Administrator, DMEA

Jan. 9, 1953

Iron and Ferro-Alloy Division, DMEA

Docket No. DMEA 2701 - Manganese
H. V. George
Mangan Mine
Johnson County, Wyoming

2701

The subject application of September 10, 1952, in the amount of $25,000.00, was denied by the Field Team, Region IV, on December 19.

The Mangan Mine, from which there has been no production, includes lode and placer locations and patented land in Secs. 29, 30, 31, and 32, T. 47 N., R. 83 W., Johnson County, Wyoming, at the southeast end of the Big Horn Mountains. An examination made on October 7, 1952, found that the exploratory work completed consisted of bulldozer trenches and test pits exposing both residual placer and gently dipping manganiferous sediments from which the placer manganese has been eroded. Several shallow holes had been drilled with an augur-type machine.

The residual placer, or north area deposit, contains manganese oxide nodules in clay, and appears to thin irregularly in all directions from a maximum thickness of 3 feet. The nodules average in grade between 20 and 26 percent manganese, but it is unlikely that the tonnage is of consequence.

The manganiferous sediments, or south area deposits, are estimated on the basis of the above work and the applicant's own sampling to constitute an ore reserve of 75,000 tons indicated ore and 175,000 tons inferred ore, both classes averaging 6 to 8 percent manganese.

It is 27 miles by county and unimproved road to U. S. Highway No. 16, and then 31 miles to Buffalo, Wyoming, and an additional 23 miles to the nearest railhead, Clearmont, on the C. B. & Q.

The applicant proposed to explore the property further by dragline and drillholes. The average grade of the ore on the property is, however, too low to be mined and processed under existing economic conditions, and the relative inaccessibility of the area and distance from consumers are disadvantages. The Field Team, therefore, denied the application. We concur in the denial.

George C. Selfridge

G. C. Selfridge, Chief
Iron and Ferro-Alloy Division

WSMartin/ls
1/9/53

COPY

224 New Customhouse
Denver 2, Colorado

December 19, 1952

Mr. H. V. George
596 North Main St.
Buffalo, Wyoming

Re: DMEA Docket 2701

Dear Mr. George:

Reference is made to your application for Government aid in exploration work on the Mangan Mine.

Projects approved by the Defense Minerals Exploration Administration must, in its judgement, 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 by your proposed exploration program is not considered sufficiently promising to justify Government participation. The ore is low grade and the deposit is relatively isolated. Under these circumstances, we regret to advise you that your application for Government aid is denied.

Very truly yours,

/s/ John F. Shaw for
W. H. King
Field Team, Region IV

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

HMC:oc
cc: Administrator (DMEA)
SRWilson
Subject
Chron.
AHKoschmann (2)

Reviewed by
DMEA OPERATING COMMITTEE

(date)

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

224 New Customhouse
Denver 2, Colorado

December 19, 1952

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: 200

From: Field Team, Region IV, DMEA

Subject: Final Report, DMEA Docket 2701, (Manganese) H. V. George, Mangan Mine, Johnson County, Wyoming

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

John F. Shaw for
W. H. King

A. H. Koschmann

Enclosures

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
DEC 2 0 1952

400

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

December 19, 1952

Memorandum

To: Field Team, Region IV

From: Acting Chief, Mining Division, Region IV

Subject: Final Report, DMEA Docket 2701, (Manganese) H. V. George, Mangan Mine, Johnson County, Wyoming

Enclosed are nine copies of the final engineering report on the subject docket.

The applicant requested $25,000 to explore the property which he holds under lease.

The examining engineers recommend denial because of the average low grade of the ore and the relative inaccessibility of the area and distance from the consumers.

We concur in this recommendation.

John F. Shaw
John F. Shaw for
W. H. King

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE

(date)

December 16, 1952

Memorandum

To: W. H. King, Acting Chief, Mining Division, Region IV

From: Chief, Utah-Wyoming Branch, Mining Division

Subject: DMEA-2701, H. V. George, Mangan mine, Johnson County, Wyo.

Enclosed are the original and 8 copies of an engineering and geologic report prepared by W. E. Young and M. M. Harcourt as a result of examination and appraisal of the subject property. Representatives of the Geological Survey did not participate in the examination.

Manganese oxide minerals occur in two deposits on the Mangan property. The north deposit contains nodular-type mineralization averaging between 20 and 26 percent manganese. No appreciable ore tonnage is present in this deposit. Manganese oxides occur as impregnations in sandstone in the south deposit, forming a body estimated to contain 250,000 tons of ores averaging 6 to 8 percent manganese.

The examining engineers believe the proposed loan on the property is not warranted because of the average low grade and relative isolation of the deposits. It is therefore recommended that the loan request be denied. I concur in this recommendation.

The brochure covering the property is attached.

Stephen R. Wilson

Stephen R. Wilson

Enclosures 2

MANGAN MINE
JOHNSON COUNTY, WYO.
DMEA-2701
Manganese

Engineering and geologic report

By W. E. Young and M. M. Harcourt
Mining engineers
Bureau of Mines

MANGAN (MEAD) MINE
JOHNSON COUNTY, WYO.

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History and production	3
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Description of the deposits	4
Ore reserves	6
Conclusions and recommendations	6

ILLUSTRATIONS

Fig. 1 Location map, Mangan mine, Johnson County, Wyo.
Fig. 2 Topographic plan and section, south area.

INTRODUCTION

H. V. George, 596 North Main Street, Buffalo, Wyoming, has made application for a DMEA loan to explore manganese deposits in the Big Horn Mountains, 48 miles southwest of Buffalo, Wyoming. The amount requested is $25,000, to be expended in surface stripping and trenching by dragline, and delineating the ore body by drilling.

An examination was made October 7, 1952, by Bureau of Mines engineers for appraisal of the proposed exploratory work.

LOCATION, TOPOGRAPHY AND PHYSICAL FEATURES

The property is reached from Buffalo, Wyoming, by traveling southwest on U. S. Highway No. 16, 31 miles to the Hazelton road, thence southerly approximately 17 miles by county and unimproved road (fig. 1).

The property, including lode and placer locations and patented land, is situated in Secs. 29, 30, 31 and 32, T. 47 N., R. 83 W., Johnson County, Wyoming, at the southeast end of the Big Horn Mountains. The nearest railhead is at Clearmont, on the Chicago, Burlington and Quincy line, 28 miles northeast from Buffalo.

East of the property, the terrain slopes steeply into the valley, but to the west the topography is relatively flat, consisting chiefly of highly eroded granite which extends some distance before reaching the extremely rugged core of the range.

There are many open, grassy parks, with scattered clumps of pine, which are utilized as summer range for cattle and sheep.

The front or easterly face of the range is dissected by precipitous gorges carrying both permanent and intermittent streams. Cross-cutting the property are Dry Beaver Creek and Beaver Creek, the latter a permanent stream.

HISTORY AND PRODUCTION

The property under consideration, formerly called the "Mead Manganese property," was located in 1942 as placer and lode claims. The owners obtained a lease in 1951 on adjoining patented land from C. J. Gammon of Buffalo, Wyoming, and, in turn, gave H. V. George a lease on the combined area. The property is now known as the Mangan mine. There has been no production.

Exploratory work completed to date consists of several bulldozer trenches and test pits exposing both residual placer and gently dipping manganiferous sediments from which the placer manganese has been eroded (fig. 2). Several shallow holes have been drilled with an auger-type machine.

OWNERSHIP AND EXTENT

The Mead property is composed of four lode and five placer claims, all of which are held by location.

The owners are listed as follows:

Melvin S. Mead	Buffalo, Wyo.
John Keahey	Sheridan, Wyo.
Roger L. Lawson	Buffalo, Wyo.
Norman Mead	Francis Drake Hotel, Minneapolis, Minn.
Northern Development Co.	1240 Rand Tower, Minneapolis, Minn.

This group obtained mineral rights, under lease, on an adjoining 200 acres of patented land owned by C. J. Gammon of Buffalo, Wyo. H. V. George is now holding the combined area under a lease dated November 10, 1951.

DESCRIPTION OF THE DEPOSITS

The Mangan deposits are confined to the basal members of the Cambrian Deadwood formation which is in contact with the pre-Cambrian granite, the main mass of the Big Horn Mountains. The geologic section exposed in this vicinity consists of pre-Cambrian granite, Cambrian Deadwood formation (sandstones, shales and thin-bedded limestones), Ordovician Big Horn limestone (grading from sandstone at base to massive silicious limestone at the top), and Carboniferous Madison limestone (gray, massive).[1/] This section of sediments has formed a gently east-dipping monocline which quickly steepens and forms the east face of the Big Horn Mountains for several miles.

As exposed on the Mangan property, the lower beds of the Deadwood formation are manganiferous for a length of approximately one mile,

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1/ U. S. Geol. Survey, Prof. Paper 51, 1906.

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As exposed on the Mangan property, the lower beds of the Deadwood formation are manganiferous for a length of approximately one mile,

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1/ U. S. Geol. Survey, Prof. Paper 51, 1906.

striking about N. 30° west with easterly dip of from 20° to 30°. East-flowing Beaver Creek has eroded through the entire section of sediments to a depth of more than 200 feet and serves to divide the deposit into north and south areas.

Erosion of the lower, flat-lying, interbedded, shaley members of the Deadwood formation has formed the north area deposit. Residual concentration of nodular manganese oxide in arenaceous clay has resulted. The nodules occur in an unconsolidated bed which lies virtually horizontally and is approximately 8 feet in maximum thickness. The deposit appears to thin irregularly in all directions from the point of maximum thickness.

Stripping has exposed the ore-bearing bed at the north end of the north deposit, adjacent to Dry Beaver Creek. Bulldozer cuts have been made through the deposit to an approximate depth of 8 feet.

The south area deposit is confined to a series of thin sandstone beds, both reddish-black and bright yellow in color, over a true thickness of approximately 26 feet. However, because of the relatively flat dips, the horizontal section of mineralization is approximately 60 feet from foot to hanging wall. This section also contains numerous barren beds. Manganese minerals have been deposited as filling in the interstices of the rather course-grained sandstone in an erratic pattern, but appear to have been localized in favorable beds.

The south deposit is elliptical in outline and is roughly 200 by 100 feet in cross section. Three test pits have been excavated to depths of 10 to 15 feet. Two bulldozer trenches have been cut through the surface debris to expose the beds in place. Three samples from this deposit, taken by the applicant, average 7.62 percent manganese.

ORE RESERVES

No significant tonnages of measured ore reserves are present on the property. The nodular ore in the north deposit is higher in grade than the impregnated sandstone in the south deposit, averaging between 20 and 26 percent manganese. It is unlikely that the reserve of residual placer manganese in the north deposit is of consequence. Surface exposures and the few pits and trenches in the south deposit permit an estimate of 75,000 tons of indicated ore and 175,000 tons of inferred ore, both classes averaging 6 to 8 percent manganese.

CONCLUSIONS AND RECOMMENDATIONS

The Mangan property, located in Secs. 29, 30, 31 and 32, T. 47 N., R. 83 W., Johnson County, Wyoming, consists of nine unpatented lode claims and 200 acres of patented land, all under lease to H. V. George of Buffalo, Wyoming.

It is estimated that the property has a total indicated and inferred reserve of 250,000 tons of ores assaying 6 to 8 percent manganese. This tonnage is estimated for the south deposit.

The residual placer nodular manganese ore in the north deposit is higher in grade than that in the south deposit, but no appreciable reserves may be estimated from present exposures.

The average grade of the ore on the property is too low to be mined and processed under existing economic conditions. The nodular type ore contains more manganese than is found in the impregnated sandstone, but the tonnage of nodular ore is considerably smaller. The relative inaccessibility of the area and distance from consumers are disadvantages.

It is believed that the property does not warrant an expenditure of funds at present to explore the zones of manganese ores because of the above conclusions. Recommendation is therefore made that the loan request be denied.

7. Are subordination agreements necessary?_____

   a) MF-201?_____

   b) MF-202?_____

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

   a) Available manpower_____

   b) Equipment and supplies_____
      (question 14 plus general knowledge of availability)*

   c) Accessibility (question 12)*_____

   d) Water (question 13)*_____

   e) Power (question 13)*_____

   Is a field check needed on any of these points?_____

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

   _____

   Is a field check needed on this point?_____

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

    a) Is the project adequately described?_____

       If not, are there sufficient data given so that you can describe the project?_____ If so, attach a draft.

    b) Is there an adequate map or sketch of the proposed work?_____

       _____

    c) Is the proposed work "exploration" under the definition of Section 8, MO-5?_____

       If not, what part of it is?_____

       _____

       _____

       _____

Is this part a worthwhile exploration project?_____

d) Are the cost estimates detailed?_____

Can they be summarized, as on page 2 of Procedural Instruction 5-A, from the available data?_____ If so, attach a draft.

e) Are the cost estimates reasonable?_____

f) Should more information be requested from applicant?_____

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

11. Exhibit B (question 23-d)*

a) Is it applicable?_____

b) If so, are sufficient data furnished?_____ If so, attach a draft.

c) Is a field check needed?_____

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

a) Is it applicable?_____

b) Sufficient data?_____ If so, attach a draft.

c) Are rents and charges reasonable?_____

d) Is a field check needed?_____

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

a) Are there sufficient data?_____

b) Is the schedule adequate for the work proposed?_____

c) Is the schedule excessive for the work proposed?_____

d) Are the proposed wages and salaries reasonable?_____

e) Is a field check needed?_____

STANDARD FORM NO.

Office Memorandum • UNITED STATES GOVERNMENT

TO : Administrator, DMEA

DATE: Jan. 9, 1953

noted

FROM : Iron and Ferro-Alloy Division, DMEA

SUBJECT: Docket No. DMEA 2701 - Manganese
H. V. George
Mangan Mine
Johnson County, Wyoming

The subject application of September 10, 1952, in the amount of $25,000.00, was denied by the Field Team, Region IV, on December 19.

The Mangan Mine, from which there has been no production, includes lode and placer locations and patented land in Secs. 29, 30, 31, and 32, T. 47 N., R. 83 W., Johnson County, Wyoming, at the southeast end of the Big Horn Mountains. An examination made on October 7, 1952, found that the exploratory work completed consisted of bulldozer trenches and test pits exposing both residual placer and gently dipping manganiferous sediments from which the placer manganese has been eroded. Several shallow holes had been drilled with an augur-type machine.

The residual placer, or north area deposit, contains manganese oxide nodules in clay, and appears to thin irregularly in all directions from a maximum thickness of 8 feet. The nodules average in grade between 20 and 26 percent manganese, but it is unlikely that the tonnage is of consequence.

The manganiferous sediments, or south area deposits, are estimated on the basis of the above work and the applicant's own sampling to constitute an ore reserve of 75,000 tons indicated ore and 175,000 tons inferred ore, both classes averaging 6 to 8 percent manganese.

It is 17 miles by county and unimproved road to U. S. Highway No. 16, and then 31 miles to Buffalo, Wyoming, and an additional 28 miles to the nearest railhead, Clearmont, on the C. B. & Q.

The applicant proposed to explore the property further by dragline and drillholes. The average grade of the ore on the property is, however, too low to be mined and processed under existing economic conditions, and the relative inaccessibility of the area and distance from consumers are disadvantages. The Field Team, therefore, denied the application. We concur in the denial.

G. C. Selfridge

G. C. Selfridge, Chief
Iron and Ferro-Alloy Division

FILE COPY
SURNAME:

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

Administrator, DMEA

Jan. 9, 1953

Martin
Selfridge

Iron and Ferro-Alloy Division, DMEA

Docket No. DMEA 2701 - Manganese
H. V. George
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Johnson County, Wyoming

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George C. Selfridge

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WSMartin/ls
1/9/53

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

224 New Customhouse
Denver 2, Colorado

December 19, 1952

BV

Mr. H. V. George
596 North Main St.
Buffalo, Wyoming

Re: DMEA Docket 2701

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A careful study of your property and data available to this agency reveals that the probability of disclosing mineable reserves of manganese by your proposed exploration program is not considered sufficiently promising to justify Government participation. The ore is low grade and the deposit is relatively isolated. Under these circumstances, we regret to advise you that your application for Government aid is denied.

Very truly yours,

John F. Shaw

John F. Shaw for
W. K. King
Field Team, Region IV

A. H. Koschmann

A. H. Koschmann
Field Team, Region IV

HMC:oc
cc: Administrator (DMEA)
SRWilson
Subject
Chron.
AHKoschmann (2)

Reviewed by
DMEA OPERATING COMMITTEE

(date)

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

224 New Customhouse
Denver 2, Colorado

December 19, 1952

Memorandum

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
DEC 20 1952

John F. Shaw for
W. H. King

A. H. Koschmann

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

December 19, 1952

Memorandum

To: Field Team, Region IV

From: Acting Chief, Mining Division, Region IV

Subject: Final Report, DMEA Docket #701, (Manganese) M. V. George, Mangan Mine, Johnson County, Wyoming

Enclosed are nine copies of the final engineering report on the subject docket.

The applicant requested $25,000 to explore the property which he holds under lease.

The examining engineers recommend denial because of the average low grade of the ore and the relative inaccessibility of the area and distance from the consumers.

We concur in this recommendation.

John F. Shaw

John F. Shaw for
W. H. King

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE

(date)

December 16, 1952

Memorandum

To: W. H. King, Acting Chief, Mining Division, Region IV

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The brochure covering the property is attached.

Stephen R Wilson

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Enclosures 2

MANGAN MINE
JOHNSON COUNTY, WYO.
DMEA-2701
Manganese

Engineering and geologic report

By W. E. Young and M. M. Harcourt
Mining engineers
Bureau of Mines

MANGAN (MEAD) MINE
JOHNSON COUNTY, WYO.

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ILLUSTRATIONS

Fig. 1 Location map, Mangan mine, Johnson County, Wyo.
Fig. 2 Topographic plan and section, south area.

INTRODUCTION

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Erosion of the lower, flat-lying, interbedded, shaley members of the Deadwood formation has formed the north area deposit. Residual concentration of nodular manganese oxide in arenaceous clay has resulted. The nodules occur in an unconsolidated bed which lies virtually horizontally and is approximately 8 feet in maximum thickness. The deposit appears to thin irregularly in all directions from the point of maximum thickness.

Stripping has exposed the ore-bearing bed at the north end of the north deposit, adjacent to Dry Beaver Creek. Bulldozer cuts have been made through the deposit to an approximate depth of 8 feet.

The south area deposit is confined to a series of thin sandstone beds, both reddish-black and bright yellow in color, over a true thickness of approximately 26 feet. However, because of the relatively flat dips, the horizontal section of mineralization is approximately 60 feet from foot to hanging wall. This section also contains numerous barren beds. Manganese minerals have been deposited as filling in the interstices of the rather course-grained sandstone in an erratic pattern, but appear to have been localized in favorable beds.

The south deposit is elliptical in outline and is roughly 200 by 100 feet in cross section. Three test pits have been excavated to depths of 10 to 15 feet. Two bulldozer trenches have been cut through the surface debris to expose the beds in place. Three samples from this deposit, taken by the applicant, average 7.62 percent manganese.

ORE RESERVES

No significant tonnages of measured ore reserves are present on the property. The nodular ore in the north deposit is higher in grade than the impregnated sandstone in the south deposit, averaging between 20 and 26 percent manganese. It is unlikely that the reserve of residual placer manganese in the north deposit is of consequence. Surface exposures and the few pits and trenches in the south deposit permit an estimate of 75,000 tons of indicated ore and 175,000 tons of inferred ore, both classes averaging 6 to 8 percent manganese.

CONCLUSIONS AND RECOMMENDATIONS

The Mangan property, located in Secs. 29, 30, 31 and 32, T. 47 N., R. 83 W., Johnson County, Wyoming, consists of nine unpatented lode claims and 200 acres of patented land, all under lease to H. V. George of Buffalo, Wyoming.

It is estimated that the property has a total indicated and inferred reserve of 250,000 tons of ores assaying 6 to 8 percent manganese. This tonnage is estimated for the south deposit.

The residual placer nodular manganese ore in the north deposit is higher in grade than that in the south deposit, but no appreciable reserves may be estimated from present exposures.

The average grade of the ore on the property is too low to be mined and processed under existing economic conditions. The nodular type ore contains more manganese than is found in the impregnated sandstone, but the tonnage of nodular ore is considerably smaller. The relative inaccessibility of the area and distance from consumers are disadvantages.

It is believed that the property does not warrant an expenditure of funds at present to explore the zones of manganese ores because of the above conclusions. Recommendation is therefore made that the loan request be denied.

Form MF-103
(Revised June 1951)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.1.

MF-103 Should Be Filed With General Technical Data Form MF-100

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

Department of the Interior
Defense Minerals Administration
SEP 17 1952

Not To Be Filled in by Applicant

Docket No. Dmea-2701
Metal or Mineral
Date Received 9-17-52
Amount $
Participation (Government %)

Name and address of applicant

E. V. George,
596 North Main St.,
Buffalo, Wyoming.

Date September 10, 1952

If you have already filed MF-100, give date filed herewith, type of assistance requested Loan,

DMA Docket Number (if available)

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four copies each, of the signed application form, General Technical Data Form MF-100, and answers to questions as specified, to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive office thereof, with your name and address on each sheet of the application and all accompanying papers. If you have previously filed MF-100, it is not necessary to file it again. However, you should indicate in space provided above the type of assistance previously applied for (loans, procurement contracts, etc.) and DMA Docket Number, if available. *When a question is inapplicable it should be so stated in the form.* Additional sheets should be attached in answering any questions or in supplying additional information. IF YOU CANNOT ANSWER A QUESTION, SO STATE.

1. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.

   (*b*) If you are not the owner of the property, submit a copy of the lease, purchase option, or other agreements under which you are authorized to operate the property with each copy of your application.

   (*c*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

   NOTE: (1) If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*c*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

   (2) If applicant is not the owner of the property or if there are any liens or encumbrances against the property, copy of agreements of claimants, lienors, encumbrances, and lessors subordinating their interests in the property to the interest of the Government under the Exploration Project Contract will be required for attachment to the Contract.

2. (*a*) What metals or minerals do you expect to find?

   (*b*) Furnish statement of the geologic features of your property, giving type of ore deposit and reasons for expecting to find commercial ore bodies. Illustrate with maps or sketches. If you have a geologic or engineering report, or assay maps showing width and grade, please send them with application, stating whether or not you wish to have them returned.

The information requested in questions 3, 4, 5, 6, 7, 8, and 9 below should be answered specifically and in detail, as this information will be attached to and incorporated as part of the Exploration Project Contract, if such contract is entered into with you by the Government.

ANSWER EACH QUESTION ON SEPARATE SHEETS OF PAPER AND SUBMIT A COPY OF EACH ANSWER FOR EACH COPY OF YOUR APPLICATION.

3. (*a*) Describe fully the proposed work and give the total cost of the project.

   (*b*) State the time required to start the project and to complete it.

4. Submit a map or sketch of the property involved showing a plan (and cross section, if needed) of the present mine workings and the *location of the proposed exploration work* as related to geologic features, such as contacts, veins, ore-bearing beds, etc.

5. Furnish an itemized list of existing facilities, buildings, installations, and fixtures with a statement of the cost of any necessary rehabilitation or repairs to put into useful and operable condition.

6. Furnish a detailed list of additional facilities, buildings, and fixtures to be purchased, installed, or erected by you, with the estimated cost of each item.

7. Furnish a detailed list of operating equipment, separated into items to be—

   (*a*) Rented

   (*b*) Purchased

   (*c*) Furnished by you

   with the rental, purchase price, or depreciation of each item, as the case may be, to be charged as a cost of the project.

8. Furnish an itemized schedule of labor, by numbers and classes (miners, muckers, etc.) and of supervisors by numbers and positions, with the maximum wages or salaries to be paid to each.

9. Furnish a detailed list with estimated cost of each item for materials, supplies, engineering, assaying, accounting, power, water, utilities, and any other items not provided for above.

10. (*a*) How much are you prepared to invest in the proposed project?

    (*b*) Is this amount sufficient to pay your part of the cost of the project, in accordance with the regulations on Government participation (Sec. 9 of MO–5)?

11. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

CERTIFICATION

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

(Name of company)	By N. J. George (Signature of authorized official)
Sept 10 - 1954 (Date)	(Title)

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

U. S. GOVERNMENT PRINTING OFFICE 16—64067-2

H. V. George,
596 North Main St.,
Buffalo, Wyoming.

M P 199. Loan for Exploration.

1 - (a) See Exhibit "A" Map M P 100

(b) See lease enclosed herewith - M P 100

(c) See lease above referred to

1 - Both areas are the same

2 - There are no liens or encumbrances, to my knowledge, against this property.

2 - (a) Manganese

(b) See geologist's report and map herewith as part of M P 100.

3 - (a) I propose exploration by using a dragline - 1/2 yard or larger to explore the deposit. During this operation the engineering, exploration by dragline, mapping, sampling, assaying and other expenses are estimated to be approximately $25,000.00. Some drilling will also be necessary and that expense is included in the $25,000.00.

The dragline operation is to thoroughly determine the extent of the nodular deposits at the north end of the property on the slope south of Dry Beaver Creek. This slope on the north side of Beaver Creek and in the draw and on the slope west of the area shown on the map as "Manganese Impregnated sandstone" at the south end of the property is also to be explored. It will also be necessary to determine the full extent of the manganese bearing sandstone in the center section of the property.

(b) 75 days.

4 - Refer to engineer's report and recommendations and geological map attached to M P 100.

5 - The plan is to contract proposed explorations with the contractor supplying all required equipment. This avoids any funds being spent for fixed or capital investment. All funds are for exploration work and supplies.

6 - See answer to 5. (Proposed program will not require any money spent for additional facilities. All funds will be used to best advantage for exploration only.

7 - The equipment will consist of the following:

(See next page.)

M. P. 103 -

7 - (Continued)

1 - 1/2 yard dragline
1 - Portable compressor, hose, drill and drill steel
1 - drill truck
1 - Water wagon
2 - Pickup trucks

(All of the above equipment will be supplied by the contractor at current rental rates to be established by contract negotiation.).

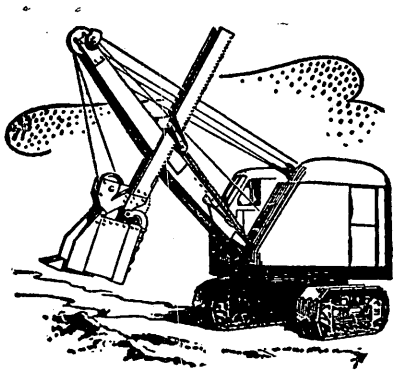
8 - All exploration will be on a contract basis.

9 - See answer No. 8

10 - I will supply capital to cover 25% of the $25,000.00 total to be used in this program.

11 - Due to the location and nature of this deposit, I believe that this property will provide manganese ore, on board cars on rail, at a very early date with a minimum of exploration and production expense.

There are eight other manganese properties in this same general area now under consideration. It is my plan to place this property in production as quickly as possible and then continue the exploration work on the other eight locations.



FREMONT 5772

GILBERT CLARK CONSTRUCTION CO.

EXCAVATING, CRANE WORK AND PIPE LINES

~~1400 NIAGARA STREET~~ - DENVER 7, COLORADO
2601 Forest St.

PROPOSAL

November 10, 19 51

H. V. George,

596 North Main St., Buffalo, Wyoming.

Dear Sir:

The undersigned proposes to furnish all materials and perform all labor necessary to complete the following:

To strip and explore your manghnese lease, located approximately 45 miles southwest of Buffalo, in Johnson County, Wyoming, to the extent of approximately 20,000 cu. yards, at the rate of forty cents (40 cents) per cu. yard.

This work to be continous as long as weather conditions permit.

All of the above work to be completed in a substantial and workmanlike manner for the sum of _____ ($_____) Dollars

Payments to be made each As above as the work progresses to the value of As above (____%) per cent of all work completed. The entire amount of contract to be paid within _____ days after completion.

Any alteration or deviation from the above specifications involving extra cost of material or labor will only be executed upon written orders for same, and will become an extra charge over the sum mentioned in this contract. All agreements must be made in writing.

The Contractor agrees to carry Workmen's Compensation and Public Liability Insurance, also to pay all Sales Taxes, Old Age Benefit and Unemployment Compensation Taxes upon the material and labor furnished under this contract, as required by the United States Government and the State in which this work is performed.

Respectfully submitted,

Gilbert Clark

Contractor

ACCEPTANCE

You are hereby authorized to furnish all materials and labor required to complete the work mentioned in the above proposal, for which the undersigned agrees to pay the amount mentioned in said proposal, and according to the terms thereof.

H. V. George

Date Nov 10 1951

PRACTICAL Standardized Forms for Contractors Form 147

FRANK R. WALKER CO., PUBLISHERS, CHICAGO

August 6, 1952

Mr. H. V. [illegible]
Box 308
Buffalo, Wyo.

Dear Mr. [illegible],

Investigation of the manganese deposit southwest of Buffalo Wyoming, justifies presentation of detailed information for your consideration.

Location: The deposit is located approximately 25 air line miles SSW of Buffalo Wyo. The present access road consists of 31 miles west of Buffalo via U.S. 16 to the exploration road turnoff; 10.5 miles on this road, which is gravel surface, county maintained; then 6.5 miles of mountain road which can be driven by a regular automobile. The deposit is located in sections 29, [illegible], 31, and 32, Range 83 West, Township 47 North, Johnson County, Wyo[illegible].

General Geology: The enclosed map has been prepared to show the general location and geology [illegible] pertinent details of the deposit. The mineralization is associated [illegible] the Deadwood formation, which is the oldest sedimentary strata, [illegible] contact with Pre-Cambrian granite. The granite uplift caused the sedimentary beds to have a general dip of 20 to 30 degrees to the east with strike N 26 degrees W. The granite topography indicates development of a peniplain, by erosion, prior to the deposition of the Deadwood formation. The contact between granite and Deadwood formation is considered to be a "cold" contact. A covering of boulders and gravel extend across the north mid-section of the deposit and at the southern end of the deposit. This covering is considered a glacial morain. Where this cover does not occur the Deadwood formation is easily traced for the entire length of the claims, a distance of 6000 feet.

Mineralization: The manganese occurs in oxide form principally as Pyrolusite and Psilomelane. These oxides are found as cementing material among the silica sand grains of the Deadwood sandstone. The original source of the manganese is not indicated, but the present occurrence is considered a redeposition. Such redeposition may have occurred several times as the manganese migrated with glaciation, leaching, and erosion action. Disintegration of the sandstone, containing the manganese, has caused concentration of the manganese, in the form of nodules of botryoidal structure. These nodules are accumulated in a rich clay matrix, as a residual deposit, in various sized pockets, over the full length of the property, closely associated with the erosion area of the Deadwood sandstone. Therefore the manganese occures in two forms, namely; (1) as cementing material in the Deadwood sandstone and (2) as nodules in clay pockets resulting from desintegration of the sandstone. The first form of occurance is most prominent at the south end of the deposit. The detailed sketch shows the area having "Heavy surface showing of manganese." This area covers approximately 75,000 square feet. Assays of samples from dozer trench and pits indicate average values to exceed 7% manganese to a depth of at least 5 feet. It is therefore indicated that this area alone contains 33,750 tons of ore at 7% man-

ganese containing [illegible] of manganese. Preliminary prospecting at the north end of the deposit has exposed manganese in a metamorphosed sandstone, over a [illegible] extent than the above described area. It is therefore reasonable to assume that the sandstone in question is of much greater extent than the above area. The pros[illegible] at the north end of the deposit has exposed an extensive area of manganese nodules in clay soil. A pro location a pit exposed 6 feet of nodules which assayed 26.75 manganese. This prospect has not been sufficiently extensive to determine the limits of the nodular deposits at the north end of the property, on the slope north of Beaver Creek. The slope on the [illegible] side of Beaver Creek has nodules in the top soil from the mass scattered on the rock. Nodules are found in the gravel and on the slope west of the [illegible] of manganese is exposed at the south end.

Conclusions: The quantity of manganese indicated in this deposit definitely justifies a [illegible] program of investigation. The present manganese market conditions provides ample incentive to investigate the full extent of the deposit, tests in beneficiation, and production procedure to market this manganese. The manganese impregnated sandstone ore is of sufficient quantity and grade to be considered for milling operations. The extent of occurrence of nodule deposits justifies further prospecting to det[illegible] the quantity of manganese obtainable from that source. In consid[illegible] these conclusions the following recommendations are presented.

Recommendations: It is [illegible] that a program be contacted, in cooperation with reputable [illegible] consultants to determine the optimum method of beneficiation [illegible] manganese impregnated sandstone. Further recommended [illegible] be made as to the extent and quantity of nodules in the [illegible] deposits. This exploration can be done most effectively by [illegible] crawler crane. This method is suggested because actual observation of underground conditions is possible and a costly drilling will not be required in this operation.

Optimum beneficiation by

Respectfully submitted

R. C. Bellows

R. C. Bellows
[illegible]
[illegible]

August 6, 1952

Mr. F. V. George
Box 808
Buffalo, Wyo.

Dear Mr. George,

Investigation of a manganese deposit southwest of Buffalo Wyoming, justifies presentation of detailed information for your consideration.

Location: The deposit is located approximately 25 air line miles SW of Buffalo Wyo. The present access road consists of 31 miles west of Buffalo via U.S. 16 to the Hazelton road turnoff; 10.5 miles on this road, which is gravel surface, county maintained; then 6.0 miles of secondary road which can be driven by a regular automobile. The deposit is located in sections 29,30,31, and 32, Range 83 West, Township 47 North, Johnson County, Wyoming.

General Geology: The enclosed print has been prepared to show the general location and geology with some pertinent details of the deposit. The mineralization is associated with the Deadwood formation, which is the oldest sedimentary strata, being in contact with Pre-Cambrian granite. The granite uplift causes the sedimentary beds to have a general dip of 20 to 30 degrees to the east with strike N 25 degrees W. The granite topography indicates development of a peneplain, by erosion, prior to the deposition of the Deadwood formation. The contact between granite and Deadwood formation is considered to be a "cold" contact. A complex of boulders and gravel extend across the north mid-section of the deposit and on the southern end of the deposit. This covering is considered a glacial drift. Where this cover does not occur the Deadwood formation is easily traced for the entire length of the claims, a distance of 6000 feet.

Mineralization: The manganese occurs in quite large pockets as pyrolusite and Psilomelane. These oxides are found as cementing material around the silica sand grains of the Deadwood sandstone. The original source of the manganese is not indicated, but the present occurrence is considered a redeposition. Such redeposition may have occurred several times as the manganese migrated with hydration, leaching, and erosion action. Weathering of the sandstone, containing the manganese, has caused concentration of the manganese, in the form of nodules of botryoidal structure. These nodules are accumulated in a dark clay matrix, as a residual deposit, in various sizes from fine, up to the size of the property, closely associated with the erosion area of the Deadwood sandstone. Therefore the manganese occurs in two forms, namely: (1) as cementing material in the Deadwood sandstone and (2) as nodules in clay matrix resulting from disintegration of the sandstone. The first form of occurrence is most prominent on the south end of the deposit. The enclosed sketch shows the area having heavy surface showing of manganese. This area covers a roughly 75,000 square feet. Assays of samples from dozer trench and pits indicate average values to exceed 7% manganese to a depth of at least 5 feet. It is therefore indicated that this area alone contains 33,750 tons or more at 7% man-

pounds containing 4,725,000 pounds of manganese. Preliminary prospecting at the north end of the deposit has exposed an area impregnated sandstone, over a mile distant from the above described area. It is therefore reasonable to assume that the sandstone impregnated zone is of much greater extent than the above area. The prospecting at the north end of the deposit has exposed an extensive area of manganese nodules in clay pockets. At one location a pit exposed 6 feet of nodules which assayed 26.75% manganese. This prospecting has not been sufficiently extensive to determine the limits of the nodules described at the north end of the property, on the slope south of Dry Beaver Creek. The slope on the north side of Beaver Creek has nodules in the top soil from the grass roots to bed rock. Nodules are found in the drain and on the slope west of the area of sandstone impregnated at the south end.

Conclusions: The quantity of manganese indicated in this deposit definitely justifies a thorough program of investigation. The present manganese market conditions provide ample incentive to investigate the full extent of the clay, methods of beneficiation, and production procedure to market this manganese. The manganese in the sandstone zone is of sufficient quality and grade to be considered for milling operations. The extent of occurrence of nodules deserves further prospecting to determine the quantity of manganese obtainable from that source. In consideration of these conclusions the following recommendations are presented.

Recommendations: It is recommended that a trench be constructed, in conjunction with reputable ore dressing consultants to determine the optimum method of beneficiation of manganese from milled sandstone. It is further recommended that exploration be made of the extent and quantity of nodules in the clay deposit. This exploration can be done most effectively by a machine bucket and crane. This method is suggested because normal observation of underground conditions is possible and excessive depths will not be required in this operation.

Respectfully submitted

R. C. Bellows

R. C. Bellows
Graduate, Bachelor of Science,
Geological Engineering

Form MF-100
(May 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Form approved.
Budget Bureau No. 42-R1026.

GENERAL TECHNICAL DATA
FOR USE UNDER THE
DEFENSE PRODUCTION ACT OF 1950

NOT TO BE FILLED IN BY APPLICANT

Docket No. Gnea-2701

Date received 8-17-52

Defense Minerals Administration
RECEIVED
SEP 17 1952

H. V. George,
506 North Main St.,
Buffalo, Wyoming.

Name and address of applicant

Date August 6, 1952

INSTRUCTIONS

This form is to be filed with Defense Minerals Administration, Department of the Interior, Washington 25, D. C. It should be accompanied by appropriate application form when a specific type of Government assistance is requested, in the form of (1) loan, (2) purchase contract, (3) Government guarantee of a private loan, (4) priorities or allocation of mining equipment, and maintenance, repair and operating supplies, and (5) other forms of Government assistance that might arise under the Act. Submit four (4) signed copies of the form and accompanying papers. Name and address should be stamped or typed on each sheet of this form and all accompanying papers. *When a question is inapplicable it should be so stated on the form.* Additional sheets may be attached in answering any questions or in supplying additional information. (IF YOU CANNOT ANSWER A QUESTION, SO STATE.) If a question is answered elsewhere indicate where answered. It is not necessary to answer it again.

GENERAL TECHNICAL DATA

Supply the following information on separate sheets, arranged, numbered, and lettered as indicated:

1. Materials produced:
   (*a*) What are the chief mine, mill, or smelter products?
   (*b*) What are the byproducts, if any?
2. Name(s) and type(s) of mine(s), mill(s), smelter(s), refinery(ies), pit(s), quarry (ies), drilling operation(s). Include old names of property, if any. Show extent of workings, including the following:
   (*a*) Linear feet of shafts.
   (*b*) Linear feet of drifts and crosscuts.
   (*c*) Linear feet of tunnels or adits.
   (*d*) Linear feet of other mine openings (explain briefly).

   Indicate whether mine is flooded or not. Describe any pumping problems. Give size or productive capacity.
3. For each operation listed above supply the following:
   (*a*) Distance and direction from nearest town and shipping point.
   (*b*) Mining district.
   (*c*) Township, Section, Range.
   (*d*) County, State.
4. (*a*) State whether or not property is now in operation, and if in operation, by whom operated.
   (*b*) Are you operating this property as:
   - ☐ Owner.
   - ☒ Lessee.
   - ☐ Contractor.
5. Number of years in production None

   If not in production or operation, estimated date when production will begin within thirty days
6. Experience of operators:
   Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who manage the project.
7. History:
   (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for suspension of operation.
   (*b*) State briefly the known history and production of adjoining and neighboring properties.
   (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

8. Names and addresses of Officers, Directors, or Partners, and in addition thereto, the five largest stockholders if applicant is a corporation.

Name and Address (a)	Official Title (If officer is also director indicate by "D") (b)	Total of Annual Salary, Commissions, Bonuses, Etc., Received From Applicant and Affiliates During Last Fiscal Year (c)	Estimated Net Worth Outside of Interest in Applicant (d)	Number of Shares Held in Applicant Corporation		Life Insurance Carried for Benefit of Applicant	
				Common (e)	Preferred (f)	Amount (g)	Net Cash Surrender Value After Loans (h)
None							
	Total		x x x x x			x x x x x	x x x x x

If more lines are needed continue on separate sheet.

9. Capital Stock Issues:

For Corporate Applicants

Item	Authorized (a)	Outstanding (b)	Par Value (c)	Number of Shares Outstanding (d)	Dividend Rate Last Paid* (e)
Common stock	$ None	$	$		
Preferred stock	$ None	$	$		

*Indicate period covered.

10. Production:

Item	Kind of Product (a)	1948 Total (b)	1949 Total (c)	1950 Total (d)	Present Average Monthly (e)
1. Quantity of product mined or quarried (Short, long, metric tons; barrels; pounds; etc.)	None				
2. Quantity of product processed (specify unit of measure and type of process)	None				
3. Quantity and grade of product sold or shipped (specify units of measure)	None				

11. Do you contemplate a change in the present average monthly rate of production? If so, state estimated maximum monthly production and basis of change.

12. Ore or Mineral Reserves:

(*a*) Describe the ore or mineral deposit briefly. Accompany the application by any available report on the geology and ore reserves.

(*b*) If deposit is other than placer:

(1) Submit assay plans and/or sections showing location and size of proved (measured) and probable (indicated) ore or mineral reserve.

(2) State the tonnage (indicate type of ton) and grade of each class of ore reserve, as above, and show how computed. Tabulated total ore reserve as follows:

TOTAL ORE OR MINERAL RESERVES

Ore or Mineral Reserve	Estimated Tons (a)	Metal or Mineral Content Per Ton (Grade) (b)	Gross Value Per Ton (c)	Recoverable Unit Value Per Ton (d)	Estimated Cost of Production Per Ton (e)
Measured (proved)					
Indicated (probable)					

(*c*) If placer:

(1) Give estimated total yardage and average marketable mineral content of each deposit.

(2) Submit map showing location of placer deposit and surrounding area, with all test holes or pits. Submit logs of each hole and test pit with depth and average value of each.

(3) Describe gravel, stating whether fine, medium or coarse; loose, tight, cemented, or frozen, and whether it contains stumps or boulders more than 1 foot in diameter; if so, how large, and in what proportion.

(4) Describe bedrock, giving type (granite, sandstone, shale, etc.) and state whether it is hard or soft, smooth, uneven or rough.

(5) Describe overburden, stating whether loose, tight, or cemented; fine or coarse textured; furnish estimate of average thickness and total amount.

(6) Tabulate the reserves using the form outlined above for ore or mineral reserves.

13. Access Roads:

Give road distances to shipping, supply and residence points, stating kind and condition of roads.

14. Water Supply:

State source and quantity of water available for operations and whether sufficient for all seasons of year.

15. Power:

State amount of power used, rate per hour, and source thereof.

16. Labor:

State number and classes (miners, muckers, millmen, etc.) of men employed during a recent representative payroll period.

17. Equipment and Facilities:

Describe present equipment on the property, including buildings. (State condition.) List major pieces of equipment now owned or controlled and in serviceable condition available for this operation.

18. Are there any particular conditions or circumstances affecting your operations that are not described above? If so, explain.

CERTIFICATION

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

(Name of company)

By J. H. V. George
(Signature of authorized official)

August 6, 1952
(Date)

(Title)

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

U. S. GOVERNMENT PRINTING OFFICE 16—63792-1

H. V. George,
506 North Main St.,
Buffalo, Wyoming.

Form MP 100

1 (a) Manganese ore assaying from 7% to 26% is the principal material to be produced.

(b) None

2 This mine is known as the MANGAN MINE. It is a stripping operation.

(a) None

(b) None

(c) None

(d) Several surface trenches have been made during the preliminary work. These are bulldozer cuts, and some prospecting pits, and cover a limited area on the south end of the property. Also, on the extreme north end of the property there are several bulldozer cuts.

The mine is not flooded.

There are no pumping problems.

The capacity of the mine should be not less than 500 long tons (2,240 pounds) per day.

3 (a) This mine is situated 25 air miles southwestof Buffalo, Johnson County, Wyoming. The nearest shipping point now is 74 miles from the mine. There is a railroad, which if repaired as now planned, would reduce this distance to some 30 miles to rail.

(b) This district was formerly know as the Big Horn Mining District.

(c) This leased property is located in Sections 29, 30, 31 and 32, Township 47 North, Range 83 West of the 6th P. M.,
(d) all in Johnson County, Wyoming.

4 (a) This property is not in production now. Exploratory work has been done since last October and is being continued.

(b) I am operating the property as Lessee.

5 This property has not shipped ore up to this time. Production can begin within thirty days.

R. V. George,
596 North Main St.,
Buffalo, Wyoming.

Form MP 100

6 I worked five years in the First National Bank of Cripple Creek, Colorado as book keeper and teller, and was associated with the Carlton mining interests. During the last World War I operated the Stevens Mine near Silver Plume, Colorado. I am a college graduate - major in chemistry.

The supervision of the mining operations on this lease will handled by Mr. K. C. Bellows, of Sheridan, Wyoming, who is a graduate of the Montana School of Mines.

A Denver general contractor now has equipment on the property and is conducting exploration operations on a contract basis.

7 (a) The previous work done on this property consisted of pits, bulldozer trenching and some drilling with a small drill. This work was primarily assessment work. The accompanying map - marked "Exhibit A" - will give the location and extent of this work. There has been no production from this property.

(b) This is a new district and there are no adjoining producing properties.

(c) "Exhibit A" shows the location of the pits and "Exhibit B" consists of copies of the assays that indicate the quality of the ore that has been developed in these pits and surface workings.

8 None

9 None

10 None

11 No ore being produced now. After explorations indicate the extent of the deposit I expect to produce a minimum of 500 tons per day. I have a tentative contract with the Clark Construction Company, 2691 Forrest St., Denver, Colorado, to strip, haul and load 500 tons per day.

12 (a) Please refer to enclosed engineer's report.

(b) Please refer to enclosed engineer's report.

Mineral or ore reserves to be developed by the exploratory program for which this loan is to be used.

(c) Seeenclosed map and engineer's report - Exhibits "A" and "B".

1, 2, 3, 4 and 5 see the enclosed map and engineer's report.

H. V. George,
596 North Main St.,
Buffalo, Wyoming.

Form IP 100

13 See Geologic report enclosed herewith.

14 Water supply on the property in sufficient quantity for all seasons of the year.

15 No power available at the site of this operation. Diesel power will be used.

16 No production employees. All production under contract.

17 No buildings on property. Present exploration equipment now being used is leased on the contract basis.

(C O P Y)

MINING LEASE.

This agreement of lease, made and entered into this 10 day of November, A. D., 1951, by and between Melvin S. Mead, Jr., of Buffalo, Wyoming, John Keahey, of Sheridan, Wyoming, Roger L. Larson, of Buffalo, Wyoming, Norman Mead, of Minneapolis, Minnesota (Francis Drake Hotel), and Northern Development Company, of 1240 Rand Tower, Minneapolis, Minnesota, parties of the first part, hereinafter called the Lessors, and H. V. George, party of the second part, hereinafter called the Lessee, WITHNESSETH THAT:

WHEREAS, Lessors own and are in possession of certain mining claims and are entitled to lease and dispose of other mineral properties pursuant to an agreement between the Lessors and Clarence J. Gammon, of Buffalo, Wyoming, a copy of which agreement is attached hereto and made a part hereof, said mining claims and other mineral properties being known, designated and described as follows:

CLAIMS

1. Notice of Mining Location, Instrument No. 2909, under Revised Statutes of the United States, Chap 6, Title 32, for 300 feet on each side of a center line of Manganese Lode located and described as follows: 480 feet N 26°30' W, and 1020 feet S 26°30' E. from the discovery point which point is located 280 feet East and 490 feet South from the Northwest corner of Sec. 32, Twp. 47 North, Range 83 West, 6th P. M., known as " Black Point", dated July 27, 1942.

2. Notice of Mining Location, Instrument No. 2908, under Revised Statutes of the United States, Chap. 6, Title 32, for 300 feet on each side of a center line of Manganese Lode located and described as follows: 20 feet S 26°30' E. and 1480 feet N 26°30' W from the discovery point which point is located 50 feet East and 60 feet South from the southeast corner of Sec. 30, Twp. 47 North, Range 83 West, 6th P. M.., known as "Black Rock", and dated July 27, 1942.

3. Notice of Mining Location, Instrument No. 2910, Under Revised Statutes of the United States, Chap. 6, Title 32, for 300 feet on each side of a center line of Manganese Lode located and described as follows: 1380 feet S 26°30' E and 120 feet N 26°30' W. from the discovery point which point is located 1220 feet South of the east quarter corner of Sec. 30, Twp. 47 North, Range 83 West, 6th P. M., known as "Black Rock No.2," and dated July 27, 1942.

4. Notice of Mining Location, Instrument No. 2911, under Revised Statutes of the United States, Chap. 6, Title 32, for 300 feet on each side of a center line of Manganese Lode located and described as follows: 520 feet N 26° 30' W, and 980 feet S 26°30' W from the discovery point which point is located 470 feet South and 840 feet east of the northwest corner of Sec. 32, Twp. 47 North, Range 83 West, 6th P. M., known as "Black Point No. 2", and dated July 27, 1942.,

and also the following placer mining claims:

1. Mary No. 1	SE 1/4 SE1/4 Sec. 30, Twp 47 N, R 83 W.
2. Mary No. 2	NW 1/4 SW 1/4 Sec. 29, Twp 47 N, R 83 W.
3. Florence	SW 1/4 SW 1/4 Sec. 29, Twp 47 N, R 83 W.
4. Ruth No. 1	NE 1/4 NE 1/4 Sec. 31, Twp 47 N, R 83 W.
5. Nettie No. 1	NW 1/4 NW 1/4 Sec. 32, Twp. 47 N., R 83 W.

Clarence J. Gammon properties

South half of the northeast quarter (S 1/2 NE 1/4) and the north half of the southeast quarter (N 1/2 SE 1/4) of Section thirty (30), and the northeast quarter of the northwest quarter (NE 1/4 NW 1/4) of Section Thirty Two (32) on Township forty seven (47) North of Range eighty three (83) West of the Sixth Principal Meridian,

Provided, however, that if any of the aforementioned placer or lode mining claims shall overlap upon the lands herein described as the "Clarence J. Gammon properties" then the descriptions pertaining to the said Clarence J. Gammon properties shall control and supersede all other descriptions.

AND WHEREAS it is the desire of the Lessors and intention to lease the above described mining properties to the Lessee, together with and including the right to construct necessary roads, ways, plants, buildings, and structures as may be necessary and useful in connection with mining operations,

NOW THEREFORE, The Lessors, for and in consideration of the making of this contract and lease, and for and in consideration of the sum of One Dollar and other valuable consideration in hand paid, receipt whereof is hereby acknowledged, and for and in consideration of the rents and royalties to be paid by the Lessee, his successors and assigns, as hereinafter provided, and in consideration of the covenants and agreements hereinafter expressed and set forth, to be performed by the Lessee, do hereby grant, demise, lease and let to the Lessee, its successors and assigns, all the aforementioned described mine and mining property, TO HAVE AND TO HOLD unto the Lessee, for the term of Ten (10) years, commencing as of the date of this lease and so long thereafter as the Lessee, its successors and assigns, shall continue the mining, processing and marketing of manganese mineral or other minerals and materials from the said properties and shall pay as advance royalty to the Lessors, the sum of Two Thousand Five Hundred Dollars ($2,500.00), payment of which shall be made as follows:

Prior to the execution of this lease the lessee shall have expended the necessary money in obtaining freight rates, investigating and determination of methods and means of processing the said manganese ore, and shall have said properties core drilled or by other means establish the quantity of ore to justify the installation of necessary equipment; and after the aforementioned sums of money have been spent and operations commenced the Lessors shall be paid the $2,500.00 which shall be from the first moneys received from the shipment of ore, less the amount necessary to pay the Gilbert Clark Construction Co., or other mining operators, as may be agreed for the mining and hauling of said ore and the freight assessed to destination. It is understood that the Lessee shall at his own expense conduct the investigations aforesaid and drilling operations and shall likewise be responsible for any surface or other damages caused by said drilling operations and shall hold the Lessors harmless therefor;

and the said sum of $2,500.00 is to be credited on the first royalties

to become due hereunder during the calendar year in which said royalties were paid, unless the lease be sooner terminated and hereinafter provided. And in consideration of the rents and royalties to be paid and the covenants and agreements herein set forth the parties hereto covenant and agree with each other as follows, to-wit:

I.

The Lessors, hereby warrant and agree to defend the title to the said mining claims and properties herein described and agrees that should anything need be done toward perfecting said title the Lessee shall havethe right at any time to do so upon the failure or neglect of the Lessorsto properly perfect the title,and the Lessors agree that any such payment or expense necessary to that end made by the Lessee may be deducted fromany amount of money which may become due the Lessors under the terms of this lease,provided,however,that nothing herein contained shall beconstrued to include the obtaining of, or damage to, surface rights and the rights of way for roads,and shall mean only the obtaining of the right to the mineral.

11.

Should any person,firm or corporation having an interest in the above described mining property leased herein,or should any one or more of the parties named as Lessors, not execute this lease,then said lease shall not be binding upon the party or parties executing the same until executed by all co-owners.

111.

The Lessee shall open,use and work the said mine or mines in such manner only as is usual and customary in the skillful and proper mining operations of similar character when conducted, mining all merchantable ore clean as the work progresses,so as not to cause or permit any unnecessary or unusual injury to the same, or inconvenience or hindrancein the subsequent operating of the same mine or mines, and inthe working of said mine or mines the Lessee shall deposit all earth,rock, or other useless material or rubbish at such places and in such manner as will not conflict with or embarass the future operating of said mine or mines.

1V.

The Lessee agrees to pay to the Lessors, royalty as follows: The basis upon which royalty shall be paid is Ten per cent(10%) of the gross sale price of the processed or beneficiated ore less the Freight to destination

It is further agreed that the basis of the 10% royalty is upon ore which does not exceed 30% manganese, and that this is upon unbeneficiated ores, and it is further provided that royalty shall be adjusted from time to time, taking into consideration the quality of the ore, cost of production, mining, freight and the sale price of the ore, it beingunderstood that if a high quality of ore is obtained (unbeneficiatedor beneficiated) then the Lessors are to receive a higher percent royalty based pro-rata upon the excess of manganese over 30% content, but in no event shall royalty be less than 10% of the gross sale price of processed or beneficiated ore less freight to destination.

It is further agreed that for metallic or nonmetallic minerals or valuable ores or minerals other than manganese contained in or upon thesemining claims hereby leased, Lessee shall have the first and sole rights to mine said minerals and to process and market such minerals and materialsand shall pay to the Lessors therefor a royalty of Ten per cent(10%) of the sale price of such minerals or ores Marketed.

The aforementioned royalties shall be paid as follows: Lessee shall assign all receipts of money received to the Wyoming Loan & Trust Company of Buffalo, Wyoming, and said Lessee shall issue to said bank a letter authorizing said bank to pay the royalty, out of such proceeds as theyare received, directly to the Lessors. And it is further provided that said Lessee shall also issue to said bank authority in writing for said bank to pay the sums due to the contractor doing the mining, hauling, and loading of the ore, as the returns for each shipment are received.

During each year of the term of this lease the Lessee shall pay a minimum royalty of $10,000.00 in advance, whether ore is mined or not. For the first payment of said minimum royalty hereunder the date of payment is established as six months after the execution and delivery of this lease, and the same date for each succeeding year thereafter that this lease is in force.

A. When ore is mined in excess of the minimum advance royalty hereby established for each year, such excess royalty above the minimum shall not be credited toward payment of the minimum royalty for subsequent years, but the sum of 10,000.00 shall be paid each year regardless of the amount of royalty paid in prior years.

B. If insufficient ore is mined to earn the minimum royalty paid Lessee may apply excess royalties paid in subsequent years, in excess of minimum required, to the deficiencies created in prior years, provided however, that royalty paid shall first be applied to the minimum royalty for the year then in force and only the excess royalty over the minimum shall be credited back to prior years.

It is the intention of all parties in establishing these minimum

royalties to prevent improper development and production of the minear mines,but it is also the intention of all parties that said minimum royalties shall not impose undue hardships upon the performance of the this contract,and that if conditions arise beyond control of the lessees that would be a hindrance of this contract,then itis the intention of the parties hereto that the minimum requirements shall be re-negotiated.

In case the Lessee shall fail to carry on said mining operations upon the premesis described in this lease for a consecutive period of one(1) year or more, or shall fail to pay royalty as described above, such failure shall constitute a forfeiture of this lease unless such failure to operate is due to labor strikes,acts of God,national emergency preventing the obtaining of equipment,extreme weather conditions or but not by way of limitation of the foregoing,circumstances wholly beyond the control of the Lessee.

V.

All payments due the parties lessor shall be made by Lessees direct to a bank to be appointed by Lessors for this purpose,and this bank shall disperse all monies received to the Lessors according to their respective shares and as agreed on between them.

Vl.

The Lessee expressly agrees that it will keep accurate records and accounts in a book or books kept for that purpose,showing the amount of manganese ore mined(and other minerals mined)and removed from the land described herein,which said records,and accounts and books shall be accurately and correctly kept in such manner asto plainly show the correct tonnage taken from said properties.

Vll.

The Lessors,their heirs,assigns,agents or attorney,shall have the ~~righ~~ right at any reasonable time after any accounting of royalties by the Lessee,to examine the records,accounts and books of the Lessee,for the purpose of verifying tonnage mined from said land,and for such purpose may appoint any competent accountant of their own selection,or attorney,to whom free access shall be given by the Lessee. The Lessors shall have the right and privilege to enter in and upon the premises leased and in and through the workings thereon,theretofore conducted and operated and being conducted and being operated thereon,and to have the mined portion thereof surveyed and measured by a competent and recognized mining engineer and the tonnage theretofore mined out established for the purpose of verifying the tonnage as reported to the Lessors by the Lessee.

VIII.

It is agreed that the Lessee, its successors or assigns, shall move suit-able machinery onto the property to develop, excavate, mine and have the said mine in operation within 120 days from the date of this lease and shall, as promptly as possible, weather conditions permitting, conduct and carry on said mining operations so long as said mining operations are economically sound and profitable, that is to say, that if the theore should decline in value, quality or quantity, to a point where the property or mine could not be operated at a profit, then the Lessee will not be required to operate the mine or mines at a loss.

IX.

The Lessee expressly agrees to pay promptly all claims for material and labor used in connection with said mining operations and other operations, and shall not permit any liens to be filed against said premises for work or materials used in said operations, provided, however, that nothing contained herein shall be construed as a violation of the terms herin in the event that any such liens are filed and the Lessee, in good faith, contest the legality thereof, either as to amount, manner of filing or the merits of any such claims, and Lessee shall indemnify the Lessors against loss or damage or expense which might be incurred by the Lessors themselves in defending against any such liens or claims of liens, and the same is to include attorneys fees incurred by Lessors in defending any such liens or suits or claims.

X.

Lessors hereby agree to safeguard Lessee from any damage or loss resulting from any lawsuits, garnishments, liens, damage suits, and damages to property upto the date this instrument is signed, or should such claims, suits or damages arise after this date, by reason of or due to the acts or performances of the Lessors prior to the date of this contract, Lessors agree that they will satisfy and settle all such matters to protect Lessors without cost or obligation in any way to the Lessee. After the date of this lease, Lessee agrees to assume and satisfy all damages to surface rights, lawsuits, or damages arising out of, caused or due to its mining operations on the above named claims during the life of this lease, it being understood that Lessee shall assume and be responsible for all drilling operations, acts or damages to surface, or other damages caused by Lessee's own acts in investigating or operations prior to the date of this lease, as set forth herein in the habendum clause on pages 2 and 3.

XI.

This lease may be assigned by the Lessee with written permission of the Lessors first had and obtained, and the sublease thereof shall assume all of the obligations of this lease and all of the obligations of the lessee hereunder, provided, however, that the Lessee shall not be discharged from any of the obligations of this lease unless so sta--ted in writing, and provided, further, that such subleasing shall not operate as a surrender unless expressly stated in writing.
Provided, also, that Lessee may subcontract said mining claims or operations in whole or in part to third parties for the purpose of removal or other disposition of minerals or other materials in, on, under or about said mining claims and provided that nothing herein contained shall be construed to release the said Lessee or sub-lessee from carrying out and performing all of the obligations and duties, covenants and agreements herein provided.

XII.

Lessee agrees, while operating said mining claims, to perform sufficient assessment work each year on these claims to satisfy the requirements of the law.

XIII.

The Lessee shall further comply with all state and federal laws and statutory requirements relative to mining and the operation of the mines.

XIV.

The Lessee covenants to pay all taxes and assessments, ordinary and extraordinary, general or specific which may or shall be levied or assessed upon the leased lands and on the manganese ore or other ores mined and unmined thereon, or on account of any and all ore taken out or mined hereunder, including any so-called tonnage or occupational tax thereon, and upon, against or on account of any ore in stockpile or other -wise, or on account of any and all buildings, improvements, structures, personal property, or other propertymade or placed upon said lands by the Lessee, its successors or assigns.

XV.

Lessors shall have and they are hereby given a lien upon all the Improvements made and placed by the Lessee on the said tracts or parcels of land as further security for the payment of the royalties, rentals, and other payments in this lease agreed to be paid, and for the performance of each and every of the covenants in this lease contained upon the part of the Lessee, successors or assigns, to be observed, kept and performed.

XV. con't
Provided, that in lieu of any lien given to the Lessors herein for the performance of the covenants and agreements stipulated hereinbefore or hereinafter, the said Lessee, successors or assigns, or contractors for the performance of any labor hereunder, may furnish and provide to the Lessors as performance bond in such company, orwith such sureties, and in such amount as may be satisfactory to the Lessors.

XVI.

The Lessee agrees to carry emoloyers Liability insurance with the State of Wyoming, or in a responsible company, covering all persons working upon or about the leased property, or in the operations of said mining and marketing of the ores obtained, under the direction of the Lessee, including all employers and sublessees, if any. This policy or account shall be placed in operation as soon as operations commence under this lease.

XVII.

Upon the termination of this lease by lapse of time or for abandonment of mining operations due to justifiable cause as hereinabove specified, Lessee shall have the right to remove within a reasonable time, any and all improvements, machinery and equipment placed on said lands by the Lessee. Provided, however, that upon the violation of any covenants or conditions herein contained, this lease shall at the option of the Lessors expire, and terminate, and the said premises with the appurtenances and all buildings, structures, machinery owned by the Lessee, or other improvements, shall become forfeited to the Lessors, and the Lessors or their agent may thereupon, after demand in writing for possession, enter upon such premises and dispossess all persons occupying the same, with or without force, and with or without process of law, or at the option of the Lessors the Lessee and all persons found occupying said premises or any part thereof may be proceeded against as guilty of unlawful detainer.
And if any of the royalty hereinbefore mentioned, orany part thereof, shall be unpaid on the date of payment whereon the same is tobe paid under the terms of this lease and agreement, or if default shall be made in any of the covenants and agreements herein contained, to be kept and performed by the Lessee, its successors and assigns, and if any such defaults shall continue for thirty(30) days thereafter, it shall and may be lawful for the said Lessors, their heirs, executors or legal representatives, at their election, to declare said term ended and enter into the said premises or any part thereof, and either with or without process of law, to re-enter, and if at any time such term shall be ended at such election of the Lessors, their heirs, executors,

administrators or legal representatives as aforesaid, orat the expiration of the term, or in any othermanner, said Lessee, its successors and assigns, hereby covenants and agrees to surrender and deliver up to said Lessors the above described mining claims and property, peaceably, and immediatly upon the termination of said term, as aforesaid, and if they shall remain in possession thereof thirty (30) days after said notice of such default which must be in writing by the Lessors, and shall continue the default mentioned, they shall be deemed guilty of forcible detainer of said premises, and the Statute, and shall be subject to all of the provisions and conditions above named and to eviction and removal, forcibly or otherwise, with or without process of of law, as above stated.

XVIII.

Failure of the Lessors to insist upon the strict performance of the terms, covenants, agreements and conditions herein contained, orany of them, shall not constitute or be construed as a waiver or relinquishment of the Lessors rights to thereafter enforce any suchterm, covenant, agreement or condition, but the same shall continue in full force and effect, and no waiverof one breach of any term, covenant, agreement or condition herein shall be construed to be a waiver of such term, covenant, agreement or condition or of any subsequent breach thereof.

XIX.

Time is of the essence of this agreement, and each and every clause of this indenture and all the covenants and conditions contained herein expressed or implied shall extend to the successors, heirs, executors, administrators and lawful assigns of all the parties hereto.

XX.

Lessors warrant that these properties have not at any time been used by themselves or their families as a homestead.

XXI.

This lease shall be mutually binding upon and inure to the benefit of the heirs, executors, administrators, successors and assigns respectively of the parties hereto, as well as upon the parties themselves.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals to duplicate originals hereof on this 10 day of November, 1951.

Parties of the First Part.

Melvin S. Mead, Jr.
John Keahey
by Melvin S. Mead, Jr.

Roger L. Larson
Norman W. Mead

NORTHERN DEVELOPMENT COMPANY. by Leonard V. Dayton, President.

Party of the Second Part

(Joe Potts) H. V. George

STATE OF WYOMING)
County of Johnson) SS

On this 30th day of January, 1952, before me personally appeared H. V. George, to me known to be the person described in and who executed the foregoing instrument and acknowledged that he executed the same as his free act and deed for the purposes therein set forth.

(Signed) Joe Potts

County Clerk.

My term of office expires on the first Monday in January, 1955.

STATE OF MINNESOTA)
COUNTY OF HENNEPIN) SS

On this 10th day of November, A. D., 1951, before me as a Notary Public, personally appeared Norman Mead, to me personally known to be the person described in and who executed the foregoing instrument and acknowledged that he executed the same as his free act and deed, including the release and waiver of right of homestead.

Kenneth C. Joas

Notary Public, Hennepin County, Minn.

My Commission expires Nov. 27, 1957.

STATE OF MINNESOTA)
COUNTY OF HENNEPIN) SS

On this 10th day of November, A. D., 1951, before me appeared Leonard V. Dayton, to me personally known, who, being by me duly sworn, did say that he is the president of the NORTHERN DEVELOPMENT COMPANY, and that the seal affixed to said instrument is the corporate seal of said corporation and that the said instrument was signed and sealed on behalf of said corporatiom by authority of its board of directors, and the said Leonard V. Dayton acknowledged said instrument to be the free act and deed of said corporation.

Kenneth C. Joas

Notary Public, Hennepin County, Minn.

My Commission Expires Nov. 27, 1957.

STATE OF WYOMING)
County of Johnson) SS

On this 14th day of November, 1951, before me personally appeared Melvin S. Mead, Jr., to me known to be the person who executed the foregoing instrument on behalf of John Keahey, and acknowledged that he executed the same as the free act and deed of the said John Keahey; and he acknowledged that he executed the foregoing instrument as the act of John Keahey, by virtue of a certain power of attorney executed by John Keahey, bearing date the 31st day of October, 1950, and recorded in the office of the County Clerk of Johnson County, Wyoming, on the 19th day of December, 1950, in Book 82of the Miscellaneous at Page 158.

Ezra K. Jones.

Notary Public.

STATE OF WYOMING)
County of Johnson) SSS

On this 14th day of November, A. D., 1951, before me personally appeared Melvin S. Mead, Jr., and Roger L. Larson, to me known to be the persons described in and who executed the foregoing instrument, and acknowledged that they executed the same as their free act and deed, including the release and waiver of the right of homestead.

Ezra K. Jones,

Notary Public.

My Commission expires _____

THIS MEMORANDUM OF AN AGREEMENT made and entered into this January 10, 1952 by and between Melvin S. Mead, Jr., of Buffalo, Wyoming; John Keahey of Sheridan, Wyoming; Roger L. Larson of Buffalo, Wyoming; Norman Mead of Minneapolis, Minnesota; and Northern Development Company, a Corporation of Minneapolis, Minnesota, First Parties, and Clarence J. Gammon, of Johnson County, Wyoming, Second Party, WITHNESSETH:-

THAT WHEREAS the first parties are now and for some time last past have been engaged in an enterprise for the development and production of minerals, particularly manganese, in the Big Horn Mountains of Johnson County, Wyoming, and for that purpose have located various mining claims and have caused prospecting work to be done thereon, and

WHEREAS, said first parties propose, and believe they have a present opportunity, to enter into a favorable contract with responsible parties for the commercial production of the minerals on said claims, and upon adjacent lands owned by second party, hereinafter more fully described, and

WHEREAS, the said second party is the owner in fee simple of lands adjacent to the claims of the first parties which said lands are described as follows:-

South Half of the northeast quarter (S 1/2 NE 1/4) and north half of the southeast quarter (N 1/2 SE 1/4) of Section thirty (30) and the northeast quarter of the northwest quarter (NE 1/4 NW 1/4) of Section thirty - two (32) in Township forty - seven (47) North Range eighty - three (83) West of the Sixth Principal Meridian, and

WHEREAS, the lands belonging to the second party above described alson contain manganese ore, believed to exist in commercial quantities, and it is the purpose and desire of all parties hereto that the entire mineral acreage owned by the first and second parties be devloped and operated and the minerals produced as a

common venture, now therefore;

IN CONSIDERATION OF THE PREMISES and of the mutual covenants and agreements hereinafter contained, to be kept and performed by the parties hereto, it is hereby agreed: -

1. That the operation and control of said mining venture shall be under the exclusive management of the first parties and that, excepting for the receipt of rentals or royalties from minerals mined from his own property, on which he owns the mineral rights, the second party shall have no interest in the conduct of said business. The first parties shall have the full power to make and to enter into such contracts, agreements or arrangements for the mining and production of ore from said lands as they may deem advisable and beneficial to all parties, and the second party shall have no control over the terms or conditions thereof, PROVIDED ONLY that the second party shall at all times participate in any benefits from said agreements in the proportion and to the extent herein stated.

2. That, for any minerals produced exclusively from the lands belonging to the second party, on which he owns the mineral rights, said second party shall have one half of all of the royalties, benefits or profits therefrom and for minerals produced from lands controlled by the first parties he shall receive one-sixth thereof. Said proportions shall be based upon the entire net receipts of the first parties from said operations, whether by way of bonus, rentals or royalties, and irrespective of whether obtained from operations carried on by themselves, or from leases or operating agreements with others.

3. That in any mining operations conducted upon the lands of the second party, due care shall at all times be used

to prevent damage to the fences and other improvements of said lands, and at all roads or crossings suitable cattle guards shall be erected to prevent the passage of live stock, and nox more of the surface of said lands shall be used than may be reasonably required for such operations. This provision is inserted for the reason that these lands constitute an essential part of the second party's summer pasture and he does not want his live stock to be unnecessarily disturbed or permitted to wander.

4. That this agreement shall be in force for a period of five years and so long thereafter as mineral is produced in commercial quantities and payments made hereunder.

5. That the first parties shall from time to time, and preferably monthly, account to the second party for all monies received and shall at all times keep the second party fully informed as to all operations hereunder. The second party shall receive copies of all operating or other agreements made by the first parties to the end that the second party may know exactly how the property is being handled. Any and all records, books of account or other sources of information shall be made available for examination by the second party or his agent at all times.

IN WITNESS WHEREOF this agreement has been executed in duplicate the day and year first above written.

In the presence of
Lorraine McIvesny

Northern Dewelopment Co.,
By Leonard V. Dayton, Pres.

Norman W. Mead

Roger L. Larson

M. S. Mead, Jr.

John Keahey
By M. S. Mead, Jr.

First Parties

Clarence J. Gammon

Second Party

(C O P Y)

MINING LEASE.

This agreement of lease, made and entered into this 10 day of November, A. D., 1951, by and between Melvin H. Mead, Jr., of Buffalo, Wyoming, John Keahey, of Sheridan, Wyoming, Roger L. Larson, of Buffalo, Wyoming, Norman Mead, of Minneapolis, Minnesota (Francis Drake Hotel), and Northern Development Company, of 1240 Rand Tower, Minneapolis, Minnesota, parties of the first part, hereinafter called the Lessors, and H. V. George, party of the second part, hereinafter called the Lessee, WITNESSETH THAT:

WHEREAS, Lessors own and are in possession of certain mining claims and are entitled to lease and dispose of other mineral properties pursuant to an agreement between the Lessors and Clarence J. Gannon, of Buffalo, Wyoming, a copy of which agreement is attached hereto and made a part hereof, said mining claims and other mineral properties being known, designated and described as follows:

CLAIMS

1. Notice of Mining Location, Instrument No. 2209, under Revised Statutes of the United States, Chap 6, Title 32, for 300 feet on each side of a center line of Manganese Lode located and described as follows: 480 feet N 26°30' W, and 1020 feet S 26°30' E, from the discovery point which point is located 28[illegible] feet East and 43[illegible] feet South from the Northwest corner of Sec. 32, Twp. 47 North, Range 83 West, 6th P. M., known as "Black Point", dated July 27, 1942.

2. Notice of Mining Location, Instrument No. 2210, under Revised Statutes of the United States, Chap. 6, Title 32, for 300 feet on each side of a center line of Manganese Lode located and described as follows: 20 feet S 26°30' E. and 1480 feet N 26°30' W from the discovery point which point is located 5[illegible] feet East and 6[illegible] feet South from the southeast corner of Sec. 30, Twp. 47 North, Range 83 West, 6th P. M., known as "Black Rock", and dated July 27, 1942.

3. Notice of Mining Location, Instrument No. 2212, Under Revised Statutes of the United States, Chap. 6, Title 32, for 300 feet on each side of a center line of Manganese Lode located and described as follows: 1380 feet S 26°30' E and 120 feet N 26°30' W. from the discovery point which point is located 12[illegible] feet South of the east quarter corner of Sec. 30, Twp. 47 North, Range 83 West, 6th P. M., known as "Black Rock No.2," and dated July 27, 1942.

4. Notice of Mining Location, Instrument No. 2211, under Revised Statutes of the United States, Chap. 6, Title 32, for 300 feet on each side of a center line of Manganese Lode located and described as follows: 520 feet N 26° 30' W, and 980 feet S 26°30' W from the discovery point which point is located 470 feet South and 840 feet east of the northwest corner of Sec. 32, Twp. 47 North, Range 83 West, 6th P. M., known as "Black Point No. 2", and dated July 27, 1942.,

and also the following placer mining claims:

1. Mary No. 1	SE 1/4 SE1/4 Sec. 30, Twp 47 N, R 83 W.
2. Mary No. 2	NW 1/4 SW 1/4 Sec. 29, Twp 47 N, R 83 W.
3. Florence	SW 1/4 SW 1/4 Sec. 29, Twp 47 N, R 83 W.
4. Ruth No. 1	NE 1/4 NE 1/4 Sec. 31, Twp 47 N, R 83 W.
5. Nettie No. 1	NW 1/4 NW 1/4 Sec. 32, Twp. 47 N., R 83 W.

Clarence J. Gammon properties

South half of the northeast quarter (S 1/2 NE 1/4) and the north half of the southeast quarter (N 1/2 SE 1/4) of Section thirty (30), and the northeast quarter of the northwest quarter (NE 1/4 NW 1/4) of Section Thirty Two (32) on Township forty seven (47) North of Range eighty three (83) West of the Sixth Principal Meridian,

Provided, however, that if any of the aforementioned placer or lode mining claims shall overlap upon the lands herein described as the "Clarence J. Gammon properties" then the descriptions pertaining to the said Clarence J. Gammon properties shall control and supersede all other descriptions.

AND WHEREAS it is the desire and intention of the Lessors to lease the above described mining properties to the Lessee, together with and including the right to construct necessary roads, ways, plants, buildings, and structures as may be necessary and useful in connection with mining operations,

NOW THEREFORE, The Lessors, for and in consideration of the making of this contract and lease, and for and in consideration of the sum of One Dollar and other valuable consideration in hand paid, receipt whereof is hereby acknowledged, and for and in consideration of the rents and royalties to be paid by the Lessee, his successors and assigns, as hereinafter provided, and in consideration of the covenants and agreements hereinafter expressed and set forth, to be performed by the Lessee, do hereby grant, demise, lease and let to the Lessee, its successors and assigns, all the aforementioned described mine and mining property, TO HAVE AND TO HOLD unto the Lessee, for the term of Ten (10) years, commencing as of the date of this lease and so long thereafter as the Lessee, its successors and assigns, shall continue the mining, processing and marketing of manganese mineral or other minerals and materials from the said properties and shall pay as advance royalty to the Lessors, the sum of Two Thousand Five Hundred Dollars ($2,500.00), payment of which shall be made as follows:

Prior to the execution of this lease the lessee shall have expended the necessary money in obtaining freight rates, investigating and determination of methods and means of processing the said manganese ore, and shall have said properties core drilled or by other means establish the quantity of ore to justify the installation of necessary equipment; and after the aforementioned sums of money have been spent and operations commenced the Lessors shall be paid the $2,500.00 which shall be from the first moneys received from the shipment of ore, less the amount necessary to pay the Gilbert Clark Construction Co., or other mining operators, as may be agreed for the mining and hauling of said ore and the freight assessed to destination. It is understood that the Lessee shall at his own expense conduct the investigations aforesaid and drilling operations and shall likewise be responsible for any surface or other damages caused by said drilling operations and shall hold the Lessors harmless therefor;

and the said sum of $2,500.00 is to be credited on the first royalties

to become due hereunder during the calendar year in which said royalties were paid, unless the lease be sooner terminated and hereinafter provided. And in consideration of the rents and royalties to be paid and the covenants and agreements herein set forth the parties hereto covenant and agree with each other as follows, to-wit:

I.

The Lessors, hereby warrant and agree to defend the title to the said mining claims and properties herein described and agrees that should anything need be done toward perfecting said title the Lessee shall havethe right at any time to do so upon the failure or neglect of the Lessorsto properly perfect the title,and the Lessors agree that any such payment or expense necessary to that end made by the Lessee may be deducted fromany amount of money which may become due the Lessors under the terms of this lease,provided,however,that nothing herein contained shall beconstrued to include the obtaining of, or damage to, surface rights and the rights of way for roads,and shall mean only the obtaining of the right to the mineral.

II.

Should any person,firm or corporation having an interest in the above described mining property leased herein,or should any one or more of the parties named as Lessors, not execute this lease,then said lease shall not be binding upon the party or parties executing the same until executed by all co-owners.

III.

The Lessee shall open,use and work the said mine or mines in such manner only as is usual and customary in the skillful and proper mining operations of similar character when conducted, mining all merchantable ore clean as the work progresses,so as not to cause or permit any unnecessary or unusual injury to the same, or inconveniens or hindrancein the subsequent operating of the same mine or mines, and inthe working of said mine or mines the Lessee shall deposit all earth,rock, or other useless material or rubbish at such places and in such manner as will not conflict with or embarass the future operating of said mine or mines.

IV.

The Lessee agrees to pay to the Lessors, royalty as follows: The basis upon which royalty shall be paid is Ten per cent(10%) of the gross sale price of the processed or beneficiated ore less the Freight to destination.

It is further agreed that the basis of the 10% royalty is upon ore which does not exceed 30% manganese, and that this is upon unbeneficiated ores, and it is further provided that royalty shall be adjusted from time to time, taking into consideration the quality of the ore, cost of production, mining, freight and the sale price of the ore, it beingunderstood that if a high quality of ore is obtained(unbeneficiatedor beneficiated) then the Lessors are to receive a higher percent royalty based pro-rata upon the excess of manganese over 30% content, but in no event shall royalty be less than 10% of the gross sale price of processed or beneficiated ore less freight to destination.

It is further agreed that for metallic or nonmetallic minerals or valuable ores or minerals other than manganese contained in or upon thesemining claims hereby leased, Lessee shall have the first and sole rights to mine said minerals and to process and market such minerals and materialsand shall pay to the Lessors therefor a royalty of Ten per cent(10%) of the sale price of such minerals or ores marketed.

The aforementioned royalties shall be paid as follows: Lessee shall assign all receipts of money received to the Wyoming Loan & Trust Company of Buffalo, Wyoming, and said Lessee shall issue to said bank a letter authorizing said bank to pay the royalty, out of such proceeds as theyare received, directly to the Lessors. And it is further provided that said Lessee shall also issue to said bank authority in writing for said bank to pay the sums due to the contractor doing the mining, hauling, and loading of the ore, as the returns for each shipment are received.

During each year of the term of this lease the Lessee shall pay a minimum royalty of $10,000.00 in advance, whether ore is mined or not. For the first payment of said minimum royalty hereunder the date of payment is established as six months after the execution and delivery of this lease, and the same date for each succeeding year thereafter that this lease is in force.

A. When ore is mined in excess of the minimum advance royalty hereby established for each year, such excess royalty above the minimum shall not be credited toward payment of the minimum royalty for subsequent years, but the sum of $10,000.00 shall be paid each year regardless of the amount of royalty paid in prior years.

B. If insufficient ore is mined to earn the minimum royalty paid Lessee may apply excess royalties paid in subsequent years, in excess of minimum required, to the deficiencies created in prior years, provided however, that royalty paid shall first be applied to the minimum royalty for the year then in force and only the excess royalty over the minimum shall be credited back to prior years.

It is the intention of all parties in establishing these minimum

royalties to prevent improper development and production of the minor minos, but it is also the intention of all parties that said minimum royalties shall not impose undue hardships upon the performance of this contract, and that if conditions arise beyond control of the lessee that would be a hindrance of this contract, then itis the intention of the parties hereto that the minimum requirements shall be re-negotiated.

In case the Lessee shall fail to carry on said mining operations upon the premises described in this lease for a consecutive period of one(1) year or more, or shall fail to pay royalty as described above, such failure shall constitute a forfeiture of this lease unless such failure to operate is due to labor strikes, acts of God, national emergency preventing the obtaining of equipment, extreme weather conditions or but not by way of limitation of the foregoing, circumstances wholly beyond the control of the Lessee.

V.

All payments due the parties Lessor shall be made by Lessee direct to a bank to be appointed by Lessee for this purpose, and this bank shall disburse all monies received by it to Lessors according to their respective interest and as agreed in between them.

VI.

The Lessee expressly agrees that it will keep accurate records and accounts in a book or books kept for that purpose, showing the amount of tonnage ore mined and other minerals mined and removed from the land described herein, which said records, and accounts and books shall be accurately and correctly kept in such manner as to clearly show the correct tonnage taken from said properties.

VII.

The Lessors, their heirs, assigns, agents or attorney, shall have the ~~rig~~ right at any reasonable time after any accounting of royalties by the Lessee, to examine the records, accounts and books of the Lessee, for the purpose of verifying tonnage mined from said land, and for such purpose may appoint any competent accountant of their own selection, or attorney, to whom free access shall be given by the Lessee. The Lessors shall have the right and privilege to enter in and upon the premises leased and in and through the workings thereon, theretofore conducted and operated and being conducted and being operated thereon, and to have the mined portion thereof surveyed and measured by a competent and recognized mining engineer and the tonnage theretofore mined out established for the purpose of verifying the tonnage as reported to the Lessors by the Lessee.

VIII.

It is agreed that the Lessee, its successors or assigns, shall move suitable machinery onto the property to develop, excavate, mine and have the said mine in operation within 12 days from the date of this lease and shall, as promptly as possible, weather conditions permitting, conduct and carry on said mining operations so long as said mining operations are economically sound and profitable, that is to say, that if there should decline in value, quality or quantity, to a point where the property or mine could not be operated at a profit, then the Lessee will not be required to operate the mine or mines at a loss.

IX.

The Lessee expressly agrees to pay promptly all claims for material and labor used in connection with said mining operations and other operations, and shall not permit any liens to be filed against said premises for work or materials used in said operations, provided, however, that nothing contained herein shall be construed as a violation of the terms herin in the event that any such liens are filed and the lessee, in good faith, contest the legality thereof, either as to amount, manner of filing or the merits of any such claims, and Lessee shall indemnify the Lessors against loss or damage or expense which might be incurred by the Lessors themselves in defending against any such liens or claims of liens, and the same is to include attorneys fees incurred by Lessors in defending any such liens or suits or claims.

X.

Lessors hereby agree to safeguard Lessee from any damage or loss resulting from any lawsuits, garnishments, liens, damage suits, and damages to property upto the date this instrument is signed, or should such claims, suits or damages arise after this date, by reason of or due to the acts or performances of the Lessors prior to the date of this contract, Lessors agree that they will satisfy and settle all such matters to protect Lessors without cost or obligation in any way to the Lessee. After the date of this lease, Lessee agrees to assume and satisfy all damages to surface rights, lawsuits, or damages arising out of caused or due to his mining operations on the above named claims during the life of this lease, it being understood that Lessee shall assume and be responsible for all drilling operations, acts or damages to surface, or other damages caused by Lessee's own acts in investigating or operations prior to the date of this lease, as set forth herein in the habendum clause on pages 2 and 3.

XI.

This lease may be assigned by the Lessee with written permission of the Lessors first had and obtained, and the sublease thereof shall assume all of the obligations of this lease and all of the obligations of the lessee hereunder, provided, however, that the lessee shall not be discharged from any of the obligations of this lease unless so stated in writing, and provided, further, that such subleasing shall not operate as a surrender unless expressly stated in writing. Provided, also, that Lessee may subcontract said mining claim or operations in whole or in part to third parties for the purpose of removal or other disposition of minerals or other materials in, on, under or about said mining claims and provided that nothing herein contained shall be construed to release the said Lessee or sub-lessee from carrying out and performing all of the obligations and duties, covenants and agreements herein provided.

XII.

Lessee agrees, while operating said mining claims, to perform sufficient assessment work each year on these claims to satisfy the requirements of the law.

XIII.

The Lessee shall further comply with all state and federal laws and statutory requirements relative to mining and the operation of the mines.

XIV.

The lessee covenants to pay all taxes and assessments, ordinary and extraordinary, general or specific which may or shall be levied or assessed upon the leased lands and on the tonnage ore or other ores mined and mined thereon, or on account of any and all ore taken out or mined hereunder, including any so-called tonnage or occupational tax thereon, and upon, against or on account of any ore in stockpiles or other mine, or on account of any and all buildings, improvements, structures, personal property, or other properties or placed upon said lands by the lessee, its successors or assigns.

XV.

Lessors shall have and they are hereby given a lien upon all the improvements made and placed by the Lessee on the said tracts or parcels of land as further security for the payment of the royalties, rentals, and other payments in this lease agreed to be paid, and for the performance of each and every of the covenants in this lease contained upon the part of the Lessee, successors or assigns, to be observed, kept and performed.

XV. con't
Provided, that in lieu of any lien given to the Lessors herein for the performance of the covenants and agreements stipulated hereinbefore or hereinafter, the said lessee, successors or assigns, or contractors for the performance of any labor hereunder, may furnish and provide to the lessors as performance bond in such company, or with such sureties, and in such amount as may be satisfactory to the lessors.

XVI.

The lessee agrees to carry employers liability insurance with the State of Wyoming, or in a responsible company, covering all persons working upon or about the leased property, or in the operations of said mining and marketing of the ores obtained, under the direction of the lessee, including all employers and sublessees, if any. This policy or account shall be placed in operation as soon as operations commence under this lease.

XVII.

Upon the termination of this lease by lapse of time or for abandonment of mining operations due to justifiable cause as hereinabove specified, lessee shall have the right to remove within a reasonable time, any and all improvements, machinery and equipment placed on said lands by the lessee. Provided, however, that upon the violation of any covenants or conditions herein contained, this lease shall at the option of the Lessors expire, and terminate, and the said premises with the appurtenances and all buildings, structures, machinery owned by the Lessee, or other improvements, shall become forfeited to the lessors, and the Lessors or their agent may thereupon, after demand in writing for possession, enter upon such premises and dispossess all persons occupying the same, with or without force, and with or without process of law, or at the option of the lessors the lessee and all persons found occupying said premises or any part thereof may be proceeded against as guilty of unlawful detainer.
And if any of the royalty hereinbefore mentioned, or any part thereof, shall be unpaid on the date of payment whereon the same is tobe paid under the terms of this lease and agreement, or if default shall be made in any of the covenants and agreements herein contained, to be kept and performed by the lessee, its successors and assigns, and if any such defaults shall continue for thirty(30) days thereafter, it shall and may be lawful for the said Lessors, their heirs, executors or legal representatives, at their election, to declare said term ended and enter into the said premises or any part thereof, and either with or without process of law, to re-enter, and if at any time such term shall be ended at such election of the lessors, their heirs, executors

administrators or legal representatives as aforesaid, or at the expiration of the term, or in any other manner, said Lessee, its successors and assigns, hereby covenants and agrees to surrender and deliver up to said lessors the above described mining claims and property, peaceably, and immediately upon the termination of said term, as aforesaid, and if they shall remain in possession thereof thirty (30) days after said notice of such default which must be in writing by the lessors, and shall continue the default mentioned, they shall be deemed guilty of forcible detainer of said premises, and the Statute, and shall be subject to all of the provisions and conditions above named and to eviction and removal, forcibly or otherwise, with or without process of of law, as above stated.

XVIII.

Failure of the lessors to insist upon the strict performance of the terms, covenants, agreements and conditions herein contained, or any of them, shall not constitute or be construed as a waiver or relinquishment of the lessors rights to thereafter enforce any such term, covenant agreement or condition, but the same shall continue in full force and effect, and no waiver of one breach of any term, covenant, agreement or condition herein shall be construed to be a waiver of such term, covenant, agreement or condition or of any subsequent breach thereof.

XIX.

Time is of the essence of this agreement, and each and every clause of this indenture and all the covenants and conditions contained herein expressed or implied shall extend to the successors, heirs, executors, administrators and lawful assigns of all the parties hereto.

XX.

Lessors warrant that these properties have not at any time been used by themselves or their families as a homestead.

XXI.

This lease shall be mutually binding upon and inure to the benefit of the heirs, executors, administrators, successors and assigns respectively of the parties hereto, as well as upon the parties themselves.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals to duplicate originals hereof on this 1[illegible] day of November, 1951.

Parties of the First Part.

Melvin S. Mead, Jr.
John Keahey
by Melvin S. Mead, Jr.

Roger L. Larson
Norman L. Mead

NORTHERN DEVELOPMENT COMPANY. by Leonard V. Dayton, President.

Party of the Second Part

(Joe Potts) H. V. George

STATE OF WYOMING)
County of Johnson) SS

On this 30th day of January, 1952, before me personally appeared H. V. George, to me known to be the person described in and who executed the foregoing instrument and acknowledged that he executed the same as his free act and deed for the purposes therein set forth.

(Signed) Joe Potts

County Clerk.

My term of office expires on the first Monday in January, 1955.

STATE OF MINNESOTA)
COUNTY OF HENNEPIN) SS

On this 10th day of November, A. D., 1951, before me as a Notary Public, personally appeared Norman Mead, to me personally known to be the person described in and who executed the foregoing instrument and acknowledged that he executed the same as his free act and deed, including the release and waiver of right of homestead.

Kenneth C. Joas

Notary Public, Hennepin County, Minn.

My Commission expires Nov. 27, 1957.

STATE OF MINNESOTA)
COUNTY OF HENNEPIN) SS

On this 10th day of November, A. D., 1951, before me appeared Leonard V. Dayton, to me personally known, who, being by me duly sworn, did say that he is the president of the NORTHERN DEVELOPMENT COMPANY, and that the seal affixed to said instrument is the corporate seal of said corporation and that the said instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and the said Leonard V. Dayton acknowledged said instrument to be the free act and deed of said corporation.

Kenneth C. Joas

Notary Public, Hennepin County, Minn.

My Commission Expires Nov. 27, 1957.

STATE OF WYOMING)
County of Johnson) SS

On this 14th day of November, 1951, before me personally appeared Melvin S. Mead, Jr., to me known to be the person who executed the foregoing instrument on behalf of John Keahey, and acknowledged that he executed the same as the free act and deed of the said John Keahey; and he acknowledged that he executed the foregoing instrument as the act of John Keahey, by virtue of a certain power of attorney executed by John Keahey, bearing date the 31st day of October, 1950, and recorded in the office of the County Clerk of Johnson County, Wyoming, on the 19th day of December, 1950, in Book 82of the Miscellaneous at Page 158.

Ezra K. Jones.

Notary Public.

STATE OF WYOMING }
County of Johnson } SSS

On this 14th day of November, A. D., 1951, before me personally appeared Melvin S. Mead, Jr., and Roger L. Larson, to me known to be the persons described in and who executed the foregoing instrument, and acknowledged that they executed the same as their free act and deed, including the release and waiver of the right of homestead.

Ezra K. Jones,

Notary Public.

My Commission expires _____

THIS MEMORANDUM OF AN AGREEMENT made and entered into this January 10, 1952 by and between Melvin S. Mead, Jr., of Buffalo, Wyoming; John Keahey of Sheridan, Wyoming; Roger L. Larson of Buffalo, Wyoming; Norman Mead of Minneapolis, Minnesota; and Northern Development Company, a Corporation of Minneapolis, Minnesota, First Parties, and Clarence J. Gammon, of Johnson County, Wyoming, Second Party, WITNESSETH:-

THAT WHEREAS the first parties are now and for some time last past have been engaged in an enterprise for the development and production of minerals, particularly manganese, in the Big Horn Mountains of Johnson County, Wyoming, and for that purpose have located various mining claims and have caused prospecting work to be done thereon, and

WHEREAS, said first parties propose, and believe they have a present opportunity, to enter into a favorable contract with responsible parties for the commercial production of the minerals on said claims, and upon adjacent lands owned by second party, hereinafter more fully described, and

WHEREAS, the said second party is the owner in fee simple of lands adjacent to the claims of the first parties which said lands are described as follows:-

South Half of the northeast quarter (S 1/2 NE 1/4) and north half of the southeast quarter (N 1/2 SE 1/4) of Section thirty (30) and the northeast quarter of the northwest quarter (NE 1/4 NW 1/4) of Section thirty - two (32) in Township forty - seven (47) North Range eighty - three (83) West of the Sixth Principal Meridian, and

WHEREAS, the lands belonging to the second party above described alson contain manganese ore, believed to exist in commercial quantities, and it is the purpose and desire of all parties hereto that the entire mineral acreage owned by the first and second parties be devloped and operated and the minerals produced as a

common venture, now therefore;

IN CONSIDERATION OF THE PREMISES and of the mutual covenants and agreements hereinafter contained, to be kept and performed by the parties hereto, it is hereby agreed: -

1. That the operation and control of said mining venture shall be under the exclusive management of the first parties and that, excepting for the receipt of rentals or royalties from minerals mined from his own property, on which he owns the mineral rights, the second party shall have no interest in the conduct of said business. The first parties shall have the full power to make and to enter into such contracts, agreements or arrangements for the mining and production of ore from said lands as they may deem advisable and beneficial to all parties, and the second party shall have no control over the terms or conditions thereof, PROVIDED ONLY that the second party shall at all times participate in any benefits ~~from~~ said agreements in the proportion and to the extent herein stated.
2. That, for any minerals produced exclusively from the lands belonging to the second party, on which he owns the mineral rights, said second party shall have one half of all of the royalties, benefits or profits therefrom and for minerals produced from lands controlled by the first parties he shall receive one-sixth thereof. Said proportions shall be based upon the entire net receipts of the first parties from said operations, whether by way of bonus, rentals or royalties, and irrespective of whether obtained from operations carried on by themselves, or from leases or operating agreements with others.
3. That in any mining operations conducted upon the lands of the second party, due care shall at all times be used

to prevent damage to the fences and other improvements of said lands, and at all roads or crossings suitable cattle guards shall be erected to prevent the passage of live stock, and nox more of the surface of said lands shall be used than may be reasonably required for such operations. This provision is inserted for the reason that these lands constitute an essential part of the second party's summer pasture and he does not want his live stock to be unnecessarily disturbed or permitted to wander.

4. That this agreement shall be in force for a period of five years and so long thereafter as mineral is produced in commercial quantities and payments made hereunder.

5. That the first parties shall from time to time, and preferably monthly, account to the second party for all monies received and shall at all times keep the second party fully informed as to all operations hereunder. The second party shall receive copies of all operating or other agreements made by the first parties to the end that the second party may know exactly how the property is being handled. Any and all records, books of account or other sources of information shall be made available for examination by the second party or his agent at all times.

IN WITNESS WHEREOF this agreement has been executed in duplicate the day and year first above written.

In the presence of
Lorraine McIvesny

Northern Development Co.,
By Leonard V. Dayton, Pres.

Norman W. Mead

Roger L. Larson

M. S. Mead, Jr.

John Keahey
By M. S. Mead, Jr.

First Parties

Clarence J. Gammon

Second Party

EAU OF MINES
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[illegible]
[illegible]L BUSINESS

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Spokane 8, Wash.

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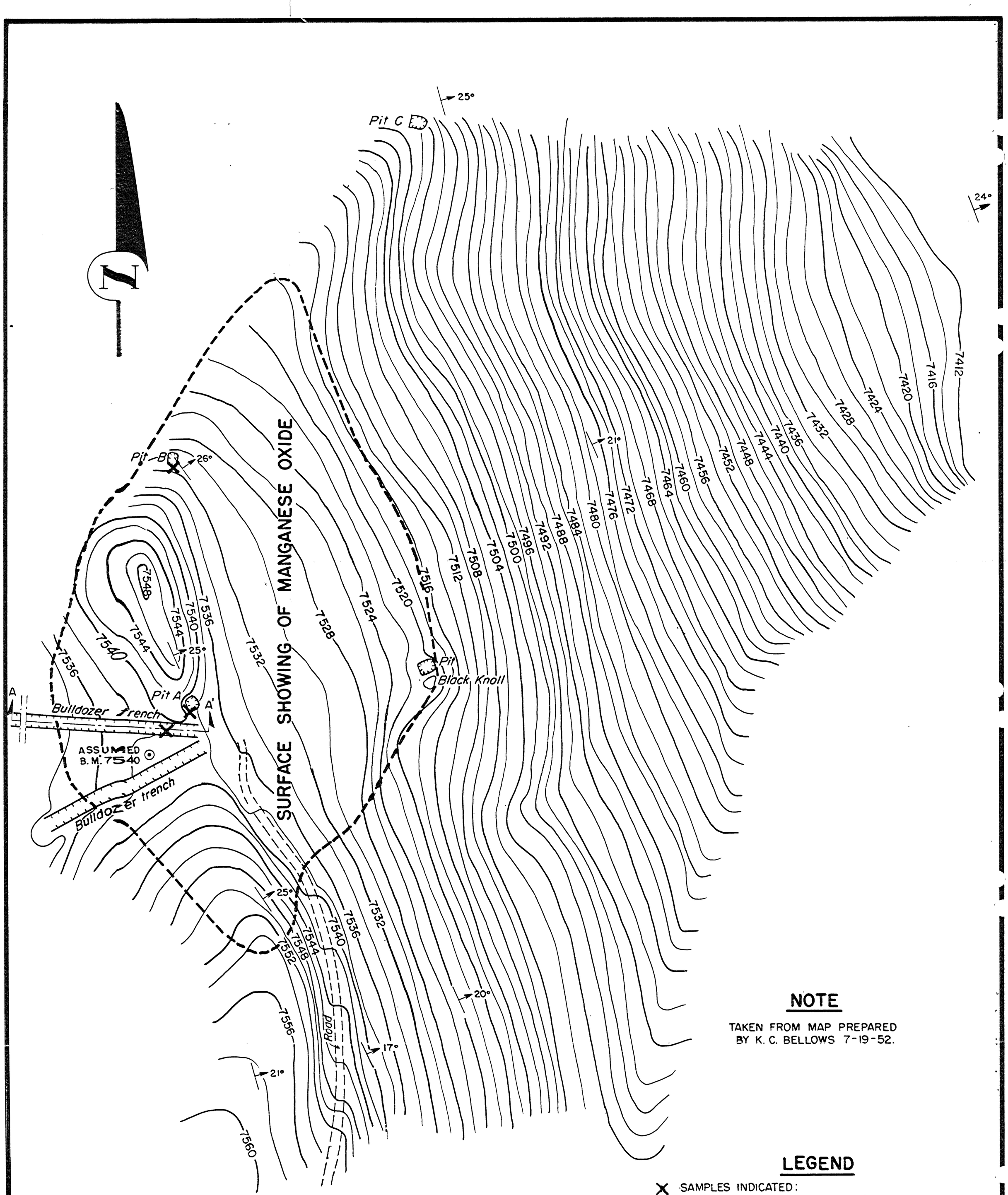
Chairman, Operating Committee
Defense Minerals Exploration Administration
Dept. of Interior
Washington 25, D. C.



TOPOGRAPHIC PLAN

NOTE

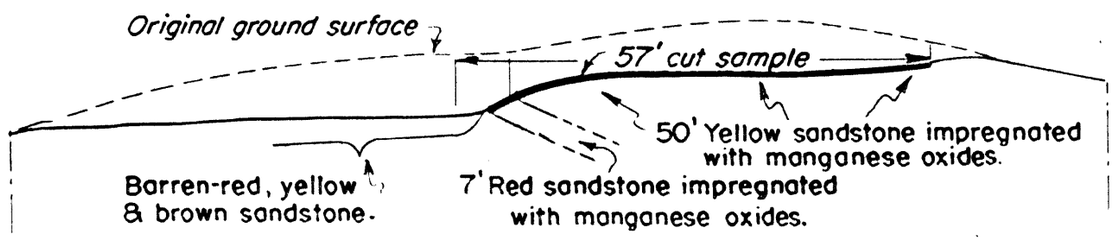
TAKEN FROM MAP PREPARED BY K. C. BELLOWS 7-19-52.

LEGEND

X SAMPLES INDICATED:

DOZER TRENCH (SECTION A-A'),	57.0' HORIZ.,	7.68% Mn.
PIT A, S.W. CORNER,	5.5' VERT.,	8.13% Mn.
PIT B, S.W. CORNER,	6.0' VERT.,	7.05% Mn.
HAND PICKED SURFACE SAMPLE,		24.00% Mn.

0 50 100 150 200
SCALE OF FEET



SECTION A-A' IN DOZER TRENCH

0 20 40 60
SCALE OF FEET

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Fig. 2 DMEA Docket No. 2701

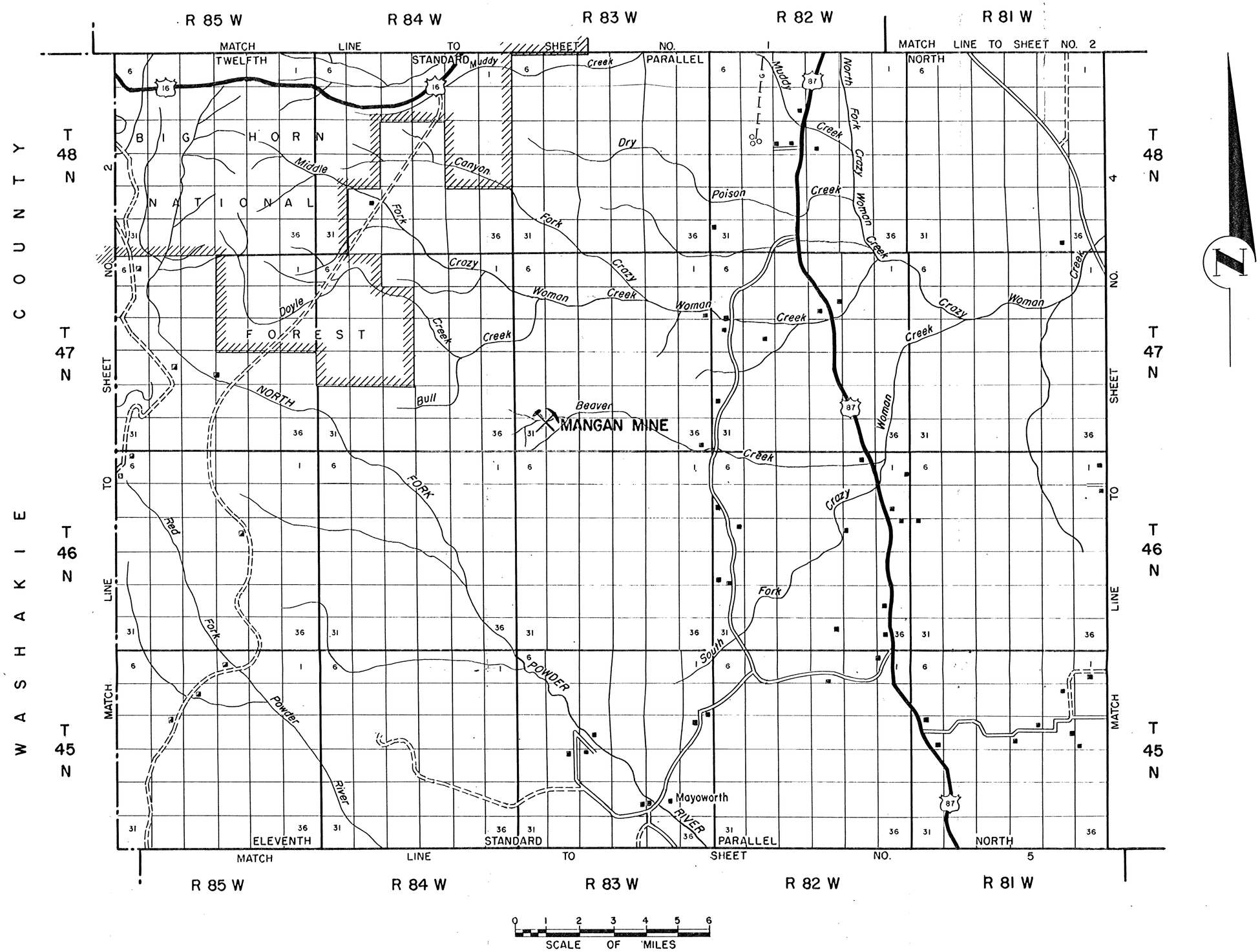
Topographic Plan and Section

MANGAN MINE (H.V. GEORGE)

(SOUTH AREA)

JOHNSON COUNTY, WYOMING

ENGINEER: W. E. YOUNG	DATE: NOV. 4, 1952
TRACED: NOV., 1952; BY: A. P. T. S.	300 - 104 - D
CHECKED:	



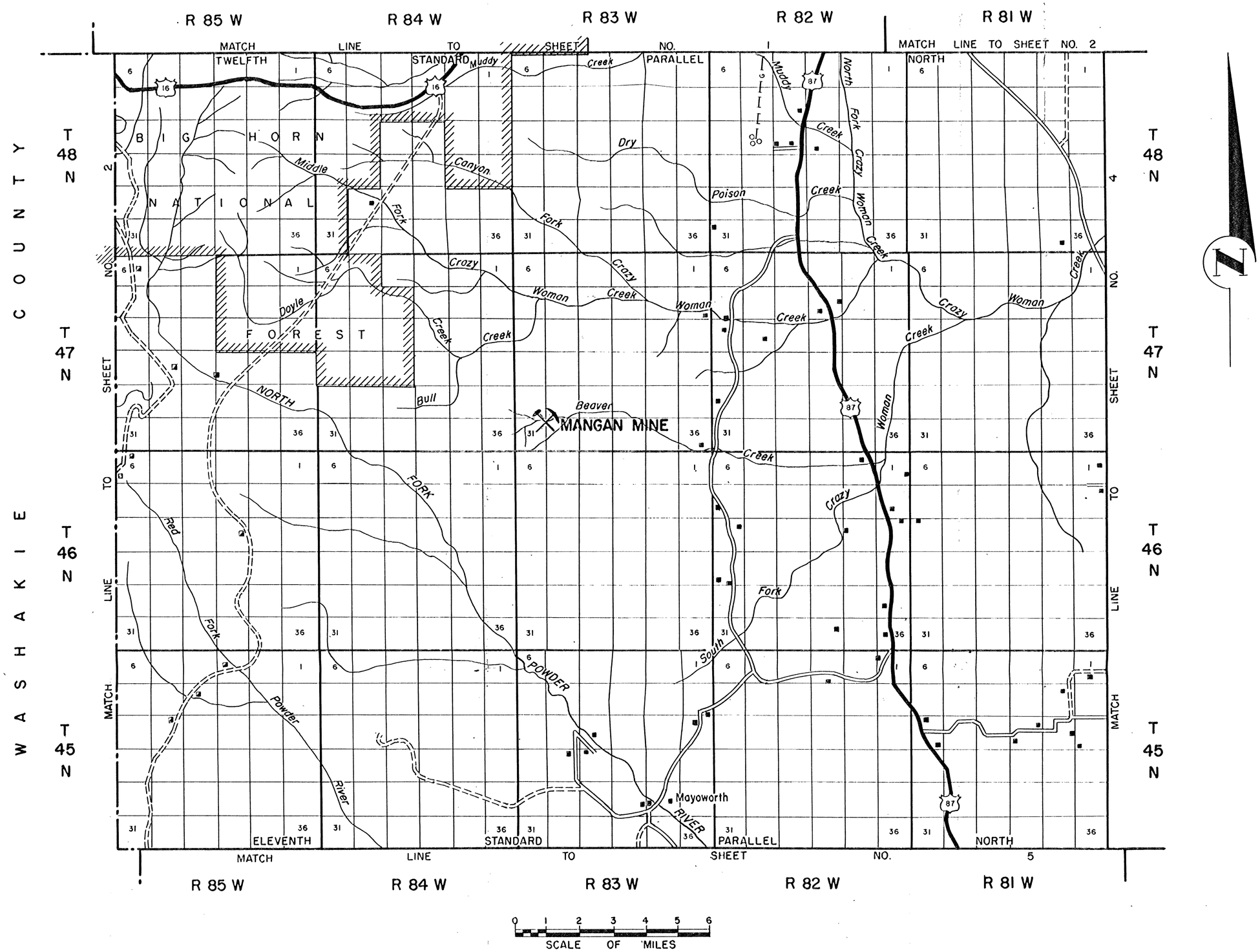
SCALE OF MILES

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Fig. 1 DMEA Docket No. 2701

STATE: WYOMING
COUNTY: JOHNSON
Sheet 3 of 6
Location Map

ENGINEER: M. M. Harcourt	DATE: OCT. 23, 1952
TRACED: OCT., 1952; BY: A. P. T. S.	300 - 103 - C
CHECKED:	



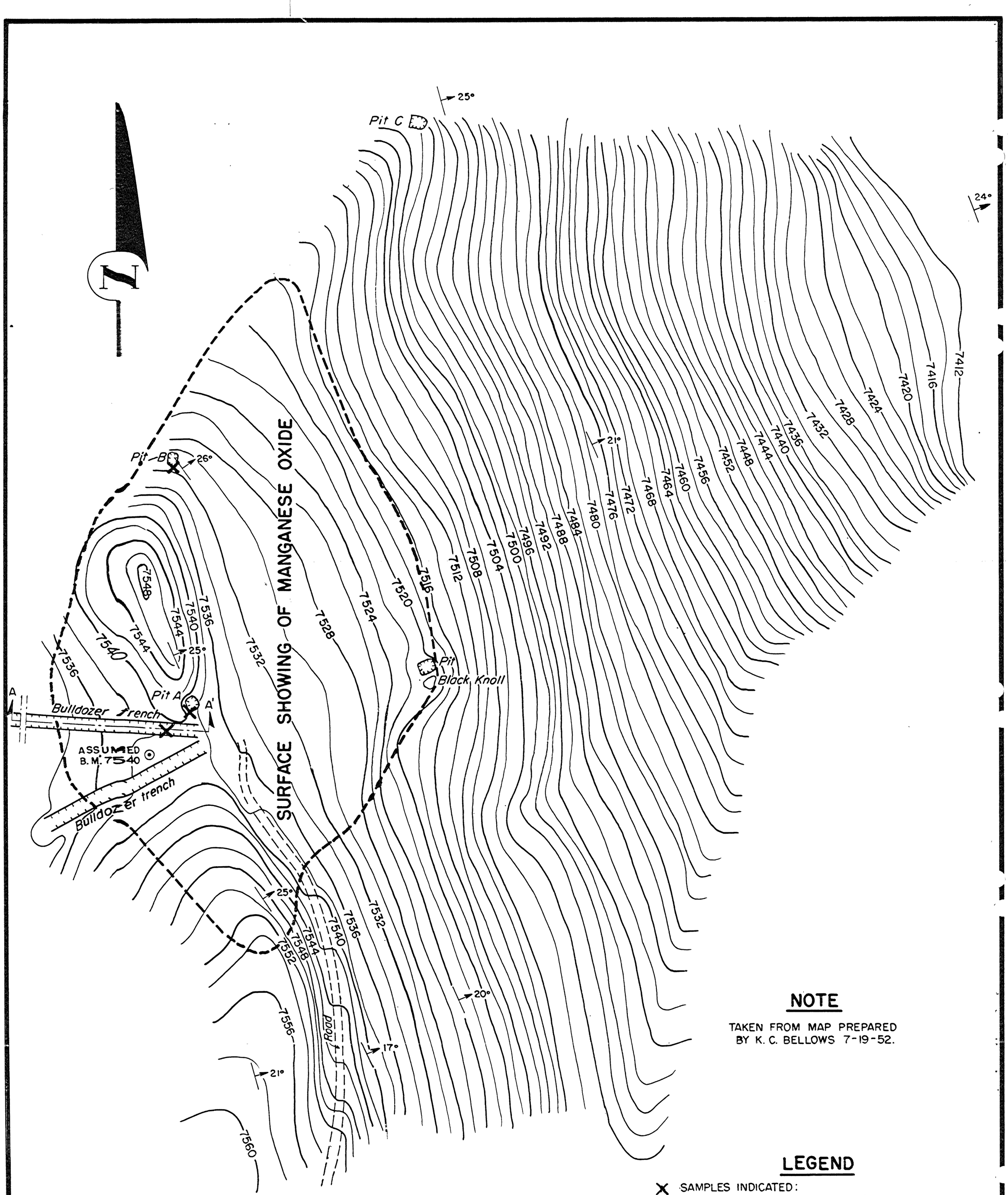
SCALE OF MILES

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Fig. 1 DMEA Docket No. 2701

STATE: WYOMING
COUNTY: JOHNSON
Sheet 3 of 6
Location Map

ENGINEER: M. M. Harcourt	DATE: OCT. 23, 1952
TRACED: OCT., 1952; BY: A. P. T. S.	300 - 103 - C
CHECKED:	



TOPOGRAPHIC PLAN

NOTE

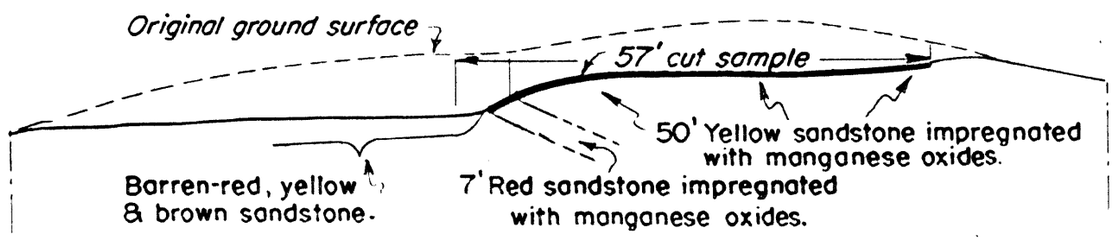
TAKEN FROM MAP PREPARED BY K. C. BELLOWS 7-19-52.

LEGEND

X SAMPLES INDICATED:

DOZER TRENCH (SECTION A-A'),	57.0' HORIZ.,	7.68% Mn.
PIT A, S.W. CORNER,	5.5' VERT.,	8.13% Mn.
PIT B, S.W. CORNER,	6.0' VERT.,	7.05% Mn.
HAND PICKED SURFACE SAMPLE,		24.00% Mn.

0 50 100 150 200
SCALE OF FEET



SECTION A-A' IN DOZER TRENCH

0 20 40 60
SCALE OF FEET

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Fig. 2 DMEA Docket No. 2701

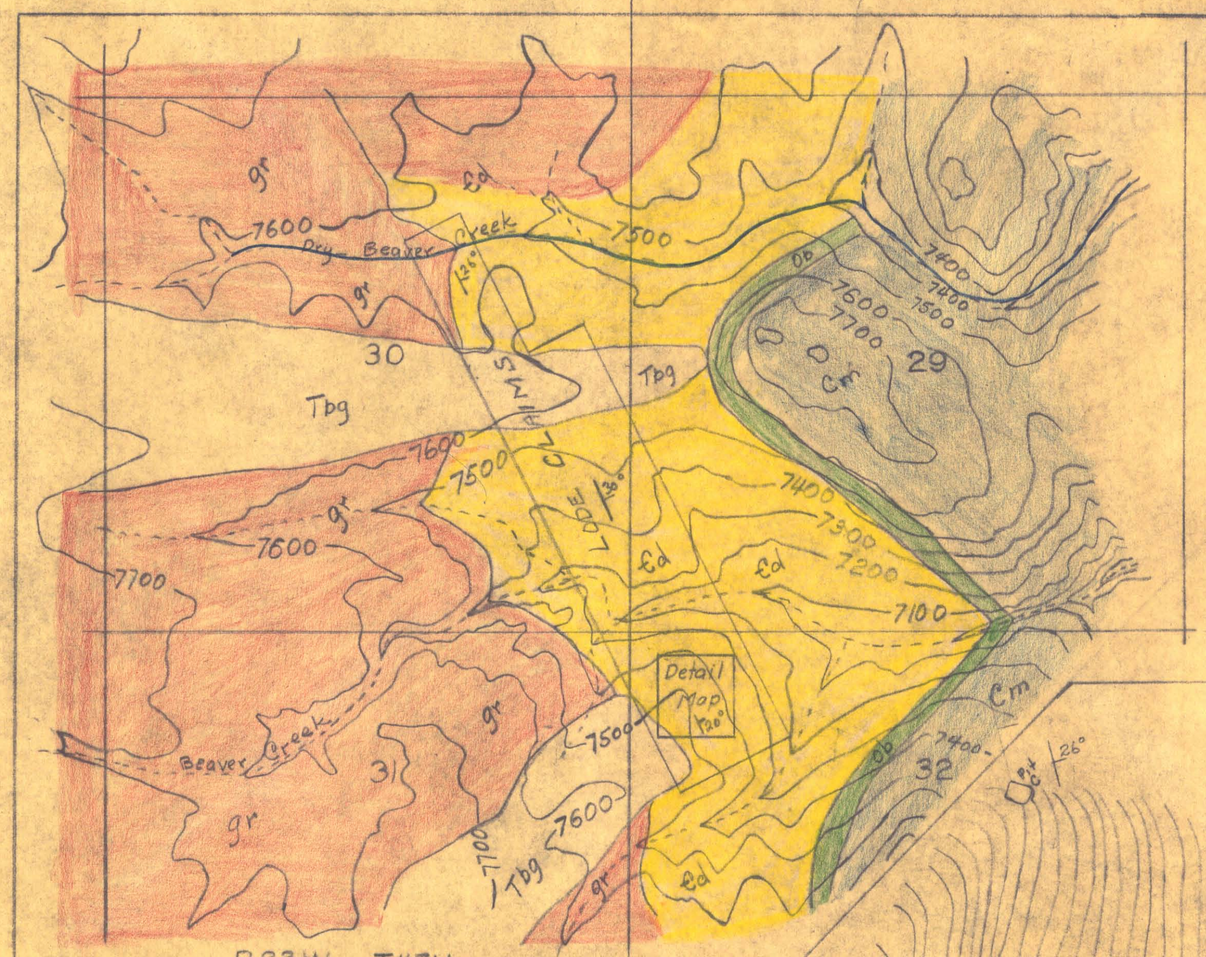
Topographic Plan and Section

MANGAN MINE (H.V. GEORGE)

(SOUTH AREA)

JOHNSON COUNTY, WYOMING

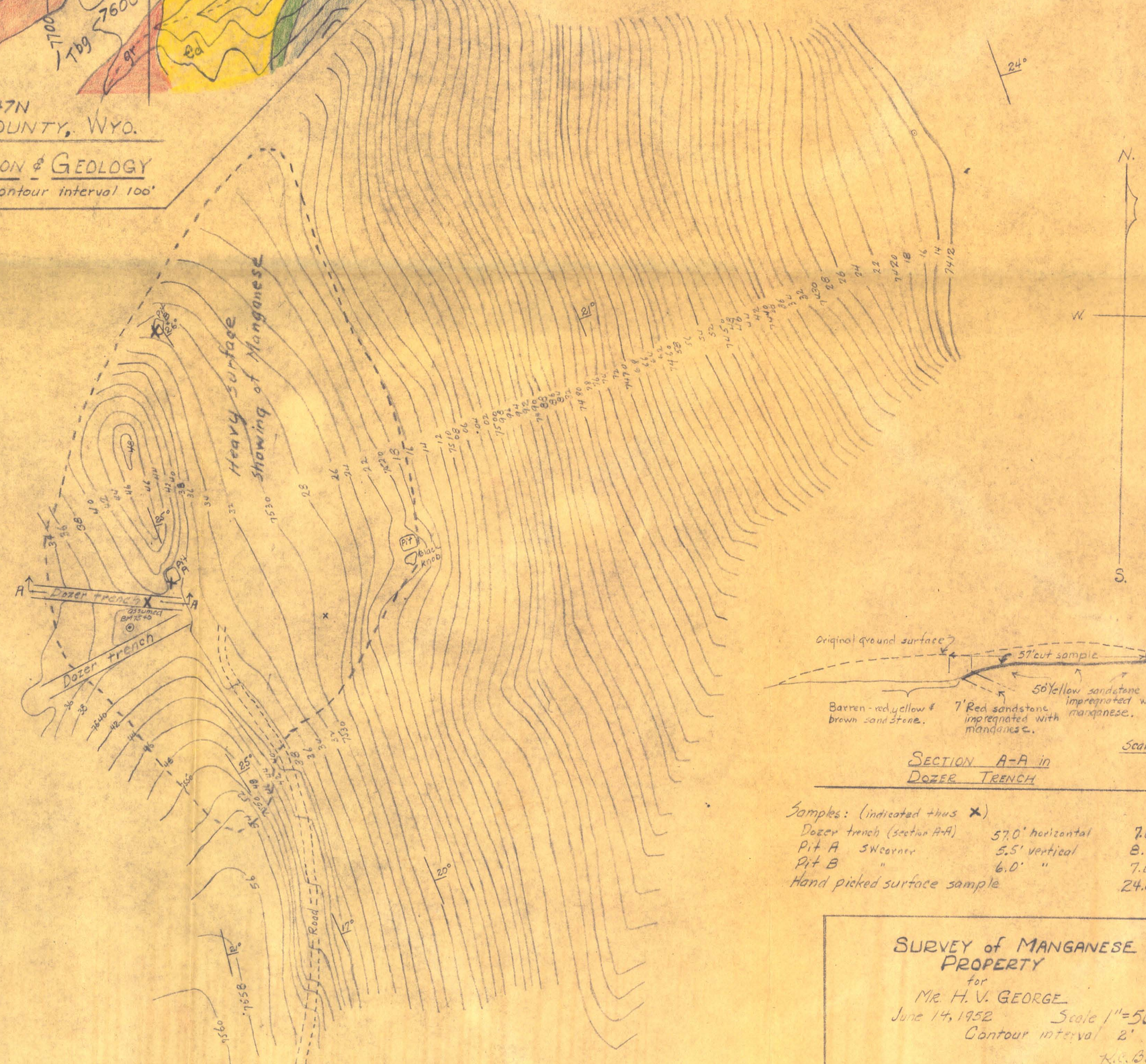
ENGINEER: W. E. YOUNG	DATE: NOV. 4, 1952
TRACED: NOV., 1952; BY: A. P. T. S.	300 - 104 - D
CHECKED:	

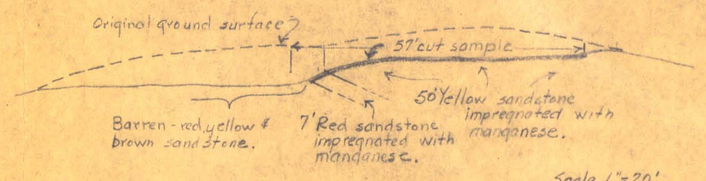


R.83W T47N
JOHNSON COUNTY, WYO.

GENERAL LOCATION & GEOLOGY

Scale 1"=1000' Contour interval 100'





Scale 1"=20'

SECTION A-A in DOZER TRENCH

Samples: (indicated thus ✕)

Dozer trench (section A-A)	57.0' horizontal	7.68	% Mn.
Pit A SW corner	5.5' vertical	8.13	"
Pit B "	6.0' "	7.05	"
Hand picked surface sample		24.00	"

SURVEY of MANGANESE PROPERTY
for
MR. H. V. GEORGE
June 14, 1952 Scale 1"=50'
Contour interval 2'

K.C. Bellows 7-19-52