Administrator, DMEA

January 6, 1954

3160

Iron and Ferro-Alloys Division, DMEA

Denial of exploration project in the amount of $24,833.00
Docket No. DMEA 3160, Manganese
D. E. Harrison, lessee, of 641 - 4th Ave., Durango, Colorado
Wolf, et al. mining claims
San Miguel County, Colorado

The denial of the subject application by the Field Team, Region 4, is based on the following information:

1. The applicant applied for a loan of $24,833.00 for exploration assistance on the subject property.

2. The property owned by E. J. Reed, Redvale, Colorado, is under lease to D. E. Harrison and consists of 6 lode mining claims as follows: Wolf, Black Prince, Dream, Fox, Doc, and Boe, in Sections 9, 10, 15, and 16, T. 43 N., R. 16 W., New Mexico Meridian, San Miguel County, Colorado.

3. Manganese oxides occur as small tabular replacements in flat to moderately dipping beds of red sandstone in the Morrison formation, and as fillings in nearly vertical joints and cracks. There is some ore of a moderately high grade, but nearly all ore carries finely divided copper oxides in concentrations too high for acceptance at the Government purchasing depots.

4. The copper is not removable by ordinary concentration methods.

5. Past production of 435 tons has occurred in small lots from 1917 until the present. A recent shipment of 14.8 tons to the depot at Deming, New Mexico, was rejected.

6. The Field Team concludes that any production would come from small scattered ore bodies of several hundred tons each, of medium low grade ore, situated in an isolated district, 600 miles from the nearest depot.

7. The chances of finding significant ore bodies of an acceptable grade is poor and does not warrant Government assistance.

8. This Division concurs in the denial.

Copy to: Docket
Code 400
Adm. Read. File

W. S. Martin, Chief
Iron and Ferro-Alloys Division

TLChapman/ls
1/7/54

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Administrator, DMEA

DATE: January 6, 1954

FROM : Iron and Ferro-Alloys Division, DMEA

SUBJECT: Denial of exploration project in the amount of $24,833.00
Docket No. DMEA 3160, Manganese
D. E. Harrison, lessee, of 641 - 4th Ave., Durango, Colorado
Wolf, et al. mining claims
San Miguel County, Colorado

The denial of the subject application by the Field Team, Region 4, is based on the following information:

1. The applicant applied for a loan of $24,833.00 for exploration assistance on the subject property.

2. The property owned by E. J. Reed, Redvale, Colorado, is under lease to D. E. Harrison and consists of 6 lode mining claims as follows: Wolf, Black Prince, Dream, Fox, Doe, and Bee, in Sections 9, 10, 15, and 16, T. 43 N., R. 16 W., New Mexico Meridian, San Miguel County, Colorado.

3. Manganese oxides occur as small tabular replacements in flat to moderately dipping beds of red sandstone in the Morrison formation, and as fillings in nearly vertical joints and cracks. There is some ore of a moderately high grade, but nearly all ore carries finely divided copper oxides in concentrations too high for acceptance at the Government purchasing depots.

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7. The chances of finding significant ore bodies of an acceptable grade is poor and does not warrant Government assistance.

8. This Division concurs in the denial.

W S Martin

W. S. Martin, Chief
Iron and Ferro-Alloys Division

Chapman
Martin

Administrator, DMEA

January 6, 1954

Iron and Ferro-Alloys Division, DMEA

Denial of exploration project in the amount of $24,833.00

Docket No. DMEA 3160, Manganese
D. D. Harrison, lessee, of 641 - 4th Ave., Durango, Colorado
Golf, et al. mining claims
San Miguel County, Colorado

The denial of the subject application by the Field Team, Region 4, is based on the following information:

1. The applicant applied for a loan of $24,833.00 for exploration assistance on the subject property.

2. The property owned by T. J. Reed, Redvale, Colorado, is under lease to D. D. Harrison and consists of 6 lode mining claims as follows: Golf, Black Prince, Dream, Fox, Doe, and Bee, in Sections 9, 10, 15, and 16, T. 43 N., R. 16 W., New Mexico Meridian, San Miguel County, Colorado.

3. Manganese oxides occur as small tabular replacements in flat to moderately dipping beds of red sandstone in the Morrison formation, and as fillings in nearly vertical joints and cracks. There is some ore of a moderately high grade, but nearly all ore carries finely divided copper oxides in concentrations too high for acceptance at the Government purchasing depots.

4. The copper is not removable by ordinary concentration methods.

5. Past production of 435 tons has occurred in small lots from 1917 until the present. A recent shipment of 14.8 tons to the depot at Deming, New Mexico, was rejected.

6. The Field Team concludes that any production would come from small scattered ore bodies of several hundred tons each, of medium low grade ore, situated in an isolated district, 600 miles from the nearest depot.

7. The chances of finding significant ore bodies of an acceptable grade is poor and does not warrant Government assistance.

8. This Division concurs in the denial.

Copy to: Docket
Code 400
Adm. Read. File

W. S. Martin, Chief
Iron and Ferro-Alloys Division

TLChapman/ls
1/7/54

R.C.S. 2-18-54

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

224 New Customhouse
Denver 2, Colorado

December 4, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: 200

From: Field Team, Region IV

Subject: Report of Examination - DMEA Docket 3160 (Manganese), D. E. Harrison, Wolf and other Manganese claims, San Miguel County, Colorado.

Enclosed are four copies of the report of examination on the subject property, a copy of the letter of denial to the applicant and two copies of Form 3b.

W. H. King
W. H. King

A. H. Koschmann
A. H. Koschmann

Enclosures

DENIED

Reviewed by
DMEA OPERATING COMMITTEE

12-18-53
(date)

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

224 New Customhouse
Denver 2, Colorado

December 4, 1953.

Mr. Duncan E. Harrison
641 - 4th Avenue
Durango, Colorado

Re: Docket No. DMEA-3160

Dear Mr. Harrison:

Reference is made to your application for Government aid on the Wolf and other Manganese claims.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding material of acceptable grade, and in quantities that will significantly improve the mineral supply position for the National Defense Program.

A careful study of your property and data available to this agency reveals that the probability of disclosing mineable reserves of Manganese is not considered sufficiently promising to justify Government participation. Under these circumstances, we regret to advise that your application for exploration aid is denied.

Very truly yours,

W. H. King
W. H. King
Field Team, Region IV

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

HMC:cwm

cc: Docket
Administrator, DMEA
WMTraver
AHKoschmann (2)
Chron.

Reviewed by
DMEA OPERATING COMMITTEE
12-18-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

December 4, 1953.

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Report of Examination - DMEA Docket 3160 (Manganese), D. E. Harrison, San Miguel County, Colorado.

Enclosed are eight copies of the engineering report of examination on the subject docket.

The applicant requested $24,833.00 to explore the group of claims by diamond drilling and drifting.

Metallurgical tests disclosed that the ore contains finely divided and intimately associated copper oxides that cannot be eliminated by standard ore dressing procedures. The ores are not suitable to stockpiling requirements due to their high copper content before and after beneficiation. The engineer recommends that the application be denied.

We concur in this recommendation.

W H King
W. H. King

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE

12-18-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 14, Colorado
November 23, 1953

Memorandum

To: Executive Officer, Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Division, Region IV

Subject: DMEA 3160, D. E. Harrison (Manganese), San Miguel County, Colorado

Enclosed are the original and eight copies of the "Summary, Conclusions, and Recommendations" by C. M. Harrer and D. R. MacLaren, and Harrer's engineering report on the above docket.

Harrer concludes that any production from the claims would have to come from small and scattered bodies of medium- to low-grade bodies of manganese oxides. The ore is not acceptable to the General Services Administration manganese ore purchasing depot at Deming, New Mexico. A test shipment of 14.81 tons failed to meet specifications as it contained excess amounts of copper oxides which could not be eliminated. In addition to the above, the deposits are horizontal and are only 1 to 3 feet thick. They cannot be mined at a profit.

I concur with the conclusions and recommendations that the application be denied.

W. M. Traver

W. M. Traver

Enclosure

cc 8
DMEA 3160

WMT/lo

Reviewed by
DMEA OPERATING COMMITTEE

12-18-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
Denver Federal Center
Denver 2, Colorado

November 10, 1953

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3160, Wolf and other Manganese Claims, San Miguel County, Colorado

Attached are 8 copies of the geologic report by D. R. MacLaren of the U. S. Geological Survey on the subject property.

The applicant proposes to explore for manganese ore by 400 feet of combined drift and crosscut and 1,000 feet of diamond drilling.

Manganese ore occurs in sandstone and limestone as replacement deposits and fissure fillings. The deposits appear to be small lenses, each containing only a few hundred tons of ore. Copper content of the ore is about 0.3%.

The principal manganese minerals are pyrolusite, manganite, psilomelane, and wad.

Mr. MacLaren concludes that significant deposits of manganese will not be found by the proposed exploration, and that the copper content of any concentrate made from the ore will be above the maximum acceptable under Government specifications. He therefore recommends denial of the application for exploration assistance.

I concur in this recommendation.

for E. M. Hinchman
A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (8)

Reviewed by
DMEA OPERATING COMMITTEE
12-18-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 3160, Duncan R. Harrison

Manganese lease

San Miguel County, Colorado

Manganese

C. M. Harrer, Mining Engineer
Bureau of Mines

D. R. MacLaren, Geologist
Geological Survey

November 16, 1953

Reviewed by
DMEA OPERATING COMMITTEE

12-18-53
(Date)

DMEA 3160

DUNCAN E. HARRISON
MANGANESE LEASE
SAN MIGUEL COUNTY, COLORADO

Summary, Conclusions, and Recommendations

By C. M. Harrer
Mining Engineer
Bureau of Mines

and

D. H. MacLaren
Geologist
Geological Survey

DMEA 3160

DUNCAN E. HARRISON
MANGANESE LEASE
SAN MIGUEL COUNTY, COLORADO

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By C. M. Harrer and D. R. MacLaren

Duncan E. Harrison of 641 4th Avenue, Durango, Colo., has applied for a Defense Minerals Exploration Administration loan of $24,833.00 to explore various exposures of manganese oxides on the Wolf, Fox and Doe claims; all standard lode locations which he has under 5-year lease from Edgar J. Reed of Redvale, Colo.

The property was examined by various members of the Colorado and U. S. Geological Surveys, and the Bureau of Mines between 1917 and 1942 and by a Defense Minerals Exploration Administration examining team on September 22, 1953.

The compact group of claims, Wolf, Black Prince, Dream, Fox, Doe and Bee, is in Klondike Basin, secs. 9, 10, 15 and 16, T. 43 N., R. 16 W., New Mexico principal meridian, Lower San Miguel mining district, San Miguel County, Colo., in rugged and arid terrain at an altitude of about 7,000 feet.

Manganese oxides occur in flat to moderately dipping beds of the Morrison formation as small tabular bodies conformable with the bedding, and as filling in nearly vertical joints or fissures of apparently limited lateral extent. Some of the manganese is of fairly high grade but contains enough copper to make an unacceptable concentrate.

Past production totals about 435 tons of which 40 tons were rejected by Government stockpiling programs.

Production of medium- to low-grade manganese ores from the claims would come from small and scattered bodies of manganese oxides containing up to several hundred tons each, situated in an isolated locality, about 600 miles from the nearest manganese ore purchasing depot.

The manganese ores contain extremely, finely-divided copper oxides that cannot be eliminated by standard ore dressing procedures. A shipment of 14.81 long tons of manganese ore was rejected by the General Services Administration manganese ore purchasing depot at Deming, New Mexico, during 1953, as unsuitable for stockpiling because of its high copper content; 0.46 percent in the crude ore and 0.6 percent in the concentrates.

Title to the property is in question and requires clarification.

Further exploration of the property is not a promising venture and it is recommended that Duncan E. Harrison's request for a Defense Minerals Exploration loan of $24,833.00 be denied.

WOLF AND OTHER MANGANESE CLAIMS

SAN MIGUEL COUNTY, COLORADO

DMEA DOCKET 3160

Geologic Report

By D. R. MacLaren
U. S. Geological Survey

WOLF AND OTHER MANGANESE CLAIMS
SAN MIGUEL COUNTY, COLORADO

INTRODUCTION

Duncan E. Harrison of Durango, Colorado, has asked the Defense Minerals Exploration Administration to participate in a program to explore for manganese on six mining claims in secs. 9, 10, 15, and 16, T. 43 N., R. 16 S., N.M.P.M., San Miguel County, Colorado. The applicant proposes to explore by driving 400 feet of drift and crosscut and by diamond drilling 1,000 feet of holes at an estimated cost of $24,833 (Government's share 75% or $18,624.75).

The claims, in the Lower San Miguel Mining District, are reached by 4.3 miles of poor dirt road that turns south from State Highway 80 about 23 miles from the junction of the latter with State Highway 145. Except during heavy rains when the roads are muddy, the claims are accessible throughout most of the year. The property was examined September 22, 1953, in the company of C. M. Harrer of the U. S. Bureau of Mines, Edgar J. Reed, claim owner, and Duncan E. Harrison, lessee and applicant. It is concluded that the copper content of concentrate made from the low grade manganese in this area is apt to be above maximum acceptable under Government specifications, and that the chance of discovering a significant deposit of high grade manganese with low copper content is poor. Therefore it is recommended that this application be denied.

GEOLOGY

The geology of the area has been described by G. A Mullenberg (1919) in Colorado Geological Survey Bulletin, 15 by Edward L. Jones Jr.

(1921) in U. S. Geological Survey Bulletin 715-D and Stokes, Phoenix, Fischer, and Smith (1948) show secs. 9 and 16 on Oil and Gas Investigation Preliminary Map 93.

Erosion of a southeast plunging anticline has resulted in a basin flanked on the east by cliffs of red, grey, and brown sandstone with interbedded red and green shale. The rocks forming the basin floor are limestone and shale of the Dolores formation, while the rocks on the flanks are sandstones and shales of the Morrison formation. Along the east rim of the basin the rocks are horizontal or dip gently towards the east. Farther south the dip tends to swing to the southeast and steepen until, at the south end of the basin the beds dip as much as 20° south.

Along the east side of the basin on the Wolf claim (figure 2), is a tabular, bedded replacement deposit of manganese oxides 21 to 24 inches thick. It is underlain by a coarse grained, red sandstone overlain by a sandy red shale. This deposit is in the Salt Wash member of the Morrison formation, close to the contact between the Salt Wash and the overlying Brushy Basin members of the Morrison. About 2,200 feet farther south, on the Doe claim, a similar bedded deposit appears to be lenticular, the lenses being 10 to 20 feet long and up to 2 feet thick. Manganese oxides can be traced from one lens to the next as thin seams, rarely as much as 1 inch thick. On the Fox claim two nearly vertical fissures up to 18 inches thick have been filled by manganese oxides between walls of coarse grained, red sandstone. The minerals in both types of deposits are essentially pyrolusite, manganite, psilomelane, and wad with considerable amounts of calcite and barite, and lesser amounts of quartz and copper oxides as a gangue.

On the Wolf claim a tunnel, now 48 feet long, has been driven on a

nearly horizontal bed of manganese oxides 6 to 12 inches thick, the bottom 1 to 2 inches being nearly pure pyrolusite, while the upper part contains considerable calcite. A sample of this bed, taken over a width of 0.6 feet, assayed 22.2% manganese and 0.35% copper. According to the applicant, this tunnel was originally somewhat longer but about half the length was removed when former owners attempted to mine by stripping. It is believed that 25 tons of ore from this operation were shipped to the Metals Reserve Company stockpile at Salida where the ore was found to assay only 31.5% manganese and was rejected. About 250 feet southeast on the Wolf claim, another tunnel is caved 15 feet from the portal. At the start of the cave a 24-inch vein of nearly pure pyrolusite was sampled over a width of 2.3 feet and assayed 40.8% manganese and 0.33% copper. The applicant stated that crosscutting and drifting from this adit was fairly extensive. Small step-like breaks on the slope above the tunnel tend to confirm the report that some ore has been mined from these workings and that the stopes have collapsed. The tonnage and grade figures of any material mined are not available.

The applicant said that, because of steep slopes and surface debris, there are no exposures or workings on the Black Prince and Dream claims. On the Fox claim a trench has exposed a manganese-filled fissure, 12 to 18 inches wide, that strikes N. 10° W. and dips 80° E. between walls of coarse-grained, red sandstone. The sandstone strikes N. 65° E. and dips 16 to 18° S. The fissure was traced up a steep slope for a horizontal distance of about 100 feet and a vertical distance of 35 to 40 feet, and then it pinched out. A sample of the fissure in the trench taken over a width of 1.3 feet assayed 36.8% manganese and 0.19% copper. About 600 feet south on the Fox claim another trench exposed a similar fissure

that strikes N. 45° W. and dips 80° to 85° SW. A sample from this fissure taken over a width of 2 feet assayed 18.9% manganese and 0.21% copper.

On the Bee claim a trench has exposed a manganese-filled fissure about 20 to 30 inches thick that strikes N. 15° W. and dips 57° W. in coarse-grained, red sandstone. A sample taken over a width of 2.5 feet assayed 16.2% manganese and 0.12% copper.

CONCLUSIONS AND RECOMMENDATIONS

Manganese oxides occur in a coarse-grained red sandstone of the Morrison formation, both as tabular, bedded replacement deposits and as fissure fillings. From the scattered exposures and the available records of past attempts at production, it is concluded that the deposits are small lenses, each containing only a few hundred tons of ore, and that the copper content is so high that after concentration the product will be unacceptable. It is also concluded that the chance of finding a significant deposit of manganese is poor. Therefore, it is recommended that this application be denied.

REFERENCES

Mullenberg, G. A. (1949) Manganese deposits of Colorado, U. S. Geol. Survey Bulletin 15, pp. 50-52, 1919

Jones, Edward L., Jr. (1921) Some deposits of manganese ore in Colorado, U. S. Geol. Survey Bulletin 715-D, pp. 68-72, 1921

Stokes, W. L., Phoenix, D. A., Fischer, R. P., and Smith, L. E. (1948) U. S. Geol. Survey, Oil and gas investigations preliminary map 93, 1948.

DMEA 3160

DUNCAN E. HARRISON
MANGANESE LEASE
SAN MIGUEL COUNTY, COLORADO

Engineering Report

By C. M. Harter
Mining Engineer
Bureau of Mines

Reviewed by
DMEA OPERATING COMMITTEE

12-18-53
(date)

DMEA 3160

DUNCAN E. HARRISON
MANGANESE LEASE
SAN MIGUEL COUNTY, COLORADO

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ILLUSTRATIONS

Figure	Follows page
1. Location map, D. E. Harrison Manganese Lease, San Miguel County, Colo.	1
2. Claim map showing approximate location of workings and outcrops of manganese deposits	*

* See figure with geologic report.

DMEA 3160

DUNCAN E. HARRISON
MANGANESE LEASE
SAN MIGUEL COUNTY, COLORADO

ENGINEERING REPORT

By

C. M. HARRER

INTRODUCTION

Duncan E. Harrison of 641 4th Avenue, Durango, Colo., has applied for a Defense Minerals Exploration Administration loan of $24,833.00 to explore various exposures of manganese on the Wolf, Fox and Doe claims which he has under lease.

The property was examined for the Defense Minerals Exploration Administration by a Bureau of Mines and Geological Survey examining team, accompanied by Duncan E. Harrison, lessee, and Edgar J. Reed, owner, on September 22, 1953.

ACKNOWLEDGMENTS

Duncan E. Harrison and Edgar J. Reed accompanied the examining team over the property.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The Wolf, Black Prince, Bream, Fox, Doe and Roe are a contiguous group of claims in secs. 9, 10, 15 and 16, T. 43 N., R. 16 W., New Mexico principal meridian, Lower San Miguel mining district, San Miguel County, Colo. (Fig. 1), at an altitude of about 7,800 feet. The claims are in Klondike Basin, at the head of Gypsum Valley and are reached by traveling east from Naturita for 3.7 miles on Colorado State Highway 90 to the junction with Colorado

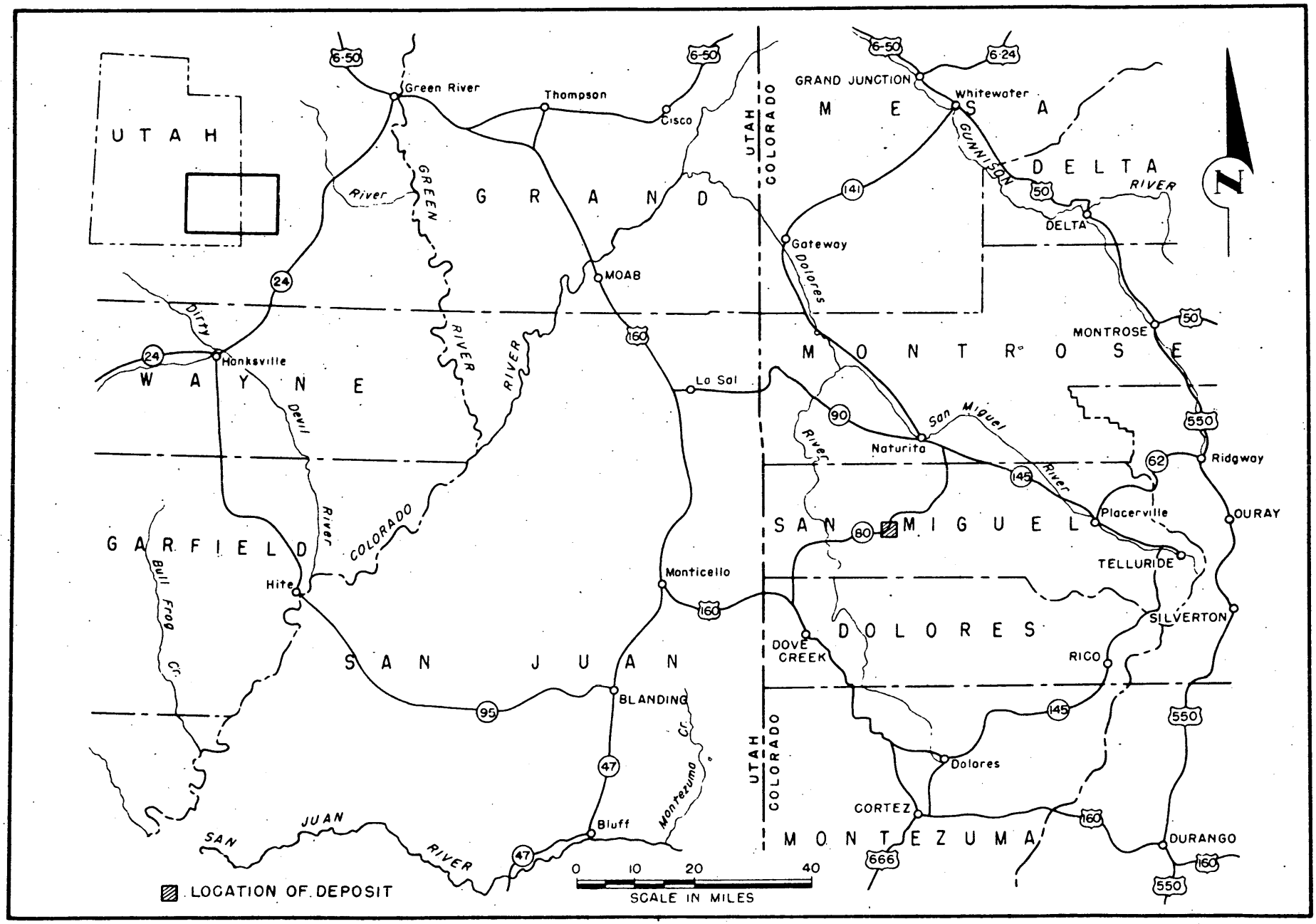

FIGURE 1. - LOCATION MAP, D. E. HARRISON MANGANESE LEASE, SAN MIGUEL COUNTY, COLO. (DMEA 3160)

State Highway 80; thence 13.5 miles southerly on Highway 80 to the "Basin store" and junction with Colorado State Highway 366; thence west and south over Highway 80 for 9.5 miles to the junction with an unmarked access road to Klondike Basin which leads southerly to the property 4.3 miles distant. Roads are rough and passable with difficulty in wet weather. Airline, the property is 5 miles northeast of Cedar and 14 miles east of Gladel, and 16 miles southwest of Naturita, Colo.

The nearest railroad shipping point is on the Denver and Rio Grande Western Railroad at Ridgeway, Colo., about 90 miles to the east. The General Services Administration manganese purchasing depot at Deming, New Mexico is about 600 miles from the property by road.

The terrain in Klondike Basin is steep and rugged. The climate is arid, with sufficient moisture to support only pinion, cedar and sagebrush. The nearest perennial stream is Disappointment Creek, about 6 miles to the southwest.

HISTORY AND PRODUCTION

The manganese claims were originally located as the Black Diamond, Black Prince, Black Bird, and Black Baby. Mining was limited to the Black Diamond claim where ten carloads (250 tons) were reported 1/ shipped during 1915-16 under the name of Colorado Manganese Mining and Smelting Company of Denver, Colo. During 1915, several

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1/ Mullenburg, G. A., Manganese Deposits of Colorado, pp 50-52, Colorado Geological Survey Bulletin 15, (1919).

lots of manganese ore totaling 120 tons were reported 2/ shipped to Chicago, Illinois.

During 1929-31, the claims were relocated by Lou and Joe White of St. Louis, Missouri and one carload of manganese was shipped to the Sheffield Steel Company of St. Louis, Missouri in 1930.

The claims were again located in 1933 by C. N. Fairlamb of Delta, Colo., and later by Wm. Naff of Montrose, Colo.

About 1940 the claims were relocated by C. G. Seipp of Chicago, Illinois, Otto Boselak of Ophir, Colo., and J. M. Baliale of Norwood, Colo. 3/

The property was examined for the Bureau of Mines on August 27, 1940, and by the Geological Survey during August 1917, 4/ and October 1942. 5/

During 1942 the claims were owned in part by James A. Noyes of Ophir, Colo., and were leased to Paul McLeod of Ouray, Colo. About 25 tons of sorted manganese ore was shipped to the Metals Reserve Company stockpile at Salida, Colo. The ore assayed 31.5 percent manganese and was rejected.

The present owner, Edgar J. Reed of Redvale, Colo., relocated the claims as the Wolf (formerly Black Diamond), Black Prince, Dream, Fox (formerly Crackerjack, Perfection, etc.), Doe (formerly Black Monarch), and the Bee (formerly the Sun claim of the Noyes group).

2/ Jones, Edward L. Jr., Some Deposits of Manganese Ore in Colorado, U. S. Geol. Survey, Bulletin 715, Contributions to Economic Geology (1920), pt. 1, pp 68-72.

3/ Bell, James E., U. S. Bureau of Mines unpublished report No. 3126, The C. G. Seipp Manganese Prospect, San Miguel County, Colo., January 29, 1941.

4/ Reference cited in footnote 2/.

5/ Neuschel, Sherman K., U. S. Geol. Survey memorandum Report on the Noyes group, San Miguel County, Colo., October 1942.

The applicant, Duncan E. Harrison, has been assigned General Services Administration authorization number S-M-601, and has shipped 14.81 dry, long-tons of manganese ore to the manganese ore purchasing depot at Deming, New Mexico as lot number H.S-1. The lot was rejected because of its high copper content (0.46 percent crude and 0.6 percent concentrates) which could not be reduced to an acceptable limit in amenability tests by the Bureau of Mines, Region IV, Metallurgical Division.

OWNERSHIP AND EXTENT

Edgar J. Reed of Redvale, Colo., is owner of the standard lode claims Wolf, Black Prince, Dream, Fox, Doe and Bee by right of location. He has given Duncan E. Harrison of Durango, Colo., Defense Minerals Exploration Administration applicant, a 5-year lease, with option to purchase, dated July 15, 1953. The lease also covers 19 other claims not included in the application.

The claim locations (Fig. 2 with the geologic report) are unsurveyed and are located approximately in secs. 9, 10, 15 and 16, T. 43 N., R. 16 W., New Mexico principal meridian, San Miguel County, Colo. Sections 9, 10, and 15 are included within an active oil and gas lease. Title to the claims within them is contingent on the filing of an amended location notice pursuant to the provisions of Public Law 250, 83rd Congress, Chapter 405, 1st session and for the purpose of obtaining the benefits thereof.

Section 16 is reserved to the State of Colorado as a school section and any claims or portions of claims extending thereon are not legally the property of Edgar J. Reed without a lease from the State of Colorado.

DESCRIPTION OF THE DEPOSITS

The Wolf claim (Fig. 2 with geologic report). Manganese oxides, chiefly pyrolusite, with associated manganite and psilomelane, calcite, barite, and oxides of copper, are exposed in a rimrock outcrop and two short adits as a thin, bedded deposit between sandstones and shales. Enclosing rocks are gray, red, and brown sandstones with interbedded red and green shales. One adit extends N. 82° E. into the outcrop for 48 feet. Manganese oxides are exposed in the adit walls in undulating thicknesses up to 1 foot. The bed is very flat with dips horizontal to 10° north. A portion of the original adit and portal was bulldozed out by the last operator and a shipment of manganese ore recovered from pillars and shipped to the Metals Reserve Company stockpile at Salida, Colo. The ore was rejected.

A second adit, 275 feet to the southeast, is caved to within 15 feet of the portal and a slump profile above it indicates that all old workings are probably seriously caved. Manganese oxides are exposed in a remnant of a portal pillar to thicknesses up to 2.3 feet. Continuity between the two portals is imperfectly indicated.

Early reports 6/,7/,8/ indicate that the manganiferous bed was traced for about 1,500 feet along its outcrop across the Wolf and Black Prince claims and was developed by several adits and drifts, most of which are obliterated or caved. Only that portion exposed in the vicinity of the adits showed unusual concentrations of manganese minerals.

6/ Reference cited in footnote 1/
7/ Reference cited in footnote 2/
8/ Reference cited in footnote 3/

Ore from the mine occurs in soft lumps of fine granular pyrolusite-manganite and copper oxides indistinguishable to the eye.

Sample H-705, taken in the breast of the 48-foot adit, assayed 22.2 percent manganese and 0.35 percent copper as oxides, over the width of the bed, 0.6 feet. Sample H-706 was taken from a portal pillar exposed in the second adit and indicates that ore, probably removed almost completely, assayed 40.8 percent manganese and 0.33 percent copper as oxides, at its best, in place. Manganese exposures and sample locations on figure 2 with the geologic report are approximately located with reference to vague claim boundaries.

<u>The Black Prince and Dream claims</u> (Fig. 2 with geologic report). Very little is known about manganese occurrences on these claims other than that the prominent manganiferous horizon on the Wolf claim is believed to extend on to the Black Prince claim. Erosion debris on steep slopes mask all surface exposures on the Black Prince and Dream claims.

<u>The Fox claim</u> (Fig. 2 with the geologic report). Two exposures of manganese were examined and sampled. A shallow cut at sample location H-708 exposes a steeply dipping seam of manganese oxides 1.3 feet wide, which strikes N. 10° W. Parallel stringers, about 1 inch thick, were noted roughly 10 feet to each side of the main zone. Sample H-708 across the exposed width assayed 36.8 percent manganese and 0.12 percent copper as oxides and was very siliceous. The outcrop pinches out within 100 feet.

Manganese occurs again in a shallow cut at the neighboring sample location H-709. The exposure strikes N. 45° W. and dips almost vertically. Manganese oxides are exposed over a 2-foot width consisting of alternate 1-inch bands of manganese oxides and red sandstone. Sample H-709 assayed 18.9 percent manganese and 0.21 percent copper as oxides and was very siliceous. The outcrop can be traced for about 25 feet. Manganese exposures and sample locations on figure 2 with the geologic report are approximately located with reference to vague claim boundaries.

The Boe claim (Fig. 2 with the geologic report). Concentrations of manganese oxides are exposed through a vertical range of 20 feet and for several hundred feet along a steep cliff exposure of red-brown sandstone. Small, irregular masses of manganese oxides, principally manganite with some pyrolusite, occur along the bedding in tabular form and have apparent lengths of less than 15 feet and thicknesses of about 1.5 feet. The exposures were too small and low grade to sample. Their scattered occurrence and sparse distribution in the sandstone beds make profitable mining extremely doubtful. The manganese exposures on figure 2 with the geologic report are approximate with reference to vague claim boundaries

The Bee claim (Fig. 2 with the geologic report). One exposure of manganese was examined and sampled. A shallow cut at sample location H-707 exposes a concentration of manganese oxides in red-brown sandstone. It strikes N. 15° W. and dips 57° to the southwest. Sample H-707 across the manganiferous zone width of 2.5 feet, assayed 16.2 percent manganese and 0.12 percent copper as oxides. The manganese

exposure on figure 2 with the geologic report is approximate with reference to vague claim boundaries.

SAMPLING AND METALLURGICAL DATA

Sorted ore from the Wolf (Black Diamond) claim was investigated by the Colorado Geological Survey during 1917 and assayed 43.38 percent manganese, a trace of iron, 8.2 percent silica, 0.469 percent sulfur and 0.039 percent phospherus.

Anaylses of cobbed ore from the same source assayed 54.75 percent manganese, 0.46 percent iron, 2.79 percent silica, 0.20 percent alumina, 0.029 percent phospherus, 0.68 percent copper, 0.53 percent calcium oxide, 0.20 percent magnesium oxide, and 5.35 percent barium oxide.

Samples of a shipment of 14.81 dry, long tons of manganese to the General Services Administration depot at Deming, New Mexico during August 1953, were analyzed by various assayers and the following results reported:

Assayer	Mn	Fe	Cu	Pb	Zn	SiO_2	S	P	CaO	MgO	BaO	Al_2O_3	Remarks
	Percent												
Columbia-Geneva Steel Company	41.6	0.6	-	0.19	0.01	1.32	0.42	0.028	-	-	—	-	Geneva, Utah Works Laboratory
Colorado Fuel and Iron Company	37.0	1.0	-	-	-	3.90	-	0.018	9.3	0.4	2.1	-	Minnequa Works Laboratory
*Root and Norton, assayers	38.1	1.3	0.42	-	-	4.6	-	-	—	-	-	1.8	Durango, Colorado Commercial Assayer
Metallurgical Div., Bureau of Mines, Reg. IV, Report 104.	34.2	0.5	0.46	0.3	0.03	2.8	-	-	18.6	-	-	-	14.81 dry, long tons. Lot BS-1. Amenability Test.

* Fines not shipped, assayed 28.45 percent manganese.

A shipment of 25 tons of sorted ore was shipped during World War II to the Metal Reserve Company stockpile at Salida, Colo. It assayed 31.5 percent manganese and was rejected.

Samples by the applicant: Two samples were taken by the applicant on the Fox claim (Fig. 2 with the geologic report). One, cut over a width of 1 foot at the same location as sample H-708, assayed 44.6 percent manganese and 0.32 percent copper. The other was cut over a width of 4 feet at the same location as sample H-709, assayed 30.6 percent manganese and 0.20 percent copper.

Samples by the DMEA examining team (Fig. 2 with the geologic report)

Sample	Feet width	Percent Manganese	Percent Copper	Description
H-705	0.6	22.2	0.35	Breast of 48-foot adit on Wolf claim
H-706	2.3	40.8	0.33	Pillar remnant (Wolf claim) in adit 275 feet S.E. of H-705.
H-707	2.5	16.2	0.12	Breast of open cut on Bee claim.
H-708	1.3	36.8	0.19	Breast of open cut on Fox claim.
H-709	2.0	18.9	0.21	Breast of open cut on Fox claim.

During an examination in 1940 9/, several grab samples were taken of small lots of sorted ore from various locations. A sample (No. 178) is believed to have been taken of ore mined from the Wolf claim at the location of sample H-705 assayed 20.1 percent manganese, 33.2 percent iron, 10.4 percent insol., and 0.03 percent phosphorus.

Another grab sample of sorted ore (No. 177) probably taken from the Wolf claim at the location of sample H-706 assayed 51.4 percent manganese, 1.6 percent iron, 3.9 percent insol., and 0.02 percent phosphorus.

9/ Reference cited in footnote 3/.

A third sample is believed to have been taken from the Fox claim at the location H-708, assayed 31.6 percent manganese, 6.7 percent iron, 29.0 percent insol., and 0.05 percent phosphorus.

Test data on the manganese ore. A lot of 14.81 dry, long-tons of manganese ore from the Wolf and adjoining claims was shipped by the applicant to the General Services Administration ore purchasing depot at Deming, New Mexico. The ore assayed 34.2 percent Mn, 0.5 percent Fe, 2.8 percent insoluble, 18.6 percent CaO, 0.30 percent Pb, 0.03 percent Zn, and 0.46 percent Cu.

Microscopic study showed the ore as principally pyrolusite so intimately associated with very finely disseminated copper oxide minerals as to preclude any effective separation of the copper from the manganese minerals.

The ore was tested by the Metallurgical Division, Region IV, of the Bureau of Mines, under a standardized technique developed to determine the amenability of manganese ores submitted to the Deming depot.

Selective flotation was successful in recovering 92.6 percent of the manganese in a product assaying 41.8 percent Mn, 2.8 percent SiO_2, 0.3 percent Al_2O_3, 0.08 percent Fe, 0.05 percent P, 0.55 percent Pb, 0.02 percent Zn, and 0.60 percent copper. The product was satisfactory in all respects except that it exceeds the 0.25 percent specification for maximum lead-zinc-copper in the current program.

The Metallurgical Division, Region IV, Bureau of Mines, reported the ore completely unamenable to concentration.

ORE RESERVES

Since most of the underground development is inaccessible or obliterated, there is insufficient data on which to base reserves of manganese ore. Prior references (1917) placed reserves of the Wolf (Black Diamond) claim between 2,000 and 50,000 tons of 40 percent manganese ore. The lower estimate appears to be the most reasonable as an inference, but is considered high in the light of available data.

About 400 tons of manganese ore were estimated for the Fox, Doe and Bee claims (Hoyes group) during 1942.

Medium-grade reserves from the Klondike Basin area would come from small and scattered bodies of manganese oxides containing up to several hundred tons each and exhibiting all stages of concentration which would necessitate cobbing and close sorting. An excess of copper was the basis of rejection for the Government stockpiling program.

PRESENT STATUS

Exploration and Development
(Fig. 2 with the geologic report)

The Wolf (Black Diamond) claim: Accessible development work is limited to parts of two adits about 275 feet apart. One adit was driven on a narrow bed of manganese for its full length of 48 feet. A large section between the present and original portals was bulldozed out by a former operator in an effort to reclaim manganese left in portal pillars. The second adit was driven on the same bed of manganese but is caved to within 15 feet of the portal.

Earlier work, now obliterated or completely inaccessible, was apparently quite extensive and is described in previously mentioned references.

The Black Prince and Dream claims: The applicant reports that there are no accessible exposures of manganese on the claims.

The Fox claim: Two 5-foot hillside cuts were excavated on narrow and separated manganese exposures for lengths of 10 feet. They are completely accessible.

The Doe claim: A shallow hillside cut exposes spotty, low-grade manganese in red sandstone along the face of a cliff and about 50 feet below its crest.

The Rue claim: A 5-foot hillside cut exposes a narrow body of manganese for a length of about 25 feet. It is completely accessible. A cut to the southeast at creek level is inaccessible.

Mining and Milling Equipment

There are no mining, milling, or other facilities on the property. A few crude cabins could house a small crew and equipment, with minor repairs.

PROJECT PROPOSALS, WITH COSTS

The applicant, Duncan E. Harrison, of Durango, Colo., proposes to explore further the occurrences of manganese on the Wolf, Fox and Doe claims which he has under lease in Klondike Basin, San Miguel, County, Colo.

He plans to accomplish about 200 feet of drifting on the Wolf claim, probably from the existing adit already in 48 feet, to determine the extent and character of the manganese between it and old workings to the southeast.

Secondly, he proposes to drift on the manganese exposures on the Fox claim for a total of 200 feet to determine their extent.

In addition, he proposes to explore the cliff exposure of manganese on the Doe claim with 1,000 feet of diamond drilling from the crest, about 50 feet above, to determine whether manganese is sufficiently concentrated to be considered as a mineable ore body.

He estimates the costs of the project as follows:

Location	Work	Cost
The Wolf claim	200 feet of drift at $30.00 per foot	$6,000.00
The Fox claim	200 feet of drift at $30.00 per foot	6,000.00
The Doe claim	1,000 feet of diamond drilling at $3.50 per foot (AX core)	3,500.00
General charges:		
Supervision	6 months at $500.00 per month	3,000.00
Engineering	6 months at $350.00 per month	2,100.00
Equipment rental	6 months at $300.00 per month	1,800.00
Bulldozing (D-7)	16 hours at $11.00 per hour	176.00
Contingencies	(Bulldozer travel time, assaying, accounting, price increases, etc.)	2,257.00
	Total cost of project	$24,833.00

CONCLUSIONS

Manganese production from the area would come from small, narrow replacement beds, veins and chimneys which would require careful sorting to keep manganese high.

Very finely divided copper oxides, invisible to the eye, are intimately associated with the manganese on all claims investigated.

On the Wolf claim, extensive mining reported in earlier references indicates that the best part of the deposit has been removed and the presence of remaining large reserves of high-grade manganese is very questionable. Finely divided copper oxides in the ore could not be removed in amenability tests and the ore was declared unfit for stockpiling.

No further exploration is recommended.

On the Doe claim, exposures of manganese in the cliff face were irregular and very low grade and indicate partial replacement. The possibility for discovery of commercial bodies of high-grade manganese is not encouraging.

On the Fox claim, exposures indicate the presence of small manganese ore bodies containing finely divided and intimately associated copper oxides. The ore would not be acceptable for stockpiling.

On the Bee claim, a small, low-grade deposit of manganese is indicated which also contains finely divided and intimately associated copper oxides.

Medium grade reserves from the Klondike Basin area would come from small and scattered bodies of manganese oxides containing up to several hundred tons each, and exhibiting all stages of concentration, which would require cobbing and close sorting.

Manganese ores from the Klondike Basin area contain finely divided and intimately associated copper oxides that cannot be eliminated by standard ore dressing procedures. The ores are not suitable to stockpiling requirements due to their high copper content before and after beneficiation.

Title to the property is in question and requires clarification.

RECOMMENDATIONS

The property is not a promising exploration venture and it is recommended that Duncan E. Harrison's request for a Defense Minerals Exploration Administration loan of $24,833.00 be denied.

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

Received
DEC 1 4 1953

224 New Customhouse
Denver 2, Colorado

December 4, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: 200

From: Field Team, Region IV

Subject: Report of Examination - DMEA Docket 3160 (Manganese), D. E. Harrison, Wolf and other Manganese claims, San Miguel County, Colorado.

Enclosed are four copies of the report of examination on the subject property, a copy of the letter of denial to the applicant and two copies of Form 3b.

W. H. King

W. H. King

A. H. Koschmann

A. H. Koschmann

Enclosures

DENIED

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

December 4, 1953

224 New Customhouse
Denver 2, Colorado

Mr. Duncan E. Harrison
641 - 4th Avenue
Durango, Colorado

Re: Docket No. DMEA-3160

Dear Mr. Harrison:

Reference is made to your application for Government aid on the Wolf and other Manganese claims.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding material of acceptable grade, and in quantities that will significantly improve the mineral supply position for the National Defense Program.

A careful study of your property and data available to this agency reveals that the probability of disclosing mineable reserves of Manganese is not considered sufficiently promising to justify Government participation. Under these circumstances, we regret to advise that your application for exploration aid is denied.

Very truly yours,

W. H. King
Field Team, Region IV

A. H. Koschmann
Field Team, Region IV

HMC:cwm

cc: Docket
Administrator, DMEA
WMTraver
AHKoschmann (2)
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

December 4, 1953.

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Report of Examination - DMEA Docket 3160 (Manganese), D. E. Harrison, San Miguel County, Colorado.

Enclosed are eight copies of the engineering report of examination on the subject docket.

The applicant requested $24,833.00 to explore the group of claims by diamond drilling and drifting.

Metallurgical tests disclosed that the ore contains finely divided and intimately associated copper oxides that cannot be eliminated by standard ore dressing procedures. The ores are not suitable to stockpiling requirements due to their high copper content before and after beneficiation. The engineer recommends that the application be denied.

We concur in this recommendation.

W. H. King

W. H. King

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 14, Colorado
November 23, 1953

Memorandum

To: Executive Officer, Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Division, Region IV

Subject: DMEA 3160, D. E. Harrison (Manganese), San Miguel County, Colorado

Enclosed are the original and eight copies of the "Summary, Conclusions, and Recommendations" by C. M. Harrer and D. R. MacLaren, and Harrer's engineering report on the above docket.

Harrer concludes that any production from the claims would have to come from small and scattered bodies of medium- to low-grade bodies of manganese oxides. The ore is not acceptable to the General Services Administration manganese ore purchasing depot at Deming, New Mexico. A test shipment of 14.81 tons failed to meet specifications as it contained excess amounts of copper oxides which could not be eliminated. In addition to the above, the deposits are horizontal and are only 1 to 3 feet thick. They cannot be mined at a profit.

I concur with the conclusions and recommendations that the application be denied.

W. M. Traver

W. M. Traver

Enclosure

cc 8
DMEA 3160

WMT/le

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
Denver Federal Center
Denver 2, Colorado

November 10, 1953

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3160, Wolf and other Manganese Claims, San Miguel County, Colorado

Attached are 8 copies of the geologic report by D. R. MacLaren of the U. S. Geological Survey on the subject property.

The applicant proposes to explore for manganese ore by 400 feet of combined drift and crosscut and 1,000 feet of diamond drilling.

Manganese ore occurs in sandstone and limestone as replacement deposits and fissure fillings. The deposits appear to be small lenses, each containing only a few hundred tons of ore. Copper content of the ore is about 0.3%.

The principal manganese minerals are pyrolusite, manganite, psilomelane, and wad.

Mr. MacLaren concludes that significant deposits of manganese will not be found by the proposed exploration, and that the copper content of any concentrate made from the ore will be above the maximum acceptable under Government specifications. He therefore recommends denial of the application for exploration assistance.

I concur in this recommendation.

for E. M. Hackman
A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (8)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 3160, Duncan E. Harrison

Manganese lease

San Miguel County, Colorado

Manganese

C. M. Harrer, Mining Engineer
Bureau of Mines

D. R. MacLaren, Geologist
Geological Survey

November 16, 1953

DMEA 3160

DUNCAN E. HARRISON
MANGANESE LEASE
SAN MIGUEL COUNTY, COLORADO

Summary, Conclusions, and Recommendations

By C. M. Harrer
Mining Engineer
Bureau of Mines

and

D. R. MacLaren
Geologist
Geological Survey

DMEA 3160

DUNCAN E. HARRISON
MANGANESE LEASE
SAN MIGUEL COUNTY, COLORADO

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By C. M. Harrer and D. R. MacLaren

Duncan E. Harrison of 641 4th Avenue, Durango, Colo., has applied for a Defense Minerals Exploration Administration loan of $24,833.00 to explore various exposures of manganese oxides on the Wolf, Fox and Doe claims; all standard lode locations which he has under 5-year lease from Edgar J. Reed of Redvale, Colo.

The property was examined by various members of the Colorado and U. S. Geological Surveys, and the Bureau of Mines between 1917 and 1942 and by a Defense Minerals Exploration Administration examining team on September 22, 1953.

The compact group of claims, Wolf, Black Prince, Dream, Fox, Doe and Bee, is in Klondike Basin, secs. 9, 10, 15 and 16, T. 43 N., R. 16 W., New Mexico principal meridian, Lower San Miguel mining district, San Miguel County, Colo., in rugged and arid terrain at an altitude of about 7,000 feet.

Manganese oxides occur in flat to moderately dipping beds of the Morrison formation as small tabular bodies conformable with the bedding, and as filling in nearly vertical joints or fissures of apparently limited lateral extent. Some of the manganese is of fairly high grade but contains enough copper to make an unacceptable concentrate.

Past production totals about 435 tons of which 40 tons were rejected by Government stockpiling programs.

Production of medium- to low-grade manganese ores from the claims would come from small and scattered bodies of manganese oxides containing up to several hundred tons each, situated in an isolated locality, about 600 miles from the nearest manganese ore purchasing depot.

The manganese ores contain extremely, finely-divided copper oxides that cannot be eliminated by standard ore dressing procedures. A shipment of 14.81 long tons of manganese ore was rejected by the General Services Administration manganese ore purchasing depot at Deming, New Mexico, during 1953, as unsuitable for stockpiling because of its high copper content; 0.46 percent in the crude ore and 0.6 percent in the concentrates.

Title to the property is in question and requires clarification.

Further exploration of the property is not a promising venture and it is recommended that Duncan E. Harrison's request for a Defense Minerals Exploration loan of $24,833.00 be denied.

WOLF AND OTHER MANGANESE CLAIMS

SAN MIGUEL COUNTY, COLORADO

DMEA DOCKET 3160

Geologic Report

By D. R. MacLaren
U. S. Geological Survey

WOLF AND OTHER MANGANESE CLAIMS
SAN MIGUEL COUNTY, COLORADO

INTRODUCTION

Duncan E. Harrison of Durango, Colorado, has asked the Defense Minerals Exploration Administration to participate in a program to explore for manganese on six mining claims in secs. 9, 10, 15, and 16, T. 43 N., R. 16 S., N.M.P.M., San Miguel County, Colorado. The applicant proposes to explore by driving 400 feet of drift and crosscut and by diamond drilling 1,000 feet of holes at an estimated cost of $24,833 (Government's share 75% or $18,624.75).

The claims, in the Lower San Miguel Mining District, are reached by 4.3 miles of poor dirt road that turns south from State Highway 80 about 23 miles from the junction of the latter with State Highway 145. Except during heavy rains when the roads are muddy, the claims are accessible throughout most of the year. The property was examined September 22, 1953, in the company of C. M. Harrer of the U. S. Bureau of Mines, Edgar J. Reed, claim owner, and Duncan E. Harrison, lessee and applicant. It is concluded that the copper content of concentrate made from the low grade manganese in this area is apt to be above maximum acceptable under Government specifications, and that the chance of discovering a significant deposit of high grade manganese with low copper content is poor. Therefore it is recommended that this application be denied.

GEOLOGY

The geology of the area has been described by G. A Muilenberg (1919) in Colorado Geological Survey Bulletin 15, by Edward L. Jones Jr.

(1921) in U. S. Geological Survey Bulletin 715-D and Stokes, Phoenix, Fischer, and Smith (1948) show secs. 9 and 16 on Oil and Gas Investigation Preliminary Map 93.

Erosion of a southeast plunging anticline has resulted in a basin flanked on the east by cliffs of red, grey, and brown sandstone with interbedded red and green shale. The rocks forming the basin floor are limestone and shale of the Dolores formation, while the rocks on the flanks are sandstones and shales of the Morrison formation. Along the east rim of the basin the rocks are horizontal or dip gently towards the east. Farther south the dip tends to swing to the southeast and steepen until, at the south end of the basin the beds dip as much as 20° south.

Along the east side of the basin on the Wolf claim (figure 2), is a tabular, bedded replacement deposit of manganese oxides 21 to 24 inches thick. It is underlain by a coarse grained, red sandstone overlain by a sandy red shale. This deposit is in the Salt Wash member of the Morrison formation, close to the contact between the Salt Wash and the overlying Brushy Basin members of the Morrison. About 2,200 feet farther south, on the Doe claim, a similar bedded deposit appears to be lenticular, the lenses being 10 to 20 feet long and up to 2 feet thick. Manganese oxides can be traced from one lens to the next as thin seams, rarely as much as 1 inch thick. On the Fox claim two nearly vertical fissures up to 18 inches thick have been filled by manganese oxides between walls of coarse grained, red sandstone. The minerals in both types of deposits are essentially pyrolusite, manganite, psilomelane, and wad with considerable amounts of calcite and barite, and lesser amounts of quartz and copper oxides as a gangue.

On the Wolf claim a tunnel, now 48 feet long, has been driven on a

nearly horizontal bed of manganese oxides 6 to 12 inches thick, the bottom 1 to 2 inches being nearly pure pyrolusite, while the upper part contains considerable calcite. A sample of this bed, taken over a width of 0.6 feet, assayed 22.2% manganese and 0.35% copper. According to the applicant, this tunnel was originally somewhat longer but about half the length was removed when former owners attempted to mine by stripping. It is believed that 25 tons of ore from this operation were shipped to the Metals Reserve Company stockpile at Salida where the ore was found to assay only 31.5% manganese and was rejected. About 250 feet southeast on the Wolf claim, another tunnel is caved 15 feet from the portal. At the start of the cave a 24-inch vein of nearly pure pyrolusite was sampled over a width of 2.3 feet and assayed 40.8% manganese and 0.33% copper. The applicant stated that crosscutting and drifting from this adit was fairly extensive. Small step-like breaks on the slope above the tunnel tend to confirm the report that some ore has been mined from these workings and that the stopes have collapsed. The tonnage and grade figures of any material mined are not available.

The applicant said that, because of steep slopes and surface debris, there are no exposures or workings on the Black Prince and Dream claims. On the Fox claim a trench has exposed a manganese-filled fissure, 12 to 18 inches wide, that strikes N. 10° W. and dips 80° E. between walls of coarse-grained, red sandstone. The sandstone strikes N. 65° E. and dips 16 to 18° S. The fissure was traced up a steep slope for a horizontal distance of about 100 feet and a vertical distance of 35 to 40 feet, and then it pinched out. A sample of the fissure in the trench taken over a width of 1.3 feet assayed 36.8% manganese and 0.19% copper. About 600 feet south on the Fox claim another trench exposed a similar fissure

that strikes N. 45° W. and dips 80° to 85° SW. A sample from this fissure taken over a width of 2 feet assayed 18.9% manganese and 0.21% copper.

On the Bee claim a trench has exposed a manganese-filled fissure about 20 to 30 inches thick that strikes N. 15° W. and dips 57° W. in coarse-grained, red sandstone. A sample taken over a width of 2.5 feet assayed 16.2% manganese and 0.12% copper.

CONCLUSIONS AND RECOMMENDATIONS

Manganese oxides occur in a coarse-grained red sandstone of the Morrison formation, both as tabular, bedded replacement deposits and as fissure fillings. From the scattered exposures and the available records of past attempts at production, it is concluded that the deposits are small lenses, each containing only a few hundred tons of ore, and that the copper content is so high that after concentration the product will be unacceptable. It is also concluded that the chance of finding a significant deposit of manganese is poor. Therefore, it is recommended that this application be denied.

REFERENCES

Mullenberg, G. A. (1949) Manganese deposits of Colorado, U. S. Geol. Survey Bulletin 15, pp. 50-52, 1919

Jones, Edward L., Jr. (1921) Some deposits of manganese ore in Colorado, U. S. Geol. Survey Bulletin 715-D, pp. 68-72, 1921

Stokes, W. L., Phoenix, D. A., Fischer, R. P., and Smith, L. E. (1948) U. S. Geol. Survey, Oil and gas investigations preliminary map 93, 1948.

DMEA 3160

DUNCAN E. HARRISON
MANGANESE LEASE
SAN MIGUEL COUNTY, COLORADO

Engineering Report

By C. M. Harrer
Mining Engineer
Bureau of Mines

DMEA 3160

DUNCAN E. HARRISON
MANGANESE LEASE
SAN MIGUEL COUNTY, COLORADO

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ILLUSTRATIONS

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2. Claim map showing approximate location of workings and outcrops of manganese deposits	*

* See figure with geologic report.

DMEA 3160

DUNCAN E. HARRISON
MANGANESE LEASE
SAN MIGUEL COUNTY, COLORADO

ENGINEERING REPORT

By

C. M. HARRER

INTRODUCTION

Duncan E. Harrison of 641 4th Avenue, Durango, Colo., has applied for a Defense Minerals Exploration Administration loan of $24,833.00 to explore various exposures of manganese on the Wolf, Fox and Doe claims which he has under lease.

The property was examined for the Defense Minerals Exploration Administration by a Bureau of Mines and Geological Survey examining team, accompanied by Duncan E. Harrison, lessee, and Edgar J. Reed, owner, on September 22, 1953.

ACKNOWLEDGMENTS

Duncan E. Harrison and Edgar J. Reed accompanied the examining team over the property.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The Wolf, Black Prince, Dream, Fox, Doe and Bee are a contiguous group of claims in secs. 9, 10, 15 and 16, T. 43 N., R. 16 W., New Mexico principal meridian, Lower San Miguel mining district, San Miguel County, Colo. (Fig. 1), at an altitude of about 7,000 feet. The claims are in Klondike Basin, at the head of Gypsum Valley and are reached by traveling east from Naturita for 3.7 miles on Colorado State Highway 90 to the junction with Colorado

State Highway 80; thence 13.5 miles southerly on Highway 80 to the "Basin store" and junction with Colorado State Highway 366; thence west and south over Highway 80 for 9.5 miles to the junction with an unmarked access road to Klondike Basin which leads southerly to the property 4.3 miles distant. Roads are rough and passable with difficulty in wet weather. Airline, the property is 5 miles northeast of Cedar and 14 miles east of Gladel, and 16 miles southwest of Naturita, Colo.

The nearest railroad shipping point is on the Denver and Rio Grande Western Railroad at Ridgeway, Colo., about 90 miles to the east. The General Services Administration manganese purchasing depot at Deming, New Mexico is about 600 miles from the property by road.

The terrain in Klondike Basin is steep and rugged. The climate is arid, with sufficient moisture to support only pinion, cedar and sagebrush. The nearest perennial stream is Disappointment Creek, about 6 miles to the southwest.

HISTORY AND PRODUCTION

The manganese claims were originally located as the Black Diamond, Black Prince, Black Bird, and Black Baby. Mining was limited to the Black Diamond claim where ten carloads (250 tons) were reported 1/ shipped during 1915-16 under the name of Colorado Manganese Mining and Smelting Company of Denver, Colo. During 1915, several

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1/ Muilenburg, G. A., Manganese Deposits of Colorado, pp 50-52, Colorado Geological Survey Bulletin 15, (1919).

lots of manganese ore totaling 120 tons were reported 2/ shipped to Chicago, Illinois.

During 1929-31, the claims were relocated by Lou and Joe White of St. Louis, Missouri and one carload of manganese was shipped to the Sheffield Steel Company of St. Louis, Missouri in 1930.

The claims were again located in 1933 by C. N. Fairlamb of Delta, Colo., and later by Wm. Naff of Montrose, Colo.

About 1940 the claims were relocated by C. G. Seipp of Chicago, Illinois, Otto Beselak of Ophir, Colo., and J. M. Belisle of Norwood, Colo. 3/

The property was examined for the Bureau of Mines on August 27, 1940, and by the Geological Survey during August 1917, 4/ and October 1942. 5/

During 1942 the claims were owned in part by James A. Noyes of Ophir, Colo., and were leased to Paul McLoud of Ouray, Colo. About 25 tons of sorted manganese ore was shipped to the Metals Reserve Company stockpile at Salida, Colo. The ore assayed 31.5 percent manganese and was rejected.

The present owner, Edgar J. Reed of Redvale, Colo., relocated the claims as the Wolf (formerly Black Diamond), Black Prince, Dream, Fox (formerly Crackerjack, Perfection, etc.), Doe (formerly Black Monarch), and the Bee (formerly the Sun claim of the Noyes group).

2/ Jones, Edward L. Jr., Some Deposits of Manganese Ore in Colorado, U. S. Geol. Survey, Bulletin 715, Contributions to Economic Geology (1920), pt. 1, pp 68-72.

3/ Bell, James E., U. S. Bureau of Mines unpublished report No. 3126, The C. G. Seipp Manganese Prospect, San Miguel County, Colo., January 29, 1941.

4/ Reference cited in footnote 2/.

5/ Neuschel, Sherman K., U. S. Geol. Survey memorandum Report on the Noyes group, San Miguel County, Colo., October 1942.

The applicant, Duncan E. Harrison, has been assigned General Services Administration authorization number 8-M-601, and has shipped 14.81 dry, long-tons of manganese ore to the manganese ore purchasing depot at Deming, New Mexico as lot number H.S-1. The lot was rejected because of its high copper content (0.46 percent crude and 0.6 percent concentrates) which could not be reduced to an acceptable limit in amenability tests by the Bureau of Mines, Region IV, Metallurgical Division.

OWNERSHIP AND EXTENT

Edgar J. Reed of Redvale, Colo., is owner of the standard lode claims Wolf, Black Prince, Dream, Fox, Doe and Bee by right of location. He has given Duncan E. Harrison of Durango, Colo., Defense Minerals Exploration Administration applicant, a 5-year lease, with option to purchase, dated July 15, 1953. The lease also covers 19 other claims not included in the application.

The claim locations (Fig. 2 with the geologic report) are unsurveyed and are located approximately in secs. 9, 10, 15 and 16, T. 43 N., R. 16 W., New Mexico principal meridian, San Miguel County, Colo. Sections 9, 10, and 15 are included within an active oil and gas lease. Title to the claims within them is contingent on the filing of an amended location notice pursuant to the provisions of Public Law 250, 83rd Congress, Chapter 405, 1st session and for the purpose of obtaining the benefits thereof.

Section 16 is reserved to the State of Colorado as a school section and any claims or portions of claims extending thereon are not legally the property of Edgar J. Reed without a lease from the State of Colorado.

DESCRIPTION OF THE DEPOSITS

The Wolf claim (Fig. 2 with geologic report). Manganese oxides, chiefly pyrolusite, with associated manganite and psilomelane, calcite, barite, and oxides of copper, are exposed in a rimrock outcrop and two short adits as a thin, bedded deposit between sandstones and shales. Enclosing rocks are gray, red, and brown sandstones with interbedded red and green shales. One adit extends N. 82° E. into the outcrop for 48 feet. Manganese oxides are exposed in the adit walls in undulating thicknesses up to 1 foot. The bed is very flat with dips horizontal to 10° north. A portion of the original adit and portal was bulldozed out by the last operator and a shipment of manganese ore recovered from pillars and shipped to the Metals Reserve Company stockpile at Salida, Colo. The ore was rejected.

A second adit, 275 feet to the southeast, is caved to within 15 feet of the portal and a slump profile above it indicates that all old workings are probably seriously caved. Manganese oxides are exposed in a remnant of a portal pillar to thicknesses up to 2.3 feet. Continuity between the two portals is imperfectly indicated.

Early reports 6/,7/,8/ indicate that the manganiferous bed was traced for about 1,500 feet along its outcrop across the Wolf and Black Prince claims and was developed by several adits and drifts, most of which are obliterated or caved. Only that portion exposed in the vicinity of the adits showed unusual concentrations of manganese minerals.

6/ Reference cited in footnote 1/
7/ Reference cited in footnote 2/
8/ Reference cited in footnote 3/

Ore from the mine occurs in soft lumps of fine granular pyrolusite-manganite and copper oxides indistinguishable to the eye.

Sample H-705, taken in the breast of the 48-foot adit, assayed 22.2 percent manganese and 0.35 percent copper as oxides, over the width of the bed, 0.6 foot. Sample H-706 was taken from a portal pillar exposed in the second adit and indicates that ore, probably removed almost completely, assayed 40.8 percent manganese and 0.33 percent copper as oxides, at its best, in place. Manganese exposures and sample locations on figure 2 with the geologic report are approximately located with reference to vague claim boundaries.

The Black Prince and Dream claims (Fig. 2 with geologic report). Very little is known about manganese occurrences on these claims other than that the prominent manganiferous horizon on the Wolf claim is believed to extend on to the Black Prince claim. Erosion debris on steep slopes mask all surface exposures on the Black Prince and Dream claims.

The Fox claim (Fig. 2 with the geologic report). Two exposures of manganese were examined and sampled. A shallow cut at sample location H-708 exposes a steeply dipping seam of manganese oxides 1.3 feet wide, which strikes N. 10° W. Parallel stringers, about 1 inch thick, were noted roughly 10 feet to each side of the main zone. Sample H-708 across the exposed width assayed 36.8 percent manganese and 0.12 percent copper as oxides and was very siliceous. The outcrop pinches out within 100 feet.

Manganese occurs again in a shallow cut at the neighboring sample location H-709. The exposure strikes N. 45° W. and dips almost vertically. Manganese oxides are exposed over a 2-foot width consisting of alternate 1-inch bands of manganese oxides and red sandstone. Sample H-709 assayed 18.9 percent manganese and 0.21 percent copper as oxides and was very siliceous. The outcrop can be traced for about 25 feet. Manganese exposures and sample locations on figure 2 with the geologic report are approximately located with reference to vague claim boundaries.

The Doe claim (Fig. 2 with the geologic report). Concentrations of manganese oxides are exposed through a vertical range of 20 feet and for several hundred feet along a steep cliff exposure of red-brown sandstone. Small, irregular masses of manganese oxides, principally manganite with some pyrolusite, occur along the bedding in tabular form and have apparent lengths of less than 15 feet and thicknesses of about 1.5 feet. The exposures were too small and low grade to sample. Their scattered occurrence and sparse distribution in the sandstone beds make profitable mining extremely doubtful. The manganese exposures on figure 2 with the geologic report are approximate with reference to vague claim boundaries

The Bee claim (Fig. 2 with the geologic report). One exposure of manganese was examined and sampled. A shallow cut at sample location H-707 exposes a concentration of manganese oxides in red-brown sandstone. It strikes N. 15° W. and dips 57° to the southwest. Sample H-707 across the manganiferous zone width of 2.5 feet, assayed 16.2 percent manganese and 0.12 percent copper as oxides. The manganese

exposure on figure 2 with the geologic report is approximate with reference to vague claim boundaries.

SAMPLING AND METALLURGICAL DATA

Sorted ore from the Wolf (Black Diamond) claim was investigated by the Colorado Geological Survey during 1917 and assayed 43.38 percent manganese, a trace of iron, 8.2 percent silica, 0.469 percent sulfur and 0.039 percent phosphorus.

Anaylses of cobbed ore from the same source assayed 54.75 percent manganese, 0.46 percent iron, 2.79 percent silica, 0.20 percent alumina, 0.029 percent phosphorus, 0.68 percent copper, 0.53 percent calcium oxide, 0.20 percent magnesium oxide, and 5.35 percent barium oxide.

Samples of a shipment of 14.81 dry, long tons of manganese to the General Services Administration depot at Deming, New Mexico during August 1953, were analyzed by various assayers and the following results reported:

Assayer	Mn	Fe	Cu	Pb	Zn	SiO_2	S	P	CaO	MgO	BaO	Al_2O_3	Remarks
	Percent												
Columbia-Geneva Steel Company	41.6	0.6	-	0.19	0.01	1.32	0.42	0.028	-	-	-	-	Geneva, Utah Works Laboratory
Colorado Fuel and Iron Company	37.0	1.0	-	-	-	3.90	-	0.018	9.3	0.4	2.1	-	Minnequa Works Laboratory
*Root and Norton, assayers	38.1	1.3	0.42	-	-	4.6	-	-	-	-	-	1.8	Durango, Colorado Commercial Assayer
Metallurgical Div., Bureau of Mines, Reg. IV, Report 104.	34.2	0.5	0.46	0.3	0.03	2.8	-	-	18.6	-	-	-	14.81 dry, long tons. Lot HS-1. Amenability Test.

* Fines not shipped, assayed 28.45 percent manganese.

A shipment of 25 tons of sorted ore was shipped during World War II to the Metal Reserve Company stockpile at Salida, Colo. It assayed 31.5 percent manganese and was rejected.

Samples by the applicant: Two samples were taken by the applicant on the Fox claim (Fig. 2 with the geologic report). One, cut over a width of 1 foot at the same location as sample H-708, assayed 44.6 percent manganese and 0.32 percent copper. The other was cut over a width of 4 feet at the same location as sample H-709, assayed 30.6 percent manganese and 0.20 percent copper.

Samples by the DMEA examining team (Fig. 2 with the geologic report)

Sample	Feet width	Percent Manganese	Percent Copper	Description
H-705	0.6	22.2	0.35	Breast of 48-foot adit on Wolf claim
H-706	2.3	40.8	0.33	Pillar remnant (Wolf claim) in adit 275 feet S.E. of H-705.
H-707	2.5	16.2	0.12	Breast of open cut on Bee claim.
H-708	1.3	36.8	0.19	Breast of open cut on Fox claim.
H-709	2.0	18.9	0.21	Breast of open cut on Fox claim.

During an examination in 1940 9/, several grab samples were taken of small lots of sorted ore from various locations. A sample (No. 178) is believed to have been taken of ore mined from the Wolf claim at the location of sample H-705 assayed 20.1 percent manganese, 33.2 percent iron, 10.4 percent insol., and 0.03 percent phosphorus.

Another grab sample of sorted ore (No. 177) probably taken from the Wolf claim at the location of sample H-706 assayed 51.4 percent manganese, 1.6 percent iron, 3.9 percent insol., and 0.02 percent phosphorus.

9/ Reference cited in footnote 3/.

A third sample is believed to have been taken from the Fox claim at the location H-708, assayed 31.6 percent manganese, 6.7 percent iron, 29.0 percent insol., and 0.05 percent phosphorus.

Test data on the manganese ore. A lot of 14.81 dry, long-tons of manganese ore from the Wolf and adjoining claims was shipped by the applicant to the General Services Administration ore purchasing depot at Deming, New Mexico. The ore assayed 34.2 percent Mn, 0.5 percent Fe, 2.8 percent insoluble, 18.6 percent CaO, 0.30 percent Pb, 0.03 percent Zn, and 0.46 percent Cu.

Microscopic study showed the ore as principally pyrolusite so intimately associated with very finely disseminated copper oxide minerals as to preclude any effective separation of the copper from the manganese minerals.

The ore was tested by the Metallurgical Division, Region IV, of the Bureau of Mines, under a standardized technique developed to determine the amenability of manganese ores submitted to the Deming depot.

Selective flotation was successful in recovering 92.6 percent of the manganese in a product assaying 41.8 percent Mn, 2.8 percent SiO_2, 0.3 percent Al_2O_3, 0.08 percent Fe, 0.05 percent P, 0.55 percent Pb, 0.02 percent Zn, and 0.60 percent copper. The product was satisfactory in all respects except that it exceeds the 0.25 percent specification for maximum lead-zinc-copper in the current program.

The Metallurgical Division, Region IV, Bureau of Mines, reported the ore completely unamenable to concentration.

ORE RESERVES

Since most of the underground development is inaccessible or obliterated, there is insufficient data on which to base reserves of manganese ore. Prior references (1917) placed reserves of the Wolf (Black Diamond) claim between 2,000 and 50,000 tons of 40 percent manganese ore. The lower estimate appears to be the most reasonable as an inference, but is considered high in the light of available data.

About 400 tons of manganese ore were estimated for the Fox, Doe and Bee claims (Noyes group) during 1942.

Medium-grade reserves from the Klondike Basin area would come from small and scattered bodies of manganese oxides containing up to several hundred tons each and exhibiting all stages of concentration which would necessitate cobbing and close sorting. An excess of copper was the basis of rejection for the Government stockpiling program.

PRESENT STATUS

Exploration and Development
(Fig. 2 with the geologic report)

The Wolf (Black Diamond) claim: Accessible development work is limited to parts of two adits about 275 feet apart. One adit was driven on a narrow bed of manganese for its full length of 48 feet. A large section between the present and original portals was bulldozed out by a former operator in an effort to reclaim manganese left in portal pillars. The second adit was driven on the same bed of manganese but is caved to within 15 feet of the portal.

Earlier work, now obliterated or completely inaccessible, was apparently quite extensive and is described in previously mentioned references.

The Black Prince and Dream claims: The applicant reports that there are no accessible exposures of manganese on the claims.

The Fox claim: Two 5-foot hillside cuts were excavated on narrow and separated manganese exposures for lengths of 10 feet. They are completely accessible.

The Doe claim: A shallow hillside cut exposes spotty, low-grade manganese in red sandstone along the face of a cliff and about 50 feet below its crest.

The Bee claim: A 5-foot hillside cut exposes a narrow body of manganese for a length of about 25 feet. It is completely accessible. A cut to the southeast at creek level is inaccessible.

Mining and Milling Equipment

There are no mining, milling, or other facilities on the property. A few crude cabins could house a small crew and equipment, with minor repairs.

PROJECT PROPOSALS, WITH COSTS

The applicant, Duncan E. Harrison, of Durango, Colo., proposes to explore further the occurrences of manganese on the Wolf, Fox and Doe claims which he has under lease in Klondike Basin, San Miguel, County, Colo.

He plans to accomplish about 200 feet of drifting on the Wolf claim, probably from the existing adit already in 48 feet, to determine the extent and character of the manganese between it and old workings to the southeast.

Secondly, he proposes to drift on the manganese exposures on the Fox claim for a total of 200 feet to determine their extent.

In addition, he proposes to explore the cliff exposure of manganese on the Doe claim with 1,000 feet of diamond drilling from the crest, about 50 feet above, to determine whether manganese is sufficiently concentrated to be considered as a mineable ore body.

He estimates the costs of the project as follows:

Location	Work	Cost
The Wolf claim	200 feet of drift at $30.00 per foot	$6,000.00
The Fox claim	200 feet of drift at $30.00 per foot	6,000.00
The Doe claim	1,000 feet of diamond drilling at $3.50 per foot (AX core)	3,500.00
General charges:		
Supervision	6 months at $500.00 per month	3,000.00
Engineering	6 months at $350.00 per month	2,100.00
Equipment rental	6 months at $300.00 per month	1,800.00
Bulldozing (D-7)	16 hours at $11.00 per hour	176.00
Contingencies	(Bulldozer travel time, assaying, accounting, price increases, etc.)	2,257.00
	Total cost of project	$24,833.00

CONCLUSIONS

Manganese production from the area would come from small, narrow replacement beds, veins and chimneys which would require careful sorting to keep manganese high.

Very finely divided copper oxides, invisible to the eye, are intimately associated with the manganese on all claims investigated.

On the Wolf claim, extensive mining reported in earlier references indicates that the best part of the deposit has been removed and the presence of remaining large reserves of high-grade manganese is very questionable. Finely divided copper oxides in the ore could not be removed in amenability tests and the ore was declared unfit for stockpiling.

No further exploration is recommended.

On the Doe claim, exposures of manganese in the cliff face were irregular and very low grade and indicate partial replacement. The possibility for discovery of commercial bodies of high-grade manganese is not encouraging.

On the Fox claim, exposures indicate the presence of small manganese ore bodies containing finely divided and intimately associated copper oxides. The ore would not be acceptable for stockpiling.

On the Bee claim, a small, low-grade deposit of manganese is indicated which also contains finely divided and intimately associated copper oxides.

Medium grade reserves from the Klondike Basin area would come from small and scattered bodies of manganese oxides containing up to several hundred tons each, and exhibiting all stages of concentration, which would require cobbing and close sorting.

Manganese ores from the Klondike Basin area contain finely divided and intimately associated copper oxides that cannot be eliminated by standard ore dressing procedures. The ores are not suitable to stockpiling requirements due to their high copper content before and after beneficiation.

Title to the property is in question and requires clarification.

RECOMMENDATIONS

The property is not a promising exploration venture and it is recommended that Duncan E. Harrison's request for a Defense Minerals Exploration Administration loan of $24,833.00 be denied.

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

224 New Customhouse
Denver 2, Colorado

September 4, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: Code 200

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docketing for Exploration Assistance

Enclosed herewith in duplicate is DMA Form 3a and MF-103 and supporting data pertaining to the following applications for Government assistance in exploration work:

Spider Uranium Mining Company, Inc. — Tungsten
16 North State Street
Preston, Idaho

(Duncan E. Harrison — Manganese
641 - 4th Avenue
Durango, Colorado)

W. H. King
W. H. King

Enclosures

ME-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

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-3160
Metal or Mineral
Date Received 9-8-53
Estimated Cost
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Duncan E. Harrison
641 - 4th Ave.
Durango, Colo.

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

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

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

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

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract Wolf, book 175 page 126, Black Prince, book 174 page 13, Dream, book 174 page 13, Fox, book 175 page 131, Doe, book 175 page 133, Bee, book 175 page 132, all located in T43N, Range 16W, Sections 9,10,15,16 N.M.P.M. San Miguel County, Colo.

(*b*) State any mine name by which the property is known.

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

(*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.

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

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

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.

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

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

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

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

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

(*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.

(*c*) The work will start within 10 days and be completed within 6 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. 25 years supervision of mines.

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

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

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

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

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

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

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

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

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

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

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

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

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

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated Sept. 2, 1953

Duncan E. Harrison
(Applicant)

By Duncan E. Harrison
641-4th Ave
Durango, Colo.

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

6(a) - I have attempted to open old mine workings, rebuild roads and repair machinery, have run out of funds to explore veins and mine workings, combination of earlier interruptions and workings only thing now possible.

6(b) - Government protection requires all data now available, ore reserves can be based on hearsay only, that plenty of ore remained in workings of mine, I just made a fair part of ore, residences about are included.

6(c) - Mine replacement in the collectibles are cases based in charges of production, reason for wanting to explore is government reports of past production and unexplained grade of manganese product, all available data is in old government production and geological reports, property has expected during period has I by the Langlois - Salem Mining Co. Metro Industry Metro.

6(d) - All assay work are accumulated, and contact with Metro. Mining Co. the assays could point to Mining, Colo. approximately 90 miles to the east, the distance to the government stockpile at Henley, Rev Mines is 60 miles but I have a contract with a trucker in which it is profitable to ship 50% in ore.

Cabins are available at the mines for living quarters.

6(e) - Plenty of manganese available the mines are located approximately 50 miles east of Saturday, Colo. and approximately 65 miles from Denver, Colo. and are located in the heart of the Rockies or Platnes area, the group includes many Customers Mines, but only Blue Chief I need to determine if ore is available are listed at this time on the U.S.B.M. plan some exploratory work also.

Materials, supplies, equipment and water available, gasoline or diesel power necessary.

6(f) - Work to explore for manganese have been issued authorization under 3-1501 by the U.S.B.M.

6(g) - The old mine workings on the Wolf claim are so badly caved it could probably pay to drive a new entry, probably 30% cost of drifting and cross cutting would open up and explore this mine.

The small Pioneer veins are exposed on the Pat claim open drifting would serve to explore these veins and see if they extend to anything or from

that they originate.

Diamond drilling would be the most practicable on the Two Chain and in all probability 1,000 feet of drilling would be all that is necessary.

O(.) - Plan to contract all diamond drilling, drilling, accomplishing and hand mining, steel barren crushing, all supplies furnished by contractor

Estimate (30.00 per foot.

Crown Claim	200' @ $30.00		$ 6,000.00
Two Chain	200' @ $30.00		6,000.00

Diamond drilling due to long water haul $5.00 per foot.

Bee Claim	1,000' @ $ 5.00		5,000.00

Approxmately 20 hrs. miscellaneous
Distance haul | 12hrs @ $25.00 | | 300.00

Supervision	$300.00 per Mo.	6 Mo.	3,600.00
Engineering	200.00 per Mo.	6 Mo.	2,400.00
Compressor and Machinery rental.	500.00 per Mo.	6 Mo.	3,000.00
Contingent exp. 15% contingencies			2,017.50
		Total	$30,300.00

N(.) - Assume you have a steel drive truck, also plain truck, miscellaneous pipe, tools and miscellaneous equipment, also two pickaxes in use, may have compressor and equipment & not on hand available at lower rate, on this outright and will use as standard rental rate on each of my claims of 200ft.

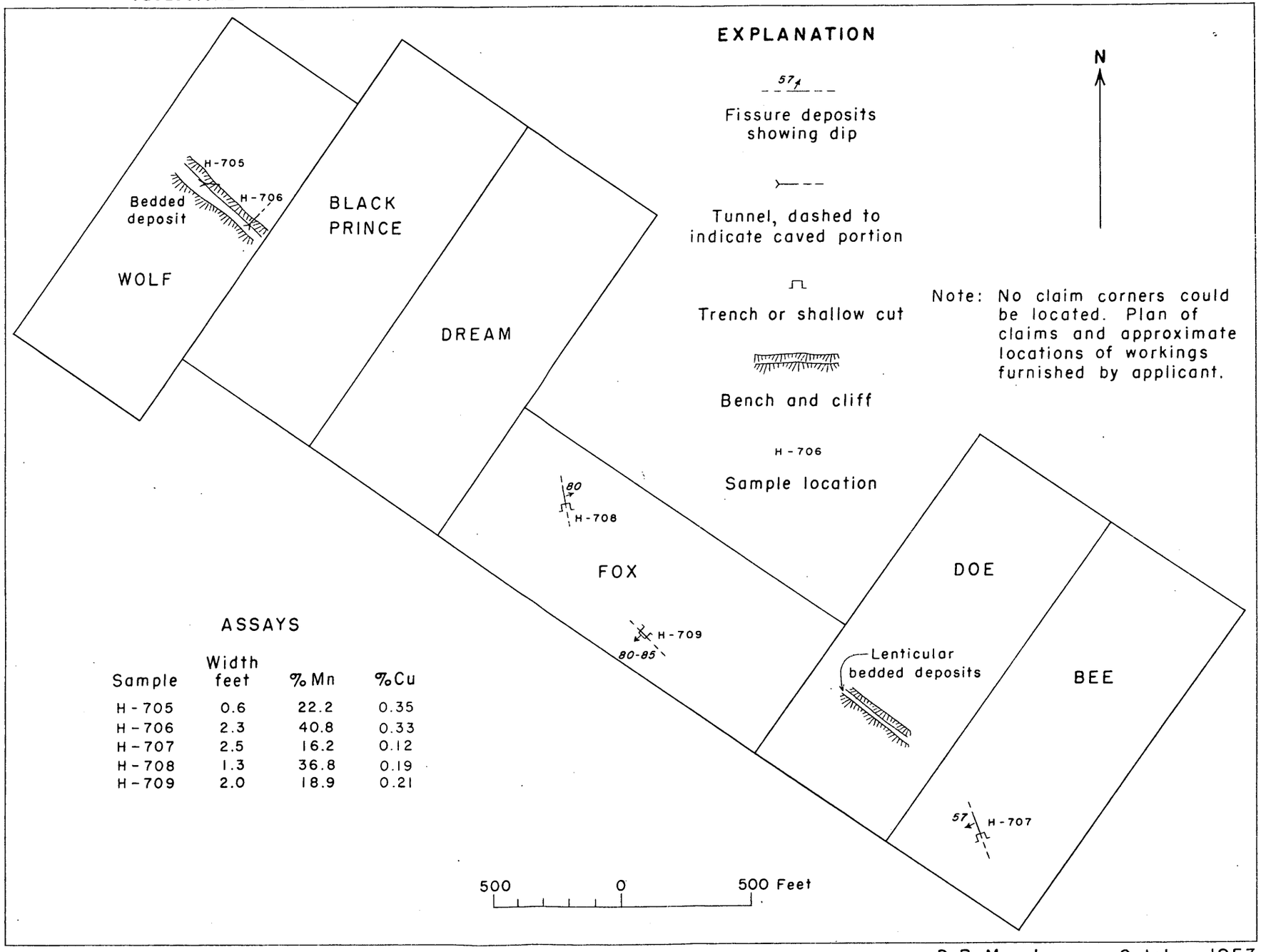
O(.) - Rather say Bee $5.00 repairs to get there to start, all other equipment in own claim.

O(.) - All items included in 15% contingencies.

Summary: - A determined effort is going to be made to get a 6.0% to engineers estimate cost up on the Western Tiger connection in case of this is successfully with this optimistic one produce a large tonnage of lower grade ores.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

D.M.E.A. DOCKET 3160



ASSAYS

Sample	Width feet	% Mn	% Cu
H-705	0.6	22.2	0.35
H-706	2.3	40.8	0.33
H-707	2.5	16.2	0.12
H-708	1.3	36.8	0.19
H-709	2.0	18.9	0.21

D. R. Mac Laren, October, 1953

FIGURE 2. - CLAIM MAP SHOWING APPROXIMATE LOCATION OF WORKINGS AND OUTCROPS OF MANGANESE DEPOSITS

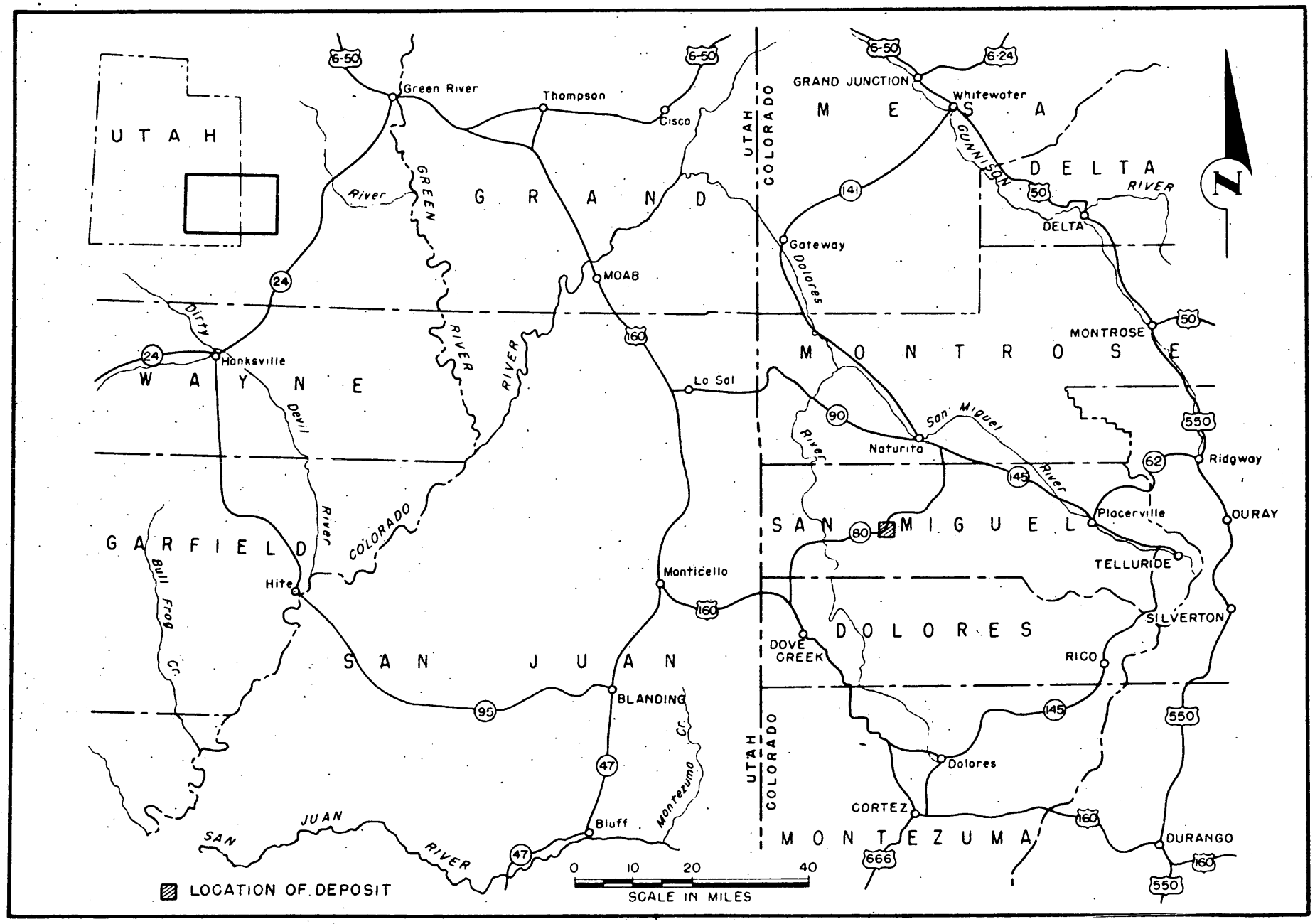


FIGURE 1. - LOCATION MAP, D. E. HARRISON MANGANESE LEASE, SAN MIGUEL COUNTY, COLO. (DMEA 3160)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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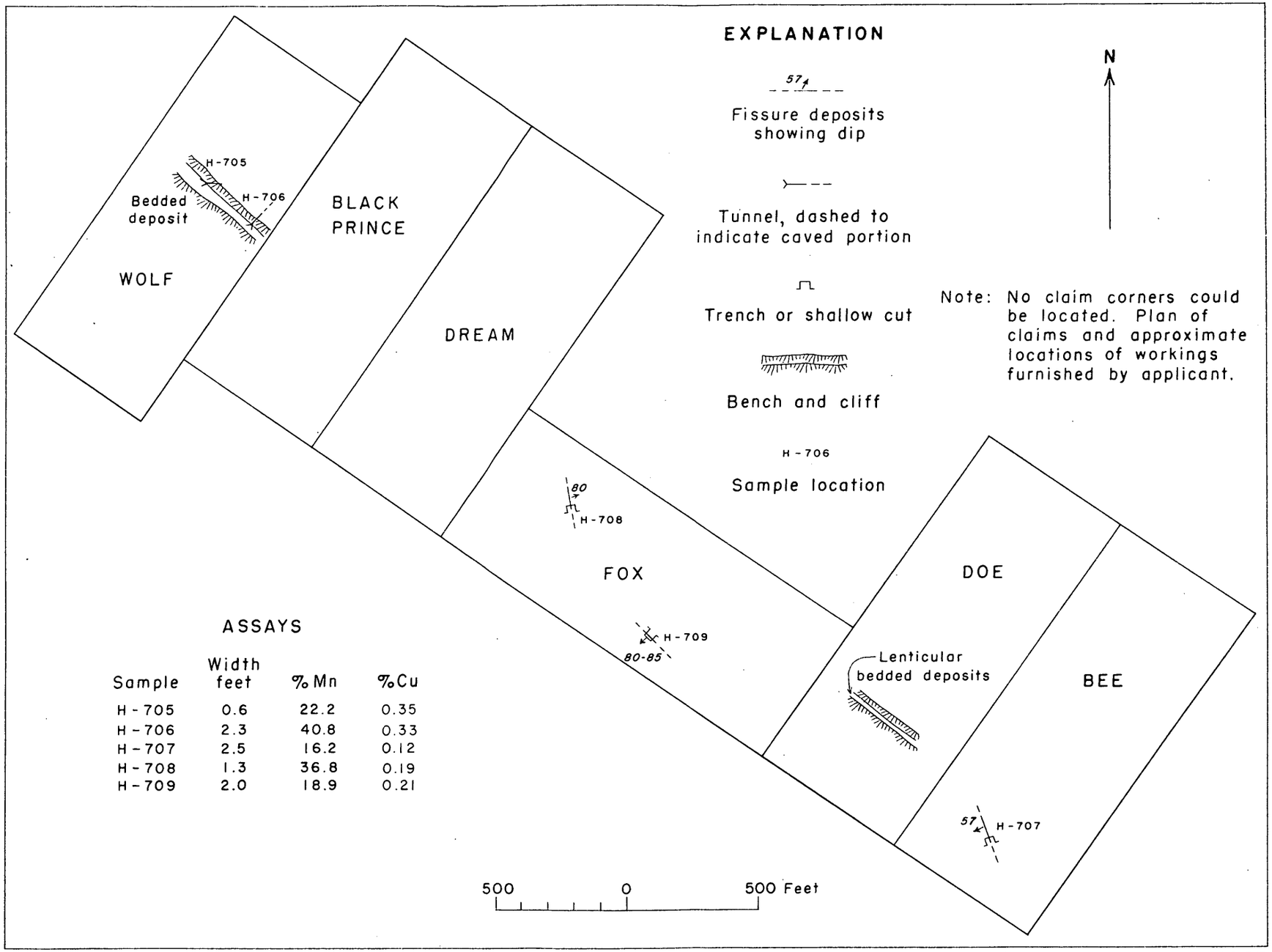

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