CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
CALUMET DIVISION
CALUMET, MICHIGAN

EXHIBIT "C"

Operating Equipment

Equipment to be rented

1, 1½-yard dragline shovel, rental $1,379 per month
1, D-8 bulldozer, rental $1,105 per month
1, 315 CFM portable gasoline air compressor, rental $390 per month

Equipment to be purchased - None

Equipment to be furnished by Operator

2 sludge pumps, rental $4 per month each
2, 50# jackhammers, rental $6 per month each
1, 1½-ton pickup truck, rental $60 per week

CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
CALUMET DIVISION
CALUMET, MICHIGAN

EXHIBIT "D"

Labor and Supervision

Number	Class	Maximum Wage or Salary
2	Miners	$1.50 per hour
2	Laborers	1.35 " "
1	Compressor man	1.40 " "
1	Truck driver	1.40 " "
1	Assayer	1.50 " "
1	Dragline operator)	Furnished by owner of equipment
1	Bulldozer operator)	
1	Geologist	$600 per month

CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
CALUMET DIVISION
CALUMET, MICHIGAN

EXHIBIT "F"

Amendment to MF-103 - Ten Copper Projects in Houghton and Keweenaw Counties, Michigan - DMA No. 1204-I

St. Louis

9. $13,644.50

23.(a)

No.	Class	Rate per Hour	Hours per Week	Weeks	Cost	
2	Miners	$1.50	60	14	$2,912	
2	Laborers	1.35	60	14	2,646	
1	Compressor man	1.40	60	14	1,372	
1	Truck driver	1.40	60	14	1,372	
1	Assayer	1.50	40	7	420	$8,722

(b) One Geologist - $600 per month - 4 months 2,400

(c) None

(d) None

(e) None

(f) 1, 1½-yard dragline shovel @ $1,379 per month rental, plus $5.25 per hour operation, or $1,050 per month. $2,429 per month for 3 months	7,287	
1, D-8 bulldozer @ $1,105 per month rental, plus $5 per hour operation, or $1,000 per month. $2,105 per month for 3 months	6,315	
1, 315 CFM portable compressor @ $390 per month, plus $1 per hour operation, or $200 per month. $590 per month for 3½ mos.	2,065	15,667
(g) 2 sludge pumps @ $25 per month - 3 months	75	
2, 50# jackhammers @ $50 per month - 3 months	150	
1, 1½-ton pickup truck @ $60 per week - 14 weeks	840	1,065
(h) Drill steel, bits, hose, wrenches, pipe, powder, fuse, and caps		500

EXHIBIT "F" (Continued)

(i) No charges

$27,289

24. The project will take slightly more than 3 months, and cost will be spread fairly evenly over the period. It is being scheduled with other trenching projects to avoid duplication of equipment. A separate schedule showing timing of all trenching projects is being submitted.

(Exhibit "G")

CALUMET AND HECLA CONSOLIDATED COPPER CO.
Timing and Financial Requirements
All Copper Exploration Projects

Months	Ashbed	West Deleware	Calumet Amygdaloid	Iroquois Trenching	Kearsarge Hanging Wall	Mayflower Old Colony	St. Louis	Deleware D.D. hole 83
1	9,000							
2	9,000							
3	9,000							5,616.00
4	9,000							
5	9,000							
6	*							
7	*							
8	*							
9	9,000							
10	9,000							
11	8,139							
12		5,109.50						
13			9,061.50					
14				9,061.50				
15					8,000.00			
16					8,000.00			
17					8,158.00			
18					*	*		
19					*	*		
20					*	*		
21						6,111.50	3,289.00	
22							8,000.00	
23							8,000.00	
24							8,000.00	
	71,139	5,109.50	9,061.50	9,061.50	24,158.00	6,111.50	27,289.00	5,616.00

* Trenching suspended during January, February, and March because of weather.

(Exhibit "C")

CALUMET AND HECLA CONSOLIDATED COPPER CO.
Timing and Financial Requirements
All Copper Exploration Projects

Months	Calumet Conglomerate	Centennial 23S Drift	Iroquois 18N Drift	Iroquois 22S Drift	Centennial 48S Drift	Seneca 26N Drift	Total Month
1		4,618.50	4,618.50	4,618.50	4,844.25	8,005.40	35,705.15
2		4,618.50	4,618.50	4,618.50	4,844.25	8,005.40	35,705.15
3		4,618.50	4,618.50	4,618.50	4,844.25	8,005.40	41,321.15
4	4,959.00	4,618.50	4,618.50	4,618.50	4,844.25	8,005.40	40,664.15
5	4,959.00	4,618.50	4,618.50	4,618.50	4,844.25	8,005.40	40,664.15
6	4,960.00	4,618.50	4,618.50	4,618.50	4,844.25	8,005.40	31,665.15
7	4,959.00	4,618.50	4,618.50	4,618.50	4,844.25	8,005.40	31,664.15
8	4,959.00	4,618.50	4,618.50	4,618.50	4,844.25	5,542.20	29,200.95
9	4,960.00	4,618.50	4,618.50	4,618.50	4,844.25		32,659.75
10		4,618.50	4,618.50	4,618.50	4,844.25		27,699.75
11		4,618.50	4,618.50	4,618.50	4,844.25		26,838.75
12		4,618.50	4,618.50	4,618.50	4,844.25		23,809.25
13		4,618.50	4,618.50	4,618.50	4,844.25		27,761.25
14		4,618.50	4,618.50	4,618.50	4,844.25		27,761.25
15		4,618.50	4,618.50	4,618.50	4,844.25		26,699.75
16		4,618.50	4,618.50	4,618.50	4,844.25		26,699.75
17		4,618.50	4,618.50	4,618.50	4,844.25		26,857.75
18		2,733.30	2,733.30	2,733.30	4,844.25		13,044.15
19					4,844.25		4,844.25
20					4,844.25		4,844.25
21					4,844.25		14,244.75
22					4,844.25		12,844.25
23					4,060.50		12,060.50
24							8,000.00
	29,756.00	81,247.80	81,247.80	81,247.80	110,634.00	61,580.00	603,259.40

To perform this work the applicant intends to rent the necessary equipment (see Exhibits C, D and F which tabulate the necessary rental, operational and labor costs). The excavation, through overburden, will be made by the bulldozer and drag line. When bedrock or ledge is reached, if conditions warrant, a trench approximately three feet wide and two feet deep across the lode will be excavated by drilling and blasting. This material will be sampled and assayed and, if necessary, mill tested.

This is definitely an exploration project and the geologic aspects indicate it to be feasible.

The costs are based on previous similar work by the company. The rental and operational costs of the heavy equipment are estimates that were submitted by contractors who will furnish this equipment. These estimates are reasonable.

The above mentioned rented equipment is all the equipment that will be required. No other facilities, buildings or improvements are needed for completing this project. The applicant's geologist will act as supervisor on the job and the work will be under the general supervision of the staff of the applicant.

In order to make full use of the heavy equipment necessary for trenching, this project has been scheduled with several others (see Exhibit G). According to this Exhibit, work will start the first of the 21st month following the signing of the contract. This is contingent on the one set of equipment being able to complete

all projects. Should one set prove insufficient, additional equipment will be secured in order to complete the project within two years. This additional equipment is available when required.

This project seems to have good geologic possibilities of discovering copper. Before the applicant submitted this request for aid, this project was thoroughly discussed and investigated by W. S. White, Geologist for the U. S. Geological Survey, and Dr. C. H. Broderick, who is also an outstanding geologist, and both of them have recommended this project as favorable (see White's statement and Ideniller's geological report). It is recommended that the United States Government render financial aid to this applicant for this project.

APPENDIX

Figure 1 - - - Map showing geographic location of the project.

Figure 2 - - - Survey map showing the area to be trenched

Exhibit "C" - - Operating Equipment

Exhibit "D" - - Labor and Supervision

Exhibit "F" - - Amendment to Application

Exhibit "G" - - Time Schedule

C O P Y C O P Y

UNITED STATES

DEPARTMENT OF THE INTERIOR
OSCAR L. CHAPMAN, SECRETARY

DEFENSE MINERALS ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM

REGION V

DMA-1204-X - Calumet and Hecla Consolidated Copper Company

St. Louis Exploration Project - Trenching

Houghton County, Michigan

Emmet J. Martin, Mining Engineer
Thomas L. Chapman, Mining Engineer
U. S. Bureau of Mines

Walter S. White, Geologist
U.S. Geological Survey

June 26, 1951

Defense Minerals Administration

Review of Application for Exploration Assistance

Docket No. 1204-X

Commodity - Copper

Total Amount of Loan - $27,289.00

Government participation - $13,644.50

The Calumet and Hecla Consolidated Copper Company, a corporation, Calumet Division of Calumet, Michigan, proposes to explore trench through six to ten feet of overburden in order to expose bedrock in cross-sections across the shear zone, above the St. Louis conglomerate. The attached map (Figure 1) shows the geographic location of this project in the Calumet area located in the NW 1/4 of Section 20, T56N, R32W. A map also attached (Figure 2) indicates the area to be trenched and where favorable intersections are located.

The repayment of the loan on this project will come from the exploitation of any ores discovered or exposed by the operation in the above land description.

This report is based on an amendment to the original application which has been submitted by the applicant to Washington (see Exhibits C, D, and F). In the amendment the applicant has reconciled all points raised by the Coordinating Committee. This exploration will be for the purpose of locating copper-bearing ores. Copper is listed in Section 9 of Mineral Order No. 5.

Geology - by H. N. Eidemiller, Geologist

"During a drilling campaign on its property shortly prior to 1912, the St. Louis Copper Company put down a series of diamond drill holes intersection the St. Louis conglomerate in the NW 1/4 of Section 20, T56N, R32W. Five of these holes, Nos. 19, 22, 23, 25 and 26 yielded good sludge analysis; one, No. 19 ran 12.1% Cu for 25 feet. This hole averaged 3.56% copper for 119 feet. The copper occurs in small fissures in a shear zone at the top of the St. Louis conglomerate, mainly in and near the base of the immediately overlying "Big Trap". The strike of this shear in this area is approximately that of the conglomerate, N27°E, and the shearing is in a plane about parallel to that of the beds, approximately 45° NW.

"To further investigate this occurrence, and to obtain additional intersections in the conglomerate, Calumet and Hecla in 1937, put down 9 additional diamond drill holes. Late the same year, a small shaft was sunk to the 54-foot level, and about 600 feet of drifting and cross cutting was done. The drilling, from 150 to 800 feet away from the original rich holes, and mainly deeper, disclosed considerable copper in fissures, but not as much as the earlier drilling.

"The underground work encountered a number of sheet-like masses in the fissures in the trap; the two main ones being, one directly overlying and at the upper contact of the conglomerate, and a second about 40 feet higher in the trap. Weather conditions caused the closing of the exploration in December 1937, but it was planned when work was resumed to extend the crosscut westerly through the shear zone. This has not been done.

" "Copper occurs here more or less continuously over a stratigraphic thickness of about 200 feet; as indicated by Hole 23. The length of the occurrence is not known, but the richest part is probably in the vicinity of Holes 19, 22, and 23. Overburden over the entire area is thin, ranging from 60 to 14 feet at the drill sites.

"To prove the existence of possible commercial copper at ledge, a trenching program with modern earth moving equipment should be undertaken during weather conditions which prevail in this district during the summer months. The first trench should be 400 feet long crossing the entire shear zone over the richest underground showings in the drill holes and shaft. Overburden here is only 6 to 10 feet deep. If warranted, additional cross trenches may be cut northeast and southwest along the strike of the shear zone, and additional NE-SW trenching should be done to follow the two main copper-bearing fissures encountered in the underground work and any mineralized fissures which may be found in the proposed first trench."

In the opinion of Walter S. White, Geologist, who has been in charge for the past five years of a party studying the geology of the Michigan Copper District, the proposed exploration is justified on geologic grounds, and he recommends approval. In this particular instance, Mr. White states that Eidemiller's report is correct and covers the geology of this project.

The applicant owns the property with no liens or encumbrances. From the data presented, this project appears feasible. The Calumet and Hecla Consolidated Copper Company employs about 2,000 men in this district and as a very small number of men will be required on

this project, labor will be available for this work. The heavy equipment; that is, a dragline and bulldozer, will be rented from the Turner Construction Company. Smaller equipment such as pumps, rock drills, and drill steel will be furnished on a rental basis by the company. The area is readily accessible by an all-weather road. There is sufficient water available, and power required will be obtained from diesel or gasoline motors.

The applicant and its predecessor companies have been producing copper since 1865. They have competent engineering and geological staffs capable of performing this work in an efficient manner.

In 1912, Calumet and Hecla drilled a group of holes to explore the St. Louis conglomerate in the NW 1/4 of Section 20, T56N, R32W. These holes showed sheets and small masses of copper in fissures in the overlying trap. To further explore this occurrence, other holes were drilled in 1937, a shallow shaft was sunk and 600 feet of drifting and crosscutting was done. Late in the year the work was suspended because of lack of facilities to carry it on during the winter. Present conditions in the copper market now make it more attractive to renew this exploration.

No production has been made from neighboring properties although it is on the copper formation of Upper Michigan. Only a few miles distant are the mines on the Calumet conglomerate, the Kearsarge amygdaloid and Osceola amygdaloid.

The applicant proposes to excavate 5 trenches approximately 400 feet long and on 500 foot centers at a cost of $11.00 per foot. (see attached map, Figure 2).

To perform this work the applicant intends to rent the necessary equipment (see Exhibits C, D, and F which tabulate the necessary rental, operational and labor costs). The excavation, through overburden, will be made by the bulldozer and drag line. When bedrock or ledge is reached, if conditions warrant, a trench approximately three feet wide and two feet deep across the lode will be excavated by drilling and blasting. This material will be sampled and assayed and, if necessary, mill tested.

This is definitely an exploration project and the geologic aspects indicate it to be feasible

The costs are based on previous similar work by the company. The rental and operational costs of the heavy equipment are estimates that were submitted by contractors who will furnish this equipment. These estimates are reasonable.

The above mentioned rented equipment is all the equipment that will be required. No other facilities, buildings or improvements are needed for completing this project. The applicant's geologist will act as supervisor on the job and the work will be under the general supervision of the staff of the applicant.

In order to make full use of the heavy equipment necessary for trenching, this project has been scheduled with several others (see Exhibit G). According to this Exhibit, work will start the first of the 21st month following the signing of the contract, This is contingent on the one set of equipment being able to complete

all projects. Should one set prove insufficient, additional equipment will be secured in order to complete the project within two years. This additional equipment is available when required.

This project seems to have good geologic possibilities of discovering copper. Before the applicant submitted this request for aid, this project was thoroughly discussed and investigated by W. S. White, Geologist for the U. S. Geological Survey, and Dr. T. M. Broderick, who is also an outstanding geologist, and both of them have recommended this project as favorable (see White's statement and Eidemiller's geological report). It is recommended that the United States Government render financial aid to this applicant for this project.

APPENDIX

Figure 1 - - - Map showing geographic location of the project.

Figure 2 - - - Survey map showing the area to be trenched.

Exhibit "C"- - Operating Equipment

Exhibit "D"- - Labor and Supervision

Exhibit "F"- - Amendment to Application

Exhibit "G"- - Time Schedule

FILE COPY
SURNAME:

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

Mailed

JUN 1 1 1951

Air Mail

Mr. A. B. Needham
Executive Officer, DMA Field Team
Region V
2908 Calfax Avenue, South
Minneapolis, Minnesota

Docket: DMA-120LX, 120SX, 120TX
Calumet & Hecla Consolidated
Copper Mining Company
Copper
Exploration

Dear Mr. Needham:

Enclosed are the applications for exploration leases filed by the Calumet and Hecla Consolidated Copper Mining Company, Calumet Division, 1 Calumet Avenue, Calumet, Michigan.

Messrs. Peterman, Lynch and Brederick paid a personal visit to the Copper Branch to explain and describe the various projects proposed. It was conceded that the applications were somewhat sketchy and incomplete, but it was their belief that they would be transmitted to the Field Team and eventually come to the attention of the government engineers who are making a study of the region and who are familiar with these projects. It was also their belief that any amendments or further and more exact dilineation of each item in the general project should be done by the Calumet and Hecla engineers in cooperation with the Field Team.

We therefore request that you arrange to have a field team make an examination of the applicant's proposed projects to determine:

The feasibility of the projects.
Check cost estimates, noting particularly the rental rates for dragline and bulldozer which seem excessive to us.
Check conflicting estimates contained in the application and reduce them to a single rational estimate.

DMA-120LX includes distinct projects covering a rather extended area. These should be treated wholly as separate items, and should be reported on individually as to costs, on maps and where technical data is presented, so that we can, if desired, act on each one by itself without upsetting all the others.

We would appreciate any further information which your field team may deem necessary or which may assist us in expediting the processing of these applications.

For your convenience we are enclosing two copies of the applications, with your report, please return these together with the additional data which might be necessary before a contract can be signed.

Very truly yours,

Tom Lyon

Tom Lyon, Chairman
Coordinating Committee

Enclosures

JBGowen:pf

APPROVED:

Lowell B. Moon

For the Bureau of Mines

Olaf N. Rove

For the Geological Survey

Copy to: Executive Officer, DMA Field Team, Region V,
2908 Colfax Avenue, South, Minneapolis, Minnesota (2)
Executive Secretary
Copper Branch, Room 3423,
Mr. Lyon
Mr. Moon
Mr. MacLaren
Files

FILE COPY
SURNAME:

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

Bowen
Thos
Ron
Moon

June 8, 1951

Re: Docket Nos. DMA-1204X, 1205X, 1207X

Mr. E. R. Lovell, President
Calumet and Hecla Consolidated Copper Company
1 Calumet Avenue
Calumet, Michigan

Dear Mr. Lovell:

The Copper Branch of the Defense Minerals Administration has carefully studied the applications for exploration loans and has concluded that these projects warrant an examination by the field team. You will hear shortly from Mr. A. B. Needham, Executive Officer, DMA Field Team, Region V, 2908 Colfax Avenue, South, Minneapolis, Minnesota.

As was brought out in your conversations with the Copper Branch, the applications are somewhat incomplete, there are certain inconsistencies in the costs of certain items, and some of the technical data are missing. It would greatly facilitate and expedite the further processing of the applications, if you would have all necessary additional information ready for the field team.

We appreciate having Messrs. Peterman, Lynch and Brederick call at this office to talk over and explain these projects to the members of the Copper Branch.

Very truly yours,

Tom Lyon

Tom Lyon, Director
Supply Division

JWAlt:pf

Copy to: Executive Officer, DMA Field Team, Region V
2908 Colfax Avenue, South, Minneapolis, Minnesota (2)
Executive Secretary
Copper Branch, Room 3423
Mr. Lyon
Mr. Moon
Mr. MacLaren
Files

FILE COPY
SURNAME:

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

May 24, 1951

Mr. E. R. Lovell, President
Calumet and Hecla Consolidated
Copper Company
1 Calumet Avenue
Calumet, Michigan

Subject: DMA-1204X
Re: Exploration Loan
St. Louis

My dear Mr. Lovell:

Receipt is acknowledged of your application and attachments of May 19, 1951 for an exploration loan under the Defense Production Act of 1950.

The application was assigned Docket Number DMA-1204X and was referred to Mr. J. B. Gowen, Chief, Copper Branch on May 21, 1951.

In any future correspondence relating to your application, kindly refer to DMA-1204X.

Sincerely yours,

LANDON F. STROBEL

Landon F. Strobel
Executive Secretary

LFSTROBEL:mab
cc: Strobel-2
Files
Gowen
Lyon

Form MF-103
(April 1951)

U. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

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

DO NOT FILL IN THIS BLOCK

Docket No. dma-1204X

Date received 5/21/51

Participation

CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
CALUMET DIVISION
1 CALUMET AVENUE
CALUMET, MICHIGAN

Name and address of applicant

Date May 19, 1951

FILL IN THIS BLOCK

Date of application May 19, 1951

Estimated cost $10,000

Mineral or metal Copper

Percentage of Government participation 50%

Location of mine Houghton County, Michigan

Date of filing MF-100 May 14, 1951

DMA Docket Number, if available dma-1204X

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four signed copies of the application to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive officer thereof, with your name and address on each sheet of the application and all accompanying papers. If any question is inapplicable, or if you cannot answer it, so state on the form. Where the space provided for answer is insufficient, answer on a separate sheet, annex it to the application form, and refer to it in space for answer. If the application is approved, you will be presented with an exploration project contract on Form MF-200, for your signature.

THE APPLICANT

*1. Is applicant an individual, partnership, or corporation?
*2. If a partnership, state names and addresses of partners.
*3. If a corporation, state names and addresses of officers, directors, and five largest stockholders.
*4. Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who will manage the project.
*5. Are you the owner or the lessee of the property?
6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

8. Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.
9. How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 23 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.
    (*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

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

*11. State the present and former names of the property, if any.
*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.
*13. State source and quantity of water available for operations and its sufficiency at all seasons.
State amount of power to be used, rate per hour or other cost, and source.
*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.
15. State in detail how the ore could be shipped and how and where milled.
*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.
*17. Production:
    (*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.
19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?
21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.

22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:
    (*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.
    (*b*) Supervisors, by numbers and positions, with salaries of each.
    (*c*) Cost of necessary repairs to existing facilities, structures, and buildings.
    (*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.
    (*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.
    (*f*) Cost of rental for equipment which the operator proposes to rent.
    (*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.
    (*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.
    (*i*) Cost of power, water, utilities, and any other items not provided for above.
24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

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

CALUMET AND HECLA CONSOLIDATED COPPER CO.
CALUMET DIVISION

(Name of company)

By _____ (Signature of authorized official)

May 19, 1951
(Date)

Vice President
(Title)

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

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
CALUMET DIVISION
CALUMET, MICHIGAN

Form MF-103
(April 1951)

1., 2., 2., and 4. Answered on Form 100.

5. Owner.

6. No liens or encumbrances.

7. Not applicable.

8. Financial statement attached as Exhibit A.

9. $16,650 ~~$5,000~~ (50% of total cost).

10. NW¼ of Section 20, Township 56 North, Range 32 West.

11. St. Louis.

12. The property is within 2 miles of Calumet, Michigan, Applicant's headquarters. It is located just off a road leading to Calumet.

13. Water is available for operations from the pumping system of Applicant in sufficient quantities at all seasons. Power can be supplied from Applicant's power plants in sufficient quantities.

14. No existing useable facilities.

15. In the event this project proves successful, ore could be shipped to Applicant's Ahmeek mill, a distance of about 3 miles, either by truck or by a spur from Applicant's railroad system.

16. (a) In 1912, Calumet and Hecla drilled a group of holes to explore the St. Louis conglomerate in the NW¼ of Section 20, T56N, R32W. These holes showed sheets and small masses of copper in fissures in the overlying trap. To further explore this occurrence, other holes were drilled in 1937, a shallow shaft was sunk and 600 feet of drifting and crosscutting was done. Late in the year the work was suspended because of lack of facilities to carry it on during the winter. Present conditions in the copper market now make it more attractive to renew this exploration.

(b) No production has been made from neighboring properties although it is on the copper formation of Upper Michigan. Only a few miles distant are the mines on the Calumet conglomerate, the Kearsarge amygdaloid and the Osceola amygdaloid.

(c) Attached as Exhibit B is a report by H. N. Eidemiller of the Calumet and Hecla Geological Department. Attached as Exhibit C is a map.

17. No production.

18. No reserves.

19. No unusual conditions or circumstances.

20. Exploration is for copper which occurs in small fissures in a shear zone.

21. It is proposed to trench through overburden 6 to 10 feet deep in order to expose bedrock in cross sections across the shear zone. Exposed rock will be blasted, sampled and assayed. If promising results are obtained, mill samples will be run in Applicant's Ahmeek mill. Time to complete this work is approximately 12 weeks.

22. See report by H. N. Eidemiller attached as Exhibit B.

23. See Exhibit D for tabulation of itemized costs of the proposed project.

24. Project will run continuously for approximately 12 weeks after the project is approved.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 21 1951
LANDON F. STROBEL
Executive Secretary

EXHIBIT A.

CALUMET AND HECLA CONSOLIDATED COPPER COMPANY

BALANCE SHEET AT DECEMBER 31, 1950

ASSETS

Current Assets	
Cash	$ 6,028,695
Federal, State and Municipal Securities	2,050,000
Accounts Receivable	4,024,165
Inventories	8,320,871
Marketable Securities (at cost)	6,399
Total Current Assets	20,430,130
Capital Assets	
Land and Land Improvements (at cost)	3,635,312
Stumpage and Timberlands (at cost)	462,205
Mine Lands (at cost of ore in place)	9,550,125
Plants and Equipment (at cost less amounts charged to past operations as depreciation)	15,241,759
Total Capital Assets	28,889,401
Other Assets	
Investment in Affiliates (at cost or less)	380,773
Explorations and Mineral Properties in Development	471,366
Charges to Future Operations (net)	262,498
Federal Tax Carryback Credit (1949)	475,000
Federal Tax Claims (1943-1945)	211,140
Total Other Assets	1,800,777
TOTAL ASSETS	$51,120,308

LIABILITIES

Current Liabilities	
Accounts Payable	$ 3,094,745
Bank Loans due in 12 months	400,000
Taxes Payable and Accrued	3,737,742
Total Current Liabilities	7,232,487
Deferred Liabilities	
Employment Contracts	57,780
Bank Loans due after 12 months	1,300,000
Insurance Company Loans due 1955 to 1964	5,700,000
Total Deferred Liabilities	7,057,780
TOTAL LIABILITIES	$14,290,267
Shareholders' Equity	36,830,041
TOTAL LIABILITIES and EQUITY	$51,120,308

CONDENSED INCOME STATEMENT FOR THE YEAR ENDED DECEMBER 31, 1950

Revenue from processing and selling metals and metal products		$46,948,761
Operating Costs - Production	$32,807,436	
- Freight, Selling, Admin. & Corporate Taxes	4,967,842	37,775,278
Net Operating Income		9,173,483
Other Income		1,063,605
Total Income		10,237,088
Other Charges		1,115,018
Net Gain before Depreciation, Depletion and Federal Taxes based on income		9,122,070
Depreciation	$1,303,137	
Depletion	375,499	1,678,636
Net Gain before Federal Taxes		7,443,434
Provision for Federal Income and Excess Profits Taxes		3,600,000
NET GAIN CARRIED TO EARNED SURPLUS		$ 3,843,434

Exhibit B

PROPOSED 1951 TRENCHING NEAR ST. LOUIS EXPLORATION SHAFT

During a drilling campaign on its property shortly prior to 1912, the St. Louis Copper Company put down a series of diamond drill holes intersecting the St. Louis conglomerate in the NW¼ of Section 20, T56N, R32W. Five of these holes, Nos. 19, 22, 23, 25 and 26 yielded good sludge analysis; one, No. 19 ran 12.1% Cu for 25 feet. This hole averaged 3.56% copper for 119 feet. The copper occurs in small fissures in a shear zone at the top of the St. Louis conglomerate, mainly in and near the base of the immediately overlying "Big Trap." The strike of this shear in this area is approximately that of the conglomerate, N27°E, and the shearing is in a plane about parallel to that of the beds, approximately 45°NW.

To further investigate this occurrence, and to obtain additional intersections in the conglomerate, Calumet and Hecla in 1937, put down 9 additional diamond drill holes. Late the same year, a small shaft was sunk to the 54-foot level, and about 600 feet of drifting and crosscutting was done. The drilling, from 150 to 800 feet away from the original rich holes, and mainly deeper, disclosed considerable copper in fissures, but not as much as the earlier drilling.

The underground work encountered a number of sheet-like masses in the fissures in the trap; the two main ones being, one directly overlying and at the upper contact of the conglomerate, and a second about 40 feet higher in the trap. Weather conditions caused the closing of the exploration in December 1937, but it was planned when work was resumed to extend the crosscut westerly through the shear zone. This has not been done.

Copper occurs here more or less continuously over a stratigraphic thickness of about 200 feet, as indicated by Hole 23. The length of the occurrence is not known, but the richest part is probably in the vicinity of Holes 19, 22 and 23. Overburden over the entire area is thin, ranging from 6 to 14 feet at the drill sites.

To prove the existence of possible commercial copper at ledge, a trenching program with modern earth moving equipment should be undertaken during weather conditions which prevail in this district during the summer months. The first trench should be 400 feet long crossing the entire shear zone over the richest underground showings in the drill holes and shaft. Overburden here is only 6 to 10 feet deep. If warranted, additional cross trenches may be cut northeast and southwest along the strike of the shear zone, and additional NE-SW trenching should be done to follow the two main copper-bearing fissures encountered in the underground work and any mineralized fissures which may be found in the proposed first trench. An estimate of the work planned is as follows:

Estimated feet of trenching ..... 2,300 feet
Estimated average depth of overburden ..... 10 feet
Estimated average trench cross section ..... 150 sq. ft.
Cu. ft. of excavation = 150' x 2300' =
345,000 cu. ft. or ..... 12,777 yds.
Estimated progress = 40' per day, including moves and delays.
Estimated cost = $170 per day, including supervision.
Estimated time to complete = 58 working days, or 11.6 weeks, 5 days per week (includes delays).
Estimated total cost $9,860

Respectfully submitted,

H. N. Eidemiller
Geologist

May 12, 1951

Exhibit D

ST. LOUIS EXPLORATION

23. Requirements and Costs:

(a)	2 miners @ $12 per day each for 75 days	$ 1,800
	2 laborers @ $10.50 per day each for 75 days	1,575
	1 compressor operator @ $11 per day for 75 days	825
		$ 4,200
(b)	1 geologist @ $600 per month for 6 months	$ 3,600
(c)	None required.	
(d)	None required.	
(e)	None required.	
(f)	1, 1½-yd. drag line shovel @ $184 per day for 60 days	$11,040
	1, D8 bulldozer @ $168 per day for 60 days	10,080
	1, 300 c.f.m. compressor @ $30 per day for 75 days	2,250
		$23,370
(g)	2 Sludge pumps @ $1 per day for 75 days	$ 75
	2, 50# jackhammers @ $2 per day for 75 days	150
	1, ½-ton truck @ $20 per day for 75 days	1,500
		$ 1,725
(h)	Drill steel, drill bits, air hose, water hose, pipe, tools, wrenches, powder, fuse and caps	$ 500
(i)	No charges.	

Dma-1204X

CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
CALUMET DIVISION
CALUMET, MICHIGAN

Amendment to MF-103 - St. Louis Exploration - DMA No. 1204X

9. $13,644.50

23.(a)

No.	Class	Rate per Hour	Hours per Week	Weeks	Cost	
2	Miners	$1.50	60	14	$2,912	
2	Laborers	1.35	60	14	2,646	
1	Compressor man	1.40	60	14	1,372	
1	Truck driver	1.40	60	14	1,372	
1	Assayer	1.50	40	7	420	$ 8,722

(b) One Geologist - $600 per month - 4 months 2,400

(c) None

(d) None

(e) None

(f) 1, 1½-yard dragline shovel @ $1,379 per month rental, plus $5.25 per hour operation, or $1,050 per month. $2,429 per month for 3 months	$7,287	
1, D-8 bulldozer @ $1,105 per month rental, plus $5 per hour operation, or $1,000 per month. $2,105 per month for 3 months	6,315	
1, 315 CFM portable compressor @ $390 per month, plus $1 per hour operation, or $200 per month. $590 per month for 3½ months	2,065	15,667
(g) 2 sludge pumps @ $25 per month - 3 months	$ 75	
2, 50# jackhammers @ $50 per month - 3 months	150	
1, 1½-ton pickup truck @ $60 per week - 14 weeks	840	1,065
(h) Drill steel, bits, hose, wrenches, pipe, powder, fuse, and caps		500
(i) No charges		
		$27,289

24. The project will take slightly more than 3 months, and cost will be spread fairly evenly over the period. It is being scheduled with other trenching projects to avoid duplication of equipment. A separate schedule showing timing of all trenching projects is being submitted.

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

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

DO NOT FILL IN THIS BLOCK

Docket No. Dma-1204X

Date received 5/21/51

Participation

CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
CALUMET DIVISION
1 CALUMET AVENUE
CALUMET, MICHIGAN

Name and address of applicant

Date May 19, 1951

FILL IN THIS BLOCK

Date of application May 19, 1951

Estimated cost $10,000

Mineral or metal Copper

Percentage of Government participation 50%

Location of mine Houghton County, Michigan

Date of filing MF-100 May 14, 1951

DMA Docket Number, if available

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four signed copies of the application to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive officer thereof, with your name and address on each sheet of the application and all accompanying papers. If any question is inapplicable, or if you cannot answer it, so state on the form. Where the space provided for answer is insufficient, answer on a separate sheet, annex it to the application form, and refer to it in space for answer. If the application is approved, you will be presented with an exploration project contract on Form MF-200, for your signature.

THE APPLICANT

*1. Is applicant an individual, partnership, or corporation?
*2. If a partnership, state names and addresses of partners.
*3. If a corporation, state names and addresses of officers, directors, and five largest stockholders.
*4. Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who will manage the project.
*5. Are you the owner or the lessee of the property?
6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

8. Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.
9. How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 23 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.
    (*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

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

*11. State the present and former names of the property, if any.
*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.
*13. State source and quantity of water available for operations and its sufficiency at all seasons.
State amount of power to be used, rate per hour or other cost, and source.
*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.
15. State in detail how the ore could be shipped and how and where milled.
*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.
*17. Production:
    (*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.
19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?
21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.

22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:
    (*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.
    (*b*) Supervisors, by numbers and positions, with salaries of each.
    (*c*) Cost of necessary repairs to existing facilities, structures, and buildings.
    (*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.
    (*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.
    (*f*) Cost of rental for equipment which the operator proposes to rent.
    (*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.
    (*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.
    (*i*) Cost of power, water, utilities, and any other items not provided for above.
24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

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

CALUMET AND HECLA CONSOLIDATED COPPER CO.
CALUMET DIVISION

(Name of company) — By _____ (Signature of authorized official)

May 19, 1951 — Vice President

(Date) — (Title)

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

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
CALUMET DIVISION
CALUMET, MICHIGAN

Form MP-103
(April 1951)

1., 2., 3., and 4. Answered on Form 100.

5. Owner.

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7. Not applicable.

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11. St. Louis.

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Executive Secretary

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To prove the existence of possible commercial copper at ledge, a trenching program with modern earth moving equipment should be undertaken during weather conditions which prevail in this district during the summer months. The first trench should be 400 feet long crossing the entire shear zone over the richest underground showings in the drill holes and shaft. Overburden here is only 6 to 10 feet deep. If warranted, additional cross trenches may be cut northeast and southwest along the strike of the shear zone, and additional NE-SW trenching should be done to follow the two main copper-bearing fissures encountered in the underground work and any mineralized fissures which may be found in the proposed first trench. An estimate of the work planned is as follows:

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Estimated average depth of overburden ..... 10 feet
Estimated average trench cross section ..... 150 sq. ft.
Cu. Ft. of excavation = 150' x 2300' =
345,000 cu. ft. or ..... 12,777 yds.
Estimated progress = 40' per day, including moves
and delays.
Estimated cost = $170 per day, including supervision.
Estimated time to complete = 58 working days, or
11.6 weeks, 5 days per week (includes delays).
Estimated total cost $9,860

Respectfully submitted,

H. M. Eidemiller
Geologist

May 12, 1951

Exhibit D

ST. LOUIS EXPLORATION

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	2, 50# jackhammers @ $2 per day for 75 days	150
	1, ½-ton truck @ $20 per day for 75 days	1,500
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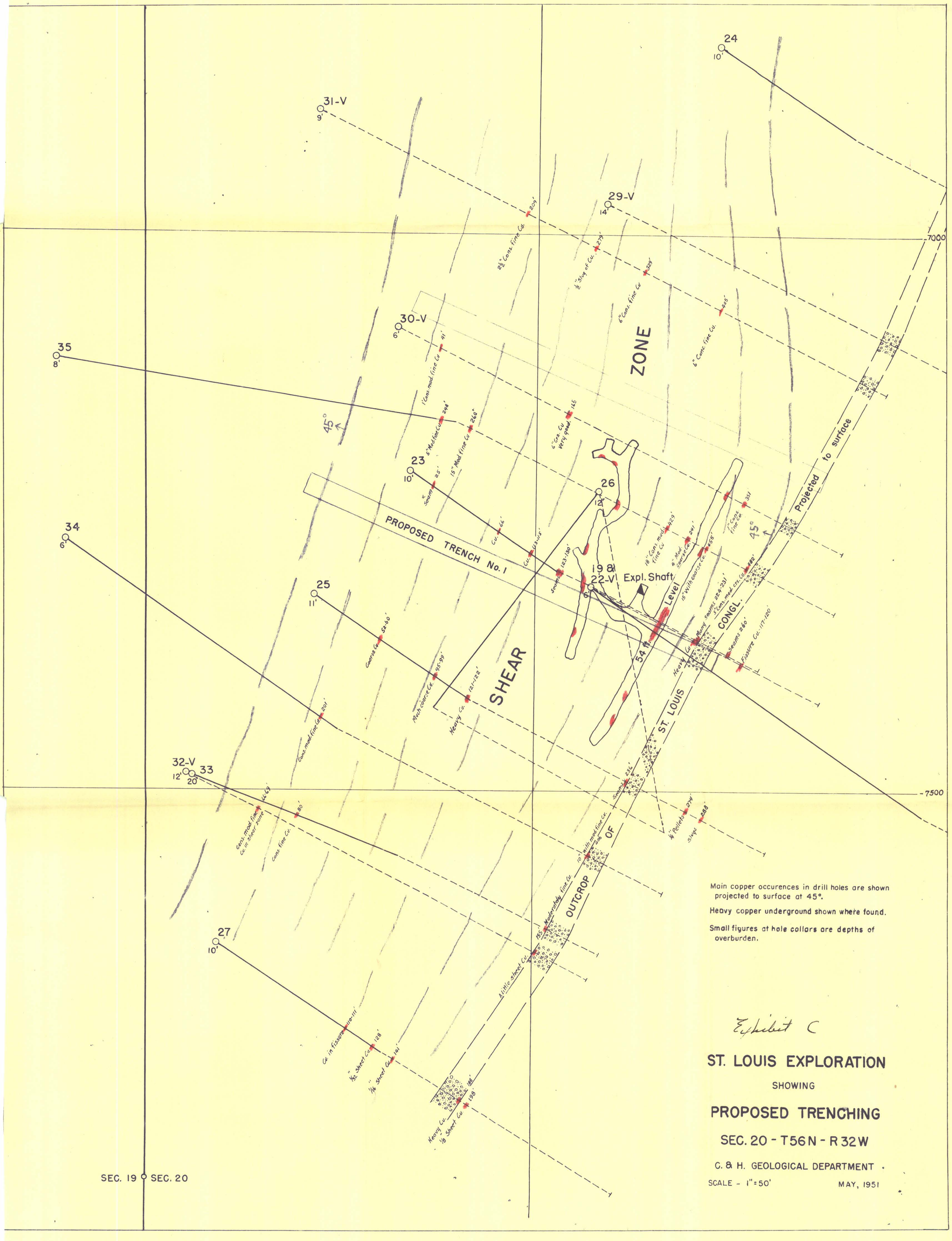
(i)	No charges.	



Main copper occurences in drill holes are shown projected to surface at 45°.

Heavy copper underground shown where found.

Small figures at hole collars are depths of overburden.

Exhibit C

ST. LOUIS EXPLORATION

SHOWING

PROPOSED TRENCHING

SEC. 20 - T56N - R32W

C. & H. GEOLOGICAL DEPARTMENT

SCALE - 1" = 50'

MAY, 1951

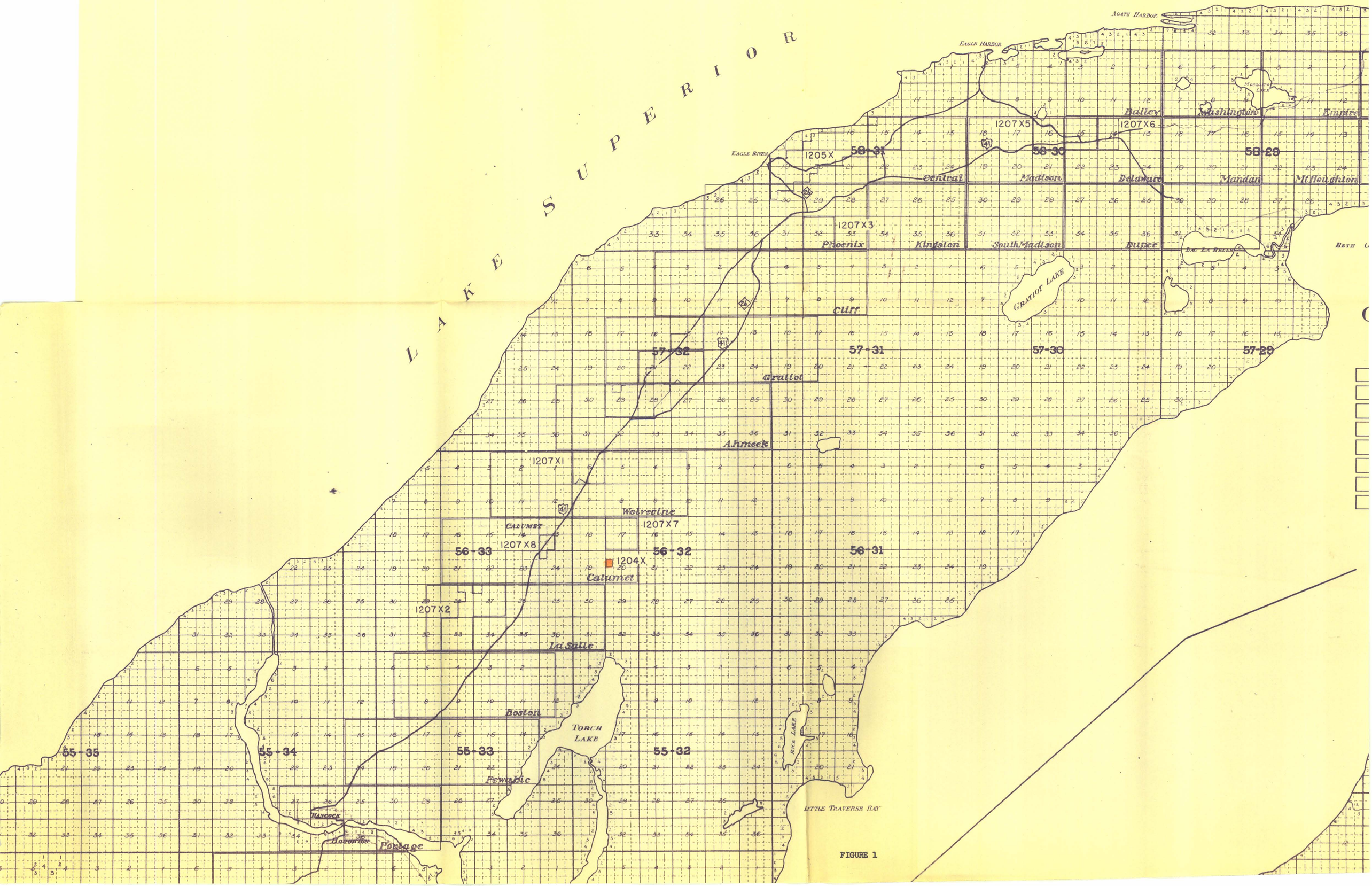

LAKE SUPERIOR
AGATE HARBOR
EAGLE HARBOR
EAGLE RIVER
MOSQUITO LAKE
GRATIOT LAKE
LAC LA BELLE
TORCH LAKE
RICE LAKE
LITTLE TRAVERSE BAY
HANCOCK
Dorrance
Portage
Bailey
Washington
Kinnine
Central
Madison
Delaware
Mandan
McNaughton
Phoenix
Kingston
SouthMadison
Dupee
Curr
Grattot
Ahmeek
Wolverine
Calumet
La Salle
Boston
Pewabic
58-31
58-30
58-29
57-32
57-31
57-30
57-29
56-33
56-32
56-31
55-35
55-34
55-33
55-32
1205X
1207X1
1207X2
1207X3
1207X5
1207X6
1207X7
1207X8
1204X

FIGURE 1

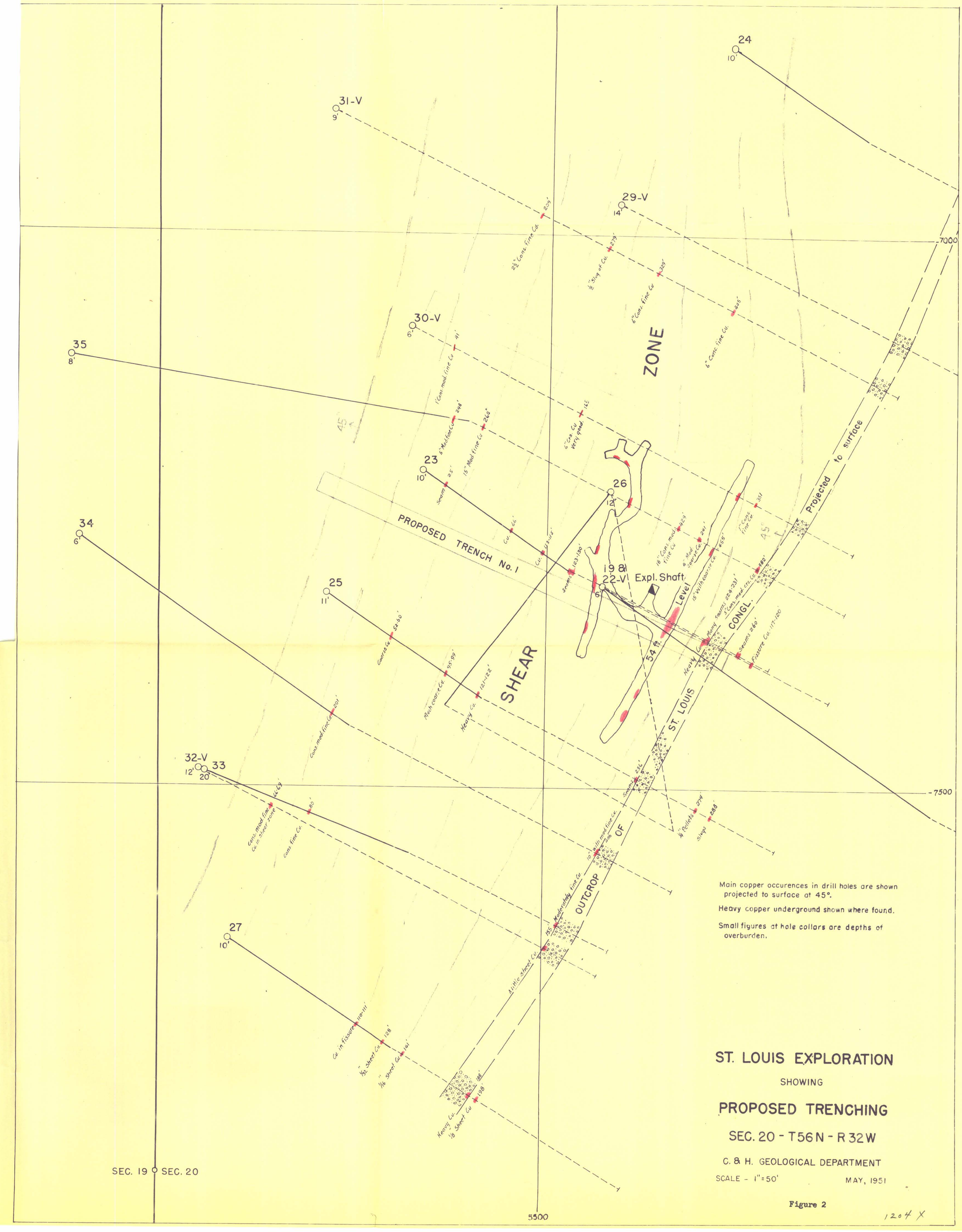
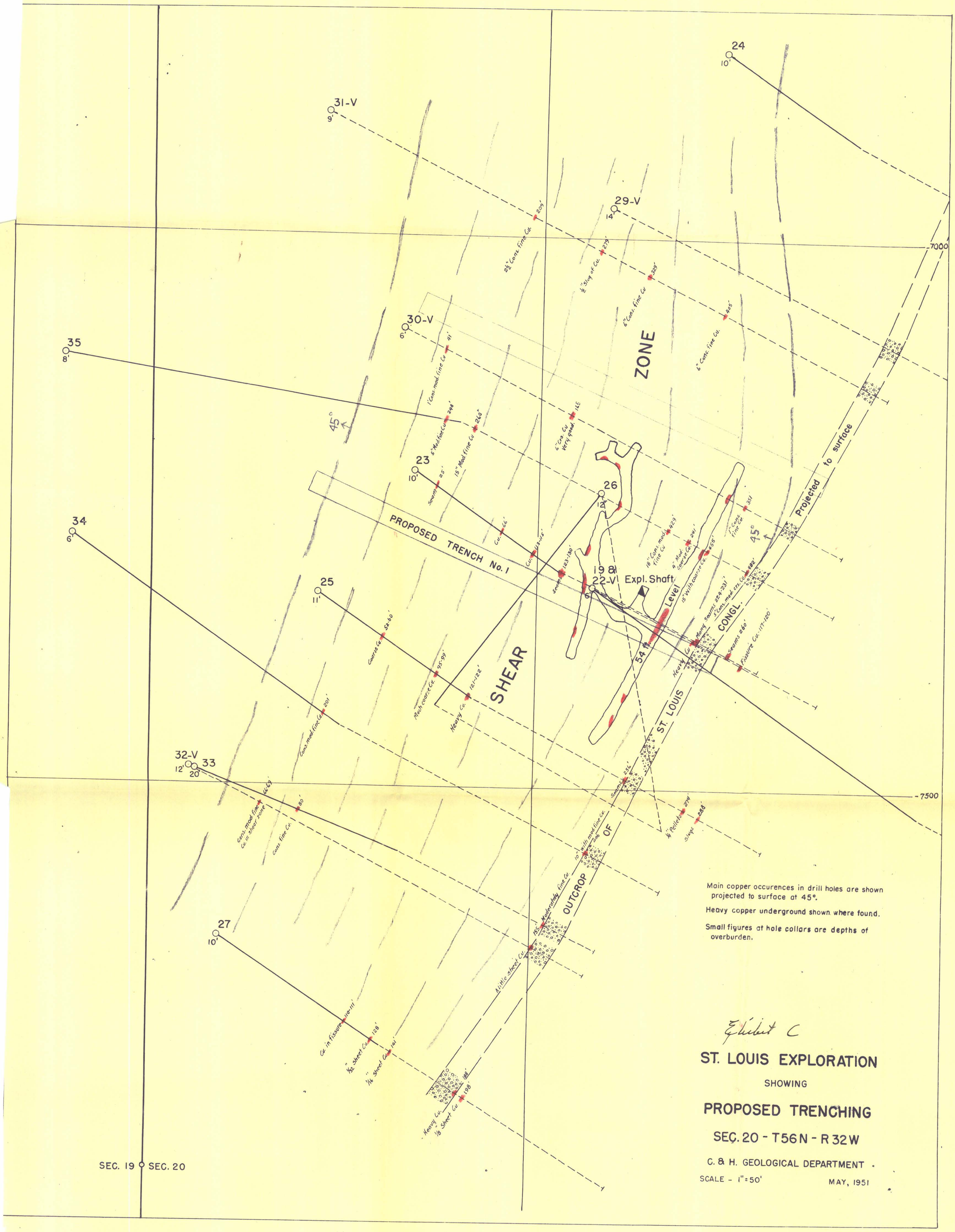


Figure 2

1204 X



Main copper occurences in drill holes are shown projected to surface at 45°.

Heavy copper underground shown where found.

Small figures at hole collars are depths of overburden.

Exhibit C

ST. LOUIS EXPLORATION

SHOWING

PROPOSED TRENCHING

SEC. 20 - T56N - R32W

C. & H. GEOLOGICAL DEPARTMENT

SCALE - 1" = 50'

MAY, 1951