. Lessee, however, shall use one roadway to and from any one mine or mill on said land, and shall keep all gates closed on such part of said premises as are used by it.

3. MILLING

Ores mined from the leased premises may be milled and prepared for market thereon, or on other lands, separately or in connection with other ores, as Lessee may elect, and the payments of royalty thereon shall be based upon the net smeltering returns.

4. TRANSPORTING OR RAISING ORES

Lessee shall have the privilege of raising ores from said land through shafts or inclines on other lands in the area, and the privilege of milling, cleaning or otherwise treating such ores in plants or mills located upon such lands. Lessee shall also have the privilege of raising ores mined from other land through shafts or inclines which Lessee has sunk or driven on the leased premises for the purpose of working same, and of milling, cleaning or otherwise treating such ores in mills or plants located upon the leased premises. The privileges referred to in the last preceding sentence shall survive the termination, by expiration or otherwise, of the lease. For any period after such termination during which Lessee is (a) raising, through a shaft driven on the demised premises or through an incline opening on the surface of the demised premises, ores exclusively from other lands in which Lessor has no interest, of (b) milling, cleaning or otherwise treating on the demised premises, ores exclusively from such other lands, or (c) doing both (a) and (b), Lessee shall pay Lessor at the rate of per year. The right to use underground inclines or exploration openings existing in the leased premises at the termination of this lease shall also survive such termination for so long as the use of any of the same may be necessary or convenient for any mining purpose connected with this or any other property. Anything hereinbefore to the contrary notwithstanding, Lessee shall have the right to remove any of its property used in connection with the exercise of the rights and privileges referred to in the last four preceding sentences of this paragraph within six (6) months after tendering a release of the same.

5. OPTION TO PURCHASE PREMISES

A. Lessor further gives and grants to Lessee the sole right and option for and during the aforesaid term to purchase, in the manner hereinafter provided, the Premises or any part thereof, including the minerals and mineral rights therein and thereon, upon the following terms and conditions:

(1) Purchase Price. The price shall be a sum equivalent to _____ _____ per acre purchased.

(2) Election to Purchase. If Lessee elects to exercise the aforesaid right and option, it shall do so in writing by registered prepaid-mail letter addressed to Lessor at the address set forth above, and which letter shall be mailed not later than the last day of said term.

(3) Evidence of Title. Within _____ days after the mailing of said registered letter, as provided in the preceding subparagraph (2), Lessor shall deliver to Lessee abstracts of title or a title insurance binder in the amount of the purchase price showing Lessor to be seized of good and marketable record title to the Premises covered by said election.

(4) Form of Deed. Conveyance of said Premises by Lessor shall be by warranty deed or deeds, free and clear of all liens and encumbrances, except those hereinabove specified to the Premises or such part thereof as Lessee has elected to purchase and to all minerals and mineral rights therein and thereon (unless hereinabove excluded therefrom), which said deed shall also include the rights of ingress and egress over and across any lands or premises of the Lessor which are necessary for Lessee's operations in mining, concentrating, beneficiating, smelting and/or refining of the ores and minerals therein and

termined by arbitration, the Lessor to select one arbitrator, the Lessee to select one arbitrator, and the two arbitrators so selected to select a third arbitrator. The award made by said arbitrators shall be binding and conclusive on the parties hereto. Should any regularly used water supply on the premises be drained by mining operations carried on by Lessee, Lessee agrees to furnish Lessor with a new water supply equal to the existing water supply before mining operations were carried on.

Lessee agrees not to sink a shaft or erect a plant on the demised premises within two hundred (200′) feet of the present main buildings on the demised premises. Lessee agrees to support all shafts and drifts when in its sole judgment it appears necessary, and not to remove such supports without the written permission of Lessor. Lessee shall not be liable for damages in event of caving of said leased premises or any portion thereof by reason of failure of supports or pillars left to support the same.

8. RECORDS AND REPORTS

Lessee agrees to keep an accurate record of all ores mined from the leased premises and of all calculations relative to royalty payments hereunder. The said records may be inspected by Lessor at all reasonable times. It is further agreed that Lessee will make available for Lessor's inspection, at all reasonable times during the term of this lease, information as to the location and footage of each hole drilled on said land. At the termination Lessee will furnish a factual record of any holes drilled on the land together with a map showing the location of such holes.

9. ROYALTIES

Lessee will pay to Lessor, as rent or royalty, as stated below, the following per cent of the market value of such sulfide and metallic concentrates, from ores mined from the leased premises, "Concentrates," for the purposes hereof means the salable zinc ( ), lead ( ), Copper ( ), nickel ( ), cobalt ( ), iron ( ), sulfides ( ), gold ( ), and silver ( ) economically recoverable, as determined above, at the mill or concentrating plant where treated, "market value," for the purposes hereof, when used with respect to the sulfide minerals listed above means the price established f.o.b. cars at the mill by responsible buyers of concentrates of a similar grade and kind produced from ores mined and milled in said district and prevailing at the time the ores are delivered to the mill for treatment. The market value for gold and silver is the price per ounce set by the United States Government. The determination of whether or not a particular sulfide or native metal is "economically recoverable" is at the sole discretion of the lessee.

10. ROYALTY PAYMENTS

Royalty payments shall be made by the Lessee on or before the last day of each calendar month for all ores delivered at the mill during the preceding calendar month. Royalty or other payments under

this agreement shall be paid (a) to Lessor at _____

or (b) shall be deposited by Lessee in _____

Bank of _____, or such other Bank as Lessor may in writing designate (such Bank being hereby constituted as agent of Lessor to receive such payments, and deposits in such bank shall be deemed to be payment to Lessor).

11. GOVERNMENTAL BONUSES, PREMIUMS OR SUBSIDIES

Lessor shall have no interest in any subsidy, bonus, premium, or similar payment made by the United States Government or any agency thereof with respect to ores and minerals mined from the premises and no royalty shall be paid on any such payment received by Lessee.

12. ROCK AND TAILINGS

Lessee shall have the right to sell any rock, tailings or other waste material (hereinafter referred to as "waste material") resulting from mining or milling ore from the leased premises. Lessee shall also have the right to use, without charge, so much of such waste material as it may desire for its own purposes.

In case of sale by Lessee of such waste material, the Lessee shall pay to Lessor, at the end of each calendar month, _____ per cent of the balance of the proceeds of sale of such waste material during the preceding calendar month, after deducting the costs of handling, stocking, preparing for market, selling, transporting, and delivering such waste material, and any taxes of any nature assessable on such waste material or measured by the proceeds of the sale of such waste material. However, if such waste material has been commingled in stockpiles at a milling plant with waste material resulting from ores from other lands, Lessee shall, in the event of a sale from such stockpiles, pay to Lessor that proportion of _____ per cent of the balance of the proceeds of sale, after the deductions here-

inabove referred to, as the amount of waste material resulting from ores from the leased premises in such stockpiles at the time of such sale is to the entire amount of waste material in such stockpiles at such time. When making payments as aforesaid, Lessee shall furnish Lessor with a statement setting forth the proceeds of sale and the costs deducted.

In case Lessor desires to remove, before termination of waste material stockpiled at a mill site of Lessee, it may do so upon request to Lessee, subject to the following: Lessee may impose such regulations upon such removal as it may deem necessary. Lessee will notify Lessor as to the amount of waste material resulting from ores from the leased premises and unsold which Lessee calculates is stockpiled at the time of such request, and Lessor may remove up to per cent of such amount. All handling, accounting or other costs of Lessee with respect to waste material which may be so removed shall be paid to Lessee by Lessor before removal.

Upon termination of milling at a mill site at which waste material is stockpiled, Lessee shall notify Lessor of such termination and of the quantity of waste material to which Lessor is entitled. Such quantity shall be per cent of the amount of waste material resulting from ores from the leased premises and unsold which Lessee calculates is so stockpiled at the time of such termination. Lessor shall have a period of two (2) years after the date of such notice in which to remove such quantity and at the expiration of such period any portion of such waste material not so removed shall be the absolute property of the owner of the premises upon which the same is stored, without further conveyance, free and clear of all obligations of this instrument.

Lessee's judgment and decisions as to handling, stockpiling, apportioning, comingling, allocation, sale, and costs accounting with respect to waste material shall be final and binding. The provisions of this Paragraph 12 apply to waste material from ores milled in a mill owned or operated by Lessee, Lessor to have no rights in or to waste material resulting from ores milled elsewhere.

13. MUTUAL PROVISIONS

It is further agreed that after the first four work years of this lease referred to in Paragraph 6 hereof, the Lessee may pay to the Lessor _____ Dollars an acre in lieu of required mining work (referred to in Paragraph 6A hereof) during any work year, payable at the end thereof. Said payment shall be considered advance royalty applicable against subsequent royalties provided for in Paragraph 9 of this lease.

14. LESSORS COVENANTS

Lessor hereby warrants and agrees to defend the title to the lands leased herein up to the time that this lease or proper notice thereof is put on record, but no later than _____, 19____, and Lessee shall at all times during the life of this lease have the right, but is not obliged, to pay taxes, mortgages or other liens which may be due and payable in the event of default of payment by Lessor, in which event Lessee shall be subrogated to all the rights of the holder thereof and Lessor also agrees, at Lessee's option, (a) to reimburse Lessee upon demand for such payments made or (b) to permit Lessee to deduct the same from any advance or earned royalties due Lessor under any of the provisions of this lease.

15. TERM OF LEASE

The lease hereby granted shall subsist and run so long as Lessee shall continue to prospect, operate or mine upon said leased premises, including such periods as the operating requirements of this lease are suspended or advance royalties are paid under any of the provisions hereof, unless surrendered or terminated as hereafter provided.

16. FORFEITURE

In case of failure of Lessee to keep and perform the terms and obligations of this lease, Lessor may give thirty (30) days written notice of the breach, violation or default complained of, in which case Lessor shall specify the details of the same in order that Lessee may be fully informed with respect thereto, and if the same is not remedied or corrected within thirty (30) days after the receipt of said notice, this lease shall thereupon terminate at the option of Lessor, which shall be evidenced by notice in writing to Lessee, and which remedy shall be exclusive. No forfeiture, however, shall be asserted or based on a breach, violation or default hereunder or on a failure to remedy or correct the same, when occasioned by fire, riot or civil commotion, strikes or other labor controversies, inability to obtain labor materials or equipment on the open market, delay of carriers, breakage of machinery or equipment, government regulation or interference, war, whether declared or not, acts of nature, or any other cause beyond the control of Lessee, whether or not of a like nature of the foregoing and whether or not the same could have been foreseen or prevented.

State of _____ }
County of _____ } ss.

Personally came before me this _____ day of _____, 19_____,

the above named _____
to me known to be the person who executed the foregoing instrument, and acknowledged the same to be their free act and deed for the uses and purposes therein set forth.

_____

Notary Public, _____ County,

My commission expires _____

State of _____ }
County of _____ } ss.

Personally came before me this _____ day of _____, 19_____,

the above named _____
to me known to be the person who executed the foregoing instrument, and acknowledged the same to be their free act and deed for the uses and purposes therein set forth.

_____

Notary Public, _____ County,

My commission expires _____

State of _____ }
County of _____ } ss.

On this day of , 19 , personally appeared

before me _____ and _____

to me personally known to be _____ President and _____ Secretary

respectively, of _____, _____, and
acknowledged that they executed the foregoing instrument as such officers and as the free act and deed of such corporation.

_____

Notary Public, _____ County,

My commission expires _____

17. SURRENDER

Lessee may at any time surrender this lease by executing and tendering to Lessor a written release thereof, and from and after such tender Lessee shall be released and relieved from all further obligations and liability hereunder, with respect to or in any way connected with the above described premises or the exercise of Lessee's rights hereunder, except to account for and make payments accrued during the life hereof and except to permit Lessor to remove tailings in accordance with the provisions of Paragraph 12 hereof. Lessee may at any time, after the surrender or termination of this lease, surrender the rights and privileges referred to in Paragraph 5 hereof which survive this lease, by executing and tendering to Lessor a written release thereof, and from and after such tender Lessee shall be released and relieved from all obligations and liabilities with respect to or in any way connected with the above described premises or such rights or privileges or the exercise of such rights or privileges, except to account for and make any payments accrued during the life of such rights and privileges for the exercise thereof. Tender of the aforesaid releases may be made by mailing same to Lessor at the address hereinafter set forth in Paragraph 18 hereof or by depositing the same with the Bank, if any, at such time acting as agent for Lessor to receive payments hereunder.

18. NOTICES

All notices herein provided to be given in writing shall, unless otherwise provided, be mailed by registered mail to the addresses following, until some other address is designated in a notice so given.

LESSORS ADDRESS

LESSEES ADDRESS

Robert S. Marks
c/o Dr. Roland F. Beers
P.O. Box 1015
Troy, New York

19. ARBITRATION

In the event that ores and minerals are discovered, mined and milled from the demised premises by the Lessee other than those stated in paragraph 10, royalties to be paid to the Lessor shall be determined as follows:

In the event the parties hereto shall not be able to mutually agree upon such royalties, the same shall be determined by arbitration; the Lessor to select one arbitrator, the Lessee to select one arbitrator, and the two arbitrators so selected to select a third arbitrator. The royalty determined by such arbitrators shall be binding and conclusive on the parties hereto. Expenses of the arbitration shall be borne by the parties equally.

In the event that the parties hereto cannot agree on any matters arising out of this lease, the same shall be settled in the same manner as herein above stated.

20. ASSIGNABILITY

This lease shall be binding upon and enure to the benefit of the respective parties hereto, and their personal representatives, successors and assigns.

IN WITNESS WHEREOF, Lessor and Lessee have hereunto set their hands and seals all in duplicate, on the day and year first above written.

In the presence of: LESSOR

_____ _____(seal)

_____ _____(seal)

_____ _____(seal)

_____ _____(seal)

_____ _____(seal)

_____ _____(seal)

LESSEE

_____ _____(seal)

State of New York)
County of Rensselaer) } ss.

Personally came before me this _____day of _____, 19_____, the above named ROBERT S. MARKS to me known to be the person who executed the foregoing instrument, and acknowledged the same to be his free act and deed for the uses and purposes therein set forth.

_____

Notary Public, _____ County,

My commission expires _____

ATTACHMENT D

ROLAND F. BEERS, INC.
P. O. Box 1015
Troy, New York

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The attached report, "On Exploration Program for the Northwest Adirondacks", is submitted in fulfillment of Items 4 (a), (c), (d), (e) and 5 (b).

D

ROLAND F. BEERS, INC.
P. O. Box 1015
Troy, New York

On Exploration Program in the Northwest Adirondacks

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PART I.

Geology and Geography of the Northwest Adirondacks

PART I. Geology and Geography of the Northwest Adirondacks

The Pre-Cambrian terrane of Jefferson and St. Lawrence counties of northern New York State is a typical Canadian Shield lowland. Elevations above sea level range from 250 feet on the St. Lawrence River to 1000 feet in the vicinity of Lake Bonaparte, where the Adirondack Highlands begin. Local relief seldom exceeds 200 feet.

The principal town in the prospect area is Gouverneur (pop. 4,916), Watertown (34,350), Ogdensburg (16,166), Canton (4,379), and Carthage (4,420) are within 25 miles. The total population of Jefferson County is 85,521; that of St. Lawrence County is 98,897.

U.S. Highway 11 passes northeastward through the center of the prospect area, and the remaining area is serviced by a network of hardtop roads. The St. Lawrence River is about 20 miles northwest of Gouverneur. The New York Central Railroad passes northeastward through Gouverneur to Massena, with connections from DeKalb Junction to Ogdensburg on the St. Lawrence. A branch of the New York Central also runs from Gouverneur through Talcville to Edwards.

Mining of various types has been an important industry in the area intermittently for a hundred years or more. Small iron ore bodies formed by oxidation of the sulfides in the rusty-weathering pyritic gneisses have been mined at several localities, and the pyrite and pyrrhotite bodies in these rusty gneisses have been worked for their sulfur content. Small bodies of lead and zinc ores of the "telethermal" type have been mined at several places northwest of Gouverneur.

The large active mines at present are the zinc-lead properties of St. Joseph Lead Co., the Edwards and Balmat Mines. The total production is reported to be $9,000,000 a year of ore, according to the Materials Survey for Zinc, 1951, and an average of about 30,000 tons a year for the period of 1930 to 1949 (Mineral Industries of New York State). It is now the major zinc-producing area east of the Mississippi River. In addition to the zinc and lead, talc is mined in the Edwards-Balmat area, the talc mines being the largest in the United States. The base-metal and talc companies have interfingered underground workings in one instance.

Dairy farming and the tourist trade are also major industries in St. Lawrence and Jefferson Counties with the tourist trade concentrated along the St. Lawrence River and the dairy industry mostly restricted to the valleys underlain by marble.

The region as a whole, has a good economic position from the standpoint of development of mining industry. Manpower, water, and electric power are adequate, and with the completion of the St. Lawrence Seaway the position will be even better.

General Geology

The Grenville of the northwest Adirondacks consists of probably 20,000 feet (Engel and Engel, 1953a) of metasedimentary rocks including the thickest sections of marble in the whole Grenville province, 8,000 to 10,000 feet. The series is complexly folded and intruded by granitic rocks. Although a large amount is known of the geology of this basement complex, significant gaps in the knowledge exist because of the abundant glacial debris and the tendency of the marbles to erode easily and hence lie in alluvium-filled valleys.

The major rock types of the area are:

1. Paragneiss: Quartz-feldspar paragneiss consists of quartz, feldspar, biotite and accessory garnet (Cushing and Newland, 1925). "Rusty" gneiss zones occurring throughout the garnet gneisses are rich in pyrite and pyrrhotite and graphitic segments are common (Engel and Engel, 1953a).

2. Marble: The marbles are both calcitic and dolomitic and may consist wholly of carbonate or contain varying quantities of accessory silicates such as diopside, tremolite, serpentine, phlogopite, talc, and chondrodite. Graphite invariably occurs in small quantities (Engel and Engel, 1953a), and pyrrhotite and pyrite are common accessory minerals throughout the marbles of the region.

3. Amphibolite: Amphibolites consisting essentially of hornblende and andesine with varying amounts of augite, diopside, biotite, chlorite, and epidote are common. Calcite, apatite, magnetite, ilmenite, pyrite, quartz, and potash feldspar are common accessories.

4. Metagabbro (amphibolite in part): The metagabbro is similar mineralogically to the amphibolite of probable sedimentary origin.

5. Porphyritic granite: Typically a moderately-coarse porphyritic granite essentially composed of microperthite, oligoclase, quartz, biotite and minor accessories. It occurs as sheets and lenses ranging widely in size. Where intimately involved with paragneiss an augen-gneiss phase is commonly developed.

6. Equigranular granite: A medium-grained alaskite essentially composed of microperthite, albite-oligoclase, quartz and minor accessories. It characteristically occurs as phacoliths.

Outcrops of the bedrock marble which contains the sphalerite and galena are not abundant and constitute no more than one to five percent of the marble in the region. The valleys are covered by soil and in some places by thin (less than 100 feet) deposits of glacio-fluvial sediments. Swamps commonly occur over the areas underlain by marble. As a rule the topographic highs of the area are underlain by granites, gneisses and gabbros.

The Grenville rocks have been metamorphosed predominantly to the amphibolite facies, although gross regional variations from this rank exist. Local and significant variations in metamorphism occur around some of the granitic masses, where the rank has been raised with the production of skarns, and elsewhere where retrograde effects associated with hydrothermal activity and magnesia metosomatism have produced talcose rocks.

Faulting is uncommon in the St. Lawrence region. Minor displacements in the Trenton and Black River rocks have been mapped by Dunn (1955, unpublished map), and the "telethermal" lead-zinc deposits of the Macomb and Rossie area are in fissures. The ore bodies of the Balmat-Edwards type are not associated with known faulting but rather with crumple and drag zones. Smyth and Buddington (1926, p. 96) suggested the presence of a fault with a displacement of a mile near Balmat, but as Brown (1936a) points out, it is in a zone where flowage was predominant and ordinary breccias or other common indications of faulting are not present. Certainly faulting of the usual type is rare in the Grenville rocks.

Geologic maps have been done by Buddington for the Hammond, Antwerp, Lowville and Lake Bonaparte quadrangles; by Cushing and Newland (1929) for the Gouverneur quadrangle; and by Cushing, Fairchild and Ruedemann for The Thousand Islands region (1910). Unpublished geologic maps include those of Dunn for the limestones of Jefferson, and of Prucha for the pyrite deposits of St. Lawrence and Jefferson counties. Numerous articles are available on the geology of the base metal and talc bodies of the region (cf. Brown, 1936 and 1947; Engel, 1949).

The map of the region included with this report is a compilation of bedrock geology by the above authors. Locally the published maps have been found to be in error (the quantity of marble is larger than indicated on some maps), but on the whole the published maps are as accurate as the scale justifies.

Known Ore Deposits

Economic deposits of zinc and minor lead occur in the Grenville dolomitic marble at Balmat (B on map), and of zinc at Edwards (A on map). The Hyatt mine (C on map) which is dominantly zinc, is inactive at present. Minor mineralization occurs at several other points between Edwards and Balmat and also southward from Balmat. The ore minerals are found in what are apparently large drag folds on the flanks of a large east-northeast trending structure which has an uncertain geometry but is quite probably a syncline (Brown, 1936b; Engel and Engel, 1953b). In general the zinc-lead deposits are restricted to the marble, but ore occurs locally in the Balmat mine in quartzite or chert, and the author has seen pyrrhotite-pyrite-sphalerite mineralization in rusty gneiss a few miles northeast of Edwards.

The sulfide assemblage is mineralogically simple and consists of pyrite, sphalerite, and galena with or without pyrrhotite. The gangue is dolomite, diopside, serpentine, talc, quartz, and minor quantities of other silicates. Supergene limonite, sphalerite, willemite, and galena occur in the upper portions of the mines (Brown, 1936a), but oxidation is nowhere at an advanced stage even at the surface.

The ore from above the 500 level at Balmat consisted of 18.52% pyrite, 19.44% sphalerite, and 1.28% galena in November 1933 as shown by a three day test on the mill heads. Ore from 1000-2000 feet depth averaged 25.62% sphalerite, 53.30% pyrite, and 2.34% galena in a composite sample of drill cores. The Hyatt dump averages between 21.90% and 36.50% sphalerite, between 13.90% and 23.20% pyrite, and between .02% and .03% galena. The Edwards mine, as shown by the results of a three day test of the mill heads in 1933, averages 19.66% sphalerite, 6.61% pyrite, and .12% galena. These figures are from Brown (1936b).

The average tenor of the Balmat ore is about 8% zinc and 1% lead. The masses of ore of this grade are large enough to place New York as the largest producer of zinc east of the Mississippi. (All of New York zinc is produced from the Balmat and Edwards mines.) The annual production from 1930 to 1949 varied from 20,857 short tons to 40,296 short tons of recoverable zinc which was between 4.1% and 5.6% of the total United States production. (The Mineral Industries of New York State, State of New York, Department of Commerce, 1950, and Materials Survey, Zinc, U.S. Bureau of Mines, 1951.)

Several bodies of galena and sphalerite of the "telethermal" type have been mined in the Hammond Quadrangle. Over 3,000,000 pounds of lead were recovered from the Coal Hill vein of the Rossie group (located

one and one-half miles south of Rossie, nine-tenths of a mile west-northwest of Rapids School). Other galena veins make up the Macomb group found in Grenville limestone near Pierces' Corners and Bigelow School group south of Rollway Bay on Black Lake. These three groups form a system of veins striking N 60-70° W and occurring along east-west lines crossing several kinds and ages of rocks, the youngest being the Potsdam sandstone occurrence near the village of Redwood. The predominant gangue mineral is calcite in each case. Drilling by the U.S. Bureau of Mines disclosed that sphalerite predominated at depth, but the results were generally discouraging (Neumann, 1952).

The Possibility of Future Discoveries

On a purely statistical basis it is unlikely that all of the economic base metal deposits in the Gouverneur area have been found. Brown (1936b) says, "Very likely some zinc deposits exist which have not been exposed by erosion....." E. J. Engel is reported on good authority (staff of International Talc Company) to have found deposits of sphalerite, the locations of which he cannot disclose because of his position with the U.S.G.S.

Difficulties in prospecting have thus far blocked discoveries of other ore bodies in the region. These inherent difficulties include:

1. The size of the area of potential economic mineralization is so large that detailed prospecting has been too much a matter of pure chance to make it practical except along the immediate extensions of known trends.

2. The marble, which is the most favorable zone for base metal mineralization, is not resistant and does not crop out extensively. Most of the important zinc bodies did not crop out (The Mineral Industries of New York State, 1950), but were discovered as a result of a roadcut crossing an ore body (Edwards) and extensive diamond drilling (Balmat).

3. Oxidation of a pyritic sulfide body, such as at Balmat and Edwards, would leave a physically non-resistant surficial gossan, and subsequent glaciation would tend to strip off such rock to leave a topographic low.

4. Thin fluvio-glacial alluvium covers much of the area, particularly the marble valleys.

5. Inexpensive regional techniques have not been available in the past.

Pyrrhotite, pyrite, sphalerite and galena are found in minor quantities in much of the area to be prospected. In view of the structural complexity, the paucity of outcrops in the favorable zones, and the widespread shows of sulfides there seems to be an excellent chance that undiscovered ore bodies of the Balmat-Edwards type are present.

Limited exploration near the present mining areas has been undertaken by several companies, but for various reasons the work has ceased

with indeterminate results. Most work resulted in the discovery of base metal mineralization, but it was not economic under existing conditions.

Recent exploration by the American Metals Company, using a ground magnetometer, in the town of Herman discovered several anomalies; but only two were drilled, and the work was discontinued before the strongest anomaly was investigated. The Sylvia Lake area has been investigated by both geophysical means and drilling, and apparently some discoveries have been made (Hermance and Sanford, 1949). However, pyrrhotite is rare in the Balmat-Edwards ores so that a magnetometer, although it has been used locally by the American Metals Company, is not a satisfactory prospecting device for zinc-lead ores of the type expected.

The recent adaptation of electromagnetometer measurements to rapid airborne regional surveys provides the means of locating ores of the Balmat-Edwards type in the area under consideration.

PART II.

Project for Exploration for Base Metals in the Northwest Adirondacks

Prospect 4.0

PART II. Project for Exploration for Base Metals in the Northwest Adirondacks

The program of exploration for which funds are requested is composed of nine phases:

1. Geologic reconnaissance

2. Airborne electromagnetic and scintillation counter survey

3. Ground geophysics:

   (a) Electromagnetic
   (b) Gravity
   (c) Self potential

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4. Ground geochemistry:

   (a) Soil sampling and analyses for base metal content
   (b) Chromatographic tests
   (c) Spectroscopic tests

5. Core drilling

   (a) Core analyses for ore content and geologic data
   (b) Location, depth, size, shape and grade of ore bodies

6. Trenching and pitting

   (a) Alluvium and soil
   (b) Bedrock

7. Prospect shafts

8. Sampling and assaying

   (a) Cores
   (b) Samples from trenching, pitting, shafts
   (c) Assaying
   (d) Spectroscopic tests
   (e) Chromatographic tests

9. Geologic supervision of phases 2 to 8, inclusive.

1. Geologic reconnaissance

This phase has been completed so far as outcrops and published information are available. The cost of this phase is not included in the budget estimate. Additional geological field work will be done in connection with other phases of the program. The cost of this additional geological work is included in the cost estimate.

2. Airborne electromagnetic and scintillation counter surveys

The total area to be surveyed comprises 291 square miles with parallel flight lines spaced at 1/16 mile intervals, a total of 4,656 line miles. These lands contain several marble belts in Lewis, St. Lawrence and Jefferson Counties, New York State. At the time of writing this report, more than 125,000 acres of this territory is under lease or option to purchase for a term of not less than three years. Additional acreage is under negotiation and it is likely that the total acreage under control may exceed the stated figure by the time this application is acted upon. In any event, there is sufficient acreage under control to justify the cost of the airborne program, since a single mine of the size of Balmat would fall within a small fraction of the total acreage.

The distribution of lands under control is shown in the maps accompanying this report.

The ability of the airborne EM to detect sulfide ore bodies beneath a cover of soil, glacial materials, water and bedrock has been established in Eastern Canada during the past twelve months. The Aeromagnetic Surveys, Ltd. of Toronto, who are furnishing the equipment to be used on this program, are now credited with not less than four major discoveries of sulfide occurrences. More than 100,000 line miles have been flown by this company in the past year, and a promise of greater activity for 1956 is now in sight.

The American Syndicate has laid out a large program of exploration on the expectation that it will be the first to operate the airborne EM in the United States on such a scale. A number of smaller scale operations in the United States have confirmed the capability of the method. Upon these results rests the decision to survey several large areas by this method, of which the Northern New York area is among the first.

3. Ground geophysics

It is not expected that airborne EM will do more than indicate the approximate location of conductive anomalies under favorable conditions. It can be shown that the cost of developing a mine and establishing a mill for zinc and lead ores is justified only if a large ore body is discovered, of the order of 5,000,000 tons. Alternatively, a cluster of ore bodies within a radius of a few miles amounting to the same tonnage would be acceptable. This economic factor has an important consequence in the deployment of exploration tools. Upon the completion of the airborne phase of the program an effort will be made to identify those anomalies which seem likely to fall within the above category. Previous experience with the airborne method shows that the application of ground geophysics and geochemistry will result in very large savings in the overall cost of the exploration program. By selecting those anomalies which appear to originate in large ore bodies or clusters, the effort and cost of ground geophysics become readily justifiable. It is estimated that 80% of the total territory surveyed by airborne methods will be rejected at the conclusion of the preliminary analysis of data. Thereafter ground geophysics may be employed to advantage in pinpointing the location of the large ore bodies and in collecting detailed information as to the depth, size, shape, attitude and grade.

For this phase of the program ground electromagnetics offers considerable promise. In addition to confirming the precise location of an ore body for core drilling it is possible to collect further detailed information as indicated above. It is well known the pure sphalerite does not respond to the inductive method. Most of the sphalerite occurrences in Northern New York contain associated pyrite and galena to such an extent that the inductive method will give satisfactory response. Unfortunately, graphite also gives an equally good response. Methods of distinguishing between sulphide and graphite include the distribution of the area showing EM anomalies and gravity measurements. In a majority of cases in Canada, it has been found possible to identify graphite from the very large areal extent of the inductive anomaly. By contrast, sulphide ore bodies are usually confined to a restricted area. There is always a chance, of course, that a graphite anomaly will mask a sulphide anomaly. These cases require special attention. Graphite also yields a self potential anomaly, although it is sometimes possible to distinguish these by the large magnitude of self-potential as compared with those originating from sulphide ores. In the final analysis, resort may be had to

gravity measurements which are useful under a restricted range of conditions. Interfering effects may be caused by rapid changes in topography, changes in density of bedrock and thickness of overburden. In the face of a wide range of such conditions it may not be economically justifiable to use gravity measurements. Each prospect must be attacked according to the observed conditions. In general there seems to be justification for the use of the combined geophysical methods as a means of reducing the cost of core drilling.

4. Ground geochemistry

An additional diagnostic tool which has proved its merit in Canada consists in the analysis of selected soil samples for traces of base metals. By controlling the portion of the soil profile from which soil samples are taken, it has been found feasible to make quantitative determinations of base metal content ranging upward from approximately 100 ppm. Analyses have been made employing portable field kits but better results have come from analyses made in a district field laboratory. Calibration of the dithizone method is accomplished by use of the spectrophotometer. Identification of individual metallic ions can be made using special dithizone techniques or by use of paper chromatographic separation, followed by dithizone quantitative analyses.

The normal procedure in employing ground geochemistry will be to collect samples on significant anomalies for which the foregoing analyses will be made. If an anomaly shows no positive evidence of trace elements, further investigation must be made by other methods before the area of the anomaly can be discarded.

5. Core drilling

By use of all of the methods described above it is estimated that about 5% of the total area explored will remain for core drilling and analysis. This estimate results from experience in Canada and remains to be confirmed by field work in the United States. It is likely, however, that the requirement for a large ore body coupled with the high resolution of the combined geophysical and geochemical methods will greatly reduce the required amount of preliminary exploratory core drilling below that of earlier practices.

The location, direction and depth of cores to be taken will be specified by the supervising geologist after coordination with the supervising geophysicist and geochemist. As cores are taken the

will be analyzed for ore content and for information leading to a better understanding of the structure and stratigraphy of the rocks related to ore occurrences. It should be emphasized that only those anomalies which have shown consistently positive results from the previous methods of exploration will be drilled in a further effort to determine the location, depth, size, shape and grade of commercial ore deposits.

6. Trenching and pitting

In the majority of cases it is expected that soil alluvium, glacial materials and bedrock will obscure ore deposits which have given evidence of their occurrences through the combined methods of exploration. The data resulting from these methods will be sufficiently quantitative to afford estimates of depth to ore. In some cases it will be desirable to resort to trenching and pitting so as to carry the program of exploration to the point of estimating tonnages. These operations will naturally lead to further geologic data as well as to the collection of ore samples for analysis and assay.

7. Prospect shafts

As the exploration program approaches its final stage it seems inevitable that prospect shafts must be dug in order to verify the existence of a commercial quantity of ore. Data resulting from the shaft will be added to that previously gathered by the other methods and at this stage it would be expected that all the evidence required for a certificate of mineability would come into hand.

As for other stages, sampling and assaying will be required.

9. Geological supervision

In each of the foregoing stages, supervision will be maintained by the senior geologist, the geological consultants and the geological staff. These activities will be partly technical and partly administrative in their nature. The function of supervision is to coordinate the activities at each stage and to distribute the effort as indicated by the fund of information as it evolves.

10. Summary

A program has been described of combined geological, geophysical and geochemical methods of exploration for base metals in Northern New York State. The prospective area to be investigated is upwards of 125,000 acres. Current costs of exploration programs which rely chiefly upon core drilling and mining operations for the discovery of commercial ore bodies are too great to warrant their application to an area of this extent. The finding power of the combined methods, when applied to large areas in a favorable geologic setting, will result in discovery costs in dollars per ton which justify their expenditure. Support for this statement rests in part upon the statistical probability of discovering ore deposits of sufficient size (of the order of 5 million tons) within an area which to date has been explored to the extent of only one or two percent. Estimates of these discovery costs range from 6¢ to 13¢ per ton, whereas existing methods cost upwards of 25¢ per ton with no assurance of success. A significant factor is that expenditure of the sums proposed in this program will lead to the actual realization of commercial ore, since each successive stage advances the program closer to commercial production. At any stage, unpromising leads will be abandoned, and the remaining funds will be applied to successively improved odds in favor of discovery. All these considerations lead to the stated estimates of discovery cost.

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Troy, New York

5. The exploration project.

(d) Operating experience and background of the applicant and personnel.

The program is divided into several phases. Dr. James R. Dunn has charge of geologic reconnaissance and mapping. He has selected the areas which appear favorable for detailed airborne geophysical surveys. Dr. Beers is in charge of geophysical operations and interpretation of data in collaboration with Dr. Dunn and Dr. Shepard W. Lowman. Field geology will be under Dr. Dunn's supervision. Geochemistry laboratory is under the supervision of Dr. Roland F. Beers, Jr., with Mr. William H. Robinson in charge of analyses and reports of findings. Soil samples will be taken under Dr. Dunn's supervision.

Development, manufacture and operation of geophysical equipment is in charge of Mr. Clifford F. Casey. Mr. Neil M. Como is engineering mathematician on these developments.

Richard W. Brown and Mary Ann MacMurray will reduce field data and prepare maps showing discovered anomalies.

Final interpretation of anomalies will be a staff function, comprising all of the above technical personnel and consultants.

The roster of consultants and technical personnel follows:

Dr. Roland F. Beers
Dr. Shepard W. Lowman
Dr. James R. Dunn
Dr. Robert S. Young
Dr. Thomas M. Broderick
Dr. Roland F. Beers, Jr.

Full-time technical personnel are as follows:

Richard W. Brown	Neil M. Como
Clifford F. Casey	W. Wallace MacGregor.

Part-time technical personnel are as follows:

Roy T. Hutchings, Jr.	William H. Robinson

Biographical sketches are attached hereto.

ROLAND F. BEERS, INC.
P. O. Box 1015
Troy, New York

5. The exploration project

(d) Operating experience and background of the applicant and personnel (Continued)

Beers, Roland F. - Consultant and General Manager:
b. June 6, 1899. Ed. R.P.I. '21, E.E. M.I.T. '28, S.M. (E.E. and Math.), Harvard Grad. Sch. Arts and Sc. '40-'41, Ph.D. (Geol.) '43.
Professional Experience: '21-'22, Inst. Physics and E.E., R.P.I.; -'23, Engg. Dept. Western Elec Co., N.Y.C.; -'27, Raytheon Mfg. Co.; -'28, Sub. Signal Co.; -'37 V.Pres. G.S.I., Dallas; -'52, Chm. Bd. and Pres. Geotechnical Corp., Dallas; -'46 to date, partner, Beers and Heroy, Troy, N.Y. and Dallas; '55, President, Roland F. Beers, Inc., Troy; '43-46, Research Assoc., M.I.T.; '47-'48, Lecturer, R.P.I.; '49-'52, Professor of Geophysics and Head, Dept. Fuel Resources, R.P.I.; '48-'51, Director, W. & L. E. Gurley Co., Troy. Director, Aeromagnetic Surveys Ltd., Canadian Airborne Geophysics, Ltd., Hunting Geophysics, Ltd. (London), Manufacturers National Bank, Troy.
Fellow, G.S.A., Amer. Acad. Arts & Sciences, N.Y.Acad.Sci., A.A.A.S. Chmn. J.R.D.B.Cte. on Geophysics, '46, Member, Nat. Res. Council Cte. on Meas. Geol. Time, '47 to date; A.S.T.M. Ctes. on Surface and Sub-Surface Exploration and Dynamic Properties of Soil, '47 to date; U.S. Delegate to I.U.G.G. Rome, '54; Member, Panel on Seismology and Gravity, International Geophysical Year, '55 - . A.G.I. Delegate to Nuclear Engineering and Science Congress, '55, Member, Petroleum Industry Radioactivity Advisory Cte., -'55; Member, S.E.G., S.Ex.G., S.E.P.M., A.A.P.G, A.I.M.E., Seis. Soc. Amer., A.G.U., Can. I.M.M.E., I.R.E.

ROLAND F. BEERS, INC.
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5. The exploration project

(d) Operating experience and background of the applicant and personnel (Continued)

Lowman, Shepard (Wetmore) - Prof. Geology, R.P.I., Troy, N.Y.
b. May 22, 1899. m. '23. c. 2.
Ed. A.B. Columbia '23; M.A. '27, Ph.D. (stratigraphic geology) '49.
Professional Experience: Paleontology Int. Petrol. Co., Mex., '23-'25; Consulting geologist '27-'28; Stratigrapher, Skelley Oil Co., Tulsa, Okla, '28-'29; Stratigrapher, Mid-Continent Petrol. Corp., '29-'36; Geologist, Shell Oil Co., Houston, '36-'37; Stratigrapher and Chief Paleontologist, '37-'45; Research Geologist '45-'50; Prof. Petroleum Geology, R.P.I., Troy, '50 - . Marine Corps '18-'19.
Fellow, A.A.A.S.; Assn. Geol. Teachers; A.A.P.G.; Geophysical Union; Fellow, G.S.A.; Soc. Econ. Pal. & Min.; A.P.I.; Rocky Mtn. Geol. Soc.; Fellow, Tex. Acad. Sci.; Tulsa Geol. Soc. (V.Pres. and Editor 1932); Chairman, Research Comm. A.A.P.G. '44-'47; Chairman, Comm. Habitat of Oil, A.A.P.G. '52-'54; Editor, Directory of Geologic Departments in U.S. and Canada; Amer. Geol. Inst. '51-'54; Assn. Geol. Teach. '55-'56; Member, Committee Education and Public Relations, A.G.I., '54-'56; President, Eastern Section Assn. Geol. Teachers, '53.
Stratigraphy and stratigraphic methods as related to geologic structure and sedimentary facies, especially in subsurface geology. Bibliography, 23 titles, esp. Sedimentary Facies in Gulf Coast. A.A.P.G. '48.

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5. The exploration project

(d) Operating experience and background of the applicant and personnel (Continued)

Dunn, James R(obert), 840 Whitney Dr., Schenectady, N.Y.
b. October 18, 1921; m., c. 4.
Education: B.A., U. of Cal., Berkeley, '43;
Ph.D. (Geology) U. of Cal., '50.
U.S.N. '43-'45; Geologist for New Idria Quicksilver Mining Co. '46-'47; Teaching ass't. U.C. '47-'50; Ph.D., Geology and Mining of Mona Lake, Calif.; Ass't. Prof., R.P.I., Troy, '50-'54; Assoc. Prof., R.P.I., '54 - ; Geologist for Iron Ore Co., Canada, Labrador, field season '51; Geologist for Shell Oil Co., Montana, field season '52; Geologist, N.Y. State, pyrite deposits near Canton, Spring '53; Geologist in charge of limestone survey of N.Y. State, '54-'55 - ; Consultant for various individuals and groups including, AEC metallurgical research, limestone quality control Callanan Road Improvement Co., manganese prospects, Adirondack Foundries, Inc., etc.
Papers - Geology of Mona Lake Area, Tufa of Mona Lake, Anthraxolite of Mohawk Valley, Plastic Models for teaching optics; GSA, AIMME, Theta Tau Geological Fraternity.

Young, Robert S(pencer), 'Knollwood', R.R.5, Charlottesville, Va.
b. April 14, 1922; m. '45; c. 1. B.A. Virginia '50, M.A. '51, Ph.D. (Geol.) Cornell '54.
Field geologist, State Geol. Surv., Va. '52, Stratigrapher and Struct. Geologist, '53 - Lecturer, Harpur Col., 154.
A.A.F. '42-'45. Assoc. Soc. Econ. Paleont. & Miner; Miner. Soc; Paleont. Soc. Stratigraphic and structural geology studies in the northern part of the Shenandoah Valley in Virginia, restricted to Paleosoic rocks;
X-ray studies of the internal structure of coals and naturally occurring petroleum hydrocarbons.

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5. The exploration project

(d) Operating experience and background of the applicant and personnel (Continued)

Broderick, Thomas M(onteith), 120 Calumet Ave., Calumet, Mich.
b. Aug. 30, 1889, m. '14, c. 1.
A.B., Minnesota, '13; Ph.D. (Geol.), '17; MS, Wisconsin, '14; Harvard and Mass. Inst. Tech.,' 19. Asst. prof. geol., Minnesota, '14-'20; Geologist, Calumet & Hecla Consol. Copper Co., '20-'24, Chief Geologist, '24-'54; Consulting Geol. Engineer, '54 -. Field geologist, Minn. and Wisc. Geol. Surveys, '13-'20; Research prof., Mich. Col. Min. & Tech., '31-'40.
A.A.; Soc. Econ. Geol. (pre. '48); Fellow Geol. Soc.; Inst. Min. & Metal. Eng.
Exploration for ore deposits; copper; lead; zinc; silver; gold.

Beers, Roland F., Jr.
b. March 31, 1923, m., c.4
Degrees: A.B. 1944, Dartmouth; M.D. 1947, Univ. of Rochester; Ph.D. 1951, M.I.T.
Positions: Interne 1947-48, Baylor Hospital; Post doctoral Fellow, A.C.A., 1950-52; Assist. Prof. Biochem, 1952 - at M.I.T. (on leave U.S.N. '52-'54); Pre-and post-doctoral medical advisor, 1952 - , M.I.T.; Lt. U.S.N.R. on active duty Naval Medical Research Inst., Bethesda, Md., '52-'54.

Casey, Clifford F(rederick)
b. Nov. 10, 1925; m. 1951
E.E. Univ. of Maine '45, R.P.I. (Phys.) '50, also graduate courses. Army experience '44-'46, Signal Corps Engineering Labs (Fort Monmouth), Development Detachment, stationed White Sands Proving Grounds, attended Central Signal Corps School.
Positions: Beers and Heroy (research and development); General Electric Co. (test engineering). Specialty: Electronics.

Como, Neil M.
b. Oct. 1, 1924. B.E.E., R.P.I., 152; M.E.E., R.P.I., '55.
Research Associate, Analog Computer Lab, R.P.I., '52-'53; Engineer, Beers and Heroy, '53-'55. Sigma Zi, Eta Kappa Nu, Tau Beta Pi.

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5. The exploration project

(d) Operating experience and background of the applicant and personnel (Continued)

Brown, Richard W(alter)
b. Dec. 17, 1928. Graduated from Gloversville High School, 1946. Attended Champlain College in Plattsburg, N.Y. and Missouri School of Mines, Rolla, Mo. Graduated from Tulsa University (Oklahoma) in 1954 with an Engineering Geology degree. For senior thesis Mr. BROWN wrote on Permian Triassic of Wyo. Mr. Brown worked part-time for various consulting geologists during college years. Employed by Magnolia Petroleum Co. summer of 1952 in Williston Basin as a field helper for seismograph crew. Spent six months at Interstate Exploration Co. in 1953 as a seismic computer in Rocky Mts. area. Worked for Geophysical Service, Inc. 1954-1955 in southwest U.S.
m. '53, c. 1.

MacGregor, W(illiam) Wallace,
b. January 11, 1928; B.Mgt.E., R.P.I., '50, B.Electrical Engineering '55. Market Analyst, The Carborundum Co. '50-'53. Mr. MacGregor first entered R.P.I. at the age of 16 in the summer of 1945. In 1946 he enlisted in the U.S. Navy and was honorably discharged shortly after the end of the war. He then returned to Rensselaer and graduated with the degree, Bachelor of Management Engineering. He first joined The Carborundum Co. where he applied himself in the field of Marketing. As a sales representative, he covered a territory in Michigan and supervised promotional salesmen. As a Market Analyst he performed many investigations in both resale and industrial marketing. His greatest contribution to the company was the ultimate addition of a new product line consisting of eight separate items. He coordinated all phases of this program from the determination of the initial need for new product line on through the packaging, pricing, advertising, sales promotion and regional sales meetings. In the summer of 1953 he returned to R.P.I. and completed requirements for the degree Bachelor of E.E. He was elected to the honorary societ, Eta Kappa Nu. Professional societies: Am. Inst. of E.E and the I.R.E. He is a former member of the Am.Marketing Assoc. and The Soc. for the Adv. of Management. His diversified background in both business and engineering gives him an exceptionally broad viewpoint and enables him to perform a wide diversity of duties as Administrative Assistant to the President.

ROLAND F. BEERS, INC.
P. O. Box 1015
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5. The exploration project.

(d) Operating experience and background of the applicant and personnel - (Continued)

Hutchings, Roy T.
b. May 14, 1923, m. c.3.
Graduate Calvin Coolidge Grammar School, Bing. East Jr. High and Bing. North Sr. High Schools; N.Y.S. Maritime Academy, Fort Schuyler, The Bronx, '42-44; U.S. Merchant Marine '44-47; N.Y.S. Dept. Public Works, Division of Highways, 1947-49, Bureau of Soils Mechanics, Technician; Mich. College of Mining and Technology, '49-'53, Student Ass't. '50-'53; N.J. Zinc Co., s.w. Virginia, '53-'55, geologist.

Robinson, William H.
b. April 19, 1920
Attended R.P.I. '38-'40, National Guard Active '40-'41, General Electric '41-'44, U.S. Army, Pfc '44-'46; R.P.I., B.Ch.E., '48; Western Cartridge Co., subsidiary of Olin Matheison, Engineer, '48-'49; Behr-Manning Corp., '49 - .

ATTACHMENT F

ROLAND F. BEERS, INC.
P. O. Box 1015
Troy, New York

6. Estimate of Costs - Airborne Survey. (1)

(a) Independent Contracts.

All airborne geophysical surveys will be conducted by Aeromagnetic Surveys, Limited, of Toronto, Ontario, Canada, using experienced personnel provided by that firm. The area will be flown by Bell 47 type helicopter or equivalent, carrying airborne electromagnetometer and scintillation counters. The contract price for the surveys is $10.00 per line mile of flight. On this basis the estimated total cost of the airborne operations will be $48,560.00. To this figure must be added the cost of data reduction, map preparation and report writing. The direct cost of these items is estimated at $23,050.00. A detailed schedule of these costs is given below:

To Aeromagnetic Surveys, Limited, Toronto, Ontario, Canada, for airborne electromagnetic and scintillation counter survey of 291 square miles, at 1/16 mile spacing, a total of 4,656 line miles at $10.00 per mile plus $2,000.00 staging costs, a total of . . . . . $48,560.00.

(b) Labor, Supervision, Consultants.

Supervision	
1 Geological-geophysical Consultant, 60 days at $100.00 per day	$ 6,000.00
2 Geological Consultants, 60 man-days at $50.00 per day	3,000.00
Technical Services	
1 Staff Geologist, 3 months at $700.00 per mo.	2,100.00
1 Assistant Geologist, 3 months at $400.00	1,200.00
2 Computers, 6 man-months at $400.00	2,400.00
1 Draftsman, 2 man-months at $350.00	700.00
1 Stenographer & Clerical, 3 months at $300.	900.00
1 Accountant, 2 man-months at $600.00	1,200.00
Labor	
2 man-months labor at $350.00	700.00
TOTAL. . . .	$18,200.00

REC'D JAN 30 1956

AEROMAGNETIC SURVEYS
LIMITED

Experienced in all branches of airborne geophysical survey

1450 O'CONNOR DRIVE, TORONTO 16, CANADA • PHONE: PL. 5-4111 • CABLE CODE: AERMAG, TORONTO

RECEIVED
FEB - 3 1956

OUR REF. ASL-2-4-180

YOUR REF:

January 27, 1956.

Dr. R.F. Beers,
P.O. Box 1019,
Troy, New York,
U.S.A.

Dear Dr. Beers:

We are pleased to give you the following quotation covering airborne geophysical survey of certain areas located in the Illinois-Wisconsin region, in the Northern Appalacians and in the Southern Appalachians. The work will be performed in accordance with the attached specifications.

A. Ferry charge covering movement ... $ 1.50 (U.S.) per mile

B. Survey flying and mapping, including airborne magnetometer, airborne E.M. and airborne scintillation counter ... ... $18.00 (U.S.) per line mile

C. Survey flying as in "B" above but not including the airborne magnetometer ... ... $13.00 (U.S.) per line mile

The above prices only apply if the average length of the flight lines is 10 miles or more.

Yours very truly,

Aeromagnetic Surveys Limited

D. G. MacKay

D.G. MacKay
General Manager.

REC'D JAN 30 1956

SPECIFICATIONS

RECEIVED
FEB - 3 1956

Equipment

Aeromagnetic Surveys Limited will provide and operate the following equipment:

1. An airborne magnetometer and ancillary equipment suitable for measuring the earth's total magnetic field.

2. An airborne radiation detector and ancillary equipment suitable for measuring the radioactive emanations which can be recorded at a ground clearance of 500 feet.

3. An E.M. device recording the phase shift between primary and secondary fields where the primary field is transmitted at a frequency of 2300 c.p.s.

4. An E.M. device recording the phase shift between primary and secondary fields where the primary field is transmitted at a frequency of 400 c.p.s.

5. A radio altimeter mounted in the aircraft and continuously recording the altitude of the aircraft above ground level.

6. A 35 mm. camera mounted in the aircraft and synchronized with all of the above records to provide accurate positiong of these records with respect to the ground.

Flying

Aeromagnetic Surveys Limited will observe the following conditions of flight:

7. Flight lines will be flown parallel at spacings according to the customer's instruction.

8. Terrain clearance will be maihtained as closely as practicable to 500 feet, consistent with safety of aircraft and crew.

9. Flight direction will be according to the customer's instruction.

Data Reduction and Plotting

10. Aeromagnetic Surveys Limited will prepare base maps from mosaics or from existing maps, if suitable, to a scale of 2640' = 1" approximately, on which the geophysical data will be plotted.

11. The final record will be in the form of linen tracings showing the following:

(a) Planimetry, sufficient detail of drainage and existing culture to allow easy location on the map.

(b) Flight lines in fine dashed lines.

(c) Magnetic contours at 25 gamma intervals in the areas of low magnetic gradient and at suitable intervals in areas of higher magnetic gradient.

.....2

REC'D JAN 30 1956

(d) Radiometric anomalies.

(e) Location of E.M. anomalies.

(f) Legend showing symbols used.

Security

12. Strict security will be maintained over all data and access will only be granted to authorized persons.

ROLAND F. BEERS, INC.
P. O. Box 1015
Troy, New York

6. Estimate of Costs - Airborne Survey (Continued) (1)

(c) Operating Materials and Supplies.

None.

(d) Operating Equipment.

Rented under independent contract - see item (a).

(e) Rehabilitation and repairs.

None.

(f) New buildings, improvements, installations.

None.

(g) Miscellaneous.

(i)	Office and drafting supplies in maintaining records, preparation of reports, maps	$ 200.00
(ii)	Workmen's Compensation and employer's liability insurance on payrolls, est. 15% of $18,200.00 .	2,730.00
(iii)	Transportation:	
	A. Geophysical Consultant (Supervisor) to field and return, automobile, est. 4,000 miles at 10¢ per mile	400.00
	B. Geological consultants and staff geologist, automobile, est. 2,000 miles at 10¢ per mile .	200.00
(iv)	Travel, and per diem:	
	A. Per diem ($12.00) est. 30 days	360.00
	B. Per diem ($12.00) est. 30 man-days	360.00
(v)	Photographic prints, reproductions, est.	200.00
(vi)	Communications, telephone and telegraph, est. 4 months	200.00
(vii)	Transportation of things - est.	200.00
	TOTAL	$4,850.00

ROLAND F. BEERS, INC.
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Troy, New York

.6. Estimate of Costs - Airborne Survey (Continued) (1)

(h) Contingencies.

None.

Recapitulation

(a)	Independent Contracts	$ 48,560.00
(b)	Consultants fees, salaries and wages	18,200.00
(g)	Miscellaneous	4,850.00
	Total Estimated Costs, Airborne Survey	$ 71,610.00

ROLAND F. BEERS, INC.
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Troy, New York

6. Estimate of Costs - Ground Geophysical Survey (2)

Unit Basis

Note: Since it is obviously impossible to determine in advance the extent of ground geophysical work to be done on the project, an estimate of costs is submitted herewith on a unit basis. The costs are estimated as those for one day of field work, including the associated supervision of field activity and the work of computing and preparation of final reports to follow. By multiplying the unit cost by the total number of days, a figure equal to the total project cost will be obtained. The estimate is prepared on the basis of 100 working days of ground geophysics. The actual number of days will then be expressed as a percentage of the estimated costs.

(a) Independent Contracts.

None.

(b) Personal Services, Field Operations

Supervision		
	Consulting Geophysicist, 25 days at $100. per day	$ 2,500.00
Technical Services		
1	Party Chief, 100 days at $25.00 per day	2,500.00
1	Observer, 100 days at $20.00 per day	2,000.00
1	Surveyor, 100 days at $20.00 per day	2,000.00
1	Computer, 100 days at $20.00 per day	2,000.00
	Accounting, 10 days at $30.00 per day	300.00
Labor		
	For cutting brush, 100 man-days at $13.50 per day	1,350.00

Personal Services, Troy Office

Supervision		
	Consulting Geologist, 25 man-days at $50.00 per day	1,250.00
Technical Services		
1	Computer, 100 man-days at $20.00	2,000.00
1	Draftsman, 100 man-days at $17.50	1,750.00
1	Clerical & Stenographic, 30 days at $14.00	420.00
Labor	None	0
	TOTAL . . .	$18,070.00

ROLAND F. BEERS, INC.
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Troy, New York

6. Estimate of Costs - Ground Geophysical Survey (Continued) (2)

(c) Operating Materials and Supplies

Field computing forms, graph paper, tracing paper, misc. field office supplies	$ 100.00
Batteries, elec. power for charging, lamps	350.00
Flagging, Vacuum Tubes, Replacement Parts	500.00
TOTAL	$ 950.00

(d) Operating Equipment.

Rental of Gravitymeter at $400./mo.-100 days	$1,333.00
Rental of Ground Electromagnetic equipment, at $400./mo.-100 days	1,333.00
Rental of Truck at 12¢ per mile-10,000 miles	1,200.00
Rental of Transit, Chains and Rods, 100 days at $5./day	500.00
TOTAL	$4,366.00

(e) Rehabilitation and repairs.
None.

(f) New buildings, improvements, installations.
None.

(g) Miscellaneous.

(i)	Prints, reproductions, drafting supplies	$ 300.00
(ii)	Accounting supplies	50.00
(iii)	Payroll taxes, employer's liability and Workmen's Compensation insurance, est. 15% of $18,070.00	2,710.50
(iv)	Transportation: Geophysical Consultant (Supervisor) to field and return, automobile, 2000 miles at 10¢ per mile	200.00
(v)	Travel and per diem: 25 days at $12.00 per diem	300.00
(vi)	Communications, telephone and telegraph	200.00
(vii)	Transportation of things	200.00
(viii)	Rental of field office, light, power, heat.	330.00
	TOTAL	$4,290.50

ROLAND F. BEERS, INC.
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Troy, New York

6. Estimate of Costs - Ground Geophysical Survey (Continued) (2)

(h) Contingencies.

None.

Recapitulation - 100 days cost

(b)	Personal Services	$ 18,070.00
(c)	Operating Materials and Supplies	950.00
(d)	Operating Equipment Rental	4,366.00
(g)	Miscellaneous	4,290.50
	Total Estimated Cost	$ 27,676.50
	Estimated Cost per Day	$ 276.77

Estimated total number of days required to survey selected anomalies on Prospect - 360 days : $100,000.00

ROLAND F. BEERS, INC.
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6. Estimate of Costs - Unit Cost of Geochemical Survey, 100 days, 30 samples per day. (3)

(a) Independent Contracts.

None.

(b) Labor, Supervision, Consultants.

Supervision	
1 Consultant Chemist, 6 days at $50.00	$ 300.00
Technical Services	
1 Chemist in charge, 50 days at $25.00	1,250.00
2 Technicians, 100 days at $10.00	2,000.00
TOTAL	$3,550.00

(c) Operating Materials and Supplies

Drafting, photo reproduction and prints, chemicals and supplies	$1,200.00

(d) Operating Equipment.

None. (Field equipment included in geophysical)

(e) Rehabilitation and repairs.

None.

(f) New buildings, improvements, installations.

None.

(g) Miscellaneous

(i) Payroll taxes, employer's liability and Workmen's Compensation insurance, 15% of $3,550.00	$ 532.50
(ii) Transportation of things - Soil samples shipped to laboratory, 100 samples per $8.00 per day	800.00
(iii) Rental of geochemical laboratory and equipment, with light, heat and power . .	150.00
TOTAL	$1,482.50

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Troy, New York

6. Estimate of Costs - Unit Cost of Geochemical Survey (Continued) (3)

(h) Contingencies.

None.

Recapitulation

(b)	Personal Services	$ 3,550.00
(c)	Operating Materials and Supplies	1,200.00
(g)	Miscellaneous	1,482.50
	Total Expense, 100 days	$ 6,232.50
	Estimated Cost per day	$ 62.32
	Estimated Total number of days required to collect samples of selected anomalies - 360 days	$22,400.00

ROLAND F. BEERS, INC.
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6. Estimate of Costs -

(4) Diamond Core Drilling (assuming one ore zone discovered of size of Balmat):

1956	5,000 feet at $4.00 per ft.	$ 20,000.00
1957	15,000 feet at $4.00 per ft.	60,000.00
1958	15,000 feet at $4.00 per ft.	60,000.00
1959	15,000 feet at $4.00 per ft.	60,000.00
	Total estimated cost of core drilling	$200,000.00

(5) Access Roads to Drill Sites on Prospect

Bulldozer and Operator,
50 days at $80.00 per day — $ 4,000.00

(6) Trenching in hard rock *

1,250 cubic yards per $2.00 per cu.yd. — $ 2,500.00

(7) Trenching and Pitting in soil and alluvium

13,000 cubic yards per $1.00 per cu.yd. — $13,000.00

(8) Prospects Shafts

600 feet - 5' x 75' - at $45.00 per ft. — $ 27,000.00

(9) Sampling - core splitting, channeling

150 man-days at $20.00 per day — $ 3,000.00

(10) Spectroscopic analyses

20 samples per $10.00 — $ 200.00

(11) Assaying

300 samples at $18.00 — $ 5,400.00

* 3 x 3 x 150 feet average
50 cubic yards per trench
25 trenches = 1,250 cubic yards

N.B. Local costs:
bulldozer, $8 to $10 per hour
backhoe, $12 per hour
power shovel (3/8 yd.), $12 per hour

ROLAND F. BEERS, INC.
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Troy, New York

6. Estimate of Costs -

(12) General Geological Supervision (4 year program)

Consultants: 400 man days per $50.00	$ 20,000.00
Senior staff geologist: 4 man years per $10,000.	40,000.00
Junior staff geologist: 4 may years per $ 5,500.	22,000.00
Travel: Consultants: 4 years, 7200 miles per year at 10¢ per mile	2,880.00
Staff geologists and junior geologist: 4 years, 100 miles per day, 3 days per week at 10¢ per mile	6,000.00
Per diem:	
Consultants: 400 man days at $12.00 per diem	4,800.00
S taff geologists: 4 man years at $12.00 per diem	16,800.00
TOTAL. . . .	$112,480.00

(13) Miscellaneous

Field office expenses, 4 years:	
Rental, 48 months at $65.00 per month	$ 3,120.00
Telephone and telegraph	960.00
Transportation of things	1,000.00
Office supplies and materials	1,400.00
Payroll taxes, employer's liability and Workmen's Compensation Insurance, 15% of $82,000.	12,300.00
TOTAL. . . .	$ 18,780.00

(14) Contingencies, 5% $ 29,000.00

ROLAND F. BEERS, INC.
P. O. Box 1015
Troy, New York

6. Estimate of Costs -

Recapitulation: Estimate of Costs - Four Year Program

(1)	Airborne Survey	$ 71,610.00
(2)	Ground Geophysics	100,000.00
(3)	Ground Geochemistry (analyses)	22,400.00
(4)	Core Drilling	200,000.00
(5)	Access Roads	4,000.00
(6)	Trenching in Hard Rock	2,500.00
(7)	Trenching and Pitting - Alluvium & Soil	13,000.00
(8)	Prospect Shafts	27,000.00
(9)	Sampling - core splitting, channeling	3,000.00
(10)	Spectroscopic analyses	200.00
(11)	Assaying	5,450.00
(12)	General Geological Supervision	112,480.00
(13)	Miscellaneous	18,780.00
(14)	Contingencies, 5%	29,000.00
	Total Estimated Cost.	$609,370.00

ATTACHMENT G

ROLAND F. BEERS, INC.
P. O. Box 1015
Troy, New York

7. (b)

Funds for the proposed exploration program will be provided by the members of The American Syndicate. The names and addresses of the members are contained in Attachment A. Many of the members represent corporations and banking firms who are unquestionably in position to provide these funds. These resources are available not only for the program of airborne exploration, but also for the ground surveys, and for the core-drilling and exploration by mining operations required to locate actual ore bodies, just short of production. The Syndicate members have committed their funds to a five year program. Each year the amount to be expended in exploration will be approved by a two-thirds (2/3) majority vote of all members in interest. Adequate representation of the adequacy of these funds will be made upon request.

OFFICIAL FILE COPY

Date	Surname	Code

March 25, 1958

Memorandum

To: Director, Division of Operation Control and Statistics

From: Director, Division of Base Metals

Subject: Withdrawal of Two Application for

Docket No. DMEA-4051 (Lead-Zinc-Copper)
Roland F. Beers, Inc.
Agent for The American Syndicate
120,000 acres more or less leased or optioned in St. Lawrence and Jefferson Counties, New York

and

Docket No. DMEA-4133 (Lead-Zinc-Copper)
Roland F. Beers, Inc.
Manager for The American Syndicate
50,000 acres more or less of land leased in Fluvanna, Louisa, Spotsylvania and Stafford Counties, Virginia

Will you kindly consider the cited applications as being withdrawn. Actually they are not being withdrawn in the ordinary sense of the word but the Applicant states that individual applications will be submitted on each of the individual projects involved in these large areas.

W. R. Griswold

W. R. Griswold

WRG/er
Copy to: Docket (2)
Admr R File
Chron.

8623

ROLAND F. BEERS, INC.

OFFICE AND LABORATORY:
447 PINEWOODS AVENUE
PHONE ASHLEY 2-2351

MAIL ADDRESS:
POST OFFICE BOX 1019
TROY, NEW YORK

August 30, 1957

OFFICIAL FILE COPY
DMEA
RECEIVED SEP 3 1957

DATE	INITIALS	CODE
9/4	Q	220
9/4	[illegible]	500

Mr. C. O. Mittendorf, Administrator
Defense Minerals Exploration Administration
U. S. Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-4051 (Lead-Zinc-Copper)
Roland F. Beers, Inc.
Agent for the American Syndicate
120,000 acres more or less leased or optioned
in St. Lawrence and Jefferson Counties, New York

Dear Mr. Mittendorf:

I wish to reply to your letter of August 26, 1957 in which you request us to advise you as to our present intentions in respect to the cited application.

We have been conducting ground exploration work on anomalies and areas geologically related thereto in an effort to isolate specific prospects for drilling. It is our intention to submit individual applications to DMEA on each of these prospects which show consistently positive results in the ground surveys. At the same time we have been assembling mineral rights on these prospects. All of this work has required much greater time and expense than we originally anticipated. At the present time we expect to submit an application on the first prospect within the next 90 days.

Sincerely yours,

Roland F. Beers

Roland F. Beers, Agent

rfb/h

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
8/26	Griswold	500
"	Johnson	110
"	Mittendorf	100
8/26	P.	225
		500

AUG 26 1957

Mr. Roland F. Beers, President
Roland F. Beers, Inc.
Post Office Box 1019
Troy, New York

Re: Docket No. DMEA-4051 (Lead-Zinc-Copper)
Roland F. Beers, Inc.
Agent for The American Syndicate
120,000 acres more or less leased or optioned in St. Lawrence and Jefferson Counties, New York

Dear Mr. Beers:

We have been holding the cited application open for a considerable period of time, since it was our understanding that you intended to submit an amended proposal. Would you be kind enough to advise us as to your present intentions, in this respect.

Sincerely yours,

C. O. Mittendorf (for)

Administrator

WRGriswold/er 8/26/57
Copy to: Docket
Admr R File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Chron.

8623

ROLAND F. BEERS, INC.

OFFICE AND LABORATORY:
47 PINEWOODS AVENUE
PHONE ASHLEY 2-2351

MAIL ADDRESS:
POST OFFICE BOX 1019
TROY, NEW YORK

April 9, 1957

Docket

OFFICIAL FILE COPY
DMEA
RECEIVED APR 12 1957

DATE	INITIALS	CODE
4/12	C	220
12	Com	100
"	[illegible]	~~110~~ 110
		120
4/13	[illegible]	500

Mr. C. O. Mittendorf, Administrator
Defense Minerals Exploration Administration
U. S. Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-4051 (Lead-Zinc-Copper)
Roland F. Beers, Inc.
Agent for the American Syndicate
120,000 acres more or less leased or optioned
in St. Lawrence and Jefferson Counties, New York

Dear Mr. Mittendorf:

Thank you for your letter of April 3rd. I am pleased to note that you would be willing to consider a revised application in our programs of exploration for lead, zinc and copper.

I did not anticipate making a request for Government participation in the flight phase of our work, since this phase has now been completed. We are putting the results of this work together and believe it would be interesting to you and some of the members of your organization. As I expect to be in Washington in the near future, I will prepare illustrative examples of this material for your examination. At some time convenient to you thereafter, I should like to ask your guidance in the preparation of a revised application. I will keep you informed as to the development of our work.

Sincerely yours,

Roland F. Beers

Roland F. Beers, Agent

rfb/h

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
4/1	[illegible]	500
4/2	[illegible]	130
"	[illegible]	110
"	[illegible]	100
4/3	[illegible]	225
		500

APR 3 - 1957

Mr. Roland F. Beers, President
Roland F. Beers, Inc.
Post Office Box 1015
Troy, New York

Re: Docket No. DMEA-4051 (Lead-Zinc-Copper)
Roland F. Beers, Inc.
Agent for The American Syndicate
120,000 acres more or less leased or optioned in St. Lawrence and Jefferson Counties, New York

Dear Mr. Beers:

We have your letter of March 22, 1957, regarding the cited project and note that you have made substantial improvements in the performance of your airborne equipment. Nevertheless, as noted in our letter of May 28, 1956, we cannot, at this time, offer you much encouragement as regards Government participation in the flight phase of exploration work.

However, at any time when you might feel that you had developed significant anomalies which warranted drilling, we would be willing to give full consideration to such a revised application on your part.

Since your are actively engaged in your preliminary work on this project, we shall continue to hold your application open for a reasonable period of time.

Sincerely yours,

C. O. Mittendorf

Administrator

WRGriswold/er 4/1/57
Copy to: Docket
Admr R File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region V, (2)
Chron.

8623

ROLAND F. BEERS, INC.

OFFICE AND LABORATORY:
447 PINEWOODS AVENUE
PHONE ASHLEY 2-2351

MAIL ADDRESS:
POST OFFICE BOX 1019
TROY, NEW YORK

OFFICIAL FILE COPY
DMEA
RECEIVED MAR 25 1957

DATE	INITIALS	CODE
3/25	C	220
3/26	WRH	500

March 22, 1957

Mr. C. O. Mittendorf, Administrator
U. S. Department of the Interior
Defense Minerals Exploration Administration
Washington 25, D. C.

Re: Docket No. DMEA-4051 (Lead-Zinc-Copper)
Roland F. Beers, Inc.
Agent for The American Syndicate
120,000 acres more or less leased
or optioned in St. Lawrence and
Jefferson Counties, New York

Dear Mr. Mittendorf:

I wish to reply to your letter of March 12th, with reference to our application under given Docket number.

We have just recently completed the reduction and evaluation of a helicopter-borne electromagnetometer survey in the specified area. During the time since we last discussed our application in your office, we have learned that ownership of mineral rights does not always accompany ownership of the surface. For this reason many of our leases do not apply to the minerals. We have been obliged to seek out the owners of minerals and to negotiate agreements with them. This work is proceeding slowly, and we expect to continue through the next several months toward its completion. All this work we consider to be essential to the requirements of any DMEA agreement which might be arranged.

At this point we have a question which may be of interest to you. From our earlier discussions, we came to the belief that your policy would permit approval of aid in drilling prospects which had been established by conventional ground methods of exploration. There did not seem to be any basis for you to approve certain exploration programs which we had planned, and which used airborne methods in the early stages. However, it was not clear to us whether you were unable to approve the methods for technical reasons, or because the programs were not tied to specific tracts of land.

The reason for bringing up this question at this time is that we have made very great improvements in the performance of our airborne equipment, and we consider it likely that your people might now view them with favor. If our surmise is correct, perhaps you would be willing for us to bring representations of the new data to your office for examination. At the same time we would be in position to discuss the other question, since our title to minerals has now been established on specific tracts.

Sincerely yours,

ROLAND F. BEERS, INC.

Roland F. Beers

Roland F. Beers

rfb/h

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
3/12	Griswold	500
"	Johnson	170
"	Hittendorf	100
3/12	C	220
		500

MAR 12 1957

Mr. Roland F. Beers, President
Roland F. Beers, Inc.
Post Office Box 1015
Troy, New York

Re: Docket No. DMEA-4051 (Lead-Zinc-Copper)
Roland F. Beers, Inc.
Agent for The American Syndicate
120,000 acres more or less leased or optioned in St. Lawrence and Jefferson Counties, New York

Dear Mr. Beers:

The cited application has been held pending for a considerable period of time, subject to the submission of additional data which might warrant consideration of a modified program of exploration.

It is difficult for us to hold applications open beyond a reasonable period of time. Therefore, if we do not hear from you further within thirty days from the date of this letter, we will assume that you are no longer interested in proceeding with your application, and we will consider it as having been withdrawn.

Sincerely yours,

C. O. Hittendorf (for)

Administrator

WRGriswold/er 3/12/57
Copy to: Docket
Admr R File
Op. Committee
Base Metals
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Chron.

8623

File Copy
Surname
Griswold
Williams
Lamb
Selfridge
Kjellmon

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

AUG 23 1956

Mr. Roland F. Beers, President
Roland F. Beers, Inc.
Post Office Box 1015
Troy, New York

Re: Docket No. DMEA-4051 (Lead-Zinc-Copper)
Roland F. Beers, Inc.
Agent for The American Syndicate
120,000 acres more or less leased or optioned in St. Lawrence and Jefferson Counties, New York

Dear Mr. Beers:

This will acknowledge your letter of August 7, 1956, referring to the cited application.

Your letter of August 7 and the supplemental report enclosed, covering the cited application, have been reviewed. We note that you are sending a ground EM crew to the area to delineate in further detail the anomalies which have been discovered.

Essentially, our position is the same as expressed in our letter to you of May 28, 1956.

Since you have obtained anomalies which you consider significant and if you can now verify them by ground geophysics or geochemistry, we would then be glad to give consideration for a request for assistance, perhaps in the form of diamond drilling.

Sincerely yours,

C. O. Mittendorf

Administrator

WRGriswold/er 8/22/56
Copy to: Docket
Admr R File
Op. Committee
Base Metals
Mr. Pennington, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Chron.

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

August 22. 1956

Memorandum for the Files

From: Chief, Base Metals Division

Subject: Docket No. DMEA-4051, Roland F. Beers, Inc. Agent for The American Syndicate 120,000 acres more or less leased or optioned in St. Lawrence and Jefferson Counties, New York

On May 28, 1956, we denied the cited application for assistance in air-borne work, but left the door open for assistance in other forms.

The Applicant has submitted supplemental data and requested reconsideration. The gist of the argument is that they have clearly developed certain anomalies.

However, we were all sure, in advance, that plenty of anomalies would be obtained in this area; probably too many. Large concentrations of barren pyrite are known to occur, plus graphite in some areas.

In reviewing the supplemental data Bill Dempsey states:

"The submission of this report convinces me that Beers has equipment suitable for detecting massive sulphide bodies of some . . . . ."

I do not believe that any of us ever questioned that fact. But it so happens that in the area in question, the ores occur, so far as is known, in relatively narrow veins, rather than in large massive sulphide deposits. I have never heard of even ground geophysics being employed very much in the search for lead-zinc veins. Hence, I cannot see why airborne work is in order in such connection.

W. R. Griswold

W. R. Griswold

WRG/er
Copy to: Docket
Base Metals
Chron.

IN REPLY REFER TO:

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

August 21, 1956

Re: DMEA 4051
Roland F. Beers, Inc.
St. Lawrence Co., N. Y., areas
$609,370.00, Lead-Zinc-Copper

Memorandum

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

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

Subject: Review of Supplemental Report on Docket No. DMEA 4051 by Dr. James R. Dunn and comment of William Dempsey on the same report.

In his report Dr. Dunn critically reviews the results of helicopter-borne electromagnetic prospecting in St. Lawrence Co., N. Y. Four small areas were selected as test areas for the evaluation of the equipment.

On May 1st, William Dempsey, Mr. Griswold, Walter Klugescheid and I were shown the strip charts obtained in the tests. A number of anomalies were indicated but no measure of their importance was afforded. In the present report Dr. Dunn relates the chart records to ground features observed by him during a ten-day field examination trip.

William Dempsey, August 17, 1956, says: "On the whole the report does lead me to believe that areas of anomalous conductivity can be detected with this equipment, but that probably little or nothing of economic significance was discovered in the particular areas surveyed. Perhaps drilling of the anomalies which appear to be most significant is in order." That DMEA should assist in such drilling is not too apparent.

The anomalous conditions noted in the northerly section (Cole mine and Richville) are, I believe, more apt to be related to pyrite mineralization than to minerals in which DMEA is interested. The anomalies north of Sylvia Lake are in an area not far removed from the Balmat zinc mine, and, as observed by Dr. Dunn, minor sphalerite was seen in a pyrite zone in gneiss, long ago exposed in pits.

I am of the opinion that substantive evidence of the presence of 'eligible' minerals should be provided. The results of geochemical prospecting as presented by the New Jersey Zinc Co. or the cores of one or two drill holes showing worthwhile lead-zinc-copper mineralization should suffice. Correlative data, as drill records of other operators, such as were used in appraising the Buckingham County, Virginia, application of Mr. Beers, should also be acceptable.

I accept Mr. Dempsey's judgement as to the adequacy of the equipment used by the applicant, but I am in doubt as to the significance of the recorded anomalies.

Unless more positive evidence is provided indicating that the anomalous conditions are caused by minerals in which DMEA is interested, I recommend that the application be denied without prejudice.

N. E. Nelson

N. E. Nelson

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Thor H. Kiilsgaard DATE: August 17, 1956

FROM : Bill Dempsey

SUBJECT: Supplemental report on Docket No. DMEA - 4051

The attached report was submitted to me by Roland F. Beers and James R. Dunn approximately July 30, 1956. Previously I had seen airborne EM records taken over areas in Wisconsin and New York submitted by Mr. Beers. Preliminary conclusions concerning these records were prepared and at the time it was my feeling that Mr. Beers was giving us insufficient evidence on which to reach final conclusions.

In considering airborne EM proposals there are certain subjective aspects which should first be presented. On the optimistic side; since approximately 1950 when first inspecting results obtained by a piece of airborne EM equipment constructed in Canada, I have believed that when suitable equipment was available massive sulphide ore bodies not too deeply buried could be detected, with airborne EM equipment. Since that time various publications, papers at scientific meetings and informal bits of information have convinced me that the equipment and the methods of analysis are sufficiently far advanced that ore bodies can be detected. Furthermore, at least in many parts of Canada, the problem is not one of finding and locating anomalies but rather one of selection between the multitude of anomalies, those having "ore body" significance.

On the pessimistic side, the original data taken over areas in Wisconsin and submitted to us did not show anomalies of sufficient amplitude to be truly recognizable. This of course might be due to a deficiency in the equipment or because ore bodies of the proper size and conductivity were not present in the test area. In any event, it was impossible to conclude that work of this nature should be underwritten with federal funds. Later records taken over an area in the Adirondacks were submitted by Mr. Beers and my conclusions were that some distinct anomalies were evident. However, even though these results were more promising little more than sketch maps and the raw records were presented. In summary, I believe that the use of airborne EM equipment is promising but that Mr. Beers did not present us with sufficient information that he had adequate equipment or was working in favorable areas.

Subsequently (approximately July 30) Mr. Beers and Mr. Dunn called on me and gave me the attached report. I believe this report illustrates that zones of high conductivity (sulphide mineralization) can be detected with the equipment used in making the Adirondacks surveys. There is still some reluctance on my part to believe that certain of the smaller features on the records are truly anomalous. In the maps at the end of the report figures representing the significance of the anomalies are presented. The figure on the left, (in some cases the upper figure), represents the amplitude of the in-phase component. The figure at the right, (in some cases the lower figure), represents the ratio of the in-phase/out-of-phase component. It is to be noted that the figure 10 for the in-phase component represents the smallest division on the EA record, that is 2% of the meter movement. Figures as low as 2, or about 1/2% of full scale meter movement are presented as representing anomalous conductivity. It would be much more convincing if larger anomalies were evident.

On the whole the report does lead me to believe that areas of anomalous conductivity can be detected with this equipment, but that probably little or nothing of economic significance was discovered in the particular areas surveyed. Perhaps drilling of the anomalies which appear to be most significant is in order.

The submission of this report convinces me that Beers has equipment suitable for detecting massive sulphide bodies of some minimum size. My recommendation is that whatever general criteria are used in evaluating other DMEA proposals be applied to proposals for the use of airborne EM equipment over large areas. While it appears difficult to make such a comparison I see no reason why criteria used in evaluating conventional prospecting techniques cannot be applied to newer, less conventional methods.

ROLAND F. BEERS, INC.

OFFICE AND LABORATORY:
447 PINEWOODS AVENUE
PHONE ASHLEY 2-2351

MAIL ADDRESS:
POST OFFICE BOX 1015
TROY, NEW YORK

August 7, 1956

Griswold
Betty

RECEIVED
AUG - 9 1956

Docked

Mr. C. O. Mittendorf, Administrator
Defense Minerals Exploration Administration
Department of the Interior
Washington 25, D. C.

Attention: Mr. W. R. Griswold
Chief, Base Metals Division

Re: Docket No. DMEA-4051 (Lead-Zinc-Copper)
St. Lawrence and Jefferson Counties, New York

Dear Mr. Mittendorf:

Upon return to Troy from our visit to your office on July 23rd, I discovered that I had failed to leave with you copies of the Supplemental Report on the work completed in northern New York. I regret this oversight very much, particularly since I did leave a copy of the report with Mr. Dempsey. Since he was recently reported to be absent on annual leave I was afraid your office might not have access to the report in your reconsideration of our application.

If you have further questions after reading the Supplemental Report either Dr. Dunn or myself will be glad to give you further information. We feel it would be especially desirable if a representative from your office could visit the field with Dr. Dunn and verify for himself the existence of the mineralized zones which have been discovered by the airborne electromagnetometer. The direct field evidence is very strong.

This week we are beginning a program of airborne exploration with the electromagnetometer on our helicopter. At the same time we are sending a ground EM crew to the area to delineate in further details those anomalies which have already been discovered. The outcome of all this work promises to be intensely interesting and we hope your office may have the opportunity of joining with us in observing its development. As new information is gathered we will inform your office promptly of significant results.

Yours sincerely,

Roland F. Beers

Roland F. Beers, Agent
for The American Syndicate

rfb/h
Encl.

CONFIDENTIAL

RECEIVED
AUG - 9 1956

SUPPLEMENTAL REPORT ON DOCKET NO. DMEA-4051

by

Dr. James R. Dunn, Consultant

Roland F. Beers, Inc.
P.O. Box 1019
Troy, New York

19 July 1956

INTRODUCTION AND SUMMARY

The purpose of the following paper is to present a critical review of the results of helicopter-borne electromagnetic prospecting in St. Lawrence County, New York. Four small areas were selected as a test program which, it was hoped, would serve as a satisfactory basis of evaluation of the equipment.

The following are the critical results of ten days in the field checking anomalies:

1. A large mass of pyrite and some pyrrhotite with minor sphalerite in a predominantly pyroxene gangue has been found in the "rusty gneiss" north of Sylvia Lake. It is near the Kilburn pyrite prospect which, according to Prucha[1/] is barely more pyritiferous than the normal rusty gneiss. The sulfide-bearing rock found has not been described and apparently was not seen by Dr. Prucha . It is believed that the pyroxene gangue and slight sphalerite content -- both characteristics of which are peculiar for the rusty gneiss and more typical of the marbles -- suggest that that place should be prospected for base metals.

2. The pyrite belt in the Sylvia Lake area was detected at every crossing no matter what the thickness, local percent of pyrite, or the amount exposed.

3. The Hendricks-Cole belt was found to be continuous for even where no outcrops existed the anomaly persisted. It was picked up at every crossing but some of the anomalies were weak. However, according to Prucha the pyrite-rich zones are discontinuous.

4. A major anomaly was detected under a plowed field 1/8 mile east of the Cole mine. The trend of the sulfides is parallel to the flight lines at that area because of a 90 degree flexure in the schistosity and hence the detecting characteristics of the equipment are poor. In spite of this difficulty the anomalies are excellent both at the Cole mine and the next line east. It is very possible that the reserves of pyrite in that area will not be notably increased as the direct result of the airborne survey.

1/ N.Y. State Science Service R.I. No. 8, "The Pyrite Deposits of Jefferson and St. Lawrence Counties, N.Y." by John James Prucha (Preliminary Report, January 1953)

5. An area of very poorly exposed deep red hematite and porous gossans has been detected by the survey within the Grenville marble south of Richville. The anomalies are weak and are probably from underlying pyritic material. This mineralization was not described in the old quadrangle mapping by Buddington.

6. A pattern of anomalies in marble around the nose of a granitic phaccolith west of Richville seems to be a very favorable structural situation. No outcrops of marble in the strongly anomalous area are visible, but 400 feet northwest of the anomalous area is a small sulfide show which was detected (5/2) and has been prospected in the past. Incidentally, according to the old maps part of the anomaly should have been in the granite but field investigation disclosed that the contact was placed incorrectly by Buddington and that all the anomalies are in the marble.

7. A small anomaly, in a swamp, southeast of Sylvia Lake was recorded in the area of the prospecting by the U.S. Bureau of Mines (Parker-Webb) even though according to the published reports there was nothing in that area which our equipment could theoretically pick up.

8. Many anomalies were detected around the St. Joseph Lead Company workings at Balmat, some in areas which have not been prospected. However, the fact that most of this is out of the outlined test area and is covered with buildings, dumps, and other conductive culture the records are not believed to be reliable enough to draw any conclusions. Just east of St. Joseph Lead Company's, Balmat, number three shaft north of Sylvia Lake a small anomaly was found to be at a low outcropping of deep red hematite, perhaps indicating sulfide at depth.

9. Potsdam sandstone is frequently mineralized at its base, judging from the limonitic material and hence low order anomalies are quite common over outcrops of Potsdam sandstone. The line of small anomalies running northward from the Balmat number three shaft is from a low mound of Potsdam sandstone.

10. The cause of most anomalies is not known because of swamps and paucity of outcrops. Anomalies of this type when they do not form a pattern or are not in a group of anomalies are not being considered at this time.

It is believed that the potential and actual discoveries made in only ten days of field work has amply justified the use of airborne electromagnetic surveying in St. Lawrence County, New York. When the short time in the field is considered, the discovery rate is in the nature of being phenomenal.

A REVIEW OF ANOMALIES SEEN IN THE FIELD

Ten days have been spent in the field checking conductivity anomalies in test areas which were detected by helicopter-borne electromagnetic prospecting equipment. Most anomalies have no visible cause because exposures are very incomplete. The nature of further work on such anomalies must be decided at a future date. However, in the short period in the field probable or possible sulfide deposits have been located and known mineralized zone extended or traced.

The following is a resume' of the field data obtained:

1. Anomaly J-20, Balmat Area, Test (4.7)

Flight line 19, 4/.7; line 20, 17/.8; line 21, 6/.1. The anomalies lie in the rock mapped as rusty gneiss, (Engel, 1953) [2/] west and southwest of the Kilburn prospect 1-3/4 miles north of Sylvia Lake. According to Dr. Prucha the sulfide content in the Kilburn pit was barely above the average for pyritic gneiss and the pyritic gneiss around the prospect should have only average anomalies for the pyritic gneiss.

However, the pyritic gneiss at the area of the large anomalies has been exposed by some pits (apparently not seen by Prucha) years ago, long enough to allow a pine tree four inches thick to grow in the middle of the main pit. This sulfide was not described. The vein dips 24° west, strikes No. 10 E and is 15-20 feet thick. The sulfide content seems to be about 30% by

2/ Engel, A.E.S. and Celeste G.; Bulletin G.S.A., vol. 64 (1953)

volume. The gangue is not normal for pyritic gneiss, for pyroxene is the most common mineral, and the main ore zone is not obviously schistose, as is most pyritic gneiss.

It is believed that this sulfide zone is an excellent pyrite prospect and the peculiarity of the gangue suggests that the mineralization may be related more to the marble than the rusty gneiss. Minor sphalerite was seen and it seems that under the conditions observed the lead and zinc possibilities should be tested.

2. Anomalies investigated: J-2, line 24, 4/1; J-3, line 23, 2/1; J-4, line 22, 6/1; J-5, line 20, 5/1; J-6, line 19, 2/1, 2/1; J-7, line 18, 3/.4; J-12, line 13, 4/1; J-10, line 12, 10/1; J-9, line 11, 16/1.1; J-8, line 10, 10/6 South Richville area; Test 4.5A

The anomalies are from a belt of rusty gneiss which is 7/8 of a mile southeast of Richville, trends southwest and has been described by Dr. Prucha as a series of discontinuous lenses and pods in the "rusty gneiss".

The "rusty gneiss" runs parallel to a railroad and power line and is in a wet swampy area. Therefore, conditions for determining zones of high conductivity were very poor. However, once the anomalies caused by cultural objects were eliminated, a set of anomalies still existed.

At each crossing of the known belt a distinct anomaly was obtained. Also, distinct anomalies were seen both northeast and southwest of the known zone, probably extending the trend of the rusty gneiss in both directions beyond the outcrops.

Line 10 (10/1) anomaly crosses the Cole mine running parallel to the local trend. The ship flew directly over an old incline around which a thickness of about 15-18 feet of pyritic ore is exposed. The pyrite, comprising perhaps 40% of the ore here, occurs as discontinuous pods 2 to 3 inches across and 4 to 5 inches long as dissemination and as thin (1 inch veins).

The total in-phase deflection is not very great because of flying parallel to the trend of the ore instead of perpendicular and because the ore dips shallowly to the east away from the flight line. The anomalous area on either side of the peak is caused by underlying pyritic schist and old dumps which seem to contain about 3-4% pyrite.

Of most significance here is the fact that on the next flight line east, number 11, an anomaly comparable to that on the Cole property exists (16/1.5). The railroad unquestionably adds to the anomaly but the wide anomalous area is definitely not caused only by the railroad. Over the conductor is a plowed field in which there are no outcrops. The suggestion is very strong that another sulfide body perhaps richer than the Cole (judging by the deflection) is in that area.

3. Anomaly Areas J-14 and J-15, South Richville area, Test 4.5A

Flight lines 4, 2/.3; line 5, 6/1; line 6, 5/2, 5/1, 5/1.7, 7/.8; line 7, 2-4/.4; line 8, 3/1, 3/.8; line 9, 2/.6, 1/.5.

The anomalies lie about two miles southwest of Richville and are in the marble around the nose of a granitic intrusive (phaccolith). One anomaly (5/2, line 6) is on a narrow pyrite vein about 600 feet north of the granite and is parallel to the contact. In prospect pits along the anomaly pyrite can be seen, amounting, perhaps to 10-30% by volume of the vein. The reasons for the other anomalies could not be seen.

The anomalies were originally believed to cross into the granite at the southeastern part of the granite, but outcrops of marble were found where the granite should be, and therefore the old maps are incorrect.

South and east of the granite the conductive zone is under tilled fields, and a stream cutting the glacial debris northeast of the anomaly discloses about 25 feet of sand and clay.

The contact of the marble and granite can be seen at one point near the farmhouse and minor sulfide is present, but the main anomaly apparently moves outward from the visible contact there and is southeast of the phaccolith about 300 to 400 feet. The northwest part of the anomabus zone is in a topographic low in which lies a swampy area of no outcrops. Clots of pyrite are visible in the marble north of the swamp, one being about three feet wide and ten feet long. It is in those outcrops that the sulfide vein occurs also.

In the granite there is specular hematite in thin crusts and a tourmaline pegmatite was seen at the northern edge. Quartz and quartz tourmaline float is common in the granite near the contact at the north edge.

This anomaly may be significant. The pattern of the anomaly around the nose of the granite is what one might expect if sulfides were deposited in marble by solutions moving upward under an inverted trough. The fact that lead and zinc sulfides were not seen in the marble is not necessarily unfavorable, for they might be concentrated at the contact in the zone of changing.

4. Anomaly J-19, Lake Bonaparte area, Test (4.9)

Flight line 10, 3/3, 3/3; line 11, 2/1, 6/3, 4/4; line 12, 2/1, 2/2, 2/2; line 13, 2/1, 4/2.

The anomalies here are in a V-shape and follow the schistosity. No reason for the anomaly was found because of lack of outcrops, but this property warrants further investigation.

5. Anomalies J-23, J-34, J-35, South Richville test area 4.5A south of Richville.

Flight lines 24, 2/1; lines 22 and 23 active zones; line 21, 2/.5; line 19, 2/.9; line 13, 3/.6.

The trend of discontinuous anomalies is about 2-1/2 miles southeast of Richville. The outcrops are sparse and swamps are prevalent. However, enough knobs with outcrops were seen to disclose the probable reason for the anomalies. The soil is locally deep red particularly at J-35, one either side of the road and low outcrops of dense, red hematite were found along the zone at several places. Some of the material seen is typical of the hematite ores of the St. Lawrence County, but much of the iron ore is a typical boxwork gossan. The hematite is within marble and probably is an indication of underlying pyrite, the substance probably detected. Cushing (1925) did not describe the iron ore shows in his report of the area, nor have any other papers been seen.

Geochemical testing of the soil and gossan is being undertaken preliminary to possible ground geophysical prospecting. The area seems to be an excellent prospect.

6. The Sylvia Lake pyrite belt

The in-phase anomalies have an amplitude of from 2 to 8, usually 3 to 5, and have in-to out-of-phase ratios of 4 to 1, with .7 to 1 the most common. The crossings were checked in the field at the south end of the belt, lines 4, 5, 6 and 7 and the Kilburn area, lines 18, 19, 20 and 21. The thinnest zone detected is at line 4 where the anomaly was 4/1. The bed is narrow with only about 5 feet exposed. Engel (1953) could not trace the unit southward from this point. At line 5, however, the bed becomes 25-30 feet wide.

At these exposures the limonite (oxidized from the pyrite) by volume, seems to be only about 4 to 5% of the total rock. About 1% graphite raises the conductivity.

The Kilburn area near Mud Lake has already been described.

7. Anomalies J-26 north, Balmat test area 4.7A, lines 21, 5/.6; and 22, 2/.6

The anomalies are in a northward trend from Balmat number three shaft.

These anomalies, although they are of small amplitude, were considered interesting because of its north-south trend. The anomalies on lines 21 and 22 were checked and found to be at a low north-south mound of Potsdam sandstone (not mapped previously), which was locally stained deep red from oxidized sulfide. Apparently the base of the Potsdam is mineralized in this area and hence is detectable.

8. Anomalies in St. Joseph Lead Company's mine area at Balmat. Test area 4.7, Flight lines 6, 7, 8, 9, 10, 11, 12 and 13.

The Balmat workings were not within the flight area, for the most part, because of the number of buildings, power lines and mine dumps. Anomalies are common, as can be seen on the map, but most are obviously due to cultural objects. Because of this interference, because of the difficulty of maintaining constant altitude around buildings and power lines, and because of the Balmat workings being mostly out of the flight area, the results are believed to be very unreliable.

9. Anomaly J-28, Balmat area, Test 4.7A. Flight line 4, 2/1, 2/1; southeast of Sylvia Lake, 150 yards

The anomaly is in a swamp and no outcrops were seen. The reason for its being noted is that it is in the area of the Parker deposit which was drilled by the U.S. Bureau of Mines.3/ According to the published data no sulfide deposits capable of being detected by the airborne equipment should occur there. Although small, the anomaly is distinct and indicates a conductor.

3/ U.S. Bureau of Mines R.I. 4417, "Investigation of Parker and Webb Zinc Deposits, St. Lawrence County, N.Y.", by H. P. Hermance and Robert S. Sanford (February 1949).

GENERAL COMMENTS ON THE METHOD

In a short period of time an important amount of information has been gained regarding the performance of the helicopter-borne EM equipment and in this time several excellent possibilities for economic deposits have presented themselves.

As a guide to where to look for sulfides the equipment seems invaluable. It is sensitive enough to pick up shallow dipping disseminated sulfides in the pyritic schist with unfailing regularity. Several conductors under swamps and plowed fields have been seen, demonstrating its probable power of penetration and discrimination.

There is little doubt that all deposits which will be flown over will not be detected. Pure sphalerite and low grade ore at depth obviously cannot be picked up. The practical depth limit of detection has not yet been determined nor will it be until some areas are drilled. Yet even with the indefinite limitations there seems little doubt that were the Balmat and Edwards sulfide deposits not discovered before this, the airborne EM method would have found them. Further exploration in light of the tests is believed to be highly desirable.

19 July 1956 James R. Dunn

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

July 24, 1956

Memorandum for the Files

From: Chief, Base Metals Division

Subject: Conference held on July 23, 1956 on:
Docket No. DMEA - 4051 (Lead-Zinc)
Roland F. Beers, Inc.
Agent for The American Syndicate
120,000 acres more or less leased or
optioned in St. Lawrence and Jefferson Counties, New York

and

Docket No. DMEA - 4133 (Lead-Zinc-Copper)
Roland F. Beers, Inc.
Manager for The American Syndicate
50,000 acres more or less of lands
leased in Fluvanna, Louisa, Spotsylvania
and Stafford Counties, Virginia

A conference was held July 23 with Dr. Beers and associates.

The gist of the conversation was that they will shortly submit a new drilling application for a Virginia area near that of DMEA-4133.

Also, that they will request a reconsideration on their DMEA-4051 application, since they believe that they have strong supporting evidence. I advised them that anything submitted would of course be given consideration.

W. R. Griswold

WRG/er 7/24/56

Copy to: Docket (2)
Base Metals (2)
Chron.

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

June 11, 1956

Re: DMEA-4051; Lead-Zinc, $609,370, Roland F. Beers, Inc., Agent for The American Syndicate 120,000 acres - leased or optioned in St. Lawrence and Jefferson Counties, N.Y.

Memorandum

To: W. R. Griswold, DMEA

From: O. M. Bishop, USBM

Subject: Review of subject application in light of information submitted in conferences by R. F. Beers, May 12, 1956

On November 9, 1955, the applicant proposed a $609,000 exploration program for a 291 square mile area in St. Lawrence, Jefferson and Lewis Counties, New York. The work proposed consisted of geologic reconnaissance, airborne electromagnetic and scintillation surveys, ground geophysics, geochemistry, core drilling, trenching and test shafting.

The size, scope, imagination, and the use of new exploration tools made the project interesting, but it was noted that the areas easily recognized as favorable are controlled by the St. Joseph Lead Co., and it might be best if the applicant made certain preliminary test flights with airborne electromagnetic equipment to learn whether whorthwhile anomalies would be produced.

This was done and on May 12, 1956, Mr. R. F. Beers presented the airborne EM recordings taken with helicopter equipment over the Balmat mine-Sylvia Lake areas and across the igneous complex-limestone contacts. Inspection of the anomalies and study of the lines of flight as plotted showed that swampy areas and the lake were recorded as an out-of-phase component of the induced secondary field, that the outcrop at Balmat with stocks of mine tailings was recorded as an increase in both the in-phase and out-of-phase component. Similarly anamolies were noted at the igneous-sediment contact zone known to contain masses of pyrite. However, where the flight line crossed the Sylvia Lake area which is the locus of some 100,000 tons of 6.2 percent zinc ore proved by core drilling, no anomaly whatever was recorded.

For this reason the test flights proved a failure in demonstrating the worth of the method in finding zinc ore bodies. Unless more positive evidence is developed to demonstrate the merit of EM surveys in the specific area I recommend the application be denied.

O. M. Bishop

O. M. Bishop

File Copy
Surname
Triswold
Gehon
Kilsgaard
Martin
Petersen

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

MAY 28 1956

Mr. Roland F. Beers, President
Roland F. Beers, Inc.
Post Office Box 1015
Troy, New York

Re: Docket No. DMEA-4051 (Lead-Zinc-Copper)
Roland F. Beers, Inc.
Agent for The American Syndicate
120,000 acres more or less leased or optioned in St. Lawrence and Jefferson Counties, New York

Dear Mr. Beers:

I refer to your submission of airborne test flight data pertaining to the cited project to representatives of the DMEA, Geological Survey and the Bureau of Mines, on May 1, 1956.

The data have been studied by the various groups concerned; certain expected anomalies were obviously present, whereas other areas of expectancy did not register anomalous conditions. It is hence our opinion that the results are not sufficiently conclusive to warrant the Government's participation in the proposed flight phase of the exploratory work.

However, if you should obtain anomalies, which you considered significant, as a result of work which you might do in this area, and which are verified by ground geophysics or geochemistry, we would be glad to give further consideration to a request for assistance. Such a program might be in the form of diamond drilling, or possibly some other standard method of exploration, in the anomalous areas.

We will hold in abeyance any further processing of your application pending communication from you.

Sincerely yours,

C. O. Mittendorf

Administrator

WHTriswold/ar 5/25/56

Copy to: Docket
Adar R File
Op. Committee
Mr. Pennington, USGS
Mr. Kiilsgaard, USGS
Base Metals
Region V (2)
Chron.

R.C.S.

FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : The Record DATE: May 25, 1956

FROM : Bill Dempsey

SUBJECT: Records presented by Roland F. Beers showing background noise level of helicopter-borne EM equipment

Attached is a copy of Mr. Beers's statement which accompanied the two records submitted.

Record 2: The observed drift, no matter what its cause, certainly appears small enough that adequate records can be obtained on short flight lines. The drift appears to be about 1/10 of an inch between traces in 20 inches. I am not certain exactly what distance is represented by 20 inches on this record but suspect it is somewhere between 8 and 10 miles. It is difficult to tell where the helicopter was above 200 feet as shown on these records. At the extreme end of the record there is a note that the helicopter has now reached a 200 foot elevation and just previous to that there is a stretch of about 10 inches where the helicopter is approaching 200 feet from some higher elevation.

Previous to that there are two sections of record about 20 inches long which I presume might have been taken at elevations in excess of 200 feet. However, there is no specific notation indicating such is the case. In viewing the deviations, I would say that none of them are large enough to justify further consideration as opposed to Mr. Beers's statement that further substantiating evidence (such as larger deflections of parallel adjacent flight lines) is required to justify their consideration. I believe that minor deviations no larger than those shown on this tape were presented to us as anomalous features observed during the course of Wisconsin flights.

Record 1: Record 1 supposedly "illustrates performance of the equipment on the ground while the helicopter engine is in operation, thus giving a measure of the noise and drift due to all sources except movement of the towed bird". It is interesting to note that, with about 60 inches of record, no drift is evident. Does this mean that the equipment does not drift while it is on the ground or maybe it just wasn't turned on? With regard to the statement that this test would simulate all noise except movement of the towed bird, I must point out that this is incorrect. There will be air turbulance, updrafts and air pockets which will impart mechanical impulses to the recorder. I have seen pens knocked out of their holders from severe bumps.

COPY

Summary: These are good looking records and are approximately what should be expected. However, I believe that they do illustrate the point that deviations sufficiently small as to require a reading glass to observe deviations from a straight line are not significant.

May 8, 1956.

Mr. Clinton Hanks,
Kingsbury, Hanes and Irvin,
750 King Building,
Washington 6, D. C.

Dear Mr. Hanks:

Enclosed you will find a brief compendium describing the records which are attached. These are for the use of Mr. Grimwald and his associates, and are submitted in response to a request from Mr. W. J. Dempsey.

I appreciate your delivering them to Mr Grimwald's office. Please ask him to return them when they have finished with them.

Sincerely,

Roland F. [illegible]

Roland F. [illegible]
President.

The attached records are presented to show the stability and background noise level of the helicopter-borne [illegible] developed by Aeromagnetic Surveys, Ltd. of Toronto.

Fig. 1. The two recorded traces show the in-phase (not [illegible]) and out-of-phase components. The scintillation counter recording is shown on the upper margin of the tape. These traces illustrate the performance of the equipment on the ground, with the helicopter engine in operation, thus giving a measure of the noise and [illegible] to all sources except movement of the towed bird.

Fig. 2. Here the recorded traces show the response of the [illegible] equipment as the helicopter approaches the 200 foot flight level from a higher elevation. The exact altitude at which these records were taken cannot be ascertained at this time, but the records illustrate the response to be expected at heights higher than [illegible].

It will be noted that the in-phase trace shows no deviation large enough that they would be picked in the course of routine [illegible] reduction as significant signals. Whatever slight deviations may be discerned are so small that they would require further [illegible] supporting evidence (such as larger deflections on parallel adjacent flight lines) to justify their further consideration.

The records in Fig. 2 also illustrate the normal [illegible] drift encountered in system airborne operations. The observed drift is almost entirely due to the small uncompensated component of the [illegible] permanent which remains in the towed bird. So long as the drift does not exceed the observed amount, no problems [illegible] linearity or sensitivity are anticipated. At this point [illegible] the recordings may be absolutely explained by the [illegible] [illegible] and [illegible] [illegible]

RECEIVED
MAY 23 1956

The Record

May 4, 1956

Bill Dempsey

DMF A
Hos'

On May 1, together with Mr. Nelson and others, I was shown airborne electromagnetic results obtained over areas in upper New York by Mr. Beers.

Area 1 included the Cole mine and Hendricks prospects. Recognizable anomalies were evident in the vicinity of the Cole mine. This mine had been worked out but a fifty-foot surface cap remains together with tailings dumps. It is, of course, possible that the anomalies are associated with the dump material or the installations remaining on the property rather than with the cap. As I recall, the Hendricks prospect did not show a recognizable anomaly. Lakes and swamps in the area also gave recognizable anomalies, albeit not very large.

Area 2 included the Kilburn Pit and the Parker Deposit (just east of Sylvia Lake). One very pronounced and interesting anomaly was observed in Area 2. This could be seen on one line as a more pronounced anomaly but there was evidence on adjoining line that the feature was lineated. Anomalies on these adjoining lines were considerably smaller and perhaps might not have been considered significant without the other evidence. Over the Parker Deposit no anomalies were recognized. A lineated feature in the massive nonsilicified Grenville was recognized along three or four lines. The large interesting anomaly also appeared in the massive Grenville but close to its contact with the Rusty gneiss. It did not appear to me that the Rusty gneiss was indicated by a recognizable anomaly.

In general the records taken in New York seemed to me to be more promising than those displayed previously which were taken across areas in Wisconsin.

IN REPLY REFER TO:

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

RECEIVED
MAY 23 1956

May 3, 1956

Memorandum

To: The files

From: N. E. Nelson

Subject: Notes on conference in D.M.E.A. room, May 1st, 1956.

4051

Present: Roland F. Beers) Roland Beers, Inc.
C. Haynes)
W. R. Griswold
Walter Klugescheid
Wm. Dempsey
N. E. Nelson

Mr. Beers, by maps and strip-charts, showed the results of two test airborne geophysical surveys of small test areas north and south of Gouverneur, N. Y.

The areas selected contain known deposits of pyrite and zinc-pyrite ores. A helicopter equipped with E.M. apparatus flying at approximately 30 miles per hour was used in the work.

The Cole and Hendricks, old time productive pyrite mines, more or less centered the northerly area.

Sylvia Lake with the nearby producing zinc-lead-pyrite Balmat mine, an old time pyrite pit, the Kilburn mine, and a well drilled zinc prospect, the Parker property, are in the southern area. Power lines (2) and a railroad cross the swampy to low lying northern area and Sylvia Lake and swamps mark the flat southerly tract.

The strip-charts show plainly the railroad, the 115,000 volt power line, the known pyrite deposits, the westerly part of the Balmat mine and several anomalous areas caused by 'unknowns.' The lake, swamps and probably creeks caused easily discerned 'lifts' in the lines on the strip-charts. One relatively striking 'lift' appears on Line 20 of the southerly survey. The cause of it and the less significant appearing 'lifts' on lines 22 and 23 to the north is not known. Line 21 lacked the to be expected 'lift.'

The Parker zinc deposit did not show a 'lift.' That Mr. Beers knew of it is not certain. He had no reason to offer for the lack of registration.

Mr. Beers said only the 50-foot surface sill pillar remains in the westerly part of the Balmat mine and seemed satisfied with the 'lift' it gave.

Resumé

The instruments registered the presence of 2 known pyrite deposits and the Balmat zinc-pyrite-lead deposit. Also showed anomalous conditions in other areas, at least one of which would seem to warrant investigation.

The Parker zinc deposit gave no response.

N. E. Nelson

N. E. Nelson

April 27, 1956

RECEIVED
MAY 2 - 1956

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

Re: Docket No. DMEA-4051
Docket No. DMEA-4052
Docket No. DMEA-4133

Dear Mr. Mittendorf:

Enclosed you will find three copies of a letter dated April 11, 1956 from Petroleum Helicopters, Inc. This letter outlines the services offered by Petroleum Helicopters, Inc. and the costs involved which would pertain to our helicopter EM exploration program.

Within a few days we hope to receive price bids from several companies who are prepared to make aerial phtomosaics from aerial phetographs. When we receive these bids we will also prepare copies and forward them to you.

Yours very truly,

ROLAND F. BEERS, INC.

W. Wallace MacGregor
Administrative Assistant

wwm/h
encls.

PETROLEUM
HELICOPTERS
INC.

P. O. DRAWER 2150, S. L. I. — PHONE CE 5-2456 — LAFAYETTE, LA.

RECEIVED
MAY 2 - 1956

April 11, 1956

Roland F. Beers, Inc.
P. O. Box 1019
Troy, New York

Attn: Mr. Wallace MacGregor
Administrative Assistant

Gentlemen:

We are in receipt of your letter dated April 6, 1956 requesting information regarding helicopter operations.

Our organization, Petroleum Helicopters, Inc., has been operating helicopters since February 1949 in conjunction with various endeavors in the exploration field. At present writing, we operate 20 Bell Model 47s and four S-55 Sikorsky type helicopters; flying an average of 1500 hours per month. It is obvious, from your letter, that you are primarily interested in the S-55 Sikorsky and, therefore, offer to you the services of one S-55 Sikorsky, complete with pilot, mechanic, fuels, oils and lubricants, spare parts and supplies, insurance and subsistence for our personnel, for a basic charge of $450.00 per day (with a guarantee of 22 operational days per month) plus $75.00 per flight hour. These charges will start when the helicopter and crew depart from the City of Lafayette and will continue until their return.

We enclose a brochure which we feel describes the service we render, and will serve as a basis for your decision should you decide to utilize our services.

Very truly yours,

Frank W. Lee
Vice President

FWL:nl
enclosure
cc: New Orleans
J. E. Hurley

RECEIVED
APR 17 1956

April 13, 1956

Mr. C. O. Mittendorf
Administrator
Defense Minerals Exploration Administration
Department of the Interior
Washington 25, D. C.

Re: Dockets Nos. DMEA-4051, 4052 and 4133
(Lead - Zinc - Copper)
Roland F. Beers, Inc., Agent for the
American Syndicate

Dear Mr. Mittendorf:

Following our discussion of April 10, we have obtained quotations on helicopter-borne EM equipment from Aeromagnetic Surveys, Ltd., of Toronto; helicopter services from Keystone Helicopter Corporation of Philadelphia; and photomosaics to be used in fixed-wing and helicopter operations. Appendix A attached hereto summarizes our estimates of the cost of the EM equipment and the helicopter.

Enclosed are copies of quotations received from Keystone and Hycon Aerial Surveys of Pasadena, California which cover costs of a helicopter and photomosaics. The estimates of the cost of the EM equipment for use in a U. S. helicopter, as shown in Appendix A, are contained in blank contract forms submitted to us by Aeromagnetic Surveys, which will require amendment in certain respects not affecting cost. We will be glad to furnish you with copies of the pertinent contracts after execution. We are now enclosing photocopies of the contract recently executed with Hycon which provides for the services of the Canadian Canso (PBY) and the fixed-wing airborne EM equipment.

Subject to the foregoing, we believe that these documents complete all the requirements of our pending applications, DocketsNos. 4051, 4052 and 4133. If you find it necessary for us to provide further information, we will be glad to comply with your request.

In our opinion, on the basis of the quotations which we have now received, the costs of the airborne portion of the three exploration projects will be well within the estimates set forth in our pending applications. In fact, we feel that the actual costs of the airborne explorations will be somewhat less than the amounts which we have estimated.

As I indicated in our discussion on April 10, we have completed the testing of the helicopter-borne EM equipment in the Wisconsin area, with very gratifying results. The Canadian helicopter equipped with EM equipment has now been transferred to the Adirondacks area where it will be used in exploratory work until approximately May 12, when, under the authorization received from the Civil Aeronautics Board, it will be necessary to return this helicopter to Canada. Thereafter, helicopter explorations with EM equipment will be continued with a helicopter furnished by Keystone.

In addition to the explorations in which we will now be engaged with the helicopter, we will also be proceeding with the explorations with the fixed-wing aircraft. We anticipate that the PBY will be transferred to Virginia within approximately ten days, to proceed with the intensive airborne explorations there. In view of the advanced stage which we have now reached, we are obviously hopeful that action may be taken by your Administration on our applications at an early date. We will be grateful for your prompt consideration of these applications.

Sincerely yours,

Roland F. Beers

Enclosures

Appendix A

RECEIVED
APR 17 1956

Estimates of Cost of Helicopter-borne EM

1. Quotation received from Aeromagnetic Surveys, Ltd., Toronto, Ontario, Canada.

   Complete service, including Bell 47-G helicopter, ASL EM equipment, 4 operating personnel, with salaries and expenses ..... $14.00 per line mile.

   Ferrying charges, per line mile 2.00

The initial operations in the United States with this equipment have been conducted in the Upper Mississippi Valley lead-zinc district of Wisconsin-Iowa-Illinois, and are being continued in the Northern New York zinc-lead district.

Pursuant to an order of the Civil Aeronautics Board, we are authorized to operate the Canadian aircraft for a period of thirty days only, at the end of which it must be returned to Canada. Consequently, it has been necessary to obtain additional quotations for a helicopter to be supplied by U. S. operators. The EM equipment for use in the U. S. aircraft will be obtained from ASL in Canada under a separate contract.

The cost estimates given below are for two types of helicopters: (a) Bell 47-G, as originally furnished by ASL, and (b) Sikorsky S-51, which Keystone Helicopter Corp. of Philadelphia, Pa., offers to furnish. It should be noted that the estimated unit cost of operating the Sikorsky helicopter is lower than that for the Bell, and it is contemplated that a Sikorsky, which has superior performance characteristics, will be used for the continuation of the work after the Bell is returned to Canada.

2. Estimate of unit cost, in dollars per line mile, of airborne EM surveys, using ASL EM equipment under lease-rental-royalty contract and Bell 47-G helicopter.

(a) ASL EM equipment (6 months basis)

Monthly rental fee	$ 1,750.00		
Estimated monthly royalty (@ $2.00 per line mile)	7,500.00		
Salary and expenses, technician (1)	1,000.00		
Total monthly charge	$10,250.00		
6 months charge, as above		$61,500.00	
Initial contract fee		3,000.00	
Total ASL charges, 6 months			$ 64,500.00

(b) Helicopter charges, Bell 47-G

Monthly charge	$ 5,000.00		
Estimated hourly charge (125 hrs. @ $15.00 per hour)	1,875.00		
Total monthly helicopter charges	$ 6,875.00		
6 months charges, as above		$41,150.00	
Estimated ferrying charges		12,000.00	
Total helicopter charges, 6 mos.			$ 53,150.00
Total 6 mos. operating cost			$117,650.00

Estimated line miles: 30 mph x 5 hr. per day x 25 days per mo. x 6 mos.: 22,500 line miles

Estimated cost per line mile: $117,650.00 ./. 22,500 = $5.25 per line mile

3. Estimate of unit cost, in dollars per line mile, of airborne EM surveys, using ASL EM equipment under lease-rental-royalty contract and Sikorsky S-51 helicopter.

(a) ASL equipment, lease-rental-royalty contract (6 mos. basis)

Monthly rental fee	$ 1,750.00		
Estimated monthly royalty	15,000.00		
Salary and expenses, technician (1)	1,000.00		
Total estimated monthly ASL charge	$17,750.00		
6 months charge, as above		$106,500.00	
Initial contract fee		3,000.00	
Total ASL charge, 6 mos.			$109,500.00

(b) Helicopter charges, Sikorsky S-51

Monthly charge	$ 7,000.00		
Estimated hourly charge @ $40.00 per hr.	5,000.00		
	$12,000.00		
6 months charges, as above		$72,000.00	
Estimated ferrying charges		12,000.00	
Total 6 mos. helicopter charges			$ 84,000.00
Total 6 mos. operating cost			193,500.00

Estimated line miles: 60 x 5 x 25 x 6: 45,000 line miles

Estimated cost per line mile: $193,500.00 ./. 45,000 = $4.30 per line mile

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APR 1 0 1956

COPY/cmh

KEYSTONE HELICOPTER
CORPORATION

LAND TITLE BUILDING • PHILADELPHIA 10, PENNSYLVANIA
RITTENHOUSE 6-9872
Cable Address: KEYCOPTER

PETER WRIGHT, President PETER M. FETTEROLF, Vice President GODFREY A. ROCKEFELLER, Operations Manager

April 9, 1956

Mr. Wallace MacGregor,
Administrative Assistant
Roland F. Beers, Inc.
P. O. Box 1019
Troy, New York.

Dear Mr. MacGregor:

In reference to your letter of April 3 and our recent telephone conversation, we can make available to you one (1) Sikorsky S-51 helicopter which we believe might well suit the EM operation which you are doing. This helicopter has a 450 h.p. engine and a cruising speed of approximately 80 miles per hour. It has a gross weight of 5300 pounds and a weight empty of 3900 pounds. We estimate that for two-hour flights besides the pilot, fuel, oil, it could carry about 700 pounds of payload. However, for your type of operation, we would recommend that the EM equipment be lightened as much as possible which would result in better performance.

We could make one of these helicopters available to you for $7,000.00 per month plus $40 per flight hour. We would expect a reasonably long contract in order to put one of these ships at your disposal.

We would suggest that if you are interested in this particular ship you advise us as soon as possible as there are not many available but we do know where we could get hold of one or two during the next few weeks. We hope that your operations are progressing a little more satisfactorily and would like to be of any help that we can.

Very truly yours,

KEYSTONE HELICOPTER CORPORATION

(Original signed by Peter Wright)

Peter Wright

PW/cmh

COPY/cmh

SYcamore 9-4171
PYramid 1-1700

Hycon Aerial Surveys, Inc.

1020-1030 S. ARROYO PARKWAY
PASADENA 2, CALIFORNIA

CABLE ADDRESS
HYCON PASADENA

AERIAL PHOTOGRAPHY • AERIAL TOPOGRAPHIC MAPS • PRECISE AERIAL MOSAICS
RELIEF MAPS • AIRBORNE MAGNETOMETER & SCINTILLOMETER SURVEYS

April 12, 1956

Messrs. Hanes & Irwin
710 Ring Building
Washington, D.C.

Gentlemen:

Reference is made to a wire received from Mr. Wallace MacGregor dated April 11, 1956, requesting the cost for preparation of aerial photo mosaics from photographs supplied at no cost to us. Please be advised that the total cost for the preparation of the mosaic, including 1:1 reproductions from copy negatives and the delivery of four sets of mosaics on single weight, semi-matte paper will be $3.00 per photograph. In the event that the number of photographs is greater than 1000, the cost will be reduced to $2.50 per photograph.

Very truly yours,

HYCON AERIAL SURVEYS, INC.

Ivan I. Sloan, Vice President
Manager of Sales & Contracts

IIS:sp
cc: MacGregor

AGREEMENT made this 13th day of March, 1956,

BETWEEN:

HYCON AERIAL SURVEYS, INC., a company incorporated under the laws of the State of Delaware (hereinafter called "HAS")

OF THE FIRST PART

- and -

ROLAND F. BEERS, INC., a company incporporated under the laws of the State of New York (hereinafter called the "Customer")

OF THE SECOND PART

WITNESSETH that each of the parties hereto agrees with the other, and each in consideration of the agreement of the other, as follows:

1. HAS agrees to carry out airborne geophysical surveying on the Customer's behalf in the United States of America in accordance with the terms and conditions hereinafter set forth, and at the rates specified in Schedule "A-1" attached hereto.

2. HAS shall provide for the purpose of such a survey a suitable aircraft, equipped with a Varian magnetometer and suitable e. m. equipment, together with a positioning camera and radio altimeter, in accordance with the specifications contained in Schedule "B" attached hereto.

3. The survey flying shall be carried out in accordance with the specifications contained in Schedule "B" attached hereto.

4. At the written request of Customer, but not otherwise, HAS shall reduce and correlate all data and prepare therefrom contoured maps in accordance with the specifications contained in Schedule "B",

attached hereto. In the event HAS has performed these services, but not otherwise, HAS will supply to the Customer one original and three copies of each map.

5. HAS agrees to complete delivery of all photographs, records and profiles not later than one month after the completion of flying, and as much sooner as possible.

6. HAS agrees that upon completion of this contract, all original records and final presentation of the data shall be and shall remain the property of the Customer, and that such data will be delivered to the Customer within four weeks of the termination of the contract, unless the Customer otherwise instructs.

7. HAS agrees that it shall maintain strict security over all information developed during the performance of the contract, and will not divulge any such information, except where necessary to perform its obligations under this contract and to persons authorized by the Customer, unless required by law to do so.

8. HAS agrees that in conducting the operations contemplated under this agreement it shall work as an independent contractor, and not as the agent or servant of the Customer.

9. The following insurance will be carried by HAS during the period of the contract and HAS will furnish customer with Certificates of Insurance as scheduled below:

   (a) Automobile Property Damage Liability Insurance in the amount of $100,000.00, any one accident.

   (b) Property Damage Liability Insurance (excluding automobile and aircraft) in the amount of $500,000.00, all accidents.

(c) Bodily Injury Liability Insurance (excluding aircraft) in the amount of $1,000,000.00, each person, each accident, including passenger liability.

(d) Aviation Insurance, Bodily Injury and Property Damage Liability in the amount of $1,500,000.00.

(e) Workmen's Compensation Insurance in an amount required by law, covering operations in each of the respective states involved in this agreement.

10. The Customer represents that the Customer has the right to perform or cause to be performed, and possesses all necessary permits and licenses to carry out geophysical exploration work on the lands referred to in paragraph 1, hereof. HAS represents that the aircraft and equipment used in it are properly licensed to enable it to perform its obligations under this contract. HAS hereby agrees to hold the Customer harmless against any claim of patent infringement arising out of the use of equipment supplied by HAS and from damages arising from such claims.

11. This contract shall be interpreted under and in accordance with the laws of the State of California.

12. In the event of any dispute as to the interpretation of any provision of this agreement or the agreements attached hereto as Schedule "A-1" and Schedule "B", it is agreed that such dispute shall be settled by arbitration in accordance with the rules of the American Arbitration Association, or by such other method of arbitration as shall be agreed upon between the parties hereto.

13. HAS agrees to start the work on the date specified in Schedule "A-1" attached hereto.

14. If and whenever either party desires to give notice to the other party under or in connection with this agreement, such notice shall be effectively given if sent by registered mail to HAS at 1030 South Arroyo Parkway, Pasadena 2, California, and to the Customer, addressed as follows: P.O. Box 1019, Troy, New York. Either party may change the address for notice as above set forth at any time by notifying the other party in accordance with the provisions hereof. Any such notice shall be considered as having been so given at the time of the deposit thereof in the Post Office in the United States or in the event that the Customer resides outside of the United States, in the Post Office of the country of the Customer's residence.

15. HAS hereby agrees that the Customer may cancel this contract at any time by notice in writing before HAS crews leave their base of operations for the project area. If cancelled subsequent to the inception of the work, the Customer agrees to pay, at the agreed rate, for all work completed up to the time of such cancellation, plus actual costs of mobilization and demobilization, as set forth in the attached schedule of such costs.

16. HAS hereby agrees that the customer has the right to revise the flight plans. If HAS so requires, a delay of forty-eight (48) hours in executing such revised plans is permissible, but no stand-by charges to customer will be made by HAS, if aircraft is made inoperative by HAS through any such delay.

17. The Customer agrees to pay HAS standby charges at the agreed upon rate provided that the aircraft is held inoperative for the Customer's convenience, at the Customer's order.

18. It is agreed that this contract shall extend to and be binding upon the parties hereto, their heirs, executors, administrators, successors and assignees.

IN WITNESS WHEREOF the parties hereto have executed these presents:

ATTEST:

HYCON AERIAL SURVEYS, INC.

By _____
Ivan I. Sloan, Vice President
Manager of Sales & Contracts

Witness:
~~ATTEST:~~

ROLAND F. BEERS, INC.

By _____
Roland F. Beers, President

SCHEDULE "A" TO AGREEMENT DATED MARCH 13, 1956, BETWEEN:

HYCON AERIAL SURVEYS, INC.

- and -

ROLAND F. BEERS, INC.

RECEIVED

Hycon Aerial Surveys, Inc. is prepared to carry out an airborne electromagnetic test survey of 240 line miles followed by 600 miles of e. m. profiling in the Wisconsin-Illinois area as shown on the map supplied by the Customer at the following rates, and in addition such other areas as may be designated by the Customer for test and/or exploration during the term of this agreement-[redacted]

e7b.

1. Cross country at $1.00 per mile to be based on actual mileage flown in bringing the aircraft from its previous base of operations to Dubuque, Iowa.
2. Flying of the above areas at a rate of $13.00 per linear mile of profile, for e.m. surveys alone, and at the rate of $17.00 per linear mile of profile for combined e.m. and aeromagnetic surveys. Use of Varian magnetometer will not be included except at specific request by Customer to HAS in writing.
3. Data Reduction at $4.00 per linear mile of profile, when specifically ordered by Customer but not otherwise.
4. Spotting of aircraft flight path in the field at $35.00 per man per day plus travel expenses of men assigned to the job in going from Pasadena, California, to Dubuque, Iowa. This service is supplied at the option of the Customer.

5. Standby charges in accordance with Section 17 of the agreement at a rate of $1,200.00 per day.

6. The above schedule will commence at Dubuque, Iowa, on or before April 1, 1956, and will be continued until terminated as provided in the attached Agreement, except for a period during which subject equipment will be engaged in a special test program for another Customer. It is expected that this work will be completed in approximately fifteen (15) days; however, this is subject to weather conditions existing within the area.

HYCON AERIAL SURVEYS, INC.

By Ivan I. Sloan

Ivan I. Sloan, Vice President
Manager of Sales & Contracts

ROLAND F. BEERS, INC.

Accepted by Roland F. Beers

Roland F. Beers, President

SCHEDULE "B" TO AGREEMENT DATED: March 13, 1956

BETWEEN: HYCON AERIAL SURVEYS, INC.

- and -

ROLAND F. BEERS, INC.

SPECIFICATIONS

AREA

The area to be selected by the Customer.

FLYING

(a) Flight line spacing will be according to the Customer's instruction.

(b) Flight direction will be according to the Customer's instruction.

(c) Average terrain clearance of the aircraft when recording data will be approximately 500 feet, consistent with the type of terrain and the safety of the aircraft.

EQUIPMENT

(a) An airborne radiation detector and auxiliary equipment suitable for measuring the radioactive emanations which can be recorded at a ground clearance of 500 feet.

(b) An electromagnetic device recording the phase shift between primary and secondary fields where the primary field is transmitted at two frequencies.

(c) A radio altimeter mounted in the aircraft to provide a continuous record of ground clearance.

(d) A 35 mm. camera mounted in the aircraft and synchronized with all of the above records to provide accurate positioning of these records with respect to the ground.

(e) A Varian magnetometer for measuring the magnetic field of the earth.

DATA REDUCTION AND MAPPING

(a) HAS will provide planimetric base maps at a scale of 2,640 feet to one inch, traced from existing maps or photographic mosaics.

(b) The final map will be in the form of a tracing produced from the base map described in paragraph (a) above.

(c) Regions showing anomalous radioactivity will be indicated on the map described in paragraph (b) above.

(d) The location of electrically conductive bodies will be shown on the map described in paragraph (b) above.

(e) The magnetic data will be shown by suitable contour intervals on the map described in paragraph (b) above.

(f) In addition to the tracing described in paragraph (b) above, HAS will also supply the Customer with three ozalid prints of each map and all original records.

COPY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Washington 25, D. C.
Box 165
Platteville, Wis.

March 24, 1956

DMEA-4051

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

Dorlet

Dear Bob:

American Syndicate is supposed to have an airplane in the district in the next day or so. The plane will be here for about one month and will test several areas during the month.

The "supposed" actually means something this time. The Syndicate wheels are in town and are eager to start.

I am probably a few months behind in my next thought, but I will pass it along anyway.

American Syndicate is an exploration company and may or may not have ideas about producing any ore found. This is different than most DMEA projects as most loans go to companies that intend to produce ore soon after it is found. American Syndicate may find ore only for the purpose of selling "ore in the ground" to producing companies. This could cause a long delay between finding ore and mining ore; longer than the current 10 year lien used by DMEA.

I recommend that DMEA try to determine the time lag between discovering and producing large amounts of ore in this district. If the lag is greater than 10 years, I think the time of the DMEA lien should be increased also.

Sincerely yours,

/s/ T. E. Mullens

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

RECEIVED
MAR - 6 1956

Docket

March 5, 1956

Memorandum

To: George C. Selfridge, Chairman, DMEA Operating Committee

From: Mining Engineer, Eastern Experiment Station

Subject: DMEA Docket No. 4051 (Cu, Pb, Zn)
Roland F. Beers, Inc., Troy, N. Y. Agents for
The American Syndicate
(Northwestern Adirondacks, N. Y.)

Since my memorandum of February 20 commenting on the subject application, further inquiries have been made.

The Horman Associates, Inc. was contacted and in turn the Hycon Mfg. Company called this office by phone. The Hycon Aerial Surveys, Inc. estimated the cost of an aerial survey at $13.00 to $17.00 per flight mile, varying with the information required. This estimated cost includes reduction of notes, maps and interpretations.

Assuming that information described by the Hycon Aerial Survey, Inc. would be sufficient, then the cost of Stage I as outlined in my memorandum of February 20 could be reduced considerably. Only the contract cost of the airborne survey would be necessary. More detailed information is expected from the Hycon Mfg. Company's office in Pasadena, California at an early date.

W. T. Millar

W. T. Millar

cc: V.J.Lynch
R.A.Laurence

ROLAND F. BEERS, INC.

OFFICE AND LABORATORY:
447 PINEWOODS AVENUE
PHONE ASHLEY 2-2351

MAIL ADDRESS:
POST OFFICE BOX 1019
TROY, NEW YORK

February 29, 1956

Docket

RECEIVED
MAR - 2 1956

Answered

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

Re: DMEA Docket No. 4051

Dear Mr. Mittendorf:

The additional enclosed information has been gathered to assist you in the evaluation of our Adirondack exploration program. It includes verifax copies of correspondence from the following companies:

Joy Manufacturing Company (Enc. 1)
Lucius Pitkin, Inc. (Enc. 2)

We will continue to send you other information as it becomes available.

Yours very truly,

ROLAND F. BEERS, INC.

J. R. Dunn

James R. Dunn

jrd/h
Encls.

FEB 21 1956

ENCL. 1

RECEIVED
MAR - 2 1956

JOY MANUFACTURING COMPANY
800 WOODLAND AVENUE
MICHIGAN CITY, INDIANA
TELEPHONE 7-7231

EXECUTIVE OFFICES
HENRY W. OLIVER BUILDING
PITTSBURGH 22, PA.

February 20, 1956

AIR MAIL

Mr. Wallace MacGregor
Roland F. Beers, Inc.
P.O. Box 1019
Troy, New York

Dear Mr. MacGregor:

This will acknowledge receipt of your letter dated February 14th and duly completed questionnaire form in which you have set forth pertinent data in connection with proposed core drilling for the exploration of lead and zinc deposits near Gouvernour, New York.

We understand that at the present time, you require preliminary estimate of the drilling costs so that you can provide these costs in your budget for the year. We further note that this drilling will not get under way until July or August of the present year.

Based on the information as set forth in the questionnaire form, our tentative price for drilling with "EX" fittings to depths of 500 ft. will be at the rate of $3.25 per ft., and the price for drilling from a depth of 500 ft. to a depth of 1000 ft. will be at the rate of $3.50 per ft. These prices are based on a minimum of 5,000 ft. of drilling.

In addition to the per foot prices, it would be necessary that you furnish core boxes for the cores and also furnish suitable roads for movement of the drilling equipment between holes. We understand that water for drilling purposes would be within 1,000 ft. of the drill holes, and our price includes pumping of the water from the source to the drill holes.

We do not anticipate any reaming, casing or cementing of the drill holes, but in the event such work becomes necessary, then it will be performed at the rate of $50.00 per 8-hour shift plus cost of materials used up.

We would furnish for this proposed drilling one of our modern Joy #12-B gasoline driven core drills complete with operating equipment and would conduct the drilling operations on the basis of two 8-hour shifts per day

and six days per week. We can make the equipment and skilled drill crew available on short notice.

As and when you are about ready to receive firm bids covering the proposed drilling, we would like to be given an opportunity of examining the location of the proposed drilling and discussing the work more fully with your representative. When this examination has been made, we will then quote firm prices covering the drilling and will forward our agreement to cover.

Thanking you for giving us an opportunity of quoting on your requirements, and hoping to hear from you at some later date.

Yours very truly,

JOY MANUFACTURING COMPANY

W. J. Pilarski

W. J. Pilarski, Mgr.
Contract Drill Division

WJP/et

ENCL. 2

REC'D FEB 24 1956

ERSKINE B. MAYO
CHAIRMAN OF THE BOARD

ROBERT H. BELL Ch.E. Ph.D.
PRESIDENT
TECHNICAL DIRECTOR

FREDERIC H. WRIGHT
VICE PRESIDENT
METALLURGIST

ERSKINE D. MAYO, JR.
SECRETARY AND TREASURER

HARRY R. HALL
SAMPLING DIRECTOR

CHARLES A. JEDLICKA, Ph.C.
ASSISTANT TO PRESIDENT

Lucius Pitkin, Inc.

ESTABLISHED 1885
METALLURGICAL CHEMISTS & CONSULTANTS
LABORATORIES
PITKIN BUILDING
47 FULTON STREET, NEW YORK 38, N. Y.

ANALYSES
ASSAYS
CONSULTATION
METALLOGRAPHY
RESEARCH
SAMPLING
WEIGHING
SHIPPERS' REPRESENTATION
SPECTROSCOPY
X-RAY FLUORESCENCE
CABLE ADDRESS: NORTHP
TELEPHONES
BEEKMAN 3-2737 [illegible]

February 23, 1956

RECEIVED
MAR - 2 1956

Roland F. Beers, Inc.
P. O. Box 1019
Troy, New York

Attention: Mr. Wallace MacGregor

Gentlemen:

This is in reply to your letter of February [illegible], in which you have given us additional information concerning soil and rock samples which you may wish to have analyzed.

We are pleased to quote as follows:

No. of Samples	Zinc	Copper	Lead
1	$10.00 per sample	$8.00 per sample	$8.0[illegible] per sample
2 to 5	9.50 " "	7.50 " "	7.5[illegible] " "
6 to 25	9.00 " "	7.00 " "	7.0[illegible] " "
26 plus	8.50 " "	6.50 " "	6.[illegible] " "

If it is necessary for us to prepare the sample by crushing and grinding, there will be an additional charge of approximately $1.50 per sample for the average size.

We note that you estimate the total number of samples to be submitted as greater than one thousand. We assume they would be coming in over a period of time. Could you give us some idea of approximately how many samples would be submitted per week, or month?

We are pleased to have this opportunity of writing to you and hope that we may be of service. If you have any further questions, please feel free to communicate with us.

Very truly yours,

LUCIUS PITKIN, INC.

[illegible]

ROLAND F. BEERS, INC.

OFFICE AND LABORATORY:
447 PINEWOODS AVENUE
PHONE ASHLEY 2-2351

MAIL ADDRESS:
POST OFFICE BOX 1019
TROY, NEW YORK

February 27, 1956

RECEIVED
MAR - 1 1956

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

Re: DMEA Docket Nos. 4051, 4052 and 4133

Dear Mr. Mittendorf:

Since sending you the results of airborne EM test flights in Canada, the ASL helicopter has been flown over three test areas with excellent results. I have examined these records and have written a brief memorandum on them. Four copies of this material are enclosed for your use and retention.

You will recall that we proposed to survey substantial areas with the helicopter if it proved satisfactory. It is now our intention to fly it over the three test areas in Wisconsin designated by your office. These records will be forwarded immediately for your consideration as soon as they are received.

If we receive CAB and Bureau of Immigration approval to bring in the helicopter and crew from Canada according to our schedule, we should start these operations within the next four weeks.

Sincerely yours,

Roland F. Beers

Roland F. Beers

rfb/h
Encls.

RECEIVED
MAR - 1 1956

DEMONSTRATION OF HELICOPTER EM

The accompanying prints of airborne EM recordings were taken from the ASL helicopter-borne equipment over known conducting ore bodies in Canada. With reference to these records, the operating principles of this equipment will be explained.

The primary and secondary field coils are rigidly mounted in a cylindrical frame of Fibreglass which is towed by the helicopter 100' above the ground. The circular transmitter coil is mounted in a vertical plane perpendicular to the direction of flight. The detector coil is placed in a parallel plane along the axis of the assembly at a distance of 20 feet from the transmitter coil. A compensator coil between the transmitter and receiver coils provides the reference voltage with which the detector coil voltage is compared in phase and magnitude. Alternating current at a frequency of 4000 cps in the transmitter coil produces the primary electromagnetic field which induces secondary fields in conducting materials at and below the surface of the earth. The detector coil generates a voltage proportional to the resultant (i.e. primary and secondary) field. The component of detector voltage arising from the primary field is nulled out by voltage received from the compensator coil. The residual voltage is proportional in amplitude and phase to the corresponding elements of the secondary field. The recorder writes a continuous record of the amplitudes of the in-phase and out-of-phase components of the secondary field. The sensitivity of the detector is such as to give a full scale deflection of the two-pen recorder for a secondary field intensity equal to 0.06% of the primary.

In operation, earth conductors are found to produce deflections in both components. Surface- and ground-water show out-of-phase deflections only. Surface metallic conductors, such as railway tracks, steel structure, power lines, etc. show in-phase and out-of-phase deflections. Conducting ore bodies at or beneath the surface show significant deflections both in- and out-of-phase components. Mine tailings show marked increase of out-of-phase over in-phase, indicating the disseminated nature of the conducting mass. Test records attached hereto indicate that this method of detection may have greater detection capability and greater power in resolving ore grades than the ASL fixed-wing two frequency method. Further tests are required to confirm this possibility.

In the attached records, the in-phase is shown on the trace which at zero usually occupies the position to the left of the out-of-phase trace. Adjustment for zero drift is sometimes necessary at the beginning of a run.

Figure 1 is a record taken over a sulfide deposit reported in The Northern Miner, December 15, 1955, as a discovery by Rio-Canadian. Earlier records taken by fixed-wing airborne EM over this anomaly by The Canadian Syndicate

showed an anomaly, but it was not conspicuous enough in the presence of larger anomalies to warrant attention at that time. The record of the helicopter unit shows discrimination between the ore body and a nearby low voltage rural electric line.

Significant features of these records are:

1. The out-of-phase deflections over bodies of water (See L-AN, Fig. 2)

2. The two phase deflections over the ore bodies

3. The discrimination between the railway bridge and the water beneath (See L-19S)

4. The two phase deflection over the railway tracks (See L-19S)

5. Out-of-phase deflections parallel to road (caused by rural electric line?), and the ore body anomaly (L-DE and L-MS)

Figure 2 is a record taken over the Macdonald Mines, Noranda District, Quebec. Features to be noted are similar to those cited for Figure 1.

Figure 3 is a record taken over the Inco Whistle Mine, Sudbury District, Ontario. The effect of a broad exposure on a horizontal plane is shown in Line C west.

Both Figures 2 and 3 show deflections over mines, presumably caused by steel structural installations and tailings dumps. The tailings appear to show a larger out-of-phase component and smaller in-phase compared with the deflections over the main ore body.

Roland F. Beers

February 27, 1956

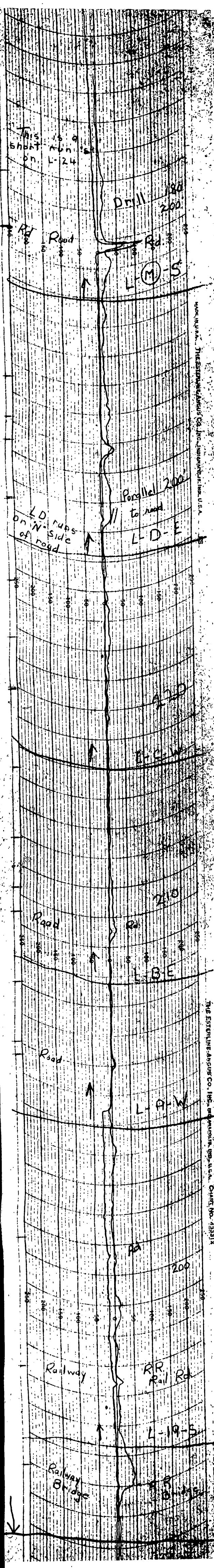


Fig. 1

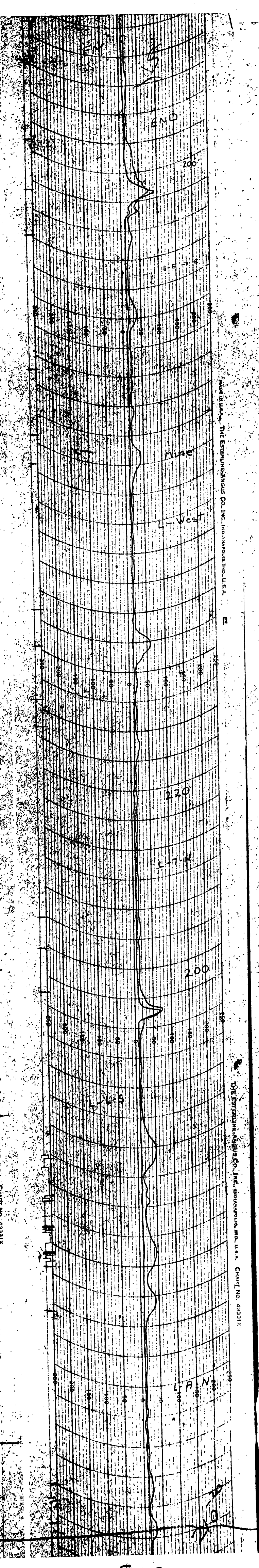


Fig. 2

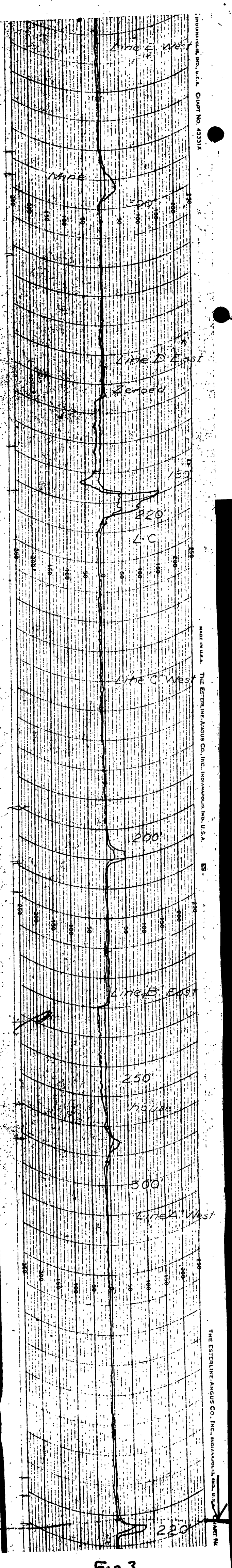


Fig. 3

Airborne E.M. Test Data

Part 1.

RECEIVED
FEB 27 1956

FEB 15 1956

James B. Gill

317 P.S.C.,
McGill University,
Montreal 8, Que.,
February 13, 1956.

Dr. Roland F. Beers,
P.O. Box 1015,
Troy, N.Y.

Dear Roland:

The Brunswick ore body is a massive sulphide replacement deposit which strikes a little east of north and dips steeply to the west. It consists of pyrite, sphalerite, galena with minor amounts of pyrrhotite and chalcopyrite. There is a little introduced quartz, siderite and calcite and possibly some barite. The thick part is 1000 feet long and up to 300 feet thick. A narrower extension is about 500 feet long.

To 1000 feet vertical depth this body has been estimated to contain 18,990,000 tons, average width 170 feet, grade 0.30% Cu, 1.79% Pb, 5.23% Zn, 1.74 oz. Ag. In addition there is a copper orebody estimated to contain 1,800,000 tons averaging 1.30% Cu. Drilling has shown the ore to extend downward to at least 1400 feet vertical depth.

The Anacon-Leadridge orebody is also a massive replacement deposit. It strikes just east of north and dips 50°-70° west parallel to the enclosing beds. It is 1,400 feet long with a maximum width of 275 feet. The tonnage to a depth of 1000 feet was estimated to be 27,440,000 tons averaging 5.20% Zn, 1.88% Pb, 0.58% Cu and 1.79 oz. Ag. Later drilling has shown the ore body to extend to a depth of 1400 feet.

American Metals have a group of at least 10 orebodies smaller in size, but similar in character. These were indicated initially by anomalies recorded during an AEM survey.

Two other recent discoveries of massive sulphides have been reported, one by Konnco Explorations, the other by Stratmat, Ltd. Both were found by ground investigation of AEM anomalies.

Yours very truly,

J. B. Gill.

JBG/cs

BATHURST AREA

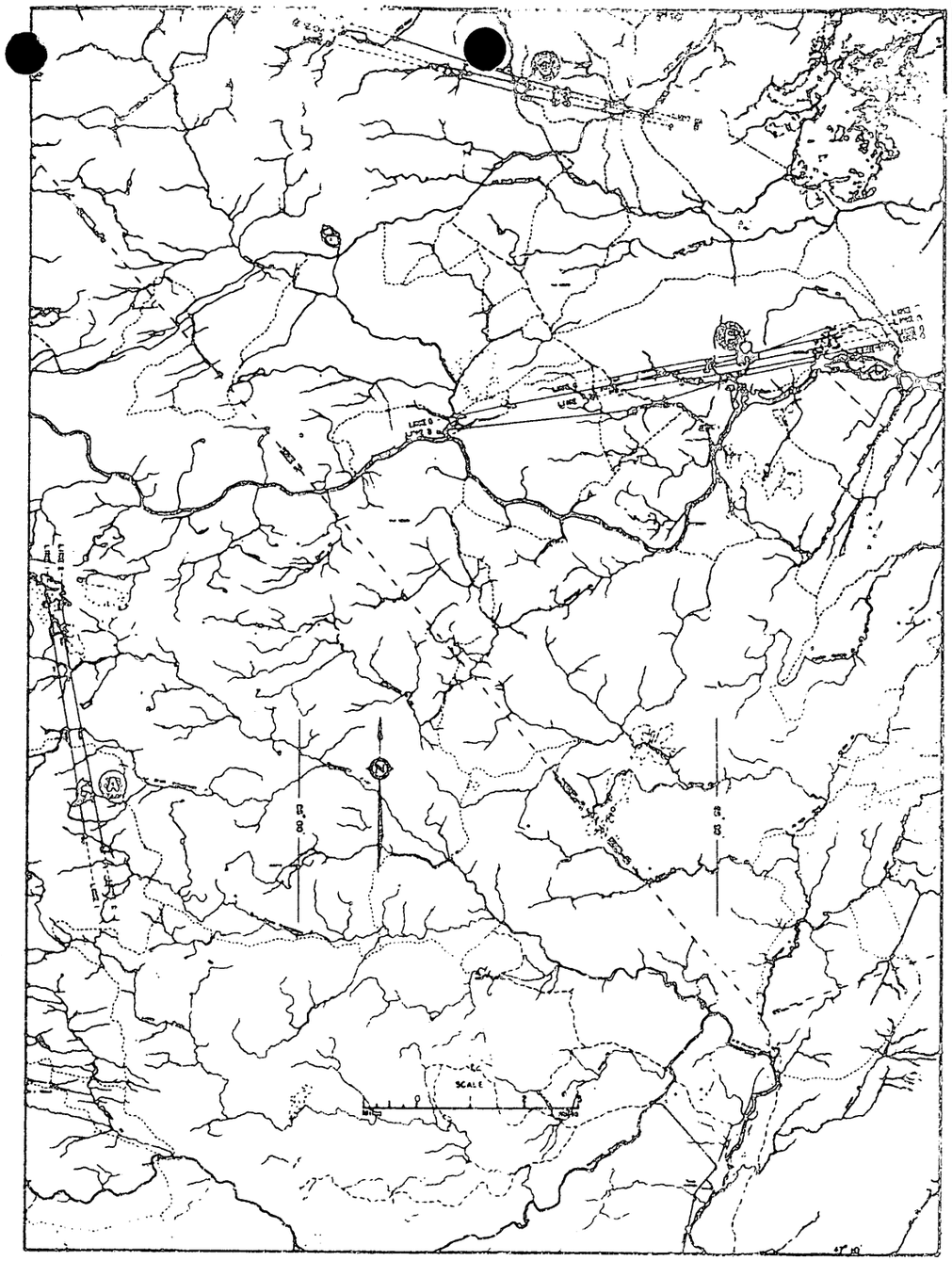
NEW BRUNSWICK CANADA

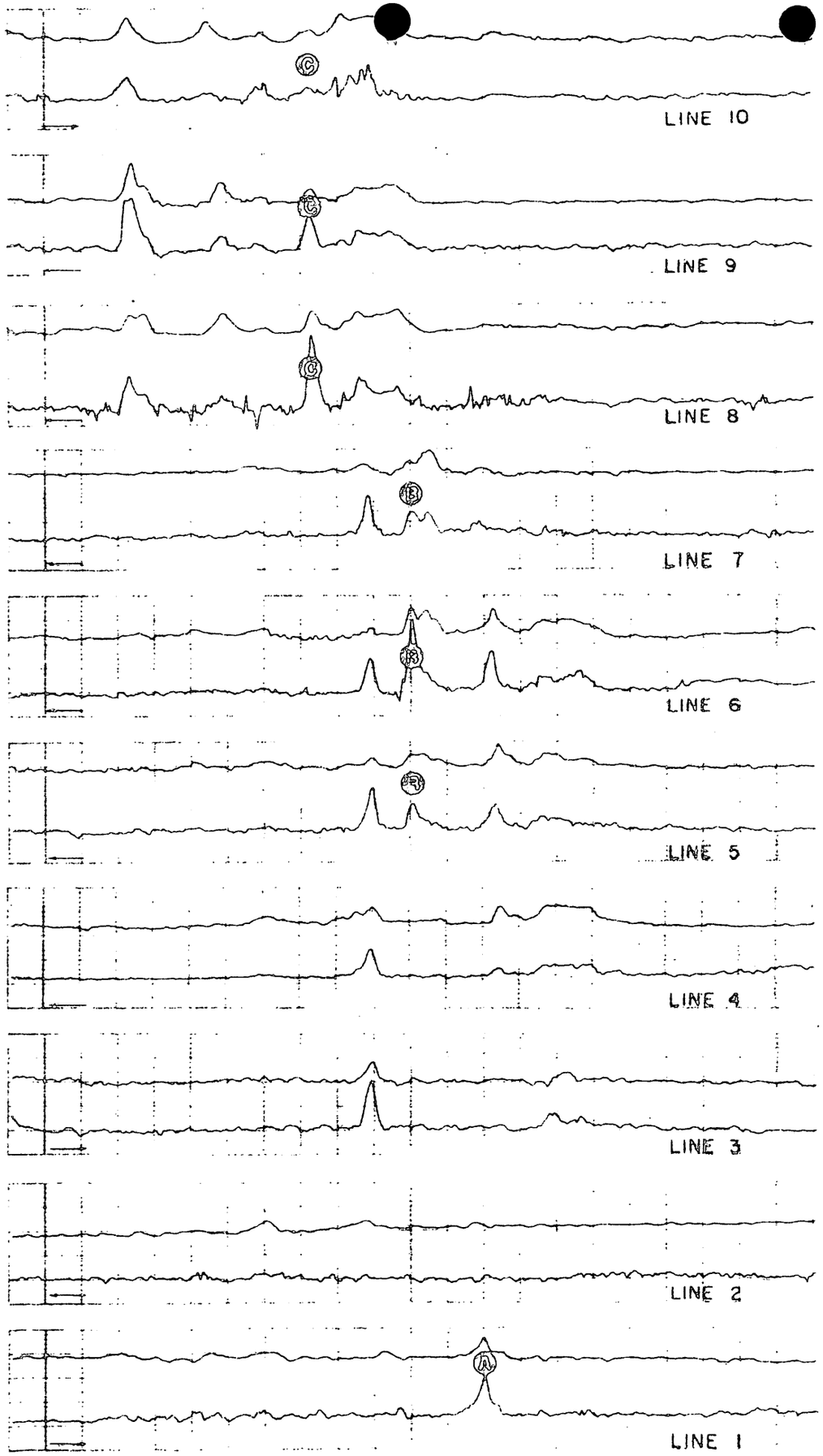
An Airborne Electromagnetometer Test

1

Aeromagnetic Surveys

1450 O'CONNOR DRIVE
TORONTO, CANADA





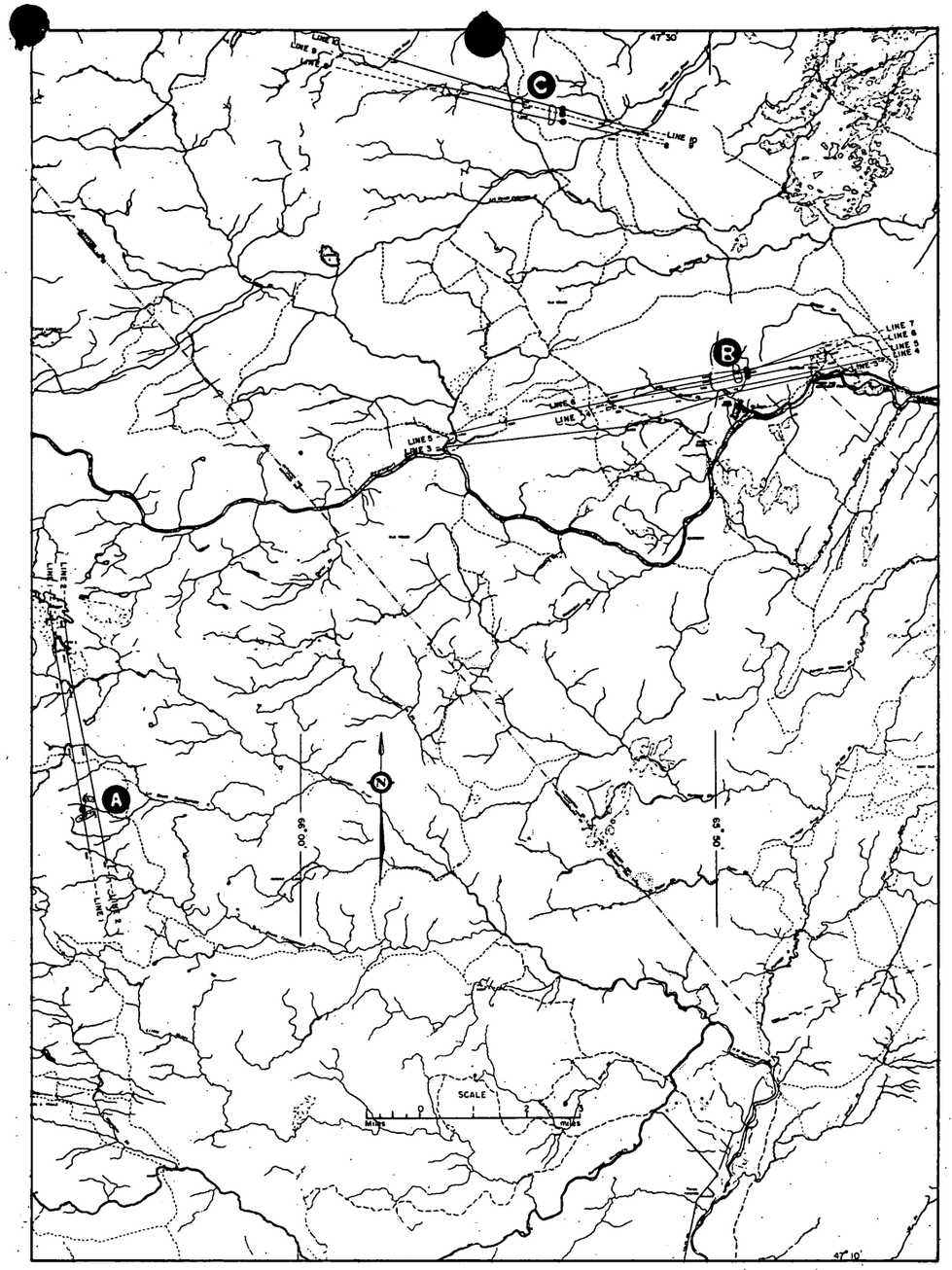
Here are electromagnetometer test results over three well-known sulphide ore bodies in the Bathurst area of New Brunswick. Each profile line in the ten graphs on the right is a record of phase shift measured in degrees. Each pair of profile lines shows dual frequency recording by the electromagnetometer along the flight line indicated. The upper line in each case is a high frequency measurement at 2300 cycles a second. Each lower line is a low frequency measurement at 400 cycles a second. The test was flown at an altitude of 500 feet above the ground and this height was maintained to plus or minus 50 feet. The flight lines were spaced approximately 660 feet apart. In the map above the three ore bodies tested are: left, American Metals Company Limited; centre, Anacon-Leadridge; right, Brunswick Mining & Smelting Corporation Limited. The approximate locations of the ore bodies are shown in second color. The latter two deposits have indicated ore totalling 50 million tons and grading approximately five per cent zinc, two per cent lead and one-half per cent copper.

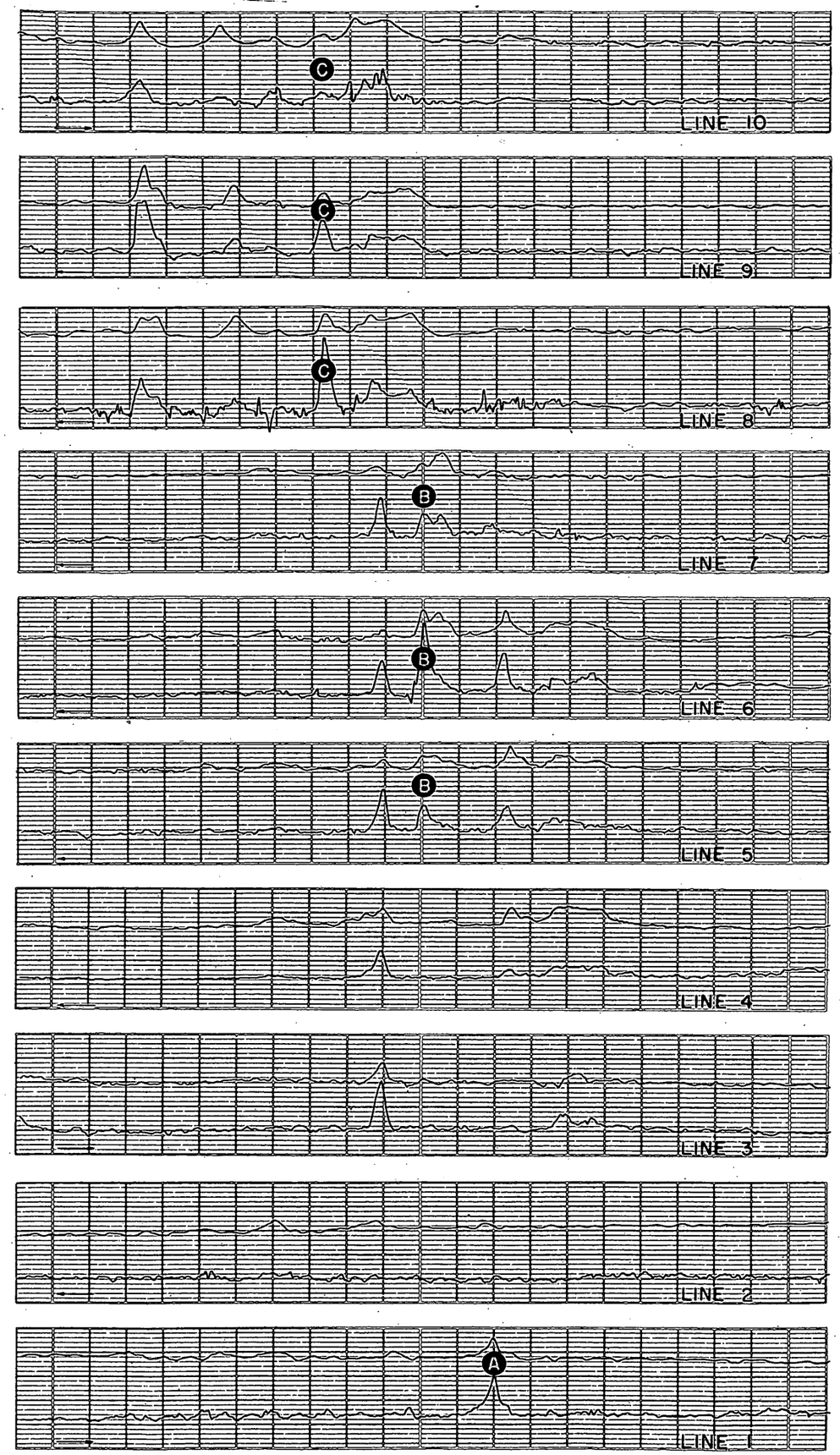
BATHURST AREA NEW BRUNSWICK CANADA

An Airborne Electromagnetometer Test

1

AEROMAGNETIC SURVEYS LTD.
1450 O'CONNOR DRIVE
TORONTO, CANADA





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Airborne E.M. Test Data

Part 2.

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DEMONSTRATION OF AIRBORNE E. M. PERFORMANCE

The ASL airborne electromagnetometer operates on the following principles. A large horizontal coil of several turns of wire carries alternating current of a constant value at two frequencies, 2300 (h.f.) and 400 (l.f.) cps. As the aircraft flies over the terrain at an average flight level of about 500 feet, the two primary magnetic fields of the coil induce secondary fields in conducting masses at and below the surface of the earth. The magnitudes and phase angles of the secondary fields vary with the frequency, and with the size, depth, attitude, magnetic permeability, and specific conductivity of the earth materials. For fixed values of these quantities the observed field magnitudes will be greater for 2300 cps than for 400 cps, and the time phase angles will be smaller for 2300 cps than for 400 cps, excepting where the conductivity is very high. Then the secondary field magnitude may reach a saturation value for both frequencies, and the difference in the time phase angles will be negligible.

The magnitude of the observed anomalies is expressed in terms of the observed time phase angle between each primary field and its resultant field (primary plus secondary). Phase angles for each of the two frequencies are recorded on a continuous moving tape, as shown in Figures 1 and 2. Observed anomalies range from 0.1° to 3.0°, top values being rare except over very large massive sulfide ore bodies and graphites.

The advantages of employing two frequencies are several. For surface conductors such as groundwater, swamps and lakes, the h.f. field shows a relatively larger response than the l.f. field. On the other hand, a massive sulfide will show a large l.f. anomaly and a relatively smaller h.f. anomaly. Important significance is attached to the ratio of l.f./h.f. anomaly values, and discrimination between non-significant surface conductors and economic sulfide bodies can be made by using this ratio in connection with the observed value of the l.f. anomaly. Experience has shown that anomalies of ratio greater than 0.3 accompanied by l.f. anomalies greater than 0.4 must be regarded as significant.

Airborne E. M. Discovery for Middle River Mining Co. in Bathurst District, New Brunswick:

This sulfide ore body lies about eight miles in a northerly direction beyond the northern boundary of the attached Bathurst map. It was reported in the Northern Miner, November 10 and December 22, 1955 issues.

It is stated to have shown 45 feet of sulfide ore in four drill holes spaced 200 feet apart along the axis of the anomaly. From this information a minimum estimate of five million tons of ore was made, the limits being yet undefined at both ends. The anomaly was spotted directly in the plane by members of the geological staff of the company, which is a subsidiary of Texas Gulf Sulphur. From the print of the record attached, Figure 1, the l.f. reading is seen to be 1.2, the h.f. reading 0.8, and the l.f./h.f. ratio 1.5. The absence of background on the record is notable. The survey was conducted by Aeromagnetic Surveys Limited of Toronto, using fixed-wing airborne E. M. equipment.

Airborne E. M. Survey, Vendome Mine, Quebec:

Figure 2 shows airborne E.M. records taken over the Vendome Mine, Quebec. From core drilling, these deposits are estimated to consist of an aggregate of about one million tons in a series of discontinuous lenses of massive sulfides, the concentration of sulfides ranging up to 75%. The upper trace of Figure 2 (l.f.) shows the combined effects of surface ground conductors (e.g. swamp) and the ore body. The lower trace (l.f.) shows the anomaly due to the ore body with relatively less response from the surface conducting materials. This case is an example of the problems mencountered in discriminating between anomaly values arising in the two sources, i.e. ore bodies and surface conductors. In the trace for L2N, the h.f. anomaly magnitude is (2.2°), the l.f. is (0.8°) and the ratio (0.8/2.2) = (0.4). The known presence of the ore body and of the surface conducting water illustrates how ore bodies may be distinguished from surface conductors employing the two frequencies. Furthermore, the traces for L1S, flown in the opposite direction, show the effect of the dip of the ore body on the magnitude of the observed anomalies. When an ore body dips 60° toward the approaching plane the magnitude of the secondary field appears smaller than that observed in the opposite direction of flight.

This effect is shown in Figure 2 by the higher amplitude of the L2N 1.f. record (0.8), compared with that of the L1S 1.f. record (0.6). The occurrence of the ore at this unfavorable attitude can also be inferred from the increased sharpness of the trace deflections on the L2N flight.

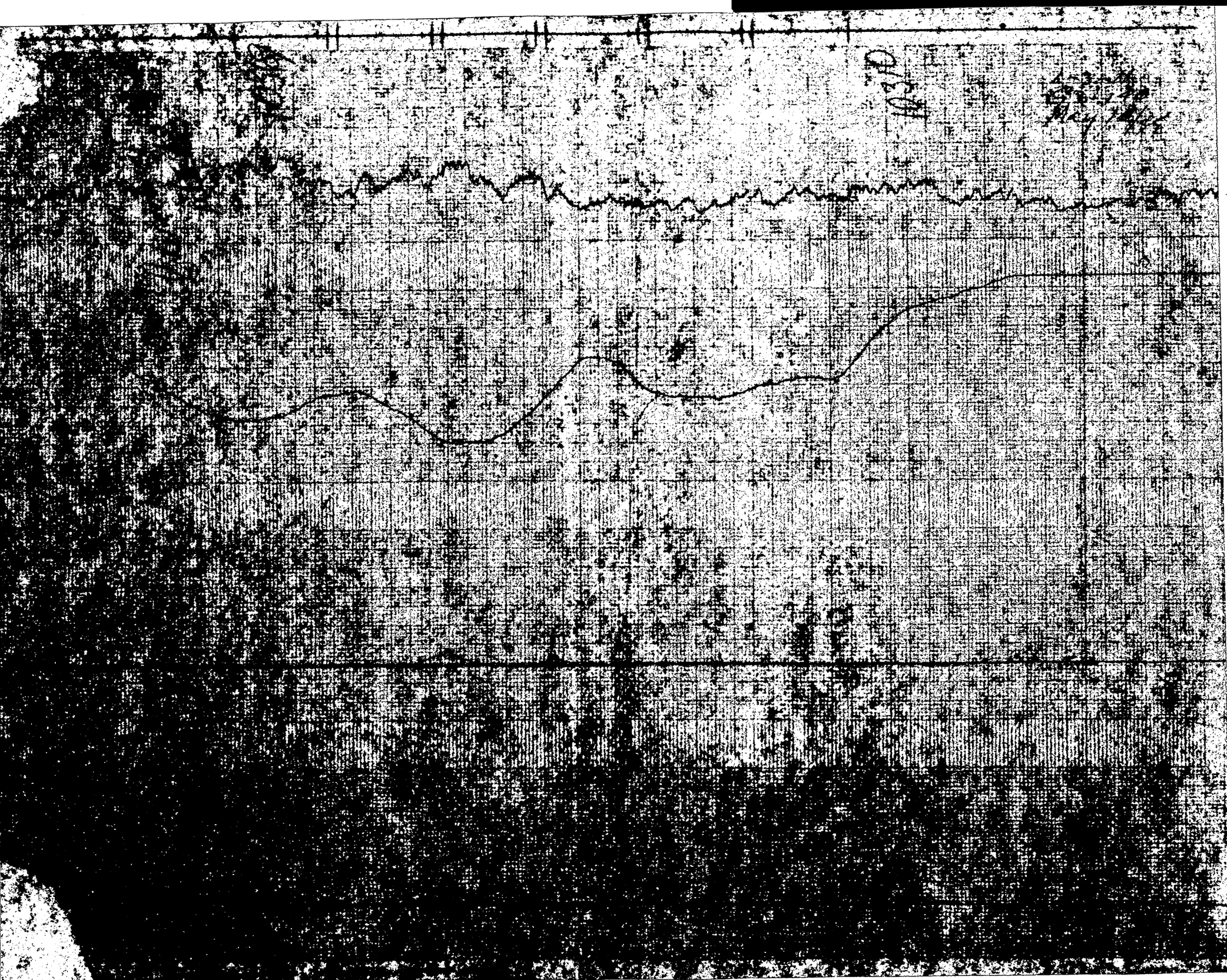
Figure 3 shows a map of an airborne E. M. survey taken in northwestern Quebec. The anomaly of a known body of massive sulfide is shown in the southwest corner of the map. These deposits are known to contain massive sulfides. The observed anomaly magnitudes are: 1.f. = 0.8; ratio = 1.0. Other anomalies shown on this map range up to values of 1.f. = 1.2, ratio = 1.5. Graphite slates of known occurrence show anomalies near the maximum values observed. Final discrimination between graphites and sulfides must be made by other means. These involve a detailed examination of the geology, the areal distribution of the anomalies, ground geophysical and geochemical investigations. Where doubt remains as to the nature of a conductor showing an anomaly of this magnitude, a single core hole will usually resolve the question. This has been the experience to date. The cost of finding sulfides by the combined methods is thus less than by straight core drilling alone.

An evaluation of the airborne E. M. method cannot be accomplished by these few examples alone, especially under the conditions shown here. In Figure 2, the contrast in conductivity of the ore body with that of overlying surface conductors is not large. Nevertheless an anomaly of the magnitude shown is sufficient to attract the attention of the geologist to that specific location, where further investigations will be made. The 60° dip of the Vendome ore body illustrates the care with which data from adjacent parallel lines flown in opposite directions must be examined. The interpretation of all airborne E. M. records must follow a meticulously detailed examination of the several kinds of data available to the geologist in charge. Earlier practice neglected these fine points of the interpretation which are only now beginning to be appreciated. In the hands of experienced geologists and geophysicists, the interpretations now being made are considered adequate and dependable. Such was not the case twelve months ago. Emphasis is now being laid on a correlation of all available data by geologists of considerable experience in the interpretation. In this connection it is well to note the recently reported discoveries (see Northern Miner,

December 22, 1955) of massive sulfide ore bodies made by Kennecott and by Strategic Materials Ltd. in Canada, using the same equipment as contracted for under this proposal.

Roland F. Beers

22 February 1956



scintillation counts

sea level elevation
↓increasing

Airborne EM phase shift.

2300cps = h.f. = 0.8°

$\frac{l.f.}{h.f.} = \frac{1.2}{0.8} = 1.5$

400 cps = l.f. = 1.2°

Fig. 1.

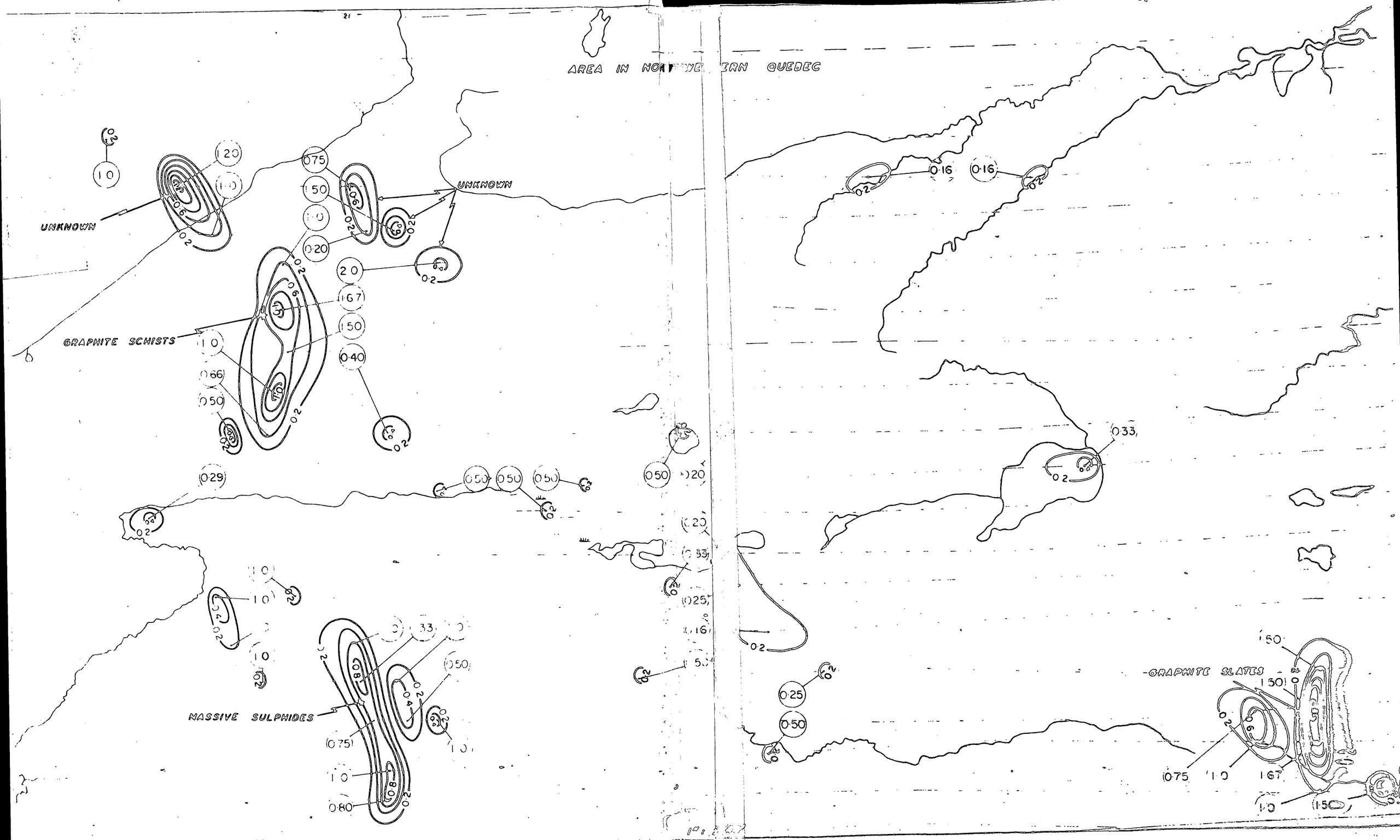
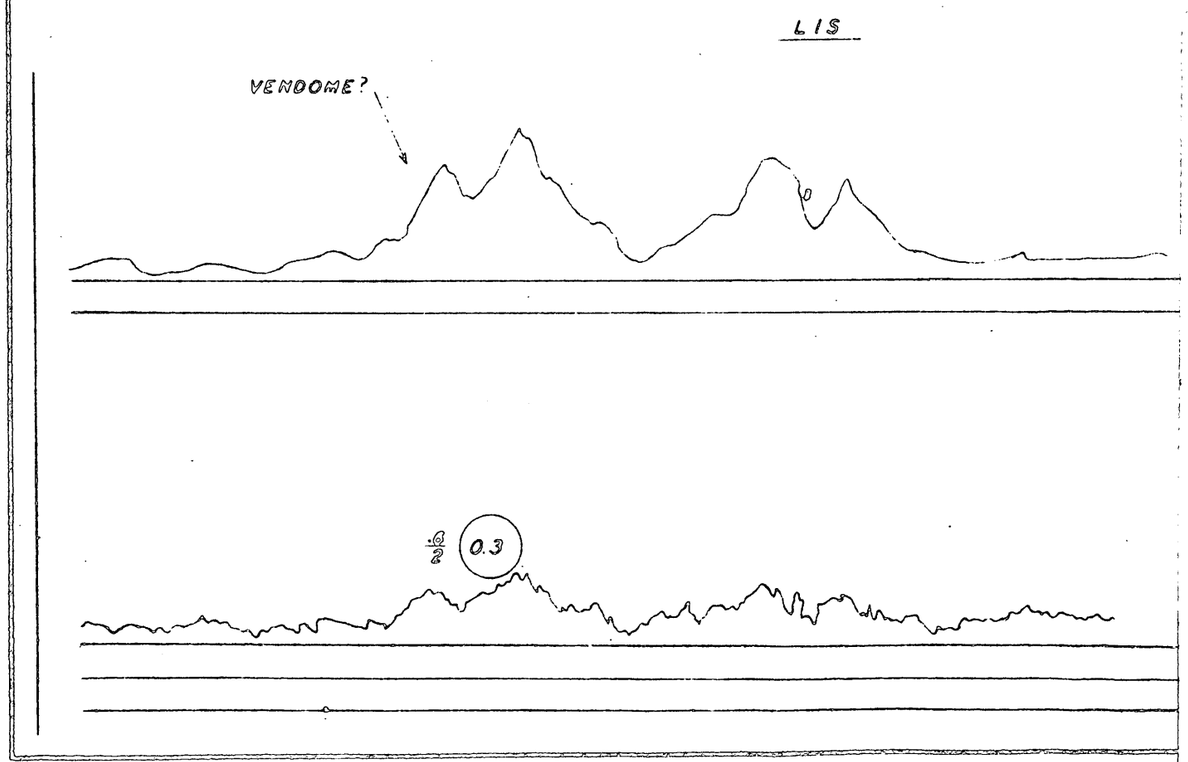

AREA IN NORTHWESTERN QUEBEC
UNKNOWN
UNKNOWN
GRAPHITE SCHISTS
MASSIVE SULPHIDES
GRAPHITE SLATES

Fig. 3



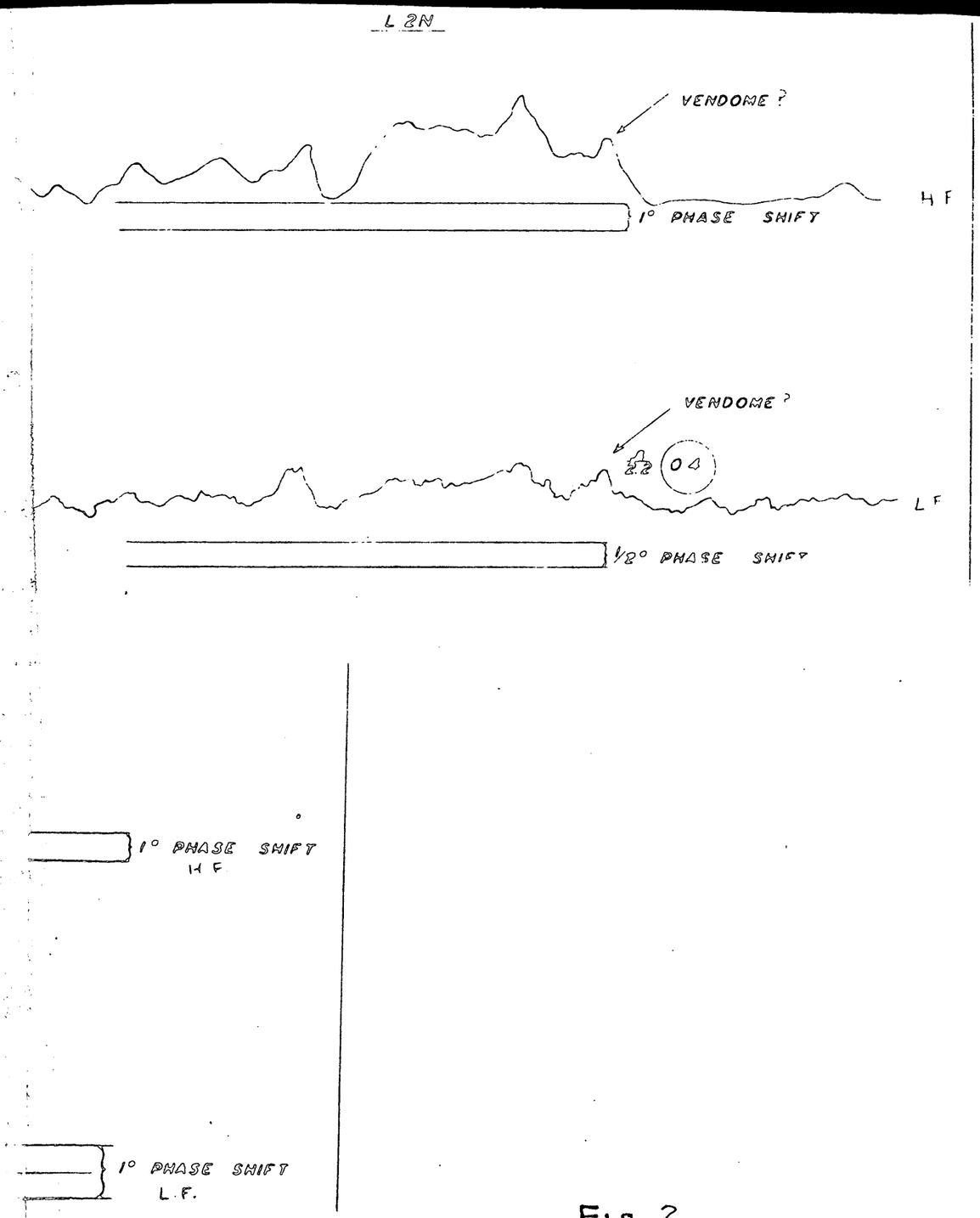


Fig. 2

SURVEY: AEROMAGNETIC	MALARTIC GOLD FIELDS LTD.	NO.
	AEM TEST SURVEY VENDOME MINE, P.Q.	BLOCK NO.
	SCALE: 1" = 3000' JANUARY 1950	

ON-SITE Report.

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

RECEIVED
FEB 25 1956

Docket

February 20, 1956

Memorandum

To: George C. Selfridge, Chairman, DMEA Operating Committee

From: Mining Engineer, Eastern Experiment Station

Subject: DMEA Docket No. 4051 (Cu, Pb, Zn)
Roland F. Beers, Inc. Troy, New York, Agents for
The American Syndicate. Northwest Adirondacks,
Jefferson, Lewis and St. Lawrence counties, New York

The subject application has been reviewed. A field examination of the area to be covered by the proposed airborne electromagnetic survey is not considered necessary at this time.

Comments on the review and suggested revisions are submitted herewith for your consideration. One suggestion is to reduce the exploration program from four years to two years, and to schedule the work in stages as follows:

Stage I - Airborne survey
II - Ground geophysics and geochemistry
III - Core drilling
IV - Open. This stage would cover any additional work which might be required

It will be noted that trenching, test pitting, shaft sinking and core drilling for the years 1958 and 1959 have been deleted. Continuance of exploration under each successive stage will be subject to approval by Government engineers, based on results of the previous stage. If the results of the first three stages warrant further exploration, a request for additional funds can be made at the appropriate time and the exploration continued under Stage IV.

My personal opinion is that the area described in the application is a potential source of sulphide minerals, chiefly lead and zinc, and that the means proposed for exploring the area are logical, but a recommendation should be withheld for reasons stated in the review.

W. T. Millar

W. T. Millar

Enclosure

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

REPORT ON REVIEW OF APPLICATION

(1) DMEA Docket No. 4051 (Copper, lead, zinc)
Northwestern Adirondacks

(2) Applicant: Roland F. Beers, Inc.
P. O. Box 1015, Troy, New York as
Agent for the American Syndicate

(3)

(a) Summary

The application is well presented. The program is considered feasible and the estimated costs are reasonable for the work as outlined, but some of the proposed exploration does not seem justified for the initial work. It is considered advisable to set up the exploration in stages.

The area indicated on the map submitted with the application and covering 291 square miles, is well mineralized and has produced iron ore, pyrite, base metals and nonmetallics. Records of past production are not complete but apparently they were major operations for that period. Zinc-lead, talc and other nonmetallic mine production is still operating on an economic basis. The area has been explored in selected localities but not extensively. Due to the heavy overburden of glacial til and vegetation, geologic structural indications are obscured, therefore modern scientific methods of indicating mineral deposits appear to be the most economic means for exploring a large mineralized area like the northwest Adirondacks.

Electromagnetic method of indicating mineral deposits as proposed by the applicant has been used by the Virginia Mining Company in Buckingham County, Virginia. As a check on the EM results and for interpretation of the anomalies located, the EM survey was extended over the area previously explored by core drilling by the Virginia Mining Company under DMEA contracts. The results were considered favorable and the method of indicating mineral deposits is considered reliable. The mineral deposits indicated in

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

Buckingham County, Virginia are long and narrow, containing magnetite, pyrite, pyrrhotite, graphite and base metals, a structural feature which might be expected in the Northwest Adirondacks.

Geochemical tests proposed in the application are to distinguish between anomalies caused by base metals and those caused by ferrous sulphides or graphite.

The applicant's property rights are problematical. Much of the area to be covered by the airborne survey is neither owned nor held under lease or option, and it is possible that the leases or options might be difficult to obtain after the aerial survey has been made.

The applicant lists a staff of consultants for conducting each phase of the proposed exploration. From the personal records supplied for each consultant, they appear to be well qualified for the assignment, excepting for the consulting geochemist. Apparently, supervision of the proposed exploration will be by the group of consultants. No one person is designated as supervisor to coordinate the work directed by the consultants.

The intent of the applicant, after completion of the exploratory work, is not stated in the application.

It is stated that The Syndicate will supply cash for its portion of exploration costs.

Additional information to be supplied by the applicant but not yet received are documentation of contract costs, flight maps and reports on results of previous electromagnetic surveys in areas geologically similar to the Northwest Adirondacks.

(b) Conclusions

From the foregoing data, it is concluded that the proposed exploratory program, with suggested revisions, is feasible and that the possibility of making a new mineral discovery of economic importance is favorable.

Modern scientific methods for exploring large mineralized areas are the most economical means for indicating mineral deposits obscured by overburden. Since a large part of the area described in the application is covered by glacial til and vegetation, the proposed airborne survey to locate the anomalous parts of the area appears logical. Ground geophysics will be required to outline the anomalies and geochemical work will be required to differentiate between anomalies caused by base metals and those caused by pyrite, pyrrhotite, graphite and water-saturated ground. Core drilling on the most favorable anomalies would be necessary for sampling and testing the material and for an accurate interpretation of the anomalies. Any further work will depend on the results obtained from the preceding stages.

The proposed exploration program set up in stages would be more practicable. Also, if the application is approved, one person should be designated as supervisor and made responsible for the proper execution of the exploration.

Much of the area to be covered by the proposed airborne survey is not owned, leased or optioned by the applicant. Subordination agreements have not been obtained. The Government's interest in such a proposal is not fully protected.

Additional information of the airborne survey, documentation of contract costs and results of previous electromagnetic surveys have not yet been supplied by the applicant.

(c) Recommendations

In general the exploration program is considered feasible. A recommendation is withheld pending (1) an agreement by which the Government's interest is protected; (2) a more comprehensive schedule for conducting the exploration; (3) documentation of contract costs ; (4) designation of a qualified supervisor to be responsible for the proper execution of the exploration.

(4) The examination; time spent on property.

The exploratory work proposed in this application consits of an airborne electromagnetic and scintillation counter survey followed by ground geophysics and geochemistry and ultimately, core drilling, trenching, test pitting and shaft sinking.

The proposed airborne survey covers an area of 291 square miles in the Northwest Adirondacks. It is considered that research on reports on the geology of the area and results of previous exploratory work, part of which was conducted by Government agencies, would be more informative than a field examination at this stage of the review. If the application is approved, and drilling is authorized, then field examinations of anomalies selected for additional exploratory work will be required.

(5) Name and location of property.

The area covered by this application consists of 291 square miles in Jefferson, Lewis and St. Lawrence counties, New York. As stated in the application, "more than 125,000 acres of this territory is under lease or option to purchase for a term of not less than three years." The area is being referred to as the "Northwestern Adirondacks".

Gouverneur, Watertown, Ogdensburg, Canton and Carthage are the principal towns in the area and are within 25 miles of various parts of the area to be explored. U.S.Route No. 11 traverses the area in a northeast-southwest direction and is served by a network of State, County, and Town roads.

(6) Generally, the roads in the Northwest Adirondacks are year-round roads but the area is subject to severe winter storms. Access roads will be required for some off-highway locations.

(7) Competency of the applicant and operating personnel.

As shown in the application, the officials of Roland F. Beers, Inc., the consultants, and members of The American Syndicate are qualified technical men and operating companies, excepting Roland F. Beers, Jr.,A.B. 1944, Dartmouth College; M.D. 1947 U. of Rochester; Ph.D.1951, M.I.T., who apparently, from the experience and background as shown in the application, is pursuing his medical profession, yet he is designated as consultant on the geochemical exploration. There are no comments in the summary of his experience to indicate that he is qualified as a consultant on geochemical work.

(8) The applicant's property rights.

It is stated in the application that the applicant has more than 125,000 acres under lease or option to purchase for terms not less than three years. Much of the area covered by the proposed airborne survey is not owned, leased or optioned by the applicant. However, verbally it was stated that it is the intent of the applicant to obtain leases or other agreements on anomalous areas indicated by the airborne survey. (By Roland F. Beers at a meeting in the W.O. 1/19/56)

Subordination agreements or other's consent to lien have not been obtained.

(9) Description of the property.

The area included in the application is primarily an agricultural section. In addition, zinc-lead and talc mining are thriving. There is considerable pulpwood production and other manufacturing industries. As related to this application, there are no surface, underground workings or other mine development which might facilitate the proposed exploration. Possibly, the previous drilling by the Bureau of Mines might be helpful in interpreting the geophysics. Maps of the area are to be supplied by the applicant.

(10) Geology and ore reserves.

The geology for the area covered by the subject application will be supplied by the Survey member on reviewing the application.

Previous exploratory work consisting of core drilling by the Bureau of Mines in the Sylvia Lake area, which is southwest of the Balmat Mine, indicated and inferred nearly 100,000 tons of ore containing 6.2% zinc, 0.50% lead, and minor quantities of copper and silver. Other core drilling in selected locations in the towns of Rossie, Macomb and Dekalb indicated good lead and zinc values in spots but insufficient continuity to be of economic importance.

A belt southwest of Gouverneur and with a northeast-southwest trend has been mined continuously for about 40 years. Operations of the St. Joseph Lead Co. are in this belt. The annual production from 1942 to 1951 inclusive varies from 34,116 to 40,051 tons of recoverable zinc and 1,231 to 1,674 tons of recoverable lead. Numerous other old mines and prospects are in the area and history shows some production. In addition considerable pyrite and iron ore have been produced in the area covered by the proposed airborne survey and the talc deposits near Gouverneur have been reported to be the world's largest known deposit of talc.

Pyrite deposits mentioned in the reports have been mined to various depths. The Stella, one of the largest pyrite operations, is reported to have been mined to a depth of 900 feet for a distance of 1,000 feet along the strike. Pyrite ore containing 20% sulphur and concentrated to 40% sulphur was produced. The St. Joseph Lead Company's zinc-lead operation at Balmat is reported to have attained depths of 2,000 to 3,000 feet. (This has not been verified.)

The sulphide ores in the Northwestern Adirondacks occur in fissure veins. Referring to New York State Museum Bulletin No. 296, galena veins are found grouped in three areas in the Hammond quadrangle, namely: The Rossie, Macomb and Bigelow School groups. Other veins are found west of Brasie Corners in the Hammond quadrangle. A number of pyrite and pyrrhotite deposits found in the Hammond quadrangle extend southwest into the Antwerp quadrangle.

Zinc ore occurs in the vicinity of Edwards, Talcville, Sylvia Lake and other places within the limestone belt crossing the southeastern corner of the Gouverneur quadrangle. Talc mining is an important industry in this locality as well as the production of zinc-lead ore. Pyrite occurs in the Gouverneur quadrangle and extends northeast into the Canton quadrangle and southwest into the Antwerp quadrangle. (N.Y.State Mus. Bull. No. 259).

This review has not been an exhaustive study of all previous reports on geology and mineral production in the Northwestern Adirondacks, but the information obtained thus far seems sufficient to conclude that the area to be covered by the proposed airborne survey is well mineralized. Also, it is well known that most of the area is covered by overburden. It seems reasonable to assume that in an area predominantly limestone, altered by igneous intrusions and with records of mineral production, other ore bodies might exist but are obscured by the overburden.

There is insufficient information for estimating ore reserves.

(11) Description of past production.

Previous records of past production are not clear. During World War II many abandoned mines in the area described in this application were visited by Bureau of Mines engineers. It is a reasonable assumption that production of lead-zinc, pyrite and iron ores was considerable. Judging from old dumps and dismantled plants, the operations were of major importance at the time.

(12) Manpower, materials, supplies, equipment, water and electric power are readily available in the area.

(13) Statement of applicant's proposal.

The applicant proposes to explore 291 square miles for copper, lead, zinc and radioactive minerals. The program is composed of nine phases as follows:

1. Geologic reconnaissance.
2. Airborne electromagnetic and scintillation counter survey.
3. Ground geophysics:
   (a) Electromagnetic
   (b) Gravity
   (c) Selfpotential
4. Ground geochemistry:
   (a) Soil sampling and analyses for base metal content
   (b) Chromatographic tests
   (c) Spectroscopic tests
5. Core drilling
   (a) Core analyses for ore content and geologic data
   (b) Location, depth, size, shape and grade of ore bodies
6. Trenching and pitting
   (a) Alluvium and soil
   (b) Bedrock

7. Prospect shafts

8. Sampling and assaying

   (a) Cores
   (b) Samples from trenching, pitting, shafts
   (c) Assaying
   (d) Spectroscopic tests
   (e) Chromatographic tests

9. Geologic supervision of phases 2 to 8, inclusive.

The methods for exploring the Northwest Adirondack area as listed above are good but as proposed, the exploration seems to be more elaborate than is justified for the initial work.

My personal opinion is that surface indications of mineral deposits in the United States are rapidly being depleted and if the United States is to maintain its economic position in world affairs, it is compelled to have sources of raw materials. In order that domestic sources of minerals may be located, it is necessary to employ scientific methods of indicating mineral deposits. Geophysics and geochemistry are being used extensively by industry and government agencies. Electromagnetics combined with geochemical testing is gaining in popularity as a reliable method in exploring for certain minerals. The Virginia Mining Company in Buckingham County, Virginia conducted exploratory work under three DMEA contracts. In all three instances, the anomalies were indicated by geophysics then core drilled. After completion of the last DMEA contract the company made an airborne electromagnetic survey, followed by ground geophysics. Recently it was reported that the company is employing geochemical testing to further delineate anomalous areas to avoid more costly core drilling. The Virginia Mining Company is checking its new EM surveys with results already proved by core drilling and reported that they are pleased.

The deposits indicated in Buckingham County, Virginia contain pyrite, pyrrhotite, magnetite, graphite and base metals. They are long, narrow, and dip steeply. Similar mineral composition and structural features might be expected in the Northwest Adirondacks. The Northwest Adirondacks is known to contain pyrite, pyrrhotite, graphite and base metals, and parts of the area are water-saturated, all of which are anomalous materials. Geochemistry is probably the best known means for differentiating the anomalies.

It is considered that the exploration of the Northwest Adirondacks set up in stages could produce the desired results at less cost. Attached hereto is a suggested alternative for conducting the proposed exploration, set up in four stages with estimated costs, submitted for consideration by the Operating Committee.

The applicant's estimated cost of the program is $609,370.00. It is stated that the Operator's share of the costs, in this case 50 percent, will be supplied by The American Syndicate.

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The American Syndicate
(NW ADIRONDACKS)

STAGE I

Estimated Costs	Estimate Revised
Airborne electromagnetic and scintillation counter survey	
291 sq. miles	
Flight lines spaced 1/16-mile	
Total 4,656 line miles @ $10	$46,560
Staging costs	2,000
	$48,560

Survey contracted to Aeromagnetic Surveys, Ltd. Toronto, Ontario, Canada, using a Bell 47 helicopter or equivalent.

Supervision

1. Geological-geophysical consultant 30 days @ $100	$3,000
1 Geological consultant, 30 days @ $50	1,500
	$4,500

Indicated time for this work is 3 months

Technical Service

1	Staff geologist,	3 mos. @ $700	$2,100
1	Asst. geologist	3 mos. @ $400	1,200
2	Computers	3 mos. @ $400	2,400
1	Draftsman	2 mos. @ $350	700
1	Stenographer & clerical	1 month @ $300	300
1	Accountant	4 days @ $30	120
			$6,820

Labor None

Total $11,320

STAGE I

Airborne Survey (cont'd)	Estimate Revised
Miscellaneous	
I Office & drafting supplies	$200
* II Workmen's Compensation and employers' liability ins. @ 15% of $11,290	1,694
III Transportation	
A Geophysical consultant 1,500 mi. @ 10¢	150
B Geol. consultant and staff geologist 1,500 mi. @ 10¢	150
IV Travel & per diem	
A 10 days @ $12	120
B 10 days @ $12	120
V Photographic prints, reproductions	200
VI Communications - tel. & teleg. 4 mos.	50
VII Transportation of things	-
	$ 2,684

Recapitulation

(a)	Independent contracts	$48,560
(b)	Consultant fees, sal. & wages	11,320
(c)	Miscellaneous	2,684
		$62,564

* 15% for workmen's compensation and employer's liability insurance was used by the applicant. To date I have been unable to verify the cost, therefore the figure is being used pending more definite information.

DMEA 4051

STAGE II

	Estimate Revised
Ground Geophysics - Prepared on basis of 100 workdays	
Supervision	
Consulting Geophysicist - 25 days @ $50	$1,250
Technical Services	
1 Party Chief 100 days @ $25	2,500
1 Observer 100 days @ $20	2,000
1 Surveyor 100 days @ $20	2,000
1 Computer 100 days @ $20	2,000
Accounting 4 days @ $30	120
Labor - brush cutter 100 days @ $13.50	1,350
	$11,220
Personal Services - Troy Office	
Supervision	
Consulting Geologist 25 days @ $50	$1,250
Technical services	
1 Computer 100 days @ $20	2,000
1 Draftsman 100 days @ $17.50	1,750
1 Clerical & Steno. 30 days @ $14	420
	$ 5,420
Operating materials & supplies, computing forms, paper, ets.	$ 100
Flagging, vacuum tubes, parts	200
Total	$ 300
Operating equipment	
Rental Gravimeter @$400/mo. 100 days	$ 1,333
Rental Ground electromag. do	1,333
Rental truck 12¢/mi. 10,000 mi.	1,200
Rental transit, ch. rd. 100 days @ $5	500
	$ 4,366
Total	$4,666

STAGE II
Continued

Ground Geophysics - cont'd	Estimate Revised
Miscellaneous	
I Prints, reproduct. etc.	$300
II Accounting supplies	50
III Payroll taxes, employer's liability ins. est. 15% on $16,640	2,496
IV Transportation - consultant auto 2000 mi. @ 10¢	200
V Travel & per diem 25 days @$12	300
VI Communications, tel & tel. $25 mo.	75
VII Transportation of things	200
VIII Rental - field office l.p.h.	330
	$3,951

Recapitulation - 100 days' cost

(b) Personal service	$16,640
(c) Operating materials & supplies	300
(d) Operating equipment rental	4,366
(e) Miscellaneous	3,951
Total 100 days	$25,257
of	$252.57 per day
Estimated 360 days to survey selected anomalies = $91,000	

STAGE II
continued

	Estimates Revised
Estimated Costs	
Geochemical Survey	
Supervision: Consultants, labor	eliminate
Technical Services:	
1 Chemist in charge 50 days @ $25	$1,250
2 Technicians 100 days @ $10	2,000
	$3,250
Operating Materials & Supplies	
Drafting, photo.reproduction, prints and chemicals	$ 500
Miscellaneous:	
Transportation of things	$ 500
Workmen's compensation & employer's ins.	488
Rental, geochemical laboratory with light, heat	150
	$1,138

Recapitulation:

Personal services	$3,250
Materials & supplies	500
Miscellaneous	1,138
Total 100 days - - -	$4,888
Cost per day	$48.88
360 days	$17,600

STAGE III

	Estimates Revised
Estimated Costs - Diamond Core Drilling. (Proposed for 4 years; DMEA has a two-year limit)	
1956 5,000 ft. @ $4	$20,000
1957 15,000 " " "	60,000
Total (Contract drilling)	$80,000
Access roads (to drill sites)	$ 4,000
Trenching (hard rock)	suspend
Trench. & pit (soil & alluvium)	"
Prospect shafts	"
Sampling - core splitting	3,000
Spectroscopic analyses - 20 @ $10	200
Assaying 300 samples @ $18	5,400
	$12,600
Total	$92,600
Geological Supervision, August 1956 & 1957:	
1 Consulting Geol. 2 days per mo. for 17 mos. Use 34 days @ $50 (17 mos.)	$ 1,700
1 Senior staff geol. @ $10,000/yr. " " "	14,167
1 Junior geol. @ $5,500/yr. " " "	7,792
	$23,659
Travel:	
Consultants (600 mi./mo. for 14 mos.) 8,000 mi. @ 10¢	800
Staff Geol. & Junior Geol. (1000 mi./mo. for 14 mos.) 14,000 mi. @ 10¢	1,400
Per diem:	
Consultant 34 days @ $12	408
Staff geol. & Junior geol.	move to project
	$26,267

STAGE III
continued

Estimated Costs - Diamond Core Drilling (cont'd)	Estimates Revised
Miscellaneous	
Field office rental, 17 mos. @ $65	$1,105
Tel. & tel. @ $20/mo. for 17 mos.	340
Transp. things 17 mos. @ $20	340
Supplies & Material, 17 mos.	500
Payroll tax, employer's liability & Workmen's compensation ins. @ 15%	3,550
	$5,835

Recapitulation:

Contract drilling	$ 80,000
Technical & accessory	12,600
Supervision	26,267
Miscellaneous	5,835
	$124,702

S T A G E I V

Stage IV will include any additional work deemed necessary after completion of Stages I and II but before completion of Stage III, such as trenching, test-pitting and shaft sinking. At that time the justification can be determined and a reasonable estimate of the amount and cost of work required can be made.

- - - - - - - -

RECAPITULATION: Estimated Costs - 2-Year Program

Stage I -	Airborne Survey	$62,564
Stage II -	Ground Geophysics	91,000
	Geochemistry	17,600
Stage III -	Diamond Core Drilling	124,702
		$295,866

ROLAND F. BEERS, INC.

OFFICE AND LABORATORY:
447 PINEWOODS AVENUE
PHONE ASHLEY 2-2351

MAIL ADDRESS:
POST OFFICE BOX 1019
TROY, NEW YORK

February 16, 1956

RECEIVED
FEB 20 1956

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

Re: Docket No. DMEA-4051 (Zinc-Lead-Copper)
Roland F. Beers, Inc.
Agent for The American Syndicate, 120,000 acres more or less in St. Lawrence and Jefferson Counties, New York

Dear Mr. Mittendorf:

To further appraise the various costs involved in the exploration for ore deposits in the Adirondack Area, we have gathered several tentative price bids from various concerns who offer to perform the services of core drilling, assaying and road building. We have enclosed verifax copies of all the replies we have received. You will find them arranged as follows:

Core Drilling
1. Sprague and Henwood, Inc.
2. E. J. Longyear Company

Assaying
1. Abbot A. Hanks, Inc.
2. Dickinson Laboratories, Inc.
3. Ledoux and Company

Road Building
1. W. E. Huntley
2. Phelps and Reed

We are presently preparing verifax copies of all the leases we have taken and will forward them to you as soon as possible. We will continue to send you other pertinent information as it becomes available. This will include replies from Joy Manufacturing Company and Lucius Pitkin, Inc.

Yours very truly,

ROLAND F. BEERS, INC.

James R. Dunn

James R. Dunn,
Consultant

jrd/h
Encls. (as listed)

REC'D FEB 2 1956

RECEIVED
FEB 20 1956

MANUFACTURERS OF
DIAMOND DRILLS
DRILLING EQUIPMENT
DIAMOND BITS

BRANCH OFFICES
NEW YORK PITTSBURGH
PHILADELPHIA
GRAND JUNCTION, COLO.

EXECUTIVE OFFICES & PLANT
221 W. OLIVE STREET
SCRANTON, PA

SINCE 1883

SPRAGUE & HENWOOD, INC.

CONTRACTORS FOR
DIAMOND DRILLING
SHOT DRILLING · SOIL SAMPLING · PRESSURE GROUTING
WATER WELLS & CHURN DRILLING

MAIL ADDRESS · P O BOX 446
SCRANTON 2, PA.
DIAMOND 4-8507

January 31, 1956

Roland F. Beers, Inc.,
P.O.Box 1019,
Troy, New York

Att:- Mr. Wallace MacGregor,
Admin. Ass't. to the President

Gentlemen:-

We wish to acknowledge receipt of your letter of January 27th in reference to quoting you an estimate price for core drilling certain marble properties in New York State, Virginia and North Carolina.

There are many things that enter into the cost of core drilling such as the accessibility to drill locations, the distance to a water supply for use in drilling, the minimum amount of drilling at each site. However, we are giving you an approximate estimate on drilling, considering the conditions about average.

AX core drilling, recovering a core 1-1/8" in diameter and drilling a minimum of 1500 feet minimum in holes not over 250 feet in depth, approximate cost ----- ----- $ 3.75 per lin.ft.

EX core drilling, recovering a core approximately 1-5/8" in diameter and drilling a minimum of 1500 feet in holes not over 250 feet in depth, approximate cost ----- ----- $ 4.25 per lin.ft.

NX core drilling, recovering a core approximately 2-1/8" in diameter and drilling a minimum of 1500 feet in holes not over 250 feet in depth, approximate cost ----- ----- $ 4.75 per lin.ft.

For the above estimated price, we will furnish complete drilling equipment, including experienced crews and with our outfits, we would include 500 feet of waterline as it would be assumed that water would be available within this distance.

Drill locations are accessible by roads.

We have stated above the prices are based on drilling 1,500 feet on any one property or region such as 1500 feet in New York State, Virginia or North Carolina as we have based approximate moving charges on this minimum per region.

Should you require any additional information, do not hesitate to write us further.

We trust we may enter into a contract with you for this work when you are ready for it.

Very truly yours,

SPRAGUE & HENWOOD, INC.,

Wm. J. Schank,
Vice President

WJS:GT

REC'D FEB 11 1956

Longyear

E. J. LONGYEAR COMPANY
General Offices, Foshay Tower
Minneapolis 2, Minnesota, U. S. A.
TELEPHONE MAIN 2447 • CABLE LONGCO

RECEIVED
FEB 20 1956

February 9, 1956

Mr. Wallace MacGregor
Admin. Asst. to the President
Roland F. Beers, Inc.
447 Pinewoods Avenue
Troy, New York

Dear Mr. MacGregor:

We wish to acknowledge and thank you for your letter of February 6th in which you enclosed the questionnaire which we recently forwarded to you.

Based upon the information which you have furnished and previous experience in the Gouvernour-Balmat-Edwards district, we estimate that the cost of the work would range from approximately $3.00 to $4.00 per foot. We wish to emphasize, however, that this is only a rough estimate. In the event that you proceed with the work and desire a firm bid we should like to have our field representative examine the drill site and submit a report to us before preparing our quotation.

We trust that the above information is sufficient for your present requirements. However, if we can be of further assistance to you, please do not hesitate to get in touch with us.

Yours very truly,

E. J. LONGYEAR COMPANY

M. J. Gleason, Manager
Contract Drilling Division

MJG:bal

RECD JAN 31 1956

ABBOT A. HANKS, INC.
ENGINEERS, ASSAYERS, CHEMISTS, METALLURGISTS
CONSULTING - TESTING - INSPECTING
ESTABLISHED 1880
684 SACRAMENTO STREET
SAN FRANCISCO 11, CALIFORNIA
TELEPHONE GARFIELD 1-1007

RECEIVED
FEB 20 1956

January 27, 1956

Roland F. Beers, Inc.
P.O. Box 1019
Troy, New York

ATTENTION: Wallace MacGregor

Gentlemen:

Your letter of January 26th is very much appreciated and we are glad to send you one of our price lists indicating the charges for assay work. There is no difference in the charges for the items mentioned under Marble or Schist.

We believe that a 3 to 5-pound sample of approximately a quarter inch material would be sufficient for our work and would be plenty of material for our assay determinations.

As you might well imagine we put these samples through the rolls or fine crusher and then pulverize the sample to be assayed.

Samples sent to us, arriving on the morning of any day, in all probability will be reported out to you the third day thereafter.

We hope that we will be of service to you.

Yours very truly,

ABBOT A. HANKS, INC.

By Herbert D. Inrie
Herbert D. Inrie

HDI/avb

RECEIVED
FEB 20 1956

Control and Umpire Assays

Careful Chemical Analyses

Supervision of Sampling at Smelters

Qualitative Spectrographic Analyses

Inspection and Tests Structural Materials

ABBOT A. HANKS, Inc.
624 SACRAMENTO STREET
SAN FRANCISCO 11, CALIFORNIA
GARFIELD 1-1697

Price List

Abbot A. Hanks, Inc.

ANALYTICAL
CHEMISTS
& ASSAYERS
TESTING AND INSPECTING
ENGINEERS

ESTABLISHED 1866
INCORPORATED 1924

624 SACRAMENTO STREET
SAN FRANCISCO 11, CALIFORNIA
GARFIELD 1-1697

APRIL 1, 1953

RECEIVED
FEB 20 1956

Chemical Determinations

Alumina, Antimony, Arsenic, Calcium, Carbon (Graphite), Chromium, Magnesium, Manganese, Nickel, Phosphorus, Silica and Sulphur, each	$ 4.00
Barium, Bismuth, Cadmium, Cobalt, Molybdenum, Palladium, Potassium, Platinum, Sodium, Tin, Titanium, Tungsten and Vanadium, each	5.00
Beryllium, Calcium Fluoride, Lithium, Selenium, Tellurium and Zirconium, each	10.00
Identification of minerals — $3.00 and up, per sample.	
Coal Analysis, approximately	$10.00
Coal Analysis, including Sulphur and B.T.U.	20.00
QUALITATIVE SPECTROGRAPHIC ANALYSIS	6.00
Total Rare Earth Oxides, plus Thorium (hand sample)	15.00
Steel (per element)	3.00
Steel (alloy per element)	4.00

Fees given on request for examination, test, analysis, plant and field inspection, on materials of construction, such as: cement, steel, brick, tile, etc.

Price List of Ore Assays

Gold	$2.00
Silver	2.00
Copper	3.00
Lead	3.00
Iron	3.00
Zinc	4.00
Mercury	4.00
Uranium	10.00

Free Gold by Amalgamation	5.00
Bullion Assay—Gold	4.00
Bullion Assay—Silver	4.00

All Assays Run in Duplicate

Where clients have not already established credit in this office it is expected that charges will be prepaid.

Remittance should be sent by separate letter and in each case instructions should be enclosed with the samples.

Many samples are received at this office without proper instructions. We cannot assume the responsibility of assaying samples where the marks and instructions are not complete and definite. Shipper's name and address should be placed inside of the package, as outside labels are often mutilated in transit.

CONTROL ANALYSES ONE AND ONE HALF TIMES ABOVE LIST PRICES

REC'D JAN 31 1956

GEO. L. DICKINSON—PRESIDENT
GEO. O. DICKINSON—VICE-PRESIDENT
ROBERT L. DICKINSON—VICE-PRESIDENT

J. A. HANCOCK, PH. D.
CONSULTING CHEMIST

ASSAYERS — CHEMISTS — METALLURGISTS
UMPIRES

DICKINSON LABORATORIES, INC.

P. O. BOX 7013 • PHONE 2-9264
1300 WEST MAIN ST.
EL PASO, TEXAS

RECEIVED
FEB 20 1956

DICKINSON LABORATORIES

SUBSIDIARIES:
TEXAS TESTING LABORATORIES
COTTONSEED OILS
PHYSICAL TESTING
FARM SERVICE LABORATORY
SOIL AND WATER ANALYSES

Jan. 29, 1956

LAB. NO.

Roland F. Beers, Inc.,
P. O. Box 1019,
Troy, New York.,

Mr. Wallace MacGregor-Admin. Ass't to the President

Gentlemen:

Thank you for your inquiry as to prices of assaying. We enclose herewith our latest price card for assaying of samples for the various minerals.

There is always a professional discount to other laboratories of from 10 to 20% on quantity work.

If samples are pulverized at your plant, a 200 grams sample is sufficient for any analysis we might do on such sample. We have a complete crushing and pulverizing plant and always grind our samples to Minus 100 mesh.

If samples are received in the morning one day for the elements mentioned in your letter of the 26th (Zinc, Lead and Copper) we are usually ready to air-mail the results at least by the following night.

We would appreciate doing your work for you and you may be sure we will give you the best price, consistent with accurate and prompt service.

Yours very truly

Dickinson Laboratories, Inc.,

Geo. L. Dickinson, Pres.

SHIPPER'S REPRESENTATIVES AT
EL PASO SMELTING WORKS
PHELPS DODGE REFINERY
FOR
ORES AND SCRAP COPPER

REPRESENTATIVES
FOR
ORE SHIPPERS AT
MEXICAN BORDER POINTS

RECEIVED
FEB 20 1956

DICKINSON LABORATORIES

Umpire Assayers, Chemists
and Metallurgists

1200 W. Main St.
EL PASO, TEXAS

CONSULTING SERVICES
AVAILABLE

P. O. Box [redacted]
Phone 2-[redacted]

PRICE SCHEDULE — ORE ANALYSIS

Effective August 1, 1954

Gold	$ 1.75
Silver	1.75
Gold & Silver	2.50
Copper	2.00
Lead	2.00
Zinc	2.00
Aluminum	$ 5.00
Antimony	4.00
Arsenic	5.00
Barite ($BaSO_4$)	6.00
Berylium	8.00
Bismuth	5.00
Cadmium	5.00
Calcium	3.00
Chromium	5.00
Cobalt	5.00
Fluorspar (CaF_2)	5.00
Fluorspar + SiO_2	7.00
Gypsum ($CaSO_4$)	6.00
Insoluble	2.00
Iron	2.00
Lithium	10.00
Magnesium	5.00
Manganese	2.50
Gold or Silver and Copper or Lead	$ 3.25
Gold, Silver and Copper or Lead	4.25
Gold, Silver, Copper and Lead	6.00
Mercury	$ 4.00
Molybdenum	5.00
Nickel	5.00
Phosphorus	5.00
Platinum Group (each)	10.00
Potassium	5.00
Silica	3.50
Sodium	5.00
Strontium	10.00
Sulphur	3.50
Thorium	10.00
Tin	5.00
Titanium	5.00
Tungsten	5.00
Uranium-Radiometric	2.00
Uranium Chemical Analysis	8.00
Vanadium	5.00
Zirconium	10.00

PRICE SCHEDULES AVAILABLE FOR:

ANALYSIS OF: Cottonseed and Cottonseed Products—Grains—Water, for Irrigation and Drinking Purposes—Fertilizers—Steel and other Metals—Physical Testing.

Prices for other analyses, not listed, furnished upon request.

Please accompany samples with check or money order, unless credit is already established.

REC'D JAN 30 1956

RECEIVED
FEB 20 1956

LEDOUX & COMPANY
(INC.)

TELEPHONE
TEANECK 7-7160

359 ALFRED AVENUE
TEANECK NEW JERSEY

CABLE ADDRESS
"LEDOUX TEANECK"

INDEPENDENT CONTROL & RESEARCH CHEMISTS, SPECTROSCOPISTS - SAMPLING, WEIGHING & SHIPPERS' REPRESENTATION

January 27, 1956

Roland F. Beers, Inc.
P. O. Box 1019
Troy, New York

Attn: Mr. Wallace MacGregor

Gentlemen:

Thank you for your inquiry of January 26, 1956. Unfortunately, this company does not publish a formal price list because costs vary greatly, both with the element to be determined and with the character of the soil or ore in which the elements are associated. Other factors depend upon the number of samples to be handled at one operation, the accuracy (will single rather than duplicate determinations be adequate?), and with the time require for reports.

Perhaps the following charges will be of interest to you. They contemplate handling only from one to three samples at a time with duplicate determinations and, therefore, reflect our highest fees:

1. Qualitative spectrographic examination of unknown minerals for elements of value - - - - - - - $10. a sample

2. Quantitative analysis for zinc and lead in limestone gangue (Marble) - - - - - - - - - - $16. a sample

3. Quantitative analysis for zinc, lead and copper in silicate material, such as schist - - - - - - $24. a sample

The fees above can be reduced substantially if the zinc, lead and copper contents are low enough to warrant spectrographic analyses. We offer a discount on quantitative analyses of 40% when single determinations are adequate and additional discounts for quantity work. Our research department is competent to develop adequate low-priced methods where a major mine examination project is involved.

We realize this information may not be of great value to you. We will appreciate it greatly if you request bids on specific projects.

Very truly yours,

LEDOUX & COMPANY

W C Bowden

W. C. Bowden
Secretary

WCB/jmg

Ashley 2-5715

REC'D FEB 6 1956

W. E. Huntley

LANDSCAPING AND EXCAVATING

In Business Since 1929

Pinewoods Avenue
Route 57, Troy, N. Y.

RECEIVED
FEB 20 1956

January 31 1956

Roland F. Beers, Inc
Pinewoods Avenue
Troy N.Y.

Gentlemen:

The following quotations are for rental rates per month. Included in each price is the standard operator's wages, the gasoline and oil used approximately in one month, the maintenance of the machinery and transportation to the job.

1.	D-6 bulldozer	$ 2,654.00
2.	D-8 "	4,231.00
3.	Pan	1,046.00
4.	Grader	2,494.00
5.	Payloader	2,000.00
6.	Backhoe	2,238.00
7.	Dump truck	1,500.00
8.	Shovel 4 (no oiler)	4,176.00
9.	Water pumps	745.00
10.	Gasoline chain saws	897.00
11.	Compressor without operator	205.00
	Compressor operator 50.00 per day	
12.	Roller 10ton	2,071.00

The above quotation does not give a true picture of the cost of building a road as all of the machines may not be used; they would not be used simultaneously; one operator may run different machines at different times.

Yours very truly,

W. E. Huntley Jr.
per E.W.H.

WEH;ewh

W. E. Huntley, Jr.

Ashley 2-5715

REC'D FEB 6 1956

W. E. Huntley

LANDSCAPING AND EXCAVATING

In Business Since 1929

Pineweeds Avenue
Route 57, Troy, N. Y.

RECEIVED
FEB 20 1956

February 2 1956

Roland F.Beers,Inc.
Pineweeds Avenue
Troy N.Y.

Gentlemen;

The following quotations are a supplement to the rental rate of January 30th and shows a breakdown of bare machinery per month ,prevailing operator's wage rate,and other costs. The machinery rates are based on " Associated Equipment Distributors Compilation of Rental Rates " A E D located at 20 East Cedar Street Chicago, Illinois. The wage scale is from a recent New York State prevailing rate listing acceptable to the authorities under the labor laws.

1. D-6 Bulldozer per month	$ 930.00	bare machine no operator	
2. D-8 " " "	1,957.00	" " "	
3. Blade for bulldozer	224.00	" " "	
4. Pan	599.00	" " "	
5. Dbl. drum	147.00	" " "	
6. Grader	694.00	" " "	
7. Payloader	500.00	" " "	
8. Backhoe	738.00	" " "	
9. Dump truck per day	50.00	with driver	
10. Roller (10 ton) per month	571.00	with oout operator	
11. Shovel " "	1,176.00	" "	
12 Compressor " "	205.00	" "	
13. Water pumps " "	25.00	" "	

On the D-8
Maintenance,gas and oil averages $30.00 per day, On the D- 6 Maintenance, gas and oil averages $20.00 per day. Smaller machines will average from $ 5.00 to $ 7.00 per day.

I am including a list of rates as is generally included with all job proposals showing minimum rates allowed under N. Y. State Labor laws.

Yours very truly,

W.E. Huntley Jr.
pres. Treas.

W.E.Huntley, Jr.

WEH;ewh

REC'D FEB 6 1956

PREVAILING RATE CASE NO. 55-2778 DATE Aug.18.1955

OCCUPATIONS.	RATE PER HOUR
Aggregate Bin Operator	$2.20
Asphalt Baker	2.27½
Asphalt Tamper & Smoother	2.27½
Asphalt Moto Paver	2.90
Barber Green Loader	2.45
Blacksmith	2.25
Bricklayer	3.30
Bulldozer Operator	2.75
Carpenter	2.97½
Carry All Scraper Operator	2.75
Cement Bin Operator	2.20
Cement Finisher	3.30
Chain Saw Operator	2.32½
Compressor Operator(under 500 cu.ft.)	2.45
Compressor Operator(500 cu.ft. & over)	2.80
Concrete Worker (bootman)	2.32½
Concrete Mixer Operator (16S & under)	2.20
Concrete Mixer Operator (over 16S)	2.90
Concrete Pump Operator	2.80
Crane Operator (under 1½ cu.yds.)	2.95
Crane Operator (1½ cu.yrs.& over)	3.10
Disbributor Operator	2.17½
Dragline Operator (under 1½ cu.yds.)	2.95
Dragline Operator (1½ cu.yds. & over)	3.10
Drill Operator (wagon drill)	2.40
Drill Runner (jackhammer	2.32½

RECEIVED
FEB 20 1956

PREVAILING RATE CASE NO. 55-2778 DATE Aug.18.1955

OCCUPATIONS	RATE PER HOUR
Finishing Machine Operator(concrete)	$2.45
Fireman	2.45
Form Tamper	2.20
Grade-All Operator (under 1½ cu.yds.)	2.95
Grade-All Operator (1½ cu.yds. & over)	3.10
Grader Operator (elevated type)	2.80
Grader Operator (power)	2.90
Grader Operator (form & fine grade)	2.45
Handfloat Operator(assistant finisher on pavement only)	2.32½
High Lift Excavators (under 100 h.p.)	2.80
High Lift Excavators (100 h.p. & over)	2.90
Ironworker (Reinforcing - except pavement each)	3.15
Ironworker (structutal)	3.15
Laborer	2.17½
Le Tourneau (scrapers & pans)	2.75
Mason (stone)	3.30
Mechanic (construction equipment)	2.75
Oiler	2.20
Painter	2.50
Painter (spray)	3.00
Painter (steel)	2.60
Pavement Form Setter	2.35
Pavement Form Setter (master)	2.65
Pile Driver Operator	3.10
Pile Driver	3.40
Pipe Layer	2.32½

RECD FEB 6

PREVAILING RATE CASE NO. 55-2778 DATE Aug. 18, 1955

OCCUPATIONS	RATE PER HOUR
Post Driver Operator (guard rail)	$2.45
Powderman	2.32½
Pump Operator (under 4")	2.20
Pump Operator (4" & over)	2.45
Quarry Master	3.10
Roller Operator (grade & fill)	2.45
Roller Operator (high type finish)	2.75
Scoopmobile Operator	2.75
Shovel Operator (under 1½ cu.yds.)	2.95
Shovel Operator (1½ cu.yds. & over)	3.10
Spreader Box Operator (Bituminous)	2.75
Spreader Box Operator (concrete)	2.45
Tractor Operator	2.45
Trenching Machine Operator	2.90
Truck Driver (dump)	2.17½
Truck Driver (euclid)	2.42½
Euclid Loader Operator	3.10
Tourn-A-Pulls	2.75
Vibrator Operator	2.32½
Waterproofer	2.85

I

PHELPS & REED
RICHVILLE, N. Y.
PHONE 2601
ENGINEERING—CONTRACTING

MURRAY PHELPS
HAILESBORO, N. Y.
PHONE 744-R-2

E. J. REED
RICHVILLE, N. Y.
PHONE 2500

February 8, 1956

RECEIVED
FEB 20 1956

Roland F. Beers, Inc.
17 East Main St.
Gouvernour, N.Y.

Listed below is an estimated price for building three types of temporary roads for exploration core drills. These accessroads would be of a temporary type andthhgy will be so constructed as to cause as little property damage as possible. Due to the temporary nature of the roads, alignment and grades not being a factor, they will be constructed thru the least difficult terrain to reach the designated area for drilling. Most of the work of clearing and leveling would be done with dozers of a size to accomplish the work economically. However in exceedingly rough terrain other equipment such as front end loader, shovel or trucks to move fill might be necessary. In a heavily wooded prospectin area it would be necessary to clear the site and therefor a chain-saw would be necessary.

The temporary roads are broken down into three types to cover the anticipated construction conditions. Number I road would be all dozer work performed on fairly level terrain - pastures and meadows. Number 2 would be dozer work involving some leveling and light tree and brush clearing. Number 3 temporary road would be in the more rugged terrain involving leveling, clearing and some tree cutting, requiring a heavy dozer and perhaps other equipment.

RECEIVED
FEB 20 '68

PHELPS & REED
RICHVILLE, N. Y.
PHONE 2601
ENGINEERING—CONTRACTING

MURRAY PHELPS
HAILESBORO, N. Y.
PHONE 744-R-2

E. J. REED
RICHVILLE, N. Y.
PHONE 2600

The three types of road quoted on should cover most of the conditions however it is perfectly possible that after the aerial survey is made that an area might be chosen that would require more work and equipment than is covered by the three conditions. If for example the road crossed a swamp it might be necessary to corduroy thereod and place some fill. In that event dozers would be used and possibly chainsaw, loader, truck or shovel. The lowbed or tractor trailer would be used to move the construction equipment on to the job.

Estimated prices for temporary roads per mile.

Number I type road	$160.00
" 2 " "	300.00
" 3 " "	600.00

Below we are listing equipment rental rates on various types of machinery that might be used on this work. The rates include the operator. We carry compensation, liability and property damage insurance and in the event that we are employed we would furnish a certificate of such.

T-6 dozer	$8:00	per hour.
D-6 "	12.00	" "
I yd front end loader	9.00	" "
¾ yd. backhoe or shovel	12.00	" "

REC'D FEB 17 195

AEROMAGNETIC SURVEYS
LIMITED

1450 O'CONNOR DRIVE, TORONTO 16, CANADA • PHONE: PL. 5-1141 • CABLE CODE: AERMAG, TORONTO

RECEIVED
FEB 27 1956

Experienced in all branches of airborne geophysical survey

OUR REF: ASL-2-4-180

YOUR REF:

February 15, 1956.

Dr. R.F. Beers,
Roland F. Beers, Inc.,
P.O. Box 1019,
Troy, New York,
U.S.A.

Dear Dr. Beers:

We are pleased to give you the following quotations for carrying out helicopter-borne E.M. surveys in the United States. These surveys will be conducted in accordance with the attached specifications.

A. Ferry charge to cover movement and setting up (return mileage) ... ... $ 2.00 per mile (U.S.)

B. Charge per line mile for survey .... $14.00 per mile (U.S.)

In the event that the flight lines were so short as to occasion considerable loss of flying efficiency, it would be necessary to add a surcharge to the above price per line mile.

Yours very truly,

Aeromagnetic Surveys Limited

D. G. MacKay

D.G. MacKay
General Manager.

PHELPS & REED

RICHVILLE. N. Y.

PHONE 2601

ENGINEERING—CONTRACTING

MURRAY PHELPS
HAILESBORO, N. Y.
PHONE 744-R-2

E. J. REED
RICHVILLE, N. Y.
PHONE 2800

5 yd. dump truck	$4.50	per hour.
25 ton tractor trailer (low-bed)... ..	10.00	" "
Chain saw (one man)	4.50	" "

Phelps & Reed

Murray Phelps
E J Reed

SPECIFICATIONS FOR HELICOPTER-BORNE E.M.

RECEIVED

FEB 27 1956

Equipment

Aeromagnetic Surveys Limited will provide and operate the following equipment:

1. An E.M. device recording amplitude measurement of the resultant field with reference to the primary field at a frequency of 4,000 c.p.s.

2. An E.M. device recording quadrature measurement of the resultant field with reference to the primary field at a frequency of 4,000 c.p.s.

3. A radiation detector suitable for measuring gamma radiation at a height of 100 feet.

4. A radio altimeter mounted in the helicopter.

5. A method for tying in the record with ground positions.

Flying

Aeromagnetic Surveys Limited will observe the following conditions of flight:

6. Flight lines will be flown parallel at spacings according to the customer's instruction.

7. Terrain clearance of the "bird" will be maintained as closely as practicable to 100 feet, consistent with safety of aircraft and crew.

8. Flight direction will be according to the customers instruction.

Data

9. Aeromagnetic Surveys Limited will prepare or obtain either photo maps or conventional maps at a suitable scale to permit accurate navigation.

10. Significant anomalies will be located directly on the above maps.

11. Data delivered to customer will include:

    (a) Field records;
    (b) Map or photo map showing actual flight track and location of all significant anomalies.

Security

12. Strict security will be maintained over all data and access will only be granted to authorized persons.

IN REPLY REFER TO:

~~Grounell~~
Betty

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Colorado Plateau District
P. O. Box 360
Grand Junction, Colorado

February 14, 1956

Mr. Thor Kiilsgaard
U. S. Geological Survey
Room 5884, GSA Building
Washington 25, D. C.

Locke Omck-4051

Dear Thor:

I have reviewed with interest the MMA application of the American Gypsicote Company.

Some of the ideas expressed in this application have been tried in the area already without much success, but to my knowledge electromagnetics has never been used. I presume this is because electromagnetics is a relatively new technique and has been in use only a short time to locate massive sulfide deposits. The most notable use of this technique is in the recent zinc discoveries made in the Bathurst, New Brunswick, area. These deposits, of course, are different from the New York deposits in that they contain a considerable amount of pyrrhotite. Also, I don't believe the New Brunswick deposits contain any appreciable amount of graphite. This, too, would be in contrast to the New York deposits. As you probably know, the original geophysical work done on the Bathurst deposits was with a ground magnetometer which was somewhat successful in picking up the magnetic anomalies. The surface indications showed practically no zinc in the soil or bedrock. Therefore, for several years nothing was done with the development of these properties.

The St. Joseph Lead Company drilled one of the New Brunswick anomalies several years ago and was unsuccessful in finding new zinc ores. I believe that electromagnetics was used only to extend the known anomalous areas previously found by standard geophysical methods. The interesting part of geophysical exploration of this type is that they were unable to determine from the records that the anomalous areas contained the mineral sought. Consequently, follow-up exploration, either geochemical or diamond drilling, is an absolute necessity.

I note in the application that these people plan a geochemical prospecting program after the geophysical work has been completed. Although this technique has received considerable publicity both in and out of the Geological Survey, there are still serious problems to be solved, particularly when prospecting in glaciated country. Again, St. Joseph Lead Company has used soil sampling in the area several miles south of Balmat northeastward on the Balmat belt to a point just east of Norman. They have taken literally thousands of

soil samples and to my knowledge not one of the anomalous [illegible] zinc mineralization in the bedrock. They also had a rather ext[illegible] water sampling program in which all the streams flowing from the Andirondacks massif were analyzed for zinc. This program was [illegible] to find other Balmats to the east of the main producing area. In addition, the Company has tried both on its own account and under [illegible] tract practically every geophysical technique, including such things as radiotransmission, resistivity, magnetics, etc. Of course all of these techniques will produce anomalies but the anomalies cannot be interpreted in the light of the known ore bodies. Many of the best geophysical anomalies have been tested by drilling and again not one zinc ore body has been discovered on data solely from the geophysical exploration.

With this rather sad experience for background, I am somewhat skeptical of the success of the proposition outlined in the application. However, I must plead ignorance in the uses of [illegible] magnetics in finding ore bodies of this type.

If timed properly and if Andy approves, I would [illegible] come to Washington and be the Survey's representative in [illegible] on this contract. It is quite possible that I could get [illegible] pertinent information from the St. Joseph Lead Company, either in New York or in Balmat. I still have many friends in the [illegible] and feel quite confident that they would cooperate in releasing [illegible] information if used on a "Company Confidential" basis. In the event this doesn't "pop" before the middle of March, perhaps we [illegible] time to discuss this when I am in Washington (March 19-[illegible]).

I am returning the Docket to you at this time.

Sincerely yours,

Arnold L. Brokaw
District Supervisor
Colorado Plateau District

Enclosure

ALB/je

File Copy
Surname
Griswold
Zyrman

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

FEB - 9 1956

Mr. Roland F. Beers, President
Roland F. Beers, Inc.
P. O. Box 1019
Troy, New York

Re: Docket No. DMEA-4051 (Zinc-Lead-Copper)
Roland F. Beers, Inc.
Agent for The American Syndicate
120,000 acres more or less leased or optioned in St. Lawrence and Jefferson Counties, New York

Dear Mr. Beers:

We have your letter of February 2, enclosing quotations from Aeromagnetic Surveys Limited covering airborne geophysical surveys. As we understand it, the quotations cover work by a fixed wing plane, whereas we believe you plan to cover the northern New York project by helicopter. We should therefore have quotations covering helicopter work.

At the January 19 meeting, it was agreed that you would promptly send us material covering electro-magnetic work done by plane plus ground work by your organization in Canada. Such material would help us in attempting to evaluate the proposed New York-Adirondack program. Therefore, will you forward us this material as soon as convenient.

Sincerely yours,

C. O. Mittendorf

Administrator

WRGriswold/bjl (2/9/56)

Copy to: Docket
Admr. R. File
Op. Committee
Base Metals
Mr. Bishop
Mr. Kiilsgaard
Region V (2)
Chron.

R.G.G.

ROLAND F. BEERS, INC.

OFFICE AND LABORATORY:
447 PINEWOODS AVENUE
PHONE ASHLEY 2-2351

MAIL ADDRESS:
POST OFFICE BOX 1019
TROY, NEW YORK

February 2, 1956

RECEIVED
FEB - 3 1956

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

Re: Docket No. DMEA-4051
Roland F. Beers, Inc.
Agent for the American Syndicate
120,000 acres more or less leased or optioned in St. Lawrence and Jefferson Counties, New York

Dear Sir:

Enclosed herewith are four copies of letter quotation dated January 27th, 1956, from Aeromagnetic Surveys Limited, Toronto, Canada, covering airborne geophysical survey. This letter quotation should be made a part of Attachment F of our Application for Aid in Exploration Project, Docket No. 4051.

Yours very truly,

ROLAND F. BEERS, INC.

Roland F. Beers II

President

h
encls. (4)

insertion made in Attachment F
file

REC'D JAN 30 1956

AEROMAGNETIC SURVEYS LIMITED

Experienced in all branches of airborne geophysical survey

1450 O'CONNOR DRIVE, TORONTO 16, CANADA ○ PHONE: PL. 3-1141 ○ CABLE CODE: AERMAG, TORONTO

OUR REF: ASL-2-4-180

YOUR REF:

January 27, 1956.

Dr. R.F. Beers,
P.O. Box 1019,
Troy, New York,
U.S.A.

Dear Dr. Beers:

We are pleased to give you the following quotation covering airborne geophysical survey of certain areas located in the Illinois-Wisconsin region, in the Northern Appalacians and in the Southern Appalachians. The work will be performed in accordance with the attached specifications.

A. Ferry charge covering movement ... $ 1.50 (U.S.) per mile

B. Survey flying and mapping, including airborne magnetometer, airborne E.M. and airborne scintillation counter ... ... $18.00 (U.S.) per line mile

C. Survey flying as in "B" above but not including the airborne magnetometer ... ... $13.00 (U.S.) per line mile

The above prices only apply if the average length of the flight lines is 10 miles or more.

Yours very truly,

Aeromagnetic Surveys Limited

D. G. MacKay

D.G. MacKay
General Manager.

REC'D JAN 30 1956

SPECIFICATIONS

RECEIVED
FEB - 3 1956

Equipment

Aeromagnetic Surveys Limited will provide and operate the following equipment:

1. An airborne magnetometer and ancillary equipment suitable for measuring the earth's total magnetic field.

2. An airborne radiation detector and ancillary equipment suitable for measuring the radioactive emanations which can be recorded at a ground clearance of 500 feet.

3. An E.M. device recording the phase shift between primary and secondary fields where the primary field is transmitted at a frequency of 2300 c.p.s.

4. An E.M. device recording the phase shift between primary and secondary fields where the primary field is transmitted at a frequency of 400 c.p.s.

5. A radio altimeter mounted in the aircraft and continuously recording the altitude of the aircraft above ground level.

6. A 35 mm. camera mounted in the aircraft and synchronized with all of the above records to provide accurate positiong of these records with respect to the ground.

Flying

Aeromagnetic Surveys Limited will observe the following conditions of flight:

7. Flight lines will be flown parallel at spacings according to the customer's instruction.

8. Terrain clearance will be maihtained as closely as practicable to 500 feet, consistent with safety of aircraft and crew.

9. Flight direction will be according to the customer's instruction.

Data Reduction and Plotting

10. Aeromagnetic Surveys Limited will prepare base maps from mosaics or from existing maps, if suitable, to a scale of 2640' = 1" approximately, on which the geophysical data will be plotted.

11. The final record will be in the form of linen tracings showing the following:

(a) Planimetry, sufficient detail of drainage and existing culture to allow easy location on the map.

(b) Flight lines in fine dashed lines.

(c) Magnetic contours at 25 gamma intervals in the areas of low magnetic gradient and at suitable intervals in areas of higher magnetic gradient.

.....2

REC'D JAN 30 1956

(d) Radiometric anomalies.

(e) Location of E.M. anomalies.

(f) Legend showing symbols used.

Security

12. Strict security will be maintained over all data and access will only be granted to authorized persons.

oooooo

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

January 19, 1956

Memorandum for the Files

From: Base Metals Division

Subject: Conference January 19 regarding the following applications:

Docket No. DMEA-4051 (Zinc-Lead-Copper)
Roland F. Beers, Inc.
Agent for the American Syndicate
St. Lawrence and Jefferson Counties, New York

Docket No. DMEA-4052 (Lead-Zinc-Copper)
Roland F. Beers, Inc.
Agent for The American Syndicate
Grant, Iowa and Lafayette Counties, Wisconsin,
Jo· Daviess County, Illinois and Dubuque County, Iowa

Test work is to begin on the Upper Mississippi Valley work on February 1st. This is to be done by fixed wing plane. Flying can be done under favorable conditions in 4 days and under unfavorable conditions in about 8 days. Data will be available about 2 weeks after the work is begun.

Flight work by helicopter is about 60% of the cost of the fixed wing work. Helicopter work is really better as it is done nearer the ground. Prices quoted in the contract for both types of flying are the costs quoted by the subcontractor. These costs are $10 per flight mile for the helicopter work and $13 per flight mile for the fixed wing.

Economic Limits for Zinc Ore. (Upper Mississippi Valley District)

3% Zn under good price conditions.
5% Zn under poor price conditions.

Pyrite is a good indicator of Zn ore in this district and tends to indicate commercial zinc ore in more than 50% of the deposits.

Exploration cost of geophysical methods is more or less about 8 cents per ton of ore.

In the Iowa-Illinois area there is a very great possibility that there is much Pb undiscovered. These deposits will not be large ones but they would probably be high-grade.

The Soft Calvert deposit is approximately 150' deep. This is a known orebody and has not been mined. The Magoon-Pogeman and the Ivy deposits are not economic deposits but they are sulphide deposits and they are at a depth of from 200'-240' which would give depth data.

W. P. Klugescheid

W. P. Klugescheid

At the January 19 meeting, it was agreed that the Applicant would promptly send us material covering electro-magnetic work done by plane plus ground work by ~~its~~ organization in Canada. Such material would help us in attempting to evaluate ~~its~~ proposed New York-Adirondack program.

The Applicant stated that it must accept helicopter delivery for the New York work on March 15.

It was agreed that the preliminary work in the Wisconsin area be assembled and presented to the Government as soon as possible, and that immediately upon receipt of such data we could start giving consideration to the two applications.

W. R. Griswold

WPKlugescheid/er 1/26/56
WRGriswold
Copy to: Docket (2)
Base Metals (2)
Chron.

ROLAND F. BEERS. INC.

OFFICE AND LABORATORY:
447 PINEWOODS AVENUE
PHONE ASHLEY 2-2351

MAIL ADDRESS:
POST OFFICE BOX 1015
TROY, NEW YORK

January 6, 1955

Gruwold

Mr. C. O. Mittendorf, Administrator
Defense Minerals Exploration Administration
U.S. Department of the Interior
C Street between 18th and 19th Streets, N.W.
Washington 25, D.C.

Pocket

RECEIVED
JAN 10 1955

Dear Mr. Mittendorf:

This is in answer to your letter of December 30, 1955, to Dr. Beers who is in Europe at this time.

It is our belief that a test program in the St. Lawrence and Jefferson County area, New York, (DMEA-4051) will do no more than delay the program. The known deposits contain sufficiently high percentages of conductive minerals to be picked up easily and the average size is apparently large enough to be detected by the airborne techniques according to our Canadian advise. Our plan at this time is to use helicopter installation which is theoretically more sensitive than the fixed wing installations. However the performance characteristics have not been completely tested. Of course if the results of the helicopter tests in Canada are disappointing, we will employ the fixed wing aircraft.

The area between Edwards and Balmat to which I believe you referred is mostly held by St. Joseph Lead Company. However, we have some leases between Balmat and Edwards and are in the final stages of negotiation with International Talc Company to explore their mineral lands in the same area. These are fairly extensive. In view of the relatively high probability of success in this small area it has been decided to explore it although we do not have all of the mineral rights.

I think that the barren pyrite deposits which you mentioned will not be a particular problem. They are in distinct zones in gneiss whereas the lead and zinc occurs only in the marble in economic quantities. I have looked at most of these pyrite deposits and mapped (plane tabled) one in detail. We are using some of these deposits to test our ground geophysical equipment.

I hope this answers your question satisfactorily. I will be glad to supply any more detailed data we have if you wish it.

Very sincerely yours,

James R. Dunn

James R. Dunn

jrd/v

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

Greenwald
Beers

January 5, 1956

Dorlet

Memorandum

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

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

Subject: DMEA-~~4075~~ 4051 (Lead-Zinc-Copper)
Roland F. Beers, Inc., agent for the
American Syndicate, Inc.

Reference is made to your letter of December 30.

We have no background data here which are pertinent. We are forwarding the entire file to Mr. W. T. Millar, Supv. Mining Engineer, Bureau of Mines, College Park, Maryland, for review and comment. We understand that the Geological Survey men most familiar with the Adirondacks (Buddington, Brokaw, Engel) have been consulted. during the Washington commodity review.

While we are aware of the value of this type of large-scale, all-out approach to exploration, we have a few doubts about certain phases of the program:

(1) Isn't this really prospecting, and if not, how does it differ from the proposal of Coastal Petroleum Corp. (DMEA-3570) which was denied?

(2) The applicant's lease-holdings appear to be small and scattered, so that much of the flying may be over non-contract area.

(3) If a contract is to be prepared, it will require more detailed data as to location of flight lines, location of areas to be explored on the ground, etc., than the application provides. We couldn't make much out of the two maps "approximate lease holdings" and "Electromagnetic flight areas" since they contain no scale or orientation and no tie points by which the two can be compared.

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

RECEIVED
JAN 9 1956

V. J. Lynch
V. J. Lynch, Mining Engineer
U. S. Bureau of Mines

File Copy
Surname
Griswold
Kiilsgaard
Geehan
Johnson

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

Mr. Roland F. Beers, President
Roland F. Beers, Inc.
P. O. Box 1015
Troy, New York

DEC 30 1955

Re: Docket No. DMSA-4051 (Zinc-Lead-Copper)
Roland F. Beers, Inc.
Agent for The American Syndicate
120,000 acres more or less leased or optioned in St. Lawrence and Jefferson Counties, New York

Dear Mr. Beers:

We have your letter of December 12, addressed to Mr. Johnson. With reference to the cited application, there are certain points which we might mention in this connection.

It is our understanding that test flights with the airborne equipment initially will be made at the expense of your syndicate. Obviously, neither your concern nor the Government would be greatly interested thereafter if such preliminary work gave only negative results.

We note that your map covering proposed flights embraces certain areas in which, we are advised, all favorable ground is already controlled by another mining company. There would appear to be little purpose in including such ground in a flight plan.

In your application you have noted the presence of graphite over the general area. However, there are also a considerable number of known deposits of barren pyrite, and probably a certain number of such deposits which are still unknown. Naturally, such deposits could produce complications.

We are not clear as to whether the relatively narrow, vein-like ore deposits of the district will afford satisfactory anomalies. Certainly they are of a different order of magnitude and different in form from the typical large sulphide deposits where geophysical work has proven to be successful. Nevertheless, we are sure that you are well aware of the various problems involved, and we shall await with interest the results of the test flights.

Sincerely yours,

C. O. Mittwoder

Administrator

WRGriswold/bjl (12/27/55)
Copy to: Docket
Admr. R. File
Op. Committee
Base Metals
Mr. Bishop, Mr. Kiilsgaard Region V (2) Chron.

File Copy
Surname
Griswold
Selfridge
Jefferson

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

DEC 30 1955

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

Re: Docket No. DMEA-4051 (Zinc-Lead-Copper)
Roland F. Beers, Inc.
Agent for The American Syndicate
120,000 acres more or less leased or optioned in St. Lawrence and Jefferson Counties, New York

Dear Mr. Laurence:

Relative to the cited application, we are enclosing the memorandums dated November 16 and December 8, 1955, by O. M. Bishop, USBM, and Thor A. Kiilsgaard, USGS, respectively. You will also receive copies of our letter to the Applicant in which we cite certain points for consideration.

Obviously, there would be little purpose in referring this application to you for the conventional type of field examination, but we would appreciate having your ideas and any background data you may consider pertinent. Likewise, we would appreciate having your comments regarding the proposed costs.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee (GB)

Enclosures

WRGriswold/bjl (12/27/55)

APPROVED:

/s/ Robert W. Geehan (GB)
Member, Bureau of Mines

T. Kiilsgaard (GB)
Member, Geological Survey

Copy to: Docket
Admr. R. File
Op. Committee
Base Metals
Mr. Bishop
Mr. Kiilsgaard
Chron.

P. S. We are also enclosing two maps entitled "Approximate Lease Holdings" and "Electromagnetic Flight Areas".

ROLAND F. BEERS, INC.
[illegible]

Mr. Frank E. Johnson, Deputy Administrator
Atomic Energy Commission
Room [illegible]
Dept. of Interior Building
Washington 25, D. C.

Reference: Contracts Nos. [illegible] and [illegible] (Atomic Energy Commission)

Dear Mr. Johnson:

I wish to confirm the points covered in our conversation today, relative to questions arising in your consideration of the applications referred to above.

1. The cost of flight testing of our airborne equipment is not to be included in the program budget which Mr. [illegible] may be prepared. It is understood that this organization will bear the entire cost of such testing.

2. You stated that you have certain areas in mind over which we might fly our equipment in the course of our testing program. If you will indicate the location and nature of these area holdings, we will plan to include them in our flying operations at the proper time.

3. You would like us to forward to your office a description of our holdings over which we have flown with our equipment in Canada. This report will be prepared immediately.

4. You will consider our question as to the extent of detail you will require in our preparation of descriptions of land under our control. I pointed out that the cost of preparing complete land descriptions in some cases is very great, being equivalent to a complete title document. We do not feel that these costs are justified until we have some encouragement from your office. We will appreciate your guidance on this point. At the proper time we will prepare complete title information but only for our purposes but also for use by AEC.

5. We have not information of building heights by owners of land over which we may fly with our equipment. Where land is used by mining companies we have always endeavored to obtain permission to explore in advance of operations. Our standard form contract provides for permission from the owners of land or minerals under lease.

6. You stated that you have discussed our applications with representatives of the U. S. Bureau of Mines, the U.S. Geological Survey and the Commodity Survey and that we may expect letters of inquiry within a week or so on questions arising from our applications.

For the next month I shall be out of the country. During this period Mr. [illegible] Johnson and Mr. J. E. [illegible] of our organization will be prepared to discuss further points which may arise in connection with our applications.

Your kind cooperation is greatly appreciated.

Sincerely yours,
ROLAND F. BEERS, INC.
Roland F. Beers, President

rfb/h

IN REPLY REFER TO:

Griswold
Betty

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

December 8, 1955

RECEIVED
DEC - 9 1955

Memorandum

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

From: Thor H. Kiilsgaard, U. S. Geological Survey

Subject: Review of application submitted by Roland F. Beers, Inc., on an area of the Adirondack Mountains in the western part of New York. DMEA-4051

The applicant proposes a program of airborne geophysical exploration, to be followed by ground geophysical and geochemical work, which in turn is to be followed by drilling and shaft sinking. Cost of the program is estimated at $609,370.00.

The program is identical to the one proposed by the same applicant for the Platteville, Wisconsin, area. Only the location of the targets is changed. As proposed the program will depend upon the success of the airborne electro magnetometer to eliminate unfavorable areas, thereby allowing ground work to be confined only to more favorable targets.

In comparing the proposed work with that proposed for the Platteville area, it should be noted that prospective ore bodies in the Adirondacks cannot be compared with those in the Platteville area, and that any appraisals DMEA might make of the applicant's airborne geophysical methods in the one area will not hold for those made in the other. Platteville deposits are low-grade bodies of sphalerite and galena formed by the replacement of selected limestone members. The deposits are for the most part stratigraphically controlled, flat-lying, and relatively close to the surface. On the other hand, the known Adirondack deposits occur as massive sulphide replacement bodies in micro-brecciated and permeable zones of the Grenville marble series, being affected by structural rather than stratigraphic controls.

The major productive mines of zinc and lead in the Adirondacks, the Balmat, Hyatt, and Edwards are in a northeast-trending belt of Grenville marble bounded on the northwest and southeast by granitic and gneissic rocks. Of these mines, the

Edwards deposit is described as a series of ore shoots ranging from 100 to 200 feet in strike length with thicknesses ranging from 2 to 20 feet. As of 1953 the Edwards mine had been explored to a depth of 3,300 feet. The ore shoots are reported to be 25 to 50 percent sulphides with pyrite and sphalerite being the dominant minerals. The Balmat deposit is comparable to the Edwards. It has a strike length of about 2 miles, although the thickness of the ore shoots and depth to which they have been explored is not known to the writer. The applicant states that composite samples of ore from drill cores, from 1,000 to 2,000 feet in depth in the Balmat deposit, averaged 25.62 percent sphalerite, 2.34 percent galena, and 53.30 percent pyrite, although the average tenor of the mine ore is apparently 8 percent zinc and 1 percent lead. All three of the deposits are described as occurring at or near the noses of tightly-folded, plunging anticlines.

No attempt was made to determine the total production from the Adirondack area, but it is of interest to note the Edwards and Balmat mines have maintained continuous production since their initial development, these dates being 1915 and 1928 respectively. In 1951, the Balmat and Edwards mines produced about 40,000 short tons of recoverable zinc; the Balmat mine also produced 1,500 short tons of recoverable lead, about 48,000 ounces of recoverable silver, and an unknown amount of pyrite.

In many ways Adirondack zinc-lead deposits are comparable to Canadian deposits that have proven amenable to exploration by electromagnetic methods, hence the applicant's proposal might be considered as a logical means of exploration. There are, however, geologic obstacles in the Adirondacks that could make this type of exploration unsuccessful. One such obstacle is the presence of graphite in the Grenville marbles. Graphite is a good conductor and could be expected to register as an anomaly. Southeast of Gouverneur, in the Balmat area, the Grenville marbles are reported to contain lesser amounts of graphite; however, to the northwest, over much of the area the applicant proposes to fly, the graphite content of the marble increases. Normally, region-wide, flake graphite in metamorphosed rocks could be expected to register as a blanket-like anomaly, much like a high background count on a Geiger counter. However, in folded sediments interfingered with ribs of intrusives and metamorphic rocks, such as occur in the Adirondacks, there may be trouble in differentiating graphitic anomalies from those of other sources.

Other trouble could be the abundance of pyrite and pyrrhotite deposits. Most of the Adirondack rocks contain a high pyrite content with many commercial deposits existing both in the gneissic rocks and the marble. Prucha (reference in application) describes 19 pyrite and pyrrhotite deposits in a belt 3 to 4 miles wide and 35 miles long extending northeast from Antwerp. It is over much of this area that the applicant proposes to fly. Iron sulphides, being good conductors, could be expected to develop anomalies that would call for further exploration from the ground, all of which could prove fruitless as these deposits are known to contain insignificant amounts of zinc and lead.

Finally, there remains the question of whether airborne electromagnetic prospecting can detect the steeply-dipping, narrow ore bodies characteristic of the Adirondacks. In this respect I am informed by Arnold Brokaw, U. S. Geological Survey but formerly geologist for St. Joe Mining Company at the Balmat and Edwards mines, that many types of geophysical surveys have been made in the Balmat area but with limited success.

By superimposing the applicant's lease map and flight map over the geologic map--as I have done, marking the flight boundaries in black ink and the leased boundaries in red--it will be seen that only parts of the areas to be flown are held under lease. The applicant cannot, of course, be expected to lease all of the ground he proposes to fly, but if flying is allowed in the contract there will be the problem of securing leases on ground in which anomalies are detected and a problem of assuring the Government of royalties on ore extracted from that ground. This could be a serious matter in those instances where the ground was held by another mining company. Of particular importance would be the Balmat area--designated area VI--, the interval between area VI and area IV, and the southern part of area IV. I am informed that all favorable ground in these areas is already tied up by mining companies, hence there would be no reason to fly these areas except for possible testing purposes, which should only be done with permission from the owners. There is no evidence in the application that such permission has been obtained.

I recommend the applicant be asked to conduct airborne electromagnetic tests, at his own expense, over known deposits in the Adirondack area. If these test results prove acceptable further details on an exploration program can no doubt be worked out which will be agreeable to both the applicant and the Government. I think it important that tests be made over the Adirondacks and that test results obtained in the Platteville area not be used because of the difference of deposits in the two areas.

The applicant's proposal is a bold, long-range venture that warrants Government backing providing the proposed method proves to be workable.

As Pakiser points out in his attached memorandum, the proposal is based on successful experience in Canada and could prove adoptable in the United States.

It is suggested the application be forwarded to the Field Team for their review. Further geological reports will very probably be written here in Washington without making a field examination as there is little information pertinent to the proposal that could be obtained from the field.

Thor H. Kiilsgaard

Thor H. Kiilsgaard

IN REPLY REFER TO:

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

RECEIVED
DEC - 9 1955

MEMORANDUM November 15, 1955

TO: Thor Kiilsgaard
Staff Assistant to DMEA

FROM: L. C. Pakiser

SUBJECT: Proposal of Roland F. Beers, Inc. for geophysical exploration in the Northwest Adirondacks. DMEA 4051

Please refer to my memorandum commenting on the proposal of Roland F. Beers, Inc. to conduct geophysical exploration for lead and zinc ores in the Upper Mississippi Valley District.

The same considerations apply to the proposal of Beers, acting as agent for the American Syndicate "On exploration program for the Northwest Adirondacks."

This proposal also is based almost entirely on the successful experience of Canadian mining and geophysical companies and there is good reason to believe that this approach should be successful in the United States.

From a geophysical point of view, I believe this proposal to be sound.

L. C. Pakiser

L. C. Pakiser
Chief, Ground Surveys Section
Geophysics Branch

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

RECEIVED
NOV 17 1955

November 16, 1955

Re: DMEA-4051
Roland F. Beers, Inc.
P. O. Box 1015, Troy, N. Y.
Agent for
The American Syndicate
120,000 acre property
St. Lawrence and Jefferson Counties, New York
Lead-zinc-copper $609,370

Memorandum

To: W. R. Griswold, DMEA

From: O. M. Bishop, Branch of Base Metals

Subject: Application dated November 8, 1955 and Received Same Day.

I have reviewed the application with interest and pleasure. I recommend that it be referred to the field team for their review and comments, and that the USGS be asked to evaluate the applicability of airborne electromagnetic and scintillation surveys to the sulfide deposits of Lawrence and Jefferson Counties, New York.

The roster of consultants is impressive and there seems little doubt of their technical ability to service the project. I believe the project falls within the meaning of DMEA Order-1 which defines an exploration project as "...the search for unknown or undeveloped sources of strategic or critical metals or minerals within a specified area...whether conducted from the surface or underground, including recognized and sound procedures for obtaining pertinent geological, geophysical and geochemical information."

The consulting fees seem reasonable on a per day and total basis as does supervision, technical services, labor charges and drilling costs.

A review of the airborne geophysical survey costs suggests them to be reasonable. Dr. William Agocs of Aero Service Corporation, Philadelphia, lists the normal cost of a helicopter-borne electromagnetic and scintillometer survey, including reduction of the electromagnetic data but excluding reduction of the scintillometer counts at $16.00 per flight mile. In comparison the applicants estimates the total cost of the two surveys plus reduction of all data at $14.95 per flight mile.

I believe the exploration concept held by the applicant is good, and that such an approach to the problem of ore discovery is necessary for maximum success in such a project area. The field team in reviewing the proposal should give consideration to phasing so that trenching, test pitting, and drilling will be dependent upon the field team evaluation of the success of the ground geophysics and geochemical surveys in developing worthwhile targets, and the ground geophysics in turn will depend upon field team appraisal of the results obtained by the airborne geophysics phase of the project.

There is a possibility that Roland F. Beers, Inc. and the consultants listed may not be wholly able to objectively review and guide all phases of the project because of their employment and syndicate relationships. For that reason I believe the contract, if one is written, should carefully safeguard the Government and the applicant against biased judgments through employment of other consultants or careful review by Survey geophysicists of experience.

O. M. Bishop

O. M. Bishop
Branch of Base Metals

Copy to - Division of Minerals
Mr. Kilsgaard, Room 5222
Mr. Geehan, Room 3608
O. M. Bishop
Files

November 8, 1955

Roland F. Beers, Inc.
P. O. Box 1015
Troy, New York

Subject: DMEA 4051
Re: Exploration Assistance
St. Lawrence and Jefferson
Counties, New York

Dear Mr. Beers:

The receipt of your application dated November 8, 1955 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA 4051 and referred to the Base Metals Division.

Kindly identify all future correspondence relating to your application by this docket number.

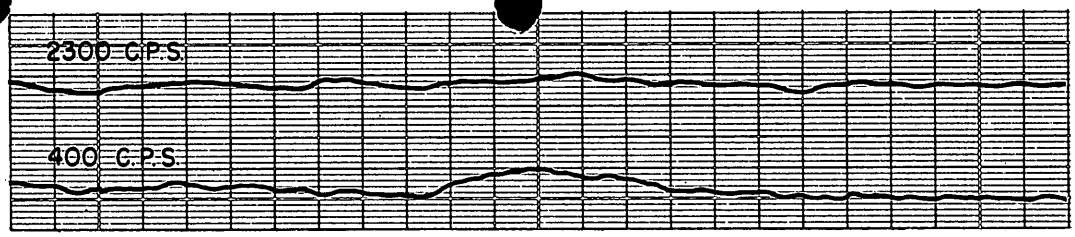
Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

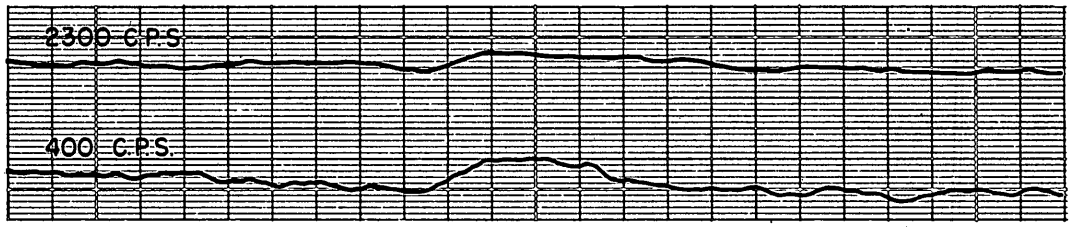
SUDBURY AREA ONTARIO CANADA

An Airborne Electromagnetometer Test To Show the Effect of Varying Altitudes

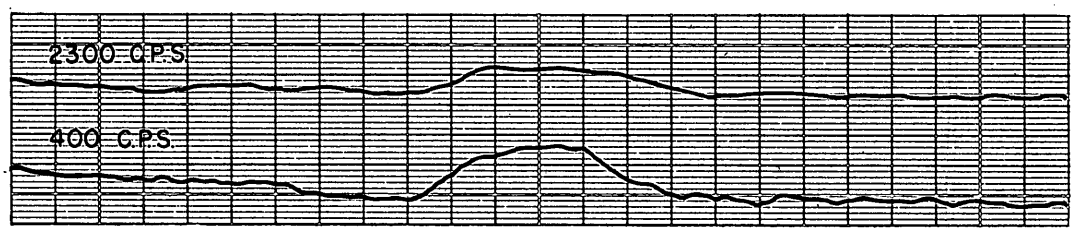
5



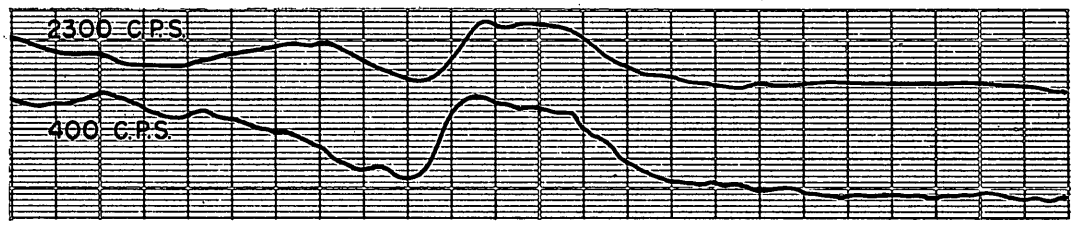
700 FEET ABOVE GROUND LEVEL



600 FEET ABOVE GROUND LEVEL



500 FEET ABOVE GROUND LEVEL



400 FEET ABOVE GROUND LEVEL

The strength of an electromagnetic field decreases as the cube of the distance from its source. In order to learn the practical effect of this law, a series of test flights were made over a copper-lead-zinc sulphide body located within the famous Sudbury basin. All traverses were flown following the same track and in the same direction, but at varying altitudes as shown here.

In this occurrence the sulphides are closely associated with graphite, so that in effect there exists a steeply dipping tabular body of several million tons, and constituting an excellent electrical conductor.

It will be noted that in each case the results have been recorded at two frequencies, a low frequency of 400 c.p.s. (bottom line) and a higher frequency of 2300 c.p.s. immediately above. Both frequencies show a rapid decrease of sensitivity with increasing height above ground. At 600 feet they are still clearly readable but at 700 feet the high frequency is almost lost. The ratio of the low frequency response to high frequency does not change as rapidly, showing only a gradual increase with increasing height.

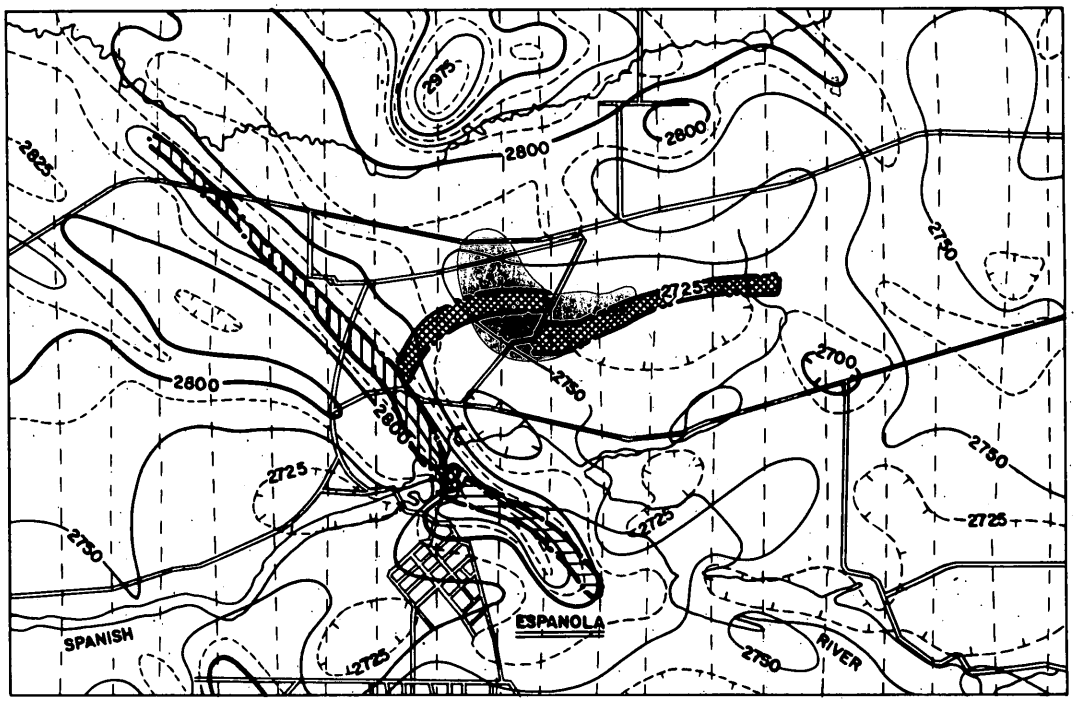
It is obvious, therefore, that survey results are subject to rather wide fluctuations unless the survey altitude above ground is held constant. Where this altitude exceeds 600 feet the record loses most of its significance. It is noteworthy also that the ratio of the low frequency to high frequency response holds fairly constant but tends to increase with increasing distance from the source of the anomaly.

AEROMAGNETIC SURVEYS
1450 O'CONNOR DRIVE
TORONTO, CANADA

ESPANOLA AREA ONTARIO, CANADA

Using the Airborne Scintillation Counter in Radioactivity Exploration

3



MEAN FLIGHT LINE SPACING____1320 FEET
MEAN TERRAIN CLEARANCE_____500 FEET
MAGNETIC LOW
RADIOMETRIC ANOMALY
FLIGHT LINES

DIABASE DYKE
CONGLOMERATE

THIS MAP, an extract from a Province of Ontario, Department of Mines Publication, May, 1952, is a classic example of the application of the airborne scintillation counter system. Geological detail was added by Aeromagnetic Surveys Limited from Department of Mines information. The Department's field work in this area was conducted by Aeromagnetic Surveys Limited, using an early model, airborne scintillation counter.

The survey took place when deep snow still covered the ground and conditions were far from ideal for airborne radioactivity measurements. The work was coupled with a magnetometer survey. This made necessary a somewhat higher flying height than the optimum for radioactivity detection from the air.

Part of the result was the stippled area in color on the map. This portion indicates anomalous radioactivity and shows that the anomaly follows an underlying band of Ramsay Lake conglomerate even to the extent of reflecting the fault which displaces the conglomerate horizon.

When this map was issued for public distribution the possibilities of finding commercial deposits of radioactive minerals on the ancient sediments of Lake Huron's north shore were recognized by only a few, notably, Dr. Franc Joubin. The news of the great Blind River discovery was still over a year away.

Nevertheless, as shown above, definite proof of the occurrence of radioactive minerals in the same series of old sediments already was available to mining interests.

Aeromagnetic Surveys
1450 O'CONNOR DRIVE
TORONTO, CANADA

NORTHWEST TERRITORIES CANADA

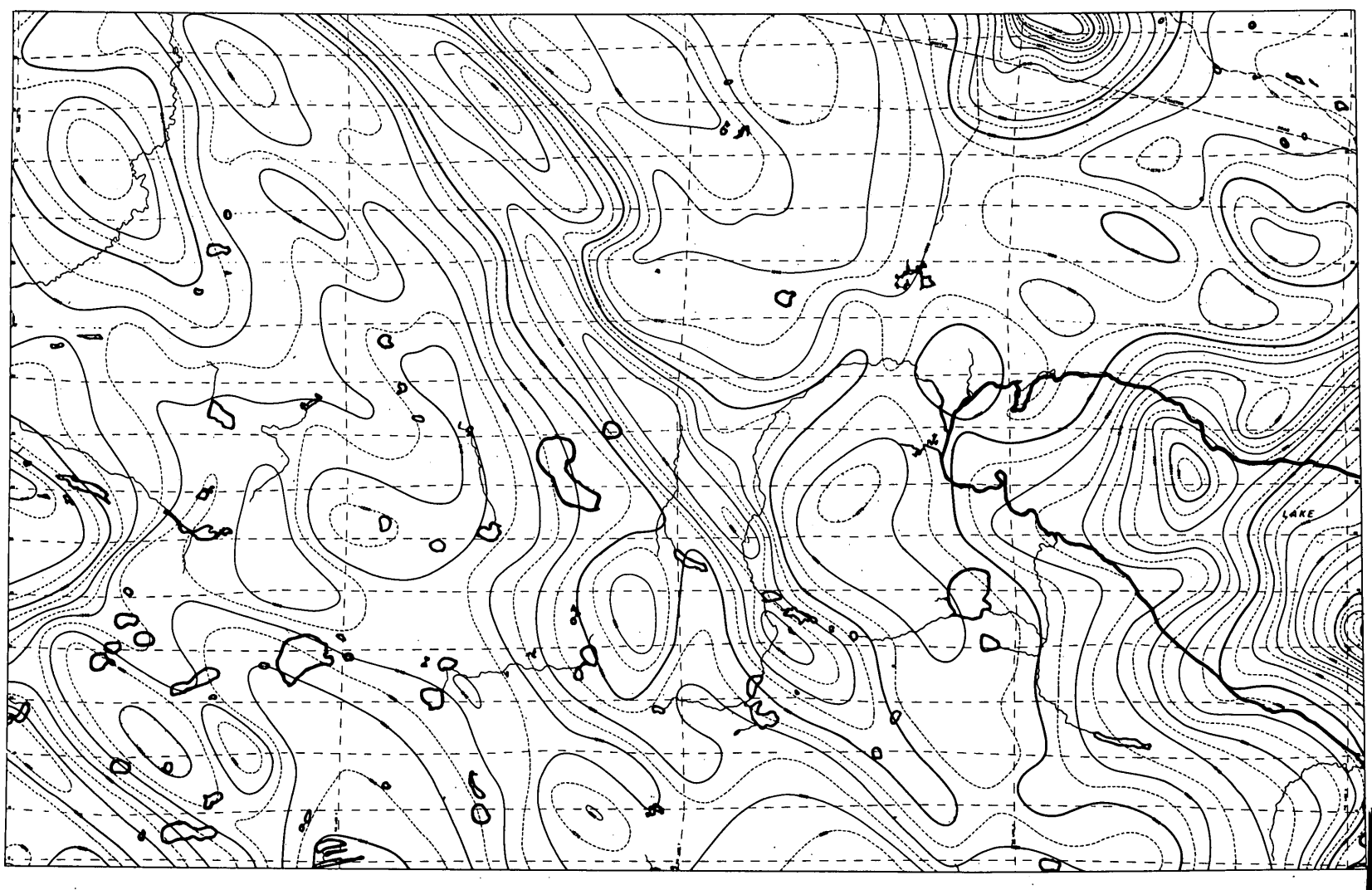
Using the Airborne Magnetometer in Oil Exploration

2

Aeromagnetic Surveys

1450 O'CONNOR DRIVE
TORONTO, CANADA

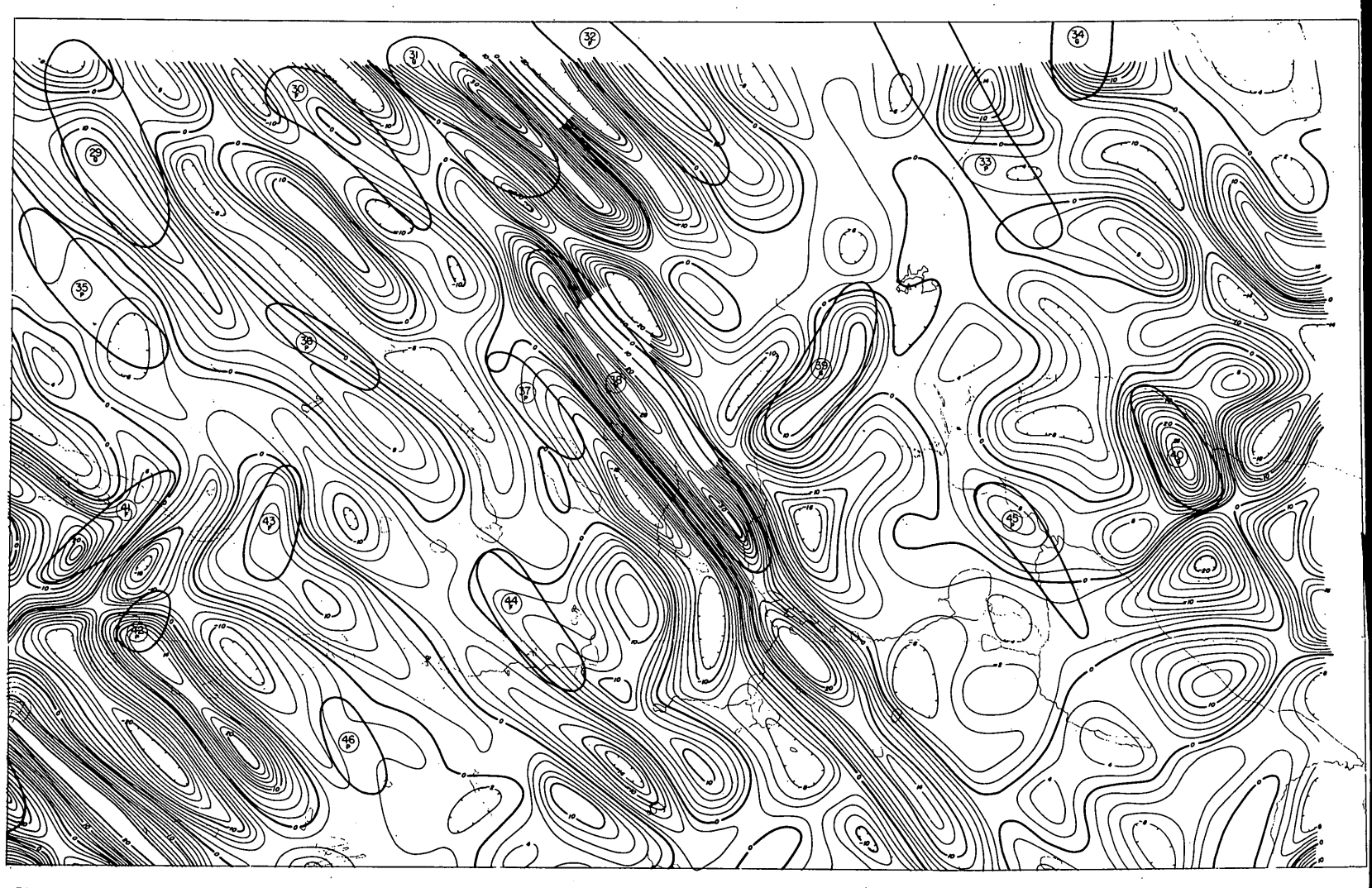
1. OBSERVED MAGNETIC MAP



MEAN FLIGHT LINE SPACING____1·5 MILES
ALTITUDE____2500 FEET ABOVE SEA LEVEL
500 GAMMA CONTOUR
100 GAMMA CONTOUR
20 GAMMA CONTOUR
10 GAMMA CONTOUR
MAGNETIC LOW
FLIGHT LINES 17 TO 32

SCALE
1 0 1 2 3 4 5
MILES MILES

2. SECOND VERTICAL DERIVATIVE MAP

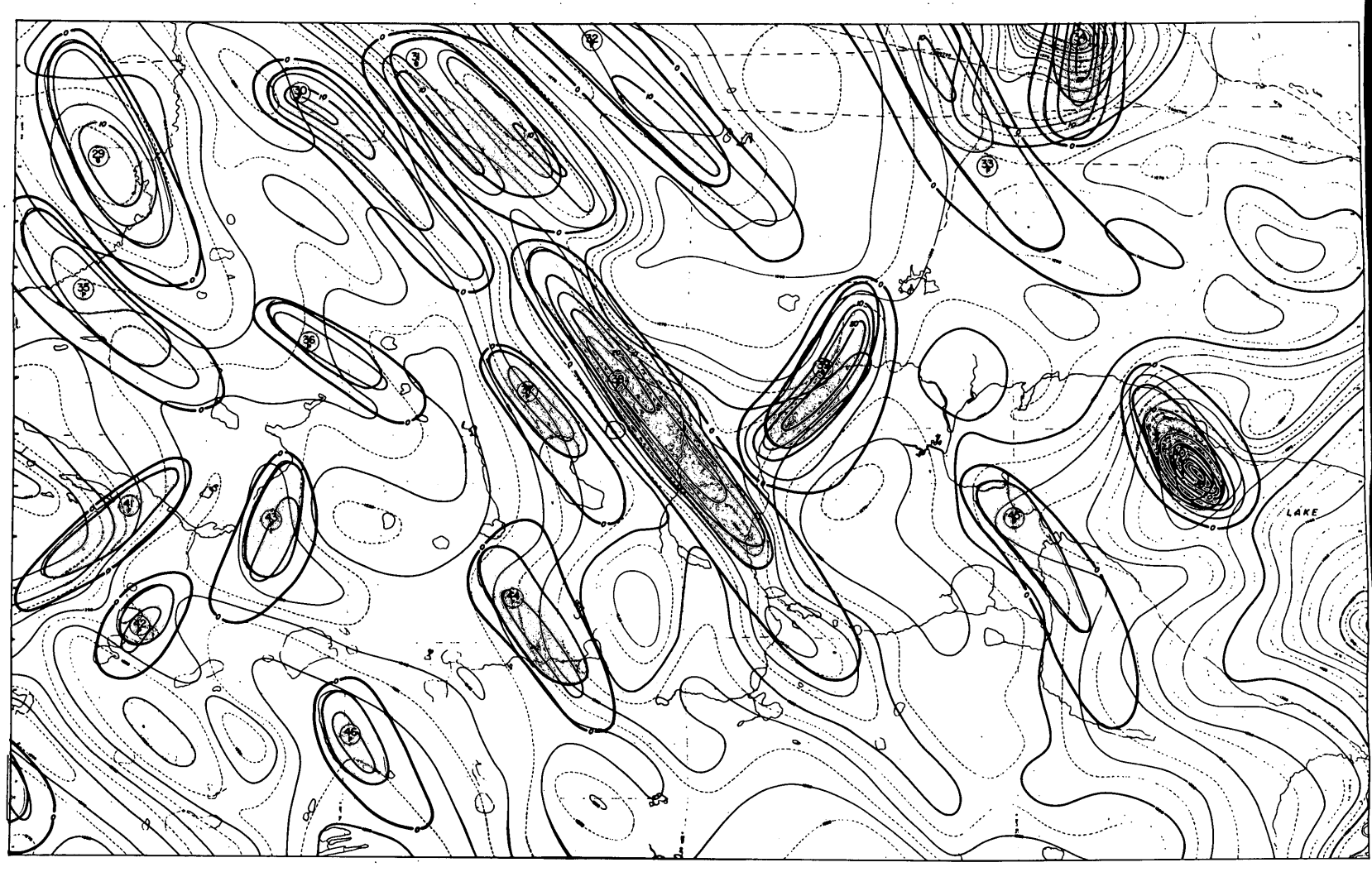


MEAN FLIGHT LINE SPACING____1·5 MILES
ALTITUDE____2500 FEET ABOVE SEA LEVEL
500 GAMMA CONTOUR
100 GAMMA CONTOUR
20 GAMMA CONTOUR
10 GAMMA CONTOUR
MAGNETIC LOW
FLIGHT LINES 17 TO 32

SCALE
1 0 1 2 3 4 5
MILES MILES

SECOND VERTICAL DERIVATIVE MAP
CONTOUR INTERVAL 2 X10⁻⁸ C.G.S.
CALCULATED BY
GRAVITY METER EXPLORATION COMPANY
HOUSTON, TEXAS REPORT APRIL 13, 1963

3. RESIDUAL ANOMALY MAP

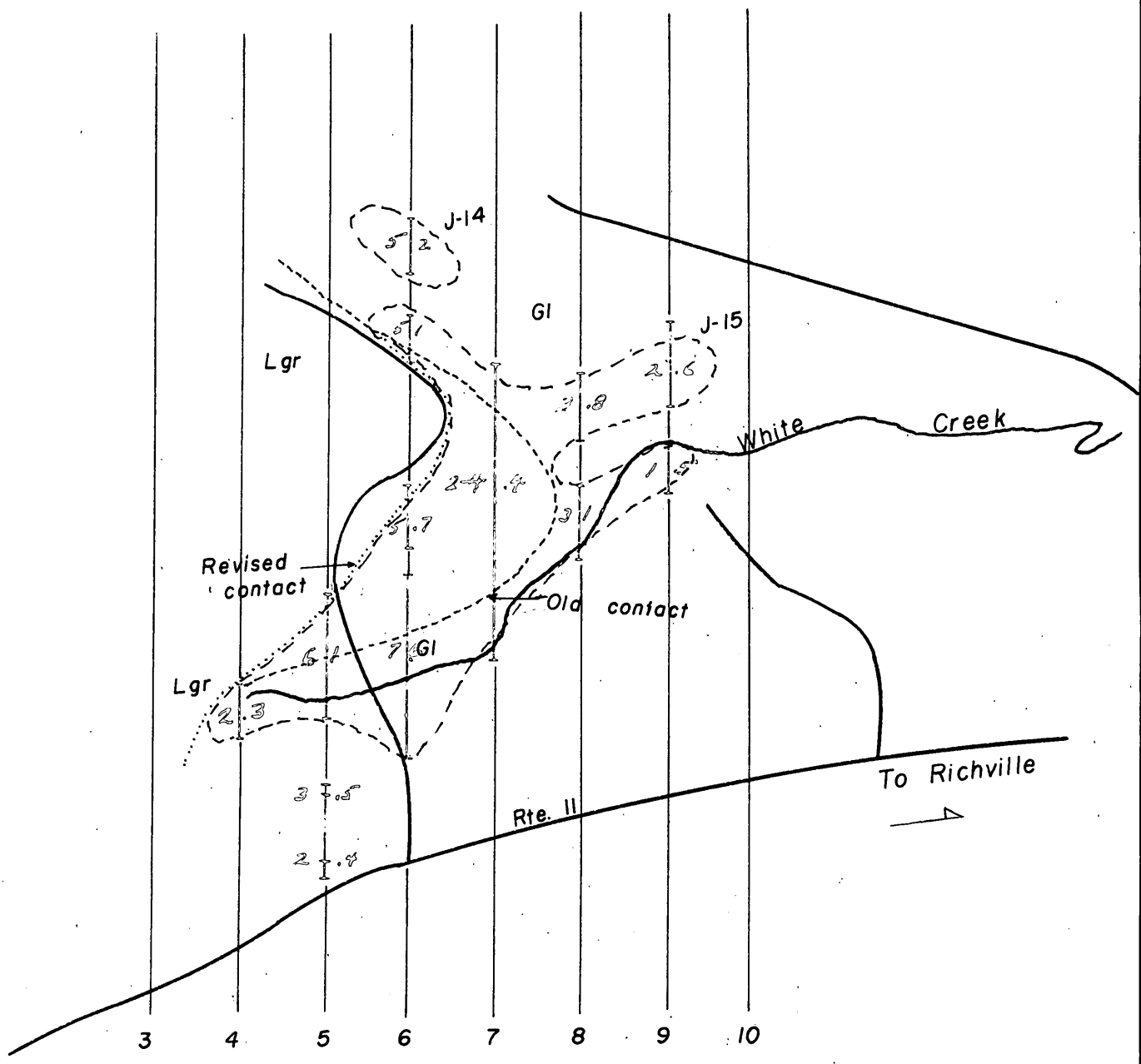


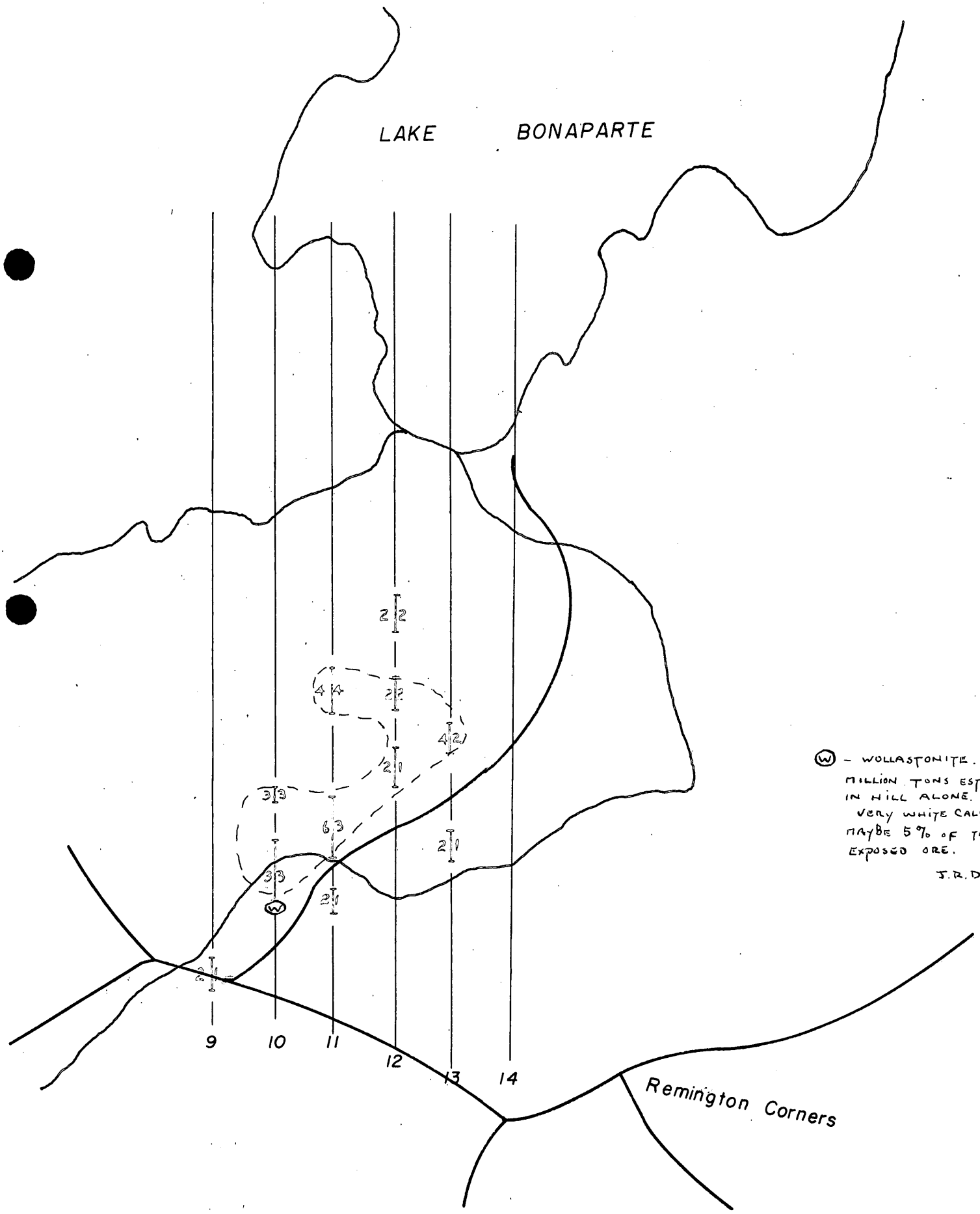
MEAN FLIGHT LINE SPACING____1·5 MILES
ALTITUDE____2500 FEET ABOVE SEA LEVEL
500 GAMMA CONTOUR
100 GAMMA CONTOUR
20 GAMMA CONTOUR
10 GAMMA CONTOUR
MAGNETIC LOW
FLIGHT LINES 17 TO 32

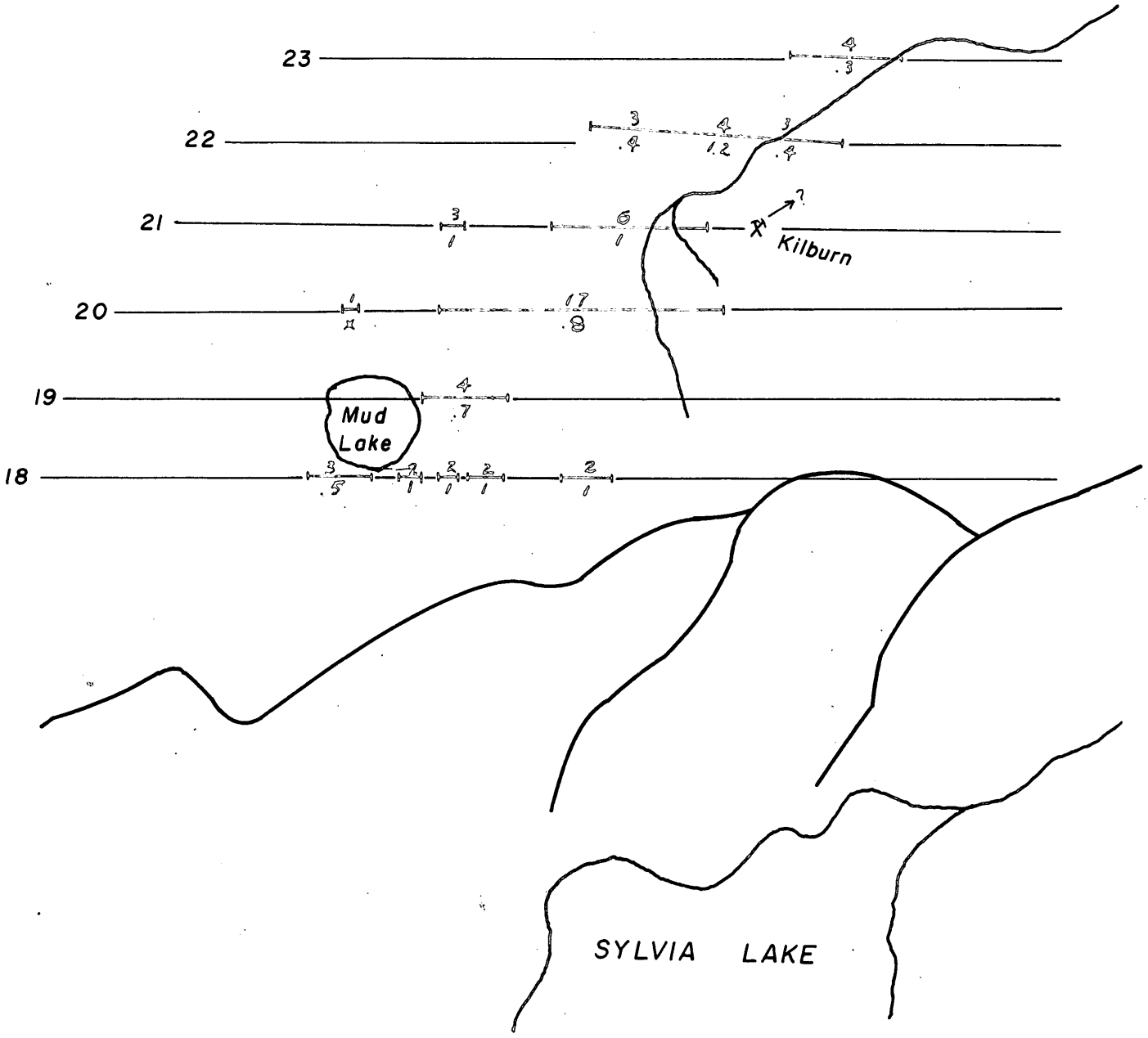
SCALE
1 0 1 2 3 4 5
MILES MILES

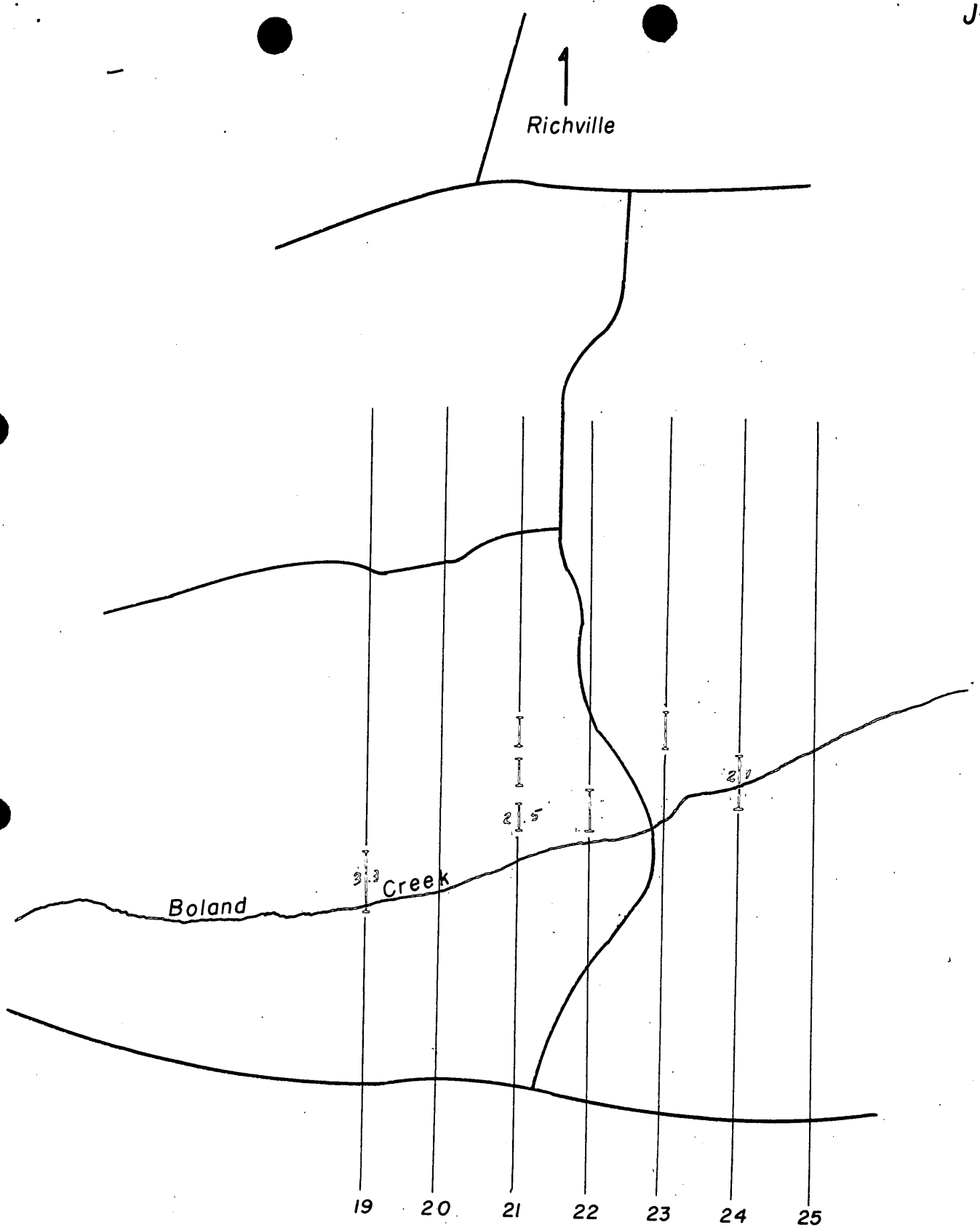
RESIDUAL MAGNETIC ANOMALIES
CONTOUR INTERVAL 5 GAMMAS
LOCAL AREA OF INTEREST
FAULT
INTERPRETED BY
GRAVITY METER EXPLORATION COMPANY
HOUSTON, TEXAS REPORT APR. 13, 1963

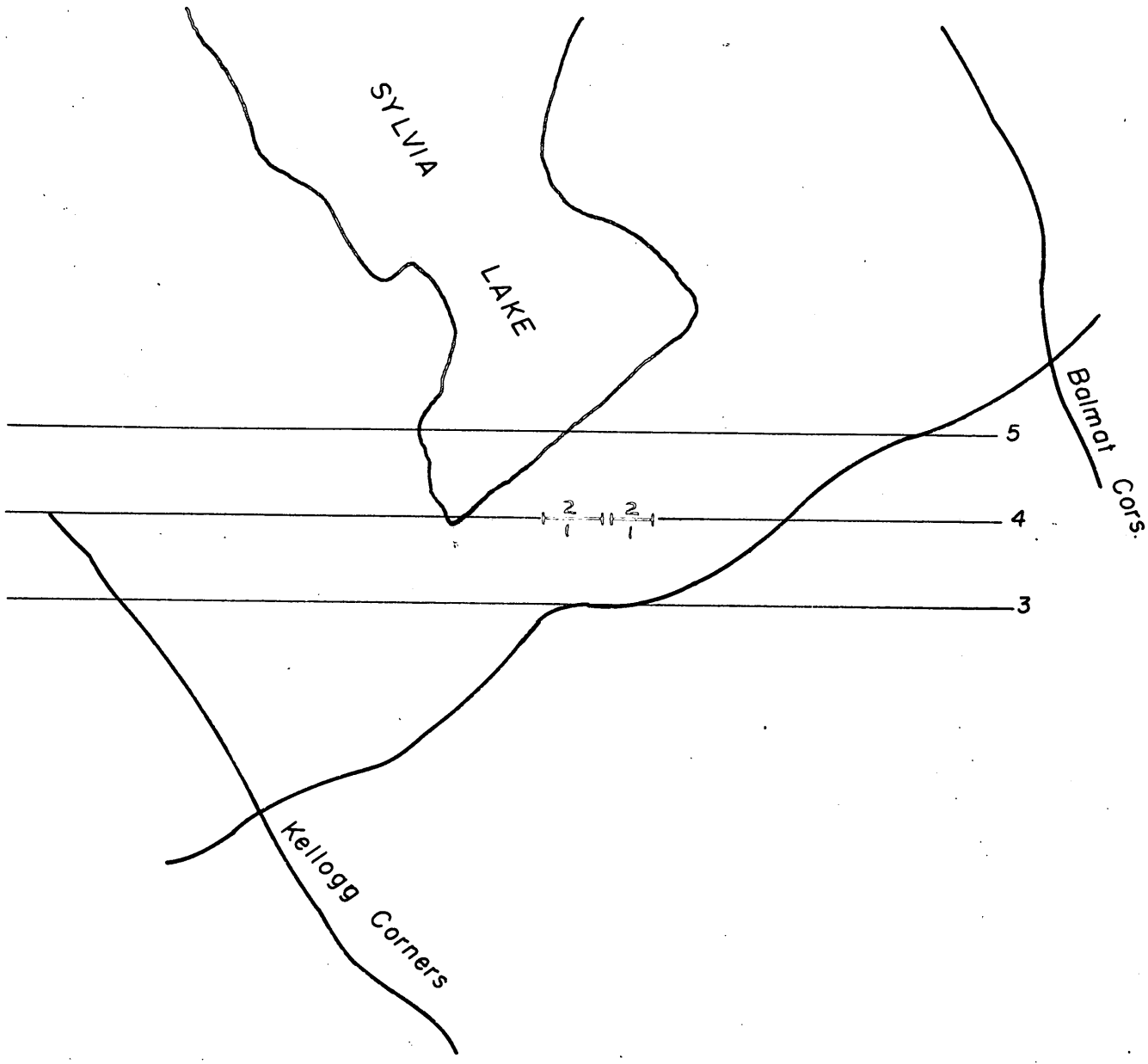
The three maps in this series illustrate the information produced for the petroleum geologist by a detailed and fully interpreted airborne magnetometer survey. Map 1., a magnetic contour map of a 1,000 square mile area, was compiled from recorded geophysical data after corrections had been made. It shows the trends or grains of the basement rocks. These may or may not reflect structural features in the sedimentary strata. Maps 2. and 3. are the result of mathematical analyses of Map 1. Map No. 2. is a second derivative map. It has the effect of sharpening local anomalies resulting from basement relief and suppressing the more intense anomalies caused by magnetic contrast within the basement rocks. The residual anomalies seen in Map 3. are selected from Map 2. They give the approximate position and forms of features on the basement surface related to the anomalies. A system of classification grades these anomalies good, fair or poor according to their relative probabilities of indicating sedimentary structures. Included in such an interpretation (not shown), is a structural contour map of the basement surface which gives definite thicknesses of section as well as the general configuration of the basement surface.

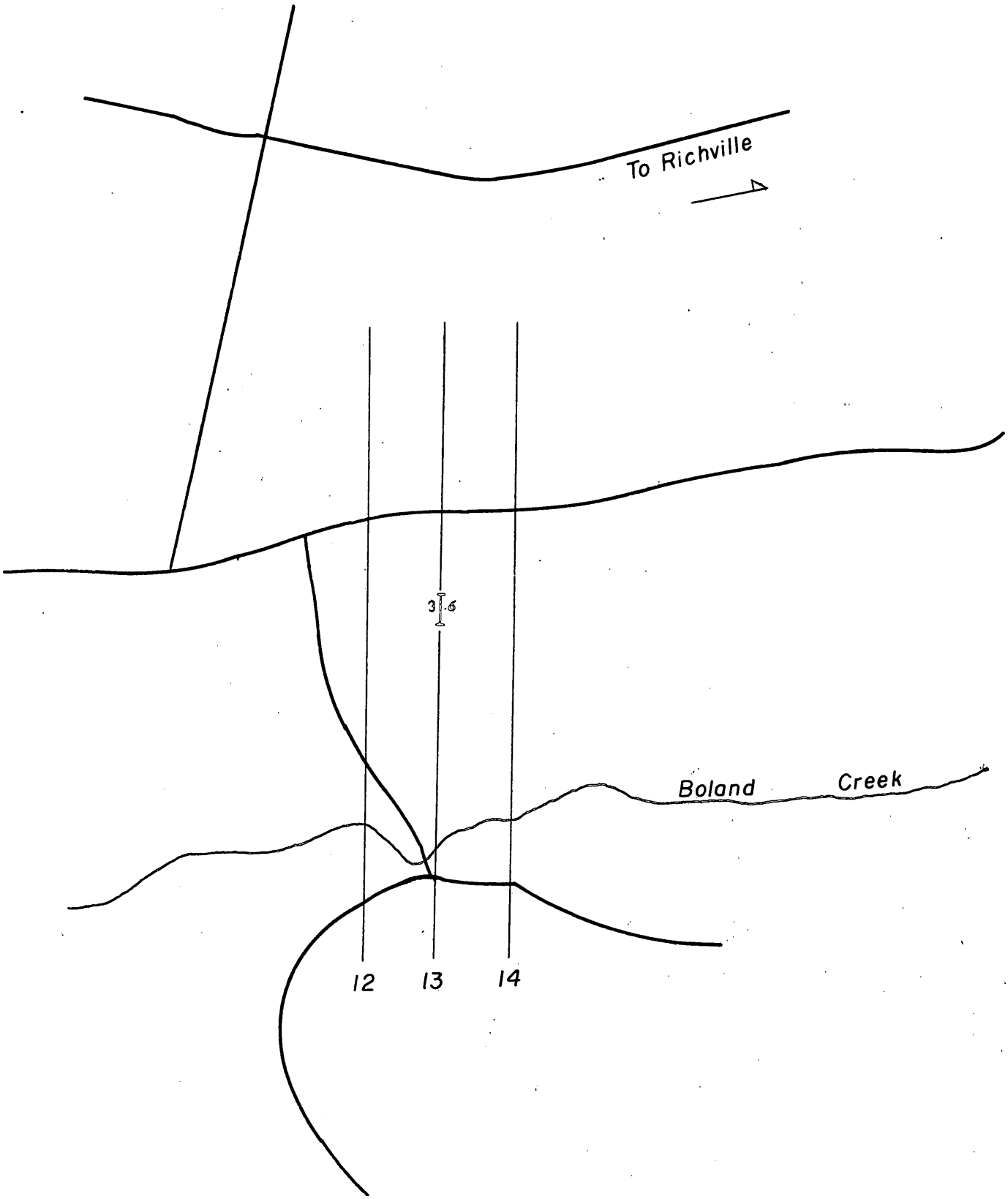

J-14
J-15
Gl
Lgr
White
Creek
Revised
contact
Old
contact
Gl
Lgr
To Richville
Rte. 11
3
4
5
6
7
8
9
10

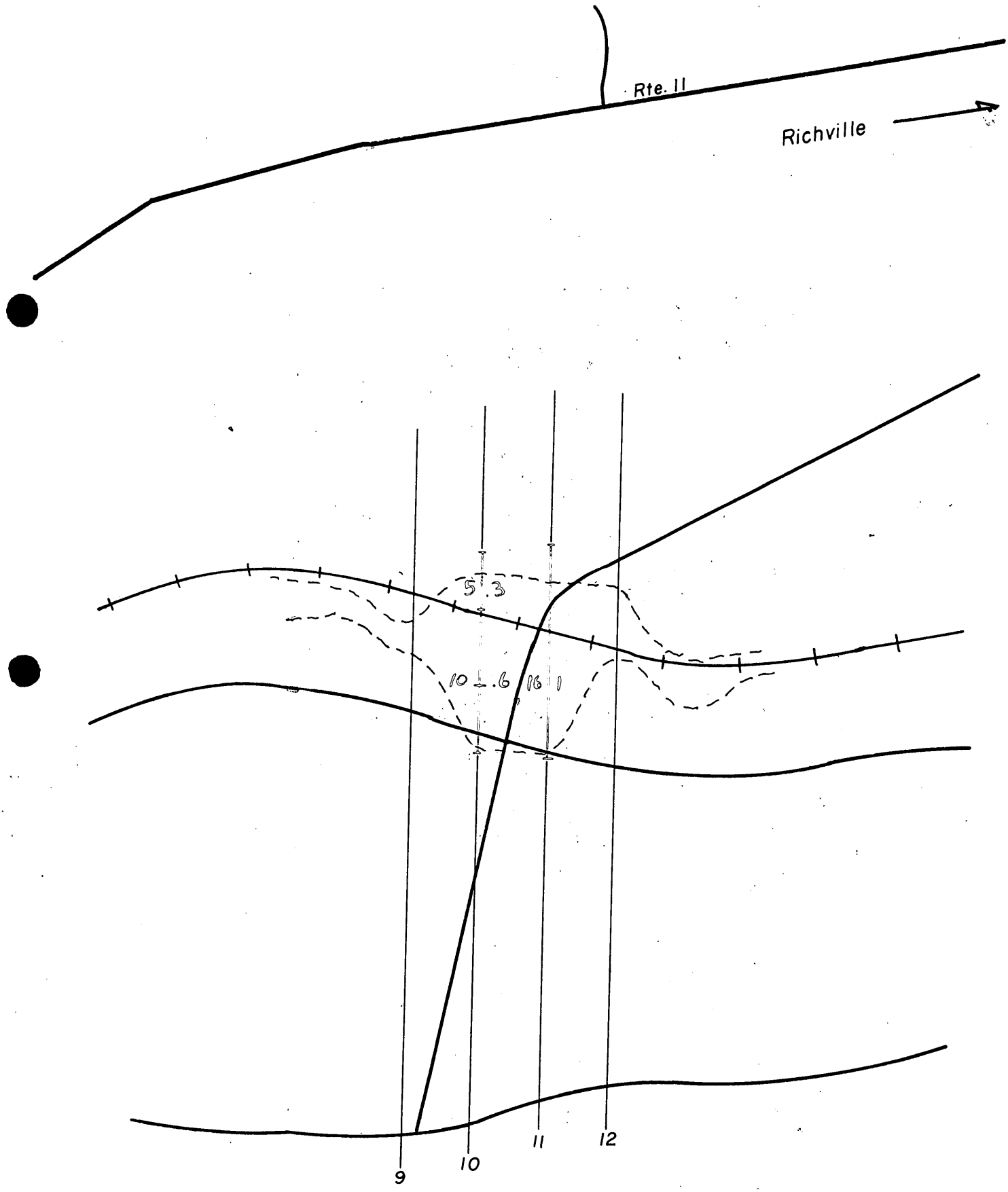

LAKE BONAPARTE
9
10
11
12
13
14
Remington Corners
W - WOLLASTONITE. 1¼ MILLION TONS ESTIMATED IN HILL ALONE. VERY WHITE CALCITE MAYBE 5% OF THE EXPOSED ORE.
J.R.D.


23
22
21
20
19
18
Mud Lake
Kilburn
SYLVIA LAKE


Richville
Boland
Creek
3.3
2.5
2.1
19
20
21
22
23
24
25


Balmat Cors.
Kellogg Corners
5
4
3
2
1
2
1
SYLVIA
LAKE

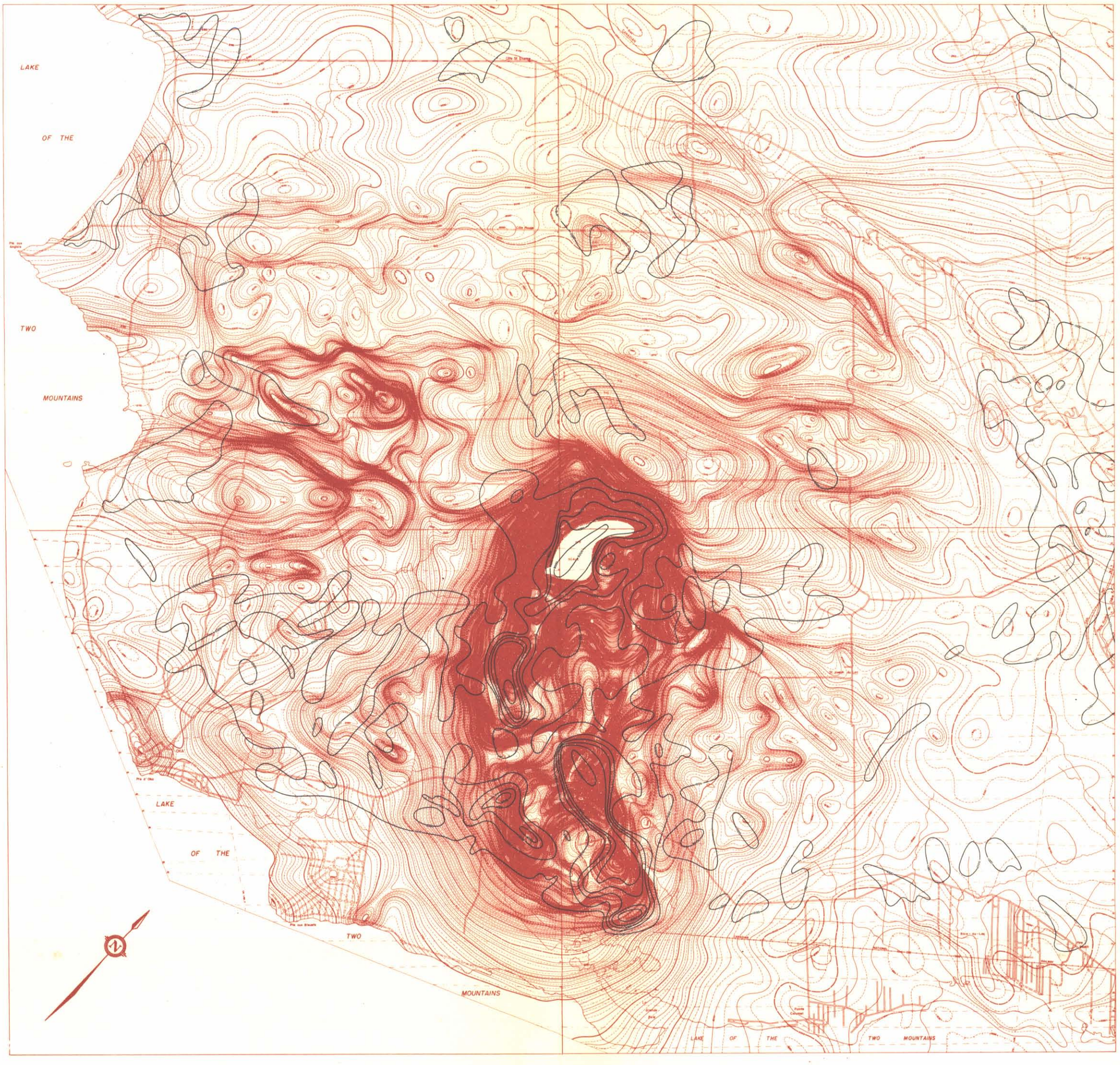

To Richville
3.6
Boland Creek
12
13
14


Rte. 11
Richville
5.3
10 .6 16 1
9
10
11
12

OKA
AREA
QUEBEC
CANADA

Using the Airborne Magnetometer and Scintillation Counter in Combined Survey

4



SCALE

2000 FEET 0 2000 4000 6000 8000 10000 FEET

2640 Feet to 1 Inch

Here is a prime example of the information that results when the magnetometer and scintillation counter are combined in one airborne survey. This is the now-famous Oka area of Quebec, southwest of Montreal. The survey was flown in April, 1954, just after the original discovery was made. The true value of the area had yet to be resolved. An Anson aircraft was used, carrying both types of recorders. The survey was flown 400 feet above the ground level. The flight lines were spaced at 1000-foot intervals.

The red map delineates the magnetic properties of the underlying rocks. It shows a series of intense anomalies indicating concentrations of magnetic minerals. The overlying black map outlines areas showing anomalous radioactivity. It should be noted how these anomalies correspond closely with the magnetic highs indicating that the radioactive minerals and the magnetic minerals lie in close association. This map provided an invaluable aid to the early companies in the field for property acquisition and subsequent exploration.

H. J. Bergman, P. Eng., consulting engineer, who has studied the district extensively, has written:

"The area of hills in the Oka district covers a circular area roughly eight miles in diameter. It is underlain by Precambrian rocks. These rocks consist of anorthosite and gabbro, gneisses, quartzite and crystalline limestone.

"An area of approximately 3½ miles long by 1½ miles wide has been affected by Monteregian intrusive activity. The Monteregian rocks are known to be younger than the Precambrian. The area affected by this activity is now composed of a complex consisting of crystalline limestone, ultra-alkaline rocks and accompanying brecciation. It is within this complex that the columbium values have been found and they are associated with radioactivity and high magnetite.

"The columbium minerals occur in various rocks within the complex. Four of these minerals have been identified to date: columbium perovskite, pyrochlore, betafite and columbium-bearing titanium magnetite. These minerals occur closely associated with biotite, magnetite and apatite.

"The combined airborne magnetometer and scintillation counter survey outlined a large anomaly which covers roughly the area of the complex rocks mentioned above and within which large tonnages of columbium ore have been outlined. The deposits also contain minor amounts or uranium, thorium, iron and phosphate."

AEROMAGNETIC SURVEYS
1450 O'CONNOR DRIVE
TORONTO, CANADA