OFFICE OF THE ADMINISTRATOR

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

224 New Customhouse
Denver 2, Colorado

December 18, 1951

Memorandum

To: Executive Secretary, Defense Minerals Administration

From: DMA Field Team, Region IV

Subject: Final Report, DMA Docket 1988, Mono Manganese Mine, Utah County, Utah. Applicant, Frank H. Eastmond, Box 637, Lehi, Utah

Enclosed herewith are the original and two copies of the report on the subject docket.

We concur with the conclusions and recommendations of the examining team that government assistance in exploration work estimated to cost $10,000 be denied.

A copy of the letter of denial is also attached.

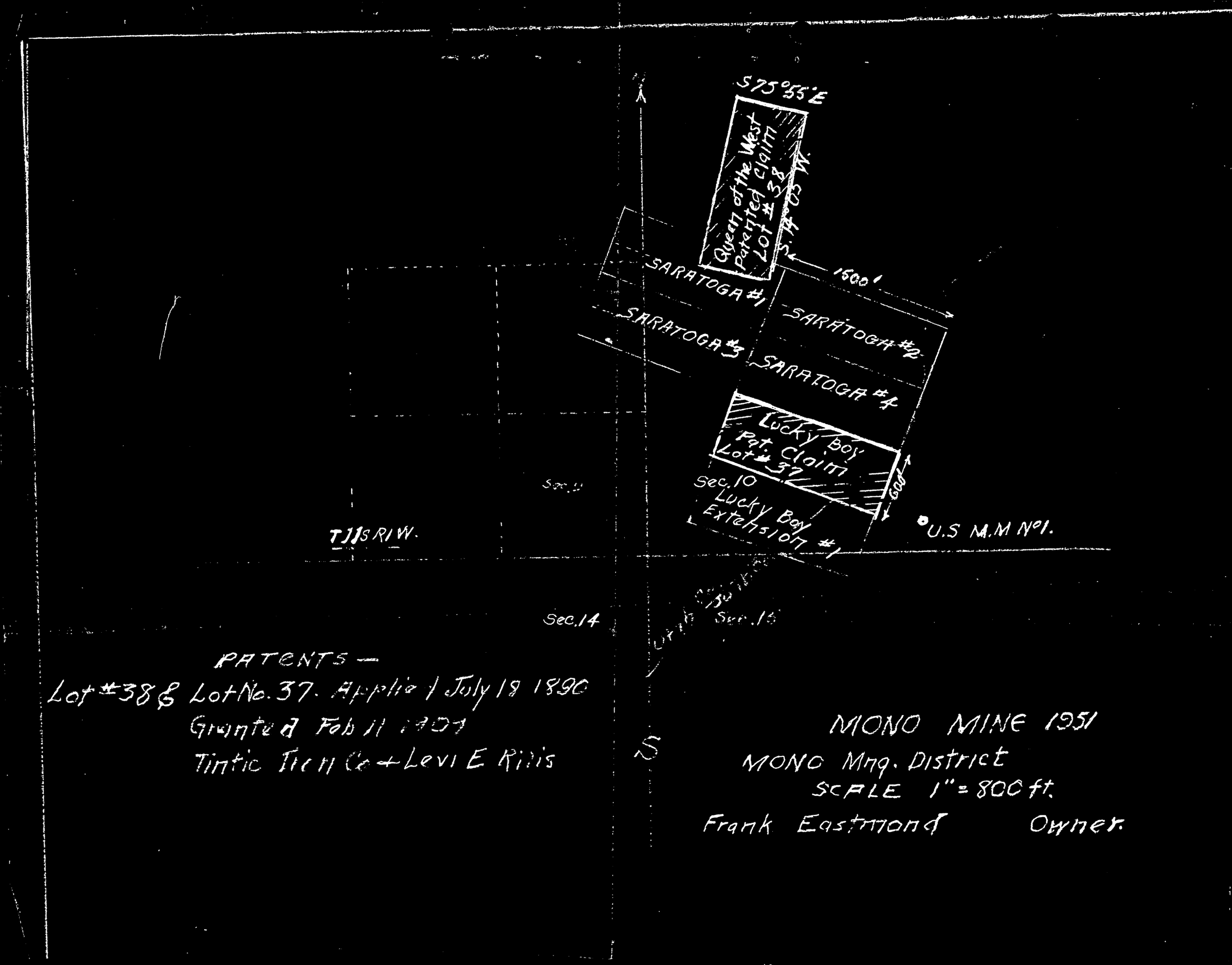
J. H. East, Jr.

J. H. East, Jr.

A. H. Koschmann

A. H. Koschmann

Enclosures:


S75°55'E
Queen of the West Patented Claim Lot #38
S.14°05'W.
1500'
SARATOGA #1
SARATOGA #2
SARATOGA #3
SARATOGA #4
Lucky Boy Pat. Claim Lot #37
600'
Sec.10
Lucky Boy Extension #1
U.S M.M No1.
Sec.15
Sec.11
T11S R1W.
Sec.14
PATENTS —
Lot #38 & Lot No. 37. Applied July 18 1890
Granted Feb 11 1901
Tintic Tech Co + Levi E Ribis
MONO MINE 1951
MONO Mng. District
SCALE 1" = 800 ft.
Frank Eastmond Owner.

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

SEP 19 1951

Mr. J. H. East, Jr., Executive Officer
Field Team Region IV
224 New Customhouse Building
Denver 2, Colorado

REGIONAL DIRECTOR'S
OFFICE
REGION IV
SEP 24 1951
BUREAU OF MINES
DENVER, COLORADO

Dear Sir:

We attach "Review of Application for Exploration Assistance" on:

Docket No. 1988

Commodity Manganese

Applicant Frank H. Eastmond

Please expedite the consideration of this application with particular reference to the points raised in the attached "Review".

Very truly yours,

Tom Lyon

Tom Lyon, Chairman
Coordinating Committee

Lowell B. Moon
For Bureau of Mines

T. P. Thayer
For Geological Survey

6/5/51

Defense Minerals Administration

Review of Application for Exploration Assistance

Docket No. 1988

Commodity Manganese

Total Amount $10,000

Govt. Participation 75%

1. Name and Address of Applicant Frank H. Eastmond
Box 637, Lehi, Utah

2. Location of Property Sections 9, 10, and 15 T11S R1W
Salt Lake Base and Meridian - Mono Mining Dist. - 6 miles
Northwest of Mona, Utah.

3. Mineral or metal Manganese Is it listed in Section 9 of MO-5?

If not, application will be rejected.

4. Geologic probability of discovery—based on data in application
(question #16, 17, 18, 20 and 22)*

Mines or Survey reports, etc., do you rate chances:

a) Good

b) Poor

c) None

d) Don't know—needs field examination ✓

e) Is there an alternative and favorable project?
(If so, attach an explanation)

5. Is the applicant's right to the property clearly stated? No
(question 5, 6, 7)*

6. If applicant is a lessee, is a copy of the lease attached? —

Does the lease have sufficient time to run to cover a future

productive period? —

*question numbers are those of MF-103

7. Are subordination agreements necessary? No

a) MF-201? ——

b) MF-202 ——

8. From the data presented, does the proposed project appear feasible from the point of view of:

a) Available manpower Yes

b) Equipment and supplies Yes
(Question 14 plus general knowledge of availability)*

c) Accessibility (question 12)* Not clear - Need additional info.

d) Water (question 13)* ——

e) Power (question 13)* ——

Is a field check needed on any of these points? Yes "C"

9. Does the experience of the applicant appear to be adequate to assure that he can properly conduct the proposed project? (question 4)* Yes

Is a field check needed on this point? No

10. Exhibit A. (questions 21 and 22)*

a) Is the project adequately described? No

If not, are there sufficient data given so that you can describe the project? No If so, attach a draft.

b) Is there an adequate map or sketch of the proposed work? No
More information needed

c) Is the proposed work "exploration" under the definition of Section 8, MO-5? Not clear

If not, what part of it is? What are the miner and helper to do*. No engineering, geological, assay, or bookeeping included.

*Install pipeline, roustabout for drillers, road work - no mining

Is this part a worthwhile exploration project? Not Known

d) Are the cost estimates detailed? Partially

Can they be summarized, as on page 2 of Procedural Instruction 5-A, from the available data? No If so, attach a draft.

e) Are the cost estimates reasonable? Yes

f) Should more information be requested from applicant? Yes

g) Is a field examination necessary to complete Exhibit A? Yes

11. Exhibit B (question 23-d)*

a) Is it applicable? Yes

b) If so, are sufficient data furnished? No If so, attach a draft.

c) Is a field check needed? Yes

12. Exhibit C (question 23-e, f and g)*

a) Is it applicable? Yes

b) Sufficient data? No If so, attach a draft.

c) Are rents and charges reasonable? No rents mentioned

d) Is a field check needed? Yes

13. Exhibit D (question 23-a, b)*

a) Are there sufficient data? No

b) Is the schedule adequate for the work proposed? No

c) Is the schedule excessive for the work proposed? None given for contract

d) Are the proposed wages and salaries reasonable? Yes

e) Is a field check needed? Yes

14. Exhibit E (question 23-c)*

a) Is it applicable? No

b) Sufficient data?

c) Reasonable?

d) Field check needed?

15. In your judgment, can the proposed work be done in the proposed time? No time given for contractor.

(All exploration must be completed within two years)

16. If field examination is not needed, attach your recommendation.

17. If field examination is needed, do you have any special instructions for the field team not indicated by your answers to the foregoing question? The applicant has not submitted any map of proposed drill hole locations, cross sections, assays, geologic maps, or any basis for establishing whether or not the proposed drilling is warranted, and if so, whether the method and amount of exploration proposed is appropriate.

Reviewed by: C.H. Jacoby

Scott Holcheck

Max A. Pritchard Jr.

Date 9/2/51

INT.-DUP. SEC., WASH., D.C. 99009

SEP 19 1951

Mr. Frank H. Eastmond
Box 637
Lehi, Utah

In reply please refer to
DMA 1988

Dear Mr. Eastmond:

Your application for an exploration project in the amount of $10,000 has been referred to the field for additional information.

Before we can consider your application further, this additional information is required. We suggest that you contact Mr. J. H. East, Jr., 224 New Customhouse Building, Denver 2, Colorado, and offer him whatever assistance he may require.

Very truly yours,

Tom Lyon, Director
Supply Division

File Content to Field

DMA-1988 Manganese

1. 1 Copy of MF-103 with attached sheets
2. 1 Copy of claim map

9/6/51

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 1988

Date received 8-20-51

Participation

Frank H. Eastmond
Box 637
Lehi, Utah

Name and address of applicant

Date

FILL IN THIS BLOCK

Date of application August 14, 1951

Estimated cost $10,000.00

Mineral or metal Manganese

Percentage of Government participation 75%

Location of mine Utah County, Utah

Date of filing MF-100

DMA Docket Number, if available 1988

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.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
AUG 20 1951

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 to 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 this form and accompanying papers is correct and complete to the best of their knowledge and belief.

(Name of company)	By _____ (Signature of authorized official)
August 14, 1951 (Date)	Owner (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

Frank H. Eastmond, applicant
Box 637, Lehi, Utah.

1. The applicant, Frank H. Eastmond, an individual, Box 637, Lehi, Utah.

2 & 3. Inapplicable.

4. The applicant is the manager and owner of Saratoga Resort, Lehi, Utah; owner and operator of the Mono Mine; and a Director of the New Majestic Mining Co., a producing mine.

5 & 6. The applicant owns the Mono Mine. There are no liens or encumbrances against it.

7. Inapplicable.

8. My assets are as follows: Bank of Pleasant Grove, Pleasant Grove, Utah, $3,500 in my checking account; Farmers & Merchants Bank, Provo, Utah with $700 in my checking account; a 60 acre ranch valued at $200 per acre; and $3,000 in crops this year; Three first mortgages in Lehi, Utah for $15,000. Saratoga Resort is clear and worth $100,000.

9. $5,000 loan is desired which is sufficient.

THE PROPERTY

10. The Mono Mine, for which application for loan is made, is located in Sections 9, 10, and 15, Township 11 South, Range 1 West, Salt Lake Base & Meridian, situate in the Mono Mining District. It is six miles north-west of the town of Mono, Utah

11. This property has always been referred to as the Mono Mine.

12. Mono, Utah, the nearest town is located on an all weather U. S. Highway 91 and is 5½ miles from the Union Pacific Railroad.

13. Water for drilling is located 500 yards from the mine.

14. There are no usable facilities on the properties.

15. Ore has been and will be shipped to Geneva Steel plant by truck and rail over a distance of about 30 miles.

16. The mine consists of two patented claims, The Lucky Boy, and Queen of the West, both patents granted in 1909; also five unpatented lode mining claims, the Saratoga #1, Saratoga #2, Saratoga #3, Saratoga #4, and Lucky Boy Extension.

17. In 1950, 428 tons of ore were shipped to Geneva from the Lucky Boy averaging 9% Manganese and 40% Iron. This was open cut mining. A half mile North of this, 380 tons were shipped from the Queen of the West. This ore averaged 15% Manganese and 32% iron.

18. There are 30,000 tons of surface ore blocked out.

19. None.

Frank H. Eastwood, applicant
Box 637, Lehi, Utah

20. Manganese or any other minerals.

21. (a). Core drilling the property; 12 holes from 50 to 200 feet.

(b). An engineers mapping of this property.

(c). Construction of a small building to house watchman and equipment.

(d). Building an ore bin and dump.

(e). Developing the spring and running a 1,500 foot 1¼" pipe line for drilling water.

(f). Improving the road.

(g). This work should take 6 months.

22. The surface ore is in place and if it goes 200 feet deep it will be an economic factor in this locality.

23. THE REQUIREMENTS AND COSTS

23.	(a). Drilling to be contracted at about $5.00 per foot for 1,000 feet	$ 5,000
	(b). One Miner and helper at $300 and $200 per month for 5 months	2,500
	(c). Supplies:	
	Lumber	500
	Pipe and pump	1,000
	Road repair	1,000
		$10,000

24. It will require 3 weeks to build the cabin and put the pipe in place. The Boyle Drilling Co. will need 10 days notice to commence drilling operations.

$2,500 was spent upon the road to the mine in the last 2 years and it is still in a usable and fair condition. Work can begin within 10 days after the project is approved.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC 26 1951

Mined Operating Com.
Received 1/2/52

Mining Division
Region IV

December 18, 1951

Memorandum

To: DMA Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMA Docket 1988, Mono Manganese Mine, Utah County, Utah, applicant, Frank H. Eastmond, Box 637, Lehi, Utah

The application of the subject docket was for government assistance in exploration work estimated to cost $10,000. Work proposals of the applicant consisted of a total of 1,000 feet of core drilling to explore the downward extension and trend of the ore body.

Records of manganiferous-iron ore produced from the Mono property indicate low manganese and high silica content.

From a study of the deposits, the examining team has reached the conclusion that the proposed exploration work would not prove additional ore of a grade or tonnage that would be of commercial significance.

We concur in the recommendations of the examining team that assistance be denied.

W. H. King
for Paul T. Allaman

Mining Division
Date Rec'd.
DEC 14 1951
BUREAU OF MINES
Denver, Colorado

December 11, 1951

Memorandum

To: Paul T. Allsman, Chief, Mining Division, Region IV

From: Chief, Utah-Wyoming Branch, Mining Division

Subject: DMA 1988, Mona Manganese Mine, Utah and Juab Counties, Utah

Enclosed are 8 copies of the engineering report covering the subject property, together with a section on Summary, Conclusions and Recommendations. The Survey submitted a geologic report November 9, 1951.

The manganiferous-iron ore on the Mona property has a low manganese and high silica content. It appears probable that the deposit is too small for commercial significance. It is recommended that the loan application be denied, with which I concur.

The brochure is attached.

Stephen R. Wilson
Stephen R. Wilson

Enclosures - 3

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION
WASHINGTON 25, D. C.
200 New Customhouse
Denver 2, Colorado

November 19, 1951

Memorandum

To: DMA Field Team, Region IV

From: A. H. Koschmann

Subject: DMA Docket 1988, Frank H. Eastmond, Mono Manganese Mine, Utah County, Utah

Enclosed are eight copies of the geologic report by R. M Smith and H. R. Craig, Jr., of the U. S. Geological Survey covering the above docket. It has been recommended that the loan be denied.

The brochure will accompany the U. S. Bureau of Mines report.

A. H. Koschmann
A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (8)

Room 307, 320 South Main
Salt Lake City 1, Utah
6 November 1951

Memorandum

To: A. H. Koschmann, Field Team, Region IV

From: Ralph J. Roberts

Subject: DMA Docket 1988, Frank H. Eastmond, Mono Manganese Mine, Utah County, Utah.

Enclosed are eight copies of a geologic report on DMA Docket 1988, Frank H. Eastmond, Mono Manganese Mine, Utah County, Utah.

The Mono Manganese Mine consists of an open cut in a mineralized fault zone in Paleozoic dolomite on Long Ridge northwest of Mona, Utah. Manganese minerals occur in a series of west to northwest striking faults that contain jasper and chalcedony. The manganese appears to be confined to small irregular shoots within the fault zones. Approximately 15 percent of the area is mineralized with manganese and iron oxides; the remainder is barren country rock.

The applicant's exploration proposals are not likely to result in the discovery of any manganese ore of commercial grade. The deposit is too small and too low in grade to contain a significant reserve of manganese. It is therefore recommended that the application be denied.

for - Ralph J. Roberts

UNITED STATES
DEPARTMENT OF THE INTERIOR
OSCAR L. CHAPMAN, SECRETARY

DEFENSE MINERALS ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

Docket DMA 1988, Frank H. Eastmond, Mono Manganese Mine

Utah County, Utah

R. M. Smith and H. R. Craig, Jr., Geologists
U. S. Geological Survey

November 5, 1951

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

By R. M. Smith and
M. H. Howes

The Mona manganese property was examined by the Geological Survey during October 1951 in response to a request from the Field Team, Region IV. An application was submitted by the property owner requesting assistance for exploration under the DMA program. A preliminary examination of the property was made previously by the Bureau of Mines.

Manganese mineralization at the Mona mine occurs in a west to northwest striking fault zone. Irregular ore shoots are found within the fault zone, the largest known shoot being 150 feet long and 35 feet wide. Approximately 50 percent of the surface area of this shoot is mineralized with manganese and iron oxides. The remaining area is barren wall rock or gangue minerals. The ore minerals include pyrolusite, psilomelane, manganite, hematite and limonite. Production from the Mona property totals 663 tons of ores averaging 10.4 percent manganese, 33.4 percent iron, and 23.8 percent SiO_2.

The applicant has proposed a diamond drilling program to cover three separate areas on the property. The total estimated cost of the program is $10,000. A more detailed estimate of the cost of the diamond drilling, prepared by the Bureau of Mines, totals $8,817.

The manganiferous iron ore deposit on the Mona property is fairly well exposed by open cut. The ore has a low manganese content, high

silica content, and occurs in irregular, erratic masses. A diamond drilling program as outlined in the application would yield information helpful in determining size and grade of the deposit. It is probable that the deposit is too small and too low in grade to contain a significant reserve of manganese. It is recommended that loan approval be denied.

CONTENTS

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Ore Deposits	1
Ore Reserves	2
Proposed Exploration	3
Project No. 1	3
Project No. 2	3
Project No. 3	3
Summary and Conclusions	3

ILLUSTRATIONS

Figure 1. Index map of Central Utah

Figure 2. Geologic map of the Mono Manganese Mine, Utah County, Utah.

Docket DMA 1988, Frank H. Eastmond, Mono Manganese Mine

Utah County, Utah

GEOLOGY

The area surrounding the Mono Manganese mine is underlain by Paleozoic sedimentary rocks which have been complexly faulted. In the area east of the mine (see fig. 2) dolomite (Cole Canyon?) beds strike north and dip 35° east. The rocks immediately around and west of the mine are altered dolomites that probably strike east and dip about 35° north. Tintic quartzite occurs north of the mine as subangular float in a zone about 300 feet wide and 1,500 feet long that trends northwest. This float may have been deposited as stream gravens or, more probably, it may be derived from a brecciated sliver of Tintic quartzite exposed by faulting.

The sedimentary rocks are overlain unconformably by an augite andesite flow, which forms the greater part of Long Ridge south of the mine.

The sedimentary rocks are cut by faults that strike west to northwest. The quartzite appears to be in fault contact with dolomite along a northwest-striking fault and also to be cut by parallel east-striking faults having displacements up to about 100 feet as shown in figure 2.

ORE DEPOSITS

The ore bodies are irregular deposits of manganese and iron oxides along brecciated fault zones which strike west to northwest and probably dip steeply south. The ore minerals are in irregular veins in the fault zones, partly replacing brecciated dolomite which is also locally replaced by clay. The ore

minerals are a mixture of pyrolusite, psilomelane, manganite, limonite and hematite; chalcedony and quartz are the main gangue minerals. Much jasper also occurs along the fault zones.

The largest deposit (fig. 2) occurs in an area 150 feet long and 70 feet wide, and is exposed to a depth of 25 feet in an open cut. The trend of the fault zone believed to control this deposit is indicated by jasper and chalcedony float; this trend is about N 75° W. The fractures that bound the fault zone are not exposed and those mapped within the fault zone are irregular and nonpersistant. Other ore bodies, not shown in figure 2, occur in parallel faults and are much smaller. They have been exposed in trenches that are partly caved.

Production from the open cut is 663 tons that averaged 10.37 percent manganese, 33.4 percent iron, and 23.8 percent silica.

ORE RESERVES

The applicant has estimated that the Lucky Boy open cut has measured reserves of 30,000 tons containing 9 percent Mn and 40 percent Fe. The ore zone is exposed on the surface by stripping and is opened to a depth of 25 feet in the open cut. The zone is about 150 feet long and from 10 to 70 feet wide. Of this volume of rock only about 15 percent is mineralized in irregular veins and lenses up to 10 feet thick.

The average grade of ore is about 5 percent Mn and 16 percent Fe. Ore reserves for this deposit are estimated to be 24,000 tons of rock in place and are subdivided as follows:

Class	Tons	Percent Mn	Percent Fe
Measured	6,000	5	16
Indicated	6,000	5	16
Inferred	12,000	5	16

About 50 percent of the reserves can be rejected as waste by selective mining, thereby raising the grade to 10 percent Mn and 33 percent Fe.

No reserves are estimated for other deposits in the Lucky Boy area.

PROPOSED EXPLORATION

The applicant orally proposed a diamond drilling program for three parts of the Lucky Boy claim.

Project No. 1:—Drill 4 or more vertical holes within the stripped outcrop area near the open cut. The depths of the holes are to be determined by the downward extension of the ore and by open cut mining; a maximum depth of about 200 feet is probable.

Project No. 2:—Drill two vertical holes in a saddle 700 feet northwest of the mine on the projected trend of the ore zone. Much jasper and brecciated dolomite but no manganese are exposed in the saddle.

Project No. 3:—Drill two holes from a ravine about 100 feet east of the open cut, inclining the holes to cut the extension of the ore zone projected southeast. A small pit contains showings of manganese near this location but the zone probably is not continuous.

SUMMARY AND CONCLUSIONS

The Mono manganese mine consists of an open cut in a mineralized fault zone in Paleozoic dolomite. The sedimentary rocks of the region strike north and dip 35° east; the mine is in a faulted block of altered dolomite that may strike east and dip 35° N. The sedimentary rocks are unconformably overlain by an andesite flow.

Manganese minerals occur in a series of west to northwest striking faults containing jasper and chalcedony. The manganese appears to be confined to small irregular shoots within the fault zones. The Mono mine is on the largest known shoot, which crops out in an area 150 feet long and 70 feet wide. About 15 percent of this area is mineralized with manganese and iron oxides; the remaining 85 percent of the outcrop area is barren wallrock or gangue minerals. The ore minerals include pyrolusite, psilomelane, manganite, hematite and limonite.

Production from the Mono mine is 663 tons that averaged 10.4 percent manganese, 33.4 percent iron, and 23.8 percent silica.

The applicant proposes to explore the deposit near the open cut by diamond drilling at three sites: (1) four holes in the outcrop at the open cut, to determine the downward extention of mineralization; (2) two holes 700 feet northwest of the outcrop to test the westward extension of the deposit; (3) two holes 100 feet east and 60 feet below the open cut to determine the eastward extension of the deposit.

The examining geologists believe that project No. 1 would yield information helpful in determining the size and grade of the deposit, that project No. 2 would almost certainly fail to reveal ore, and that project No. 3 is unlikely to reveal ore. The deposit is probably too small and too low in grade to contain a significant reserve of manganese. It is therefore recommended that the application be denied.

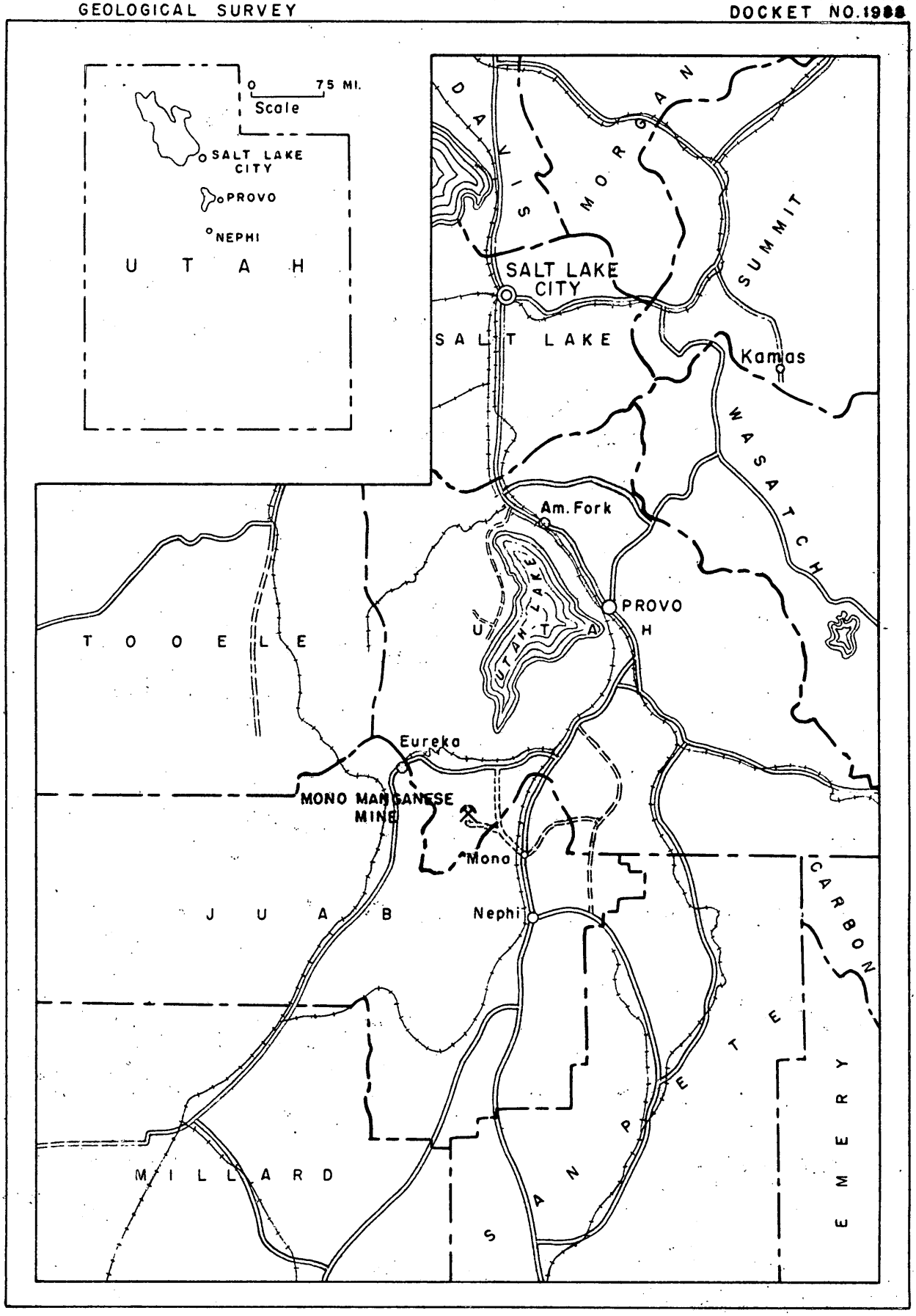

FIG. 1 INDEX MAP OF CENTRAL UTAH

0 5 10 15 20 MILES
Scale

U. S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DEFENSE MINERALS ADMINISTRATION
DOCKET NO. 1988

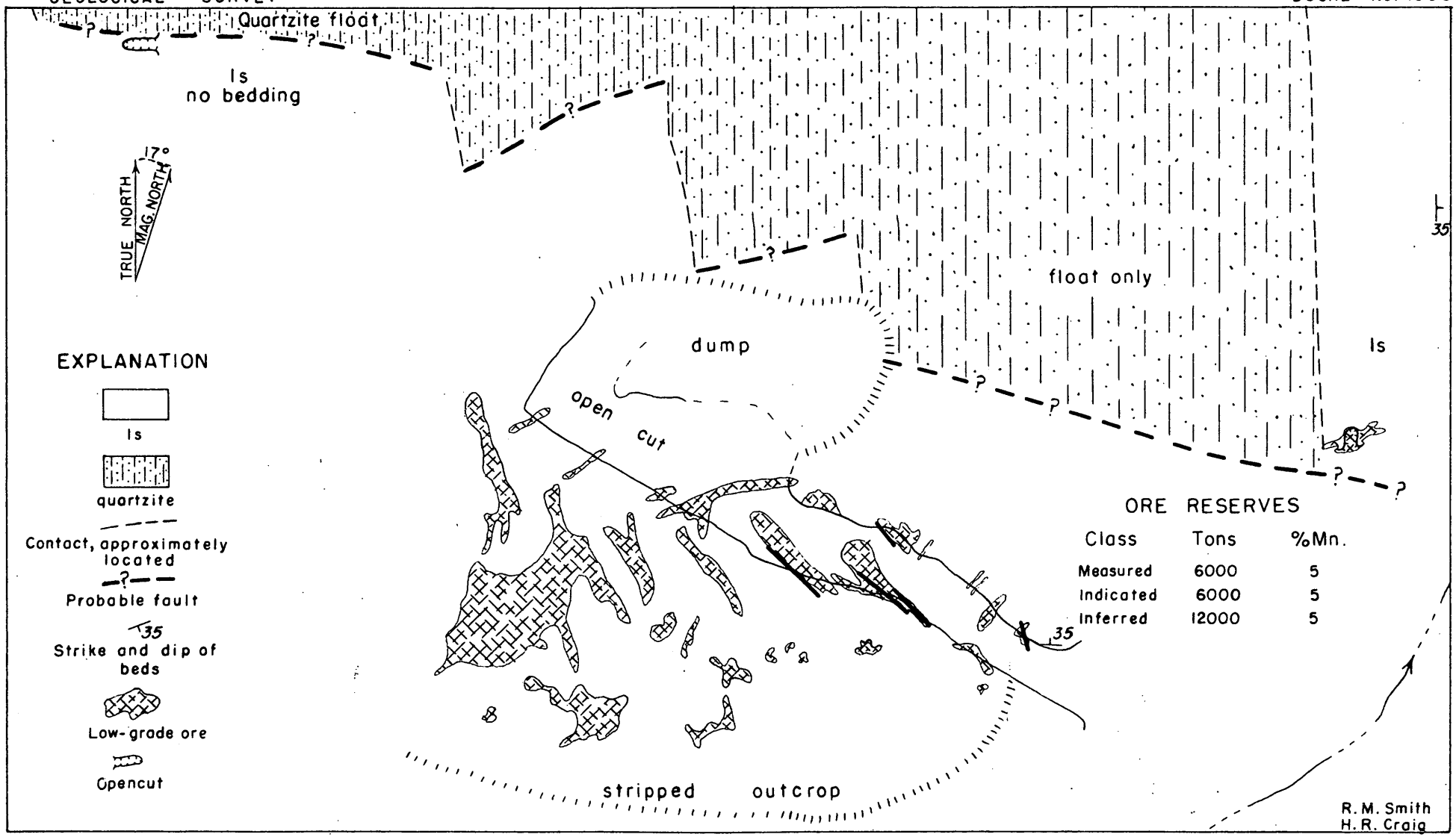

FIG. 2 GEOLOGIC MAP OF THE MONO MANGANESE MINE

MONA, UTAH COUNTY, UTAH

0 40 80 FEET
Scale

MONA MANGANESE MINE
UTAH AND JUAB COUNTIES, UTAH

Manganese
DMA-1988

Engineering Report

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U. S. Bureau of Mines

MONA MANGANESE MINE
UTAH AND JUAB COUNTIES, UTAH

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Fig. 1 Location map, Mona manganese mine, Utah and Juab Counties, Utah

INTRODUCTION

Frank H. Eastmond, of Lehi, Utah, has applied for an exploratory Loan on the Mona manganese property, Mona district, Juab and Utah Counties, Utah. The application was filed August 14, 1951, and was assigned DMA docket 1988.

Previous preliminary examination of the property was made March 28, 1951, by M. H. Howes and H. F. Buchholtz, mining engineers, Bureau of Mines. R. M. Smith and Reed Craig, geologists of the Survey, examined the property October 24 and 25, 1951, to determine the feasibility of the proposed project.

LOCATION, TOPOGRAPHY AND PHYSICAL FEATURES

The property is located in secs. 9, 10 and 15, T. 11 S., R. 1 W., S.L.B. & M., in Utah and Juab Counties, Utah, about 7 miles by road northwesterly from Mona, Utah. It is situated along a broad, undulating, northwesterly segment of Long Ridge, at an elevation of approximately 5,800 feet above sea level.

The climate is semi-arid. Days are hot and nights are cool in the summer. Winters are moderately cold. All-year operations are possible.

Rather sparse vegetation consists of sagebrush, pinion pine and cedar.

HISTORY, PRODUCTION, OWNERSHIP AND EXTENT

The Mona property consists of two patented lode claims, Lucky Boy and Queen of the West, and 5 unpatented claims, Saratoga #1, Saratoga

#2, Saratoga #3, Saratoga #4, and Lucky Boy Extension. The Lucky Boy and Queen of the West were patented in 1909. The unpatented claims were located during the summer of 1951. Mr. Frank H. Eastmond, Box 637, Lehi, Utah, is owner of the property. There are no liens or encumbrances.

From December 1950 to May 1950, 13 carloads of ore were mined from the property and shipped to Geneva Steel Company. Settlement assays of the shipments are as follows:

	Percent		
Tons	Mn	Fe	SiO_2
49.5	13.7	25.9	29.91
59	14.5	24.0	28.98
47	8.3	43.0	13.76
65	9.5	41.3	13.85
54	12.6	23.5	37.8
48	7.2	39.1	18.43
47	8.6	41.0	18.35
46	8.0	38.1	19.72
46	8.0	39.5	18.95
51	11.8	20.8	41.47
56	16.8	27.1	22.92
46	6.9	37.8	20.76
48.5	6.4	36.8	23.67

Total — 663 tons

The weighted assay value of the 663 tons of ore produced is 10.4 percent manganese, 33.4 percent iron, and 23.8 percent silica.

DESCRIPTION OF THE DEPOSIT

The Mona manganese deposit lies along a broad, hog-back ridge and is covered for the most part by a thin overburden of clay and disintegrated limestone and quartzite. Outcrops of limestone,

quartzite and ore are exposed in a shallow ravine which cuts through the ridge. Irregular, massive and erratic deposition of the manganiferous-iron ore occurs as a limestone replacement. Limonite, pyrolusite, and psilomelane are the common ore minerals, and quartz, jasperoid, calcite, clay and unreplaced limestone constitute the gangue. Considerable alteration in the form of kaolinization and silicification is present in the limestone. Fine, gravel-sized particles of iron and manganese oxide float are scattered over a large area.

MINABLE ORE RESERVES

Most of the ore produced from the property was mined from an open pit 75 feet long, 20 feet wide, and 0 to 25 feet deep (12.5 feet average). Stripping of the overburden in the vicinity of the pit has exposed an area 150 feet long and 35 feet wide, the material of which is composed of 50 percent ore of 10 percent manganese grade. It will be necessary to use selective mining methods to maintain the extraction of an average 10 percent manganese ore.

Measured Ore Reserves

Measured volume of exposed area 150 feet by 35 feet, with average measured thickness of 12.5 feet = 65,625 cu. ft.

50 percent of 65,625 cu. ft. = 32,812 cu. ft. of 10 percent Mn ore.

32,812 cu. ft. ore = 3,000 tons 10 percent Mn ore at 10 cu. ft. per ton.

Indicated Ore Reserves

Total volume of exposed area, 150 feet by 35 feet, with maximum measured thickness of 25 feet = 131,250 cu. ft.

131,250 cu. ft. - 65,625 cu. ft. measured volume = 65,625 cu. ft. indicated volume.

50 percent of 65,625 cu. ft. = 32,812 cu. ft. of 10 percent Mn ore.

32,812 cu. ft. ore = 3,000 tons 10 percent Mn ore at 10 cu. ft. per ton.

Inferred Ore Reserves

It is inferred that ore in the same exposed area will extend to twice the depth of the measured plus the indicated ore and will be 6,000 tons 10 percent Mn ore at 10 cu. ft. per ton.

Summary of Ore Reserves

Class	Tons	Percent Mn
Measured	3,000	10
Indicated	3,000	10
Inferred	6,000	10

PRESENT STATUS

No exploration or development work is being conducted at the present time.

There are no items of mining and milling equipment or other facilities on the property.

PROJECT PROPOSALS, WITH COSTS

The applicant proposes a program in three projects, totaling 1,000 feet of diamond drilling, to explore the Mona property for

manganese or any other minerals.

Project #1

Four or more vertical holes are proposed for the stripped area in the vicinity of the open cut on Lucky Boy claim, the depth to be determined by the downward extension of the ore and the economic limit of open pit mining (maximum depth about 200 feet).

Project #2

Two vertical holes are proposed for the area 700 feet northwesterly from the Lucky Boy open pit on the projected trend of the ore zone.

Project #3

Two inclined holes are proposed from a ravine 100 feet east of the Lucky Boy open pit to cut the extension of the ore zone projected southeasterly.

Time Schedule

Construction of 10' x 12' frame building	12 days or 2 weeks
Lay 1,500 feet 1¼-inch water pipe line	6 days or 1 week
Diamond drilling:	
Project #1 - 4 holes - 500 feet at 30' per day	18 days or 3 weeks
Project #2 - 2 holes - 250 feet at 30' per day	9 days or 1½ weeks
Project #3 - 2 holes - 250 feet at 30' per day	9 days or 1½ weeks
Total time	9 weeks

Labor Costs

Diamond drilling contract		$5.00 per foot
1 laborer (base pay plus overtime and 11 percent payroll taxes)	$14.50	
1 laborer (base pay plus overtime and 11 percent payroll taxes)	10.00	
Supervision, bookkeeping, sampling, etc.	16.00	
Total labor		$40.50 per day

Cost of 10- x 12-foot frame building (12 days)

Building materials	$200.00	
Labor at $40.50 per day	486.00	
Total		$686.00

Cost of pump and pipe line (6 days)

Gasoline-driven pump	$500.00	
1,500 feet 1¼-inch pipe at $0.22 per foot	330.00	
Labor at $40.50 per day	243.00	
Total		$1,073.00

Diamond drilling cost

Project #1 (500 feet, 18 days)

500 feet drilling at $5.00 per foot	$2,500.00	
Labor at $40.50 per day	729.00	
Assaying - 100 samples at $3.00 each	300.00	
Total		$3,529.00

Project #2 (250 feet, 9 days)

250 feet drilling at $5.00 per foot	$1,250.00	
Labor at $40.50 per day	364.50	
Assaying - 50 samples at $3.00 each	150.00	
Total		$1,764.50

Project #3 (250 feet, 9 days)

250 feet drilling at $5.00 per foot	$1,250.00	
Labor at $40.50 per day	364.50	
Assaying - 50 samples at $3.00 each	150.00	
Total		$1,764.50
Grand total for program		$8,817.00

About 3 miles of passable access road, in an easterly direction, connects the property with a graveled country road. Mona, Utah, the nearest railhead, is 4 miles southeast of this junction. Ores are trucked from Mona to Geneva Steel Company, 43 miles to the north, over hard-surfaced roads.

Manpower is available in the vicinity of Mona, Utah.

Power will be supplied by gasoline or Diesel-driven equipment.

Sufficient water for mining is available from a spring 1,500 feet from the deposit.

PRODUCTION PLAN

The applicant states that he has no definite production plan after completion of the exploratory program. However, he plans to mine by selective, open-pit methods.

PROPOSED FINANCING

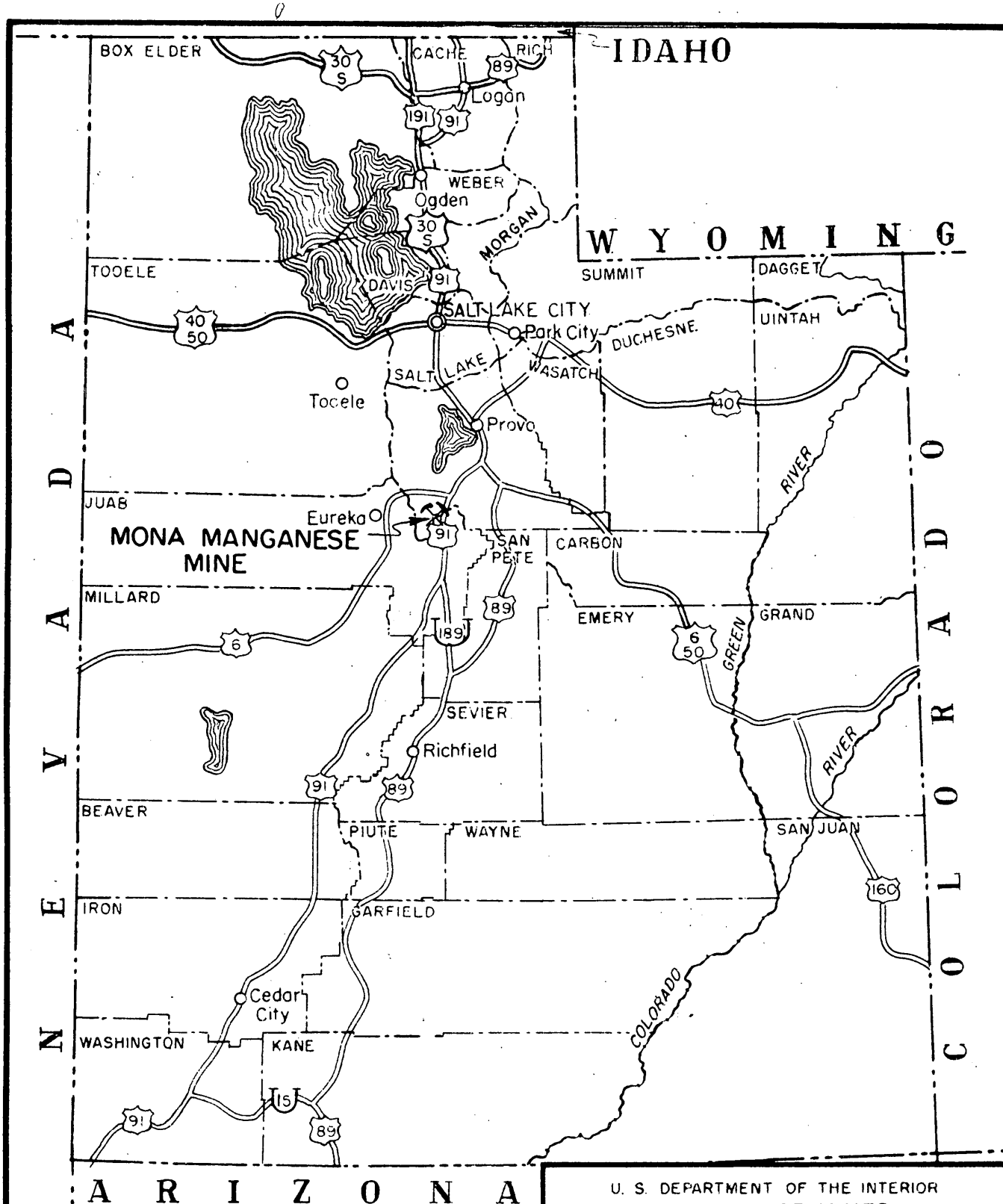
Government participation (75 percent)	$6,612.75
Applicant participation (25 percent)	1,204.25
Total cost of exploration program	$7,817.00

CONCLUSIONS AND RECOMMENDATIONS

The manganiferous-iron ore deposits of the Mona mine are fairly well exposed by open pit and stripping. The ore is low-grade, high in silica content and occurs in irregular, erratic bunches. A core drilling program would determine tonnage of ore at depth.

The applicant stated that Geneva Steel Company will not contract for more than 500 tons of the low-grade ore at a time and will not provide a continuous market. There appears to be no other economic market for this product at present.

It is therefore recommended that government participation in the proposed exploration program be denied.



U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Fig. 1 Proj. No.

Location Map

MONA MANGANESE MINE

UTAH AND JUAB COUNTIES, UTAH

ENGINEER: *M. H. HOWES*	DATE: NOV. 20, 1951
TRACED: NOV., 1951; A.P.T.S.	300 - 99 - E
CHECKED:	