DMA Form 1

DEFENSE MINERALS ADMINISTRATION
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DMEA ~~DMA~~ Docket No. 2693

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Exploration Project

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To:	Code 700, Rm. 4640	Date	9-11-52
To:	Oper Com	Date	2-6-53
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FILE COPY
SURNAME:

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

MAY 1 8 1953

[illegible] and Exploration Company
c/o Harry Pinneker
Consolidated National Bank
Scottsbluff, Nebraska

Re: Docket No. [illegible]-2-53 (Uranium)
Little Pine, [illegible] Lorraine and [illegible] areas of Sioux
Fall River County, South Dakota

Gentlemen:

Reference is made to your application, [illegible], for a [illegible] proposed exploration project pertinent to [illegible], which was revised on January [illegible], 1953, the proposed project [illegible] $1,[illegible].00.

Projects approved by the Defense Minerals Exploration Administration must, in the judgment, offer 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 application and data available to this agency and an examination of the property concerned reveal that the probability of disclosing minerals over measured by your proposed exploration program is not believed to be sufficiently promising to justify government participation. Under these circumstances, we regret to advise that your application for exploration aid is denied.

If future work at your property should indicate a need materially altering this situation, please be assured we will be glad to consider a new application.

Sincerely yours,

C. O. Mittendorf

Administrator

FLKNOUSE
DMAult/~~[illegible]~~/cef 5/12/53

cc to: [illegible] Filed
Oper. Committee
Docket
Secure. [illegible], Room 3[illegible]
[illegible], Room 3[illegible]
[illegible]

J Z Kusche
[illegible]
[illegible]
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5-18-53

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

May 13, 1953

SUMMARY OF PROPOSED PROJECT

Docket No. DMEA-2693
Applicant: Lakota Mining and Exploration Company
Scottsbluff, Nebraska

Subject: Denial of application

Commodity: Uranium
Location of property: Fall River, S. Dakota Region V
Amount of application: $51,840.00
Revised 1/5/53: Reduced to $14,080.00
Date of application: September 6, 1952; revised January 5, 1953.

Outline of project: Wagon drilling 150 holes an average 60 feet deep at $1.372/foot on Eagle Aerie and Little Windy Groups of claims.

Field Team Report: Dated: April 9, 1953.
by: E. O. Binyon, Mining Engineer, USBM, and J. A. Redden, Geologist, USGS

Recommendation: Denial, because of poor mineralization and improbability of making a significant discovery.

Commodity Members' comments:

Bureau of Mines: H. D. Keiser, dated May 11, 1953.

Following discussion of the Field Team report with Mr. A. P.Butler, Jr., USGS, and Mr. J. O. Hosted, AEC, recommends application be denied.

Geological Survey: Arthur P. Butler,Jr., April 21, 1953.

Concurs in Field Team recommendation of denial.

Rare and Misc. Metals Div. Engineer: F. L. Knouse

Comments: Because of the small uranium mineral exposure on these properties and doubtful possibility of uranium mineralization penetrating into the beds away from the rim exposures of mineralization any appreciable distance, as has been proven by work done on the property and by work done on nearby properties, it is believed the probability of disclosing minable ore reserves by the proposed exploration is not sufficiently promising to justify the expenditure of Government funds.

Denial letter written on basis of above recommendations.

Ernest Wm. Ellis

Ernest Wm. Ellis, Chief
Rare & Misc. Metals Division

5/12/53 gla

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

May 11, 1953

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 12 1953

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee, Room 4640

From: H. D. Keiser, Bureau of Mines Member
Uranium Commodity Committee

Subject: Field Team Report, DMEA Docket-2693, LaKota Mining and Exploration Co., Fall River County, S. Dak.

I have reviewed the subject report and discussed it with Arthur P. Butler, Geological Survey Member, and Joseph O. Hosted, representative of the Atomic Energy Commission.

It is recommended that the field team report be approved, and that the application for an exploration loan be denied.

H. D. Keiser

H. D. Keiser

Attachment

STANDARD FORM NO. 64

4/24/53 gla

Office Memorandum • UNITED STATES GOVERNMENT

TO : E. Wm. Ellis, DMEA Member
Uranium Commodity Committee

DATE: April 21, 1953

FROM : Arthur P. Butler, Jr., USGS Member, Uranium Commodity Committee

SUBJECT: Field Team Report, DMEA Docket 2693, Lakota Mining and Exploration Company, Little Windy-Eagle Aerie Claim groups, Tps. 7 and 8 S., Rs. 2 and 3 E., Fall River County, South Dakota.

I have reviewed the report of the examining members of the Field Team concerning the property identified in the subject above. As a result of examination of the property, the Field Team concludes that distribution and small size of the deposits located in the areas adjacent to and included in this application are such that exploration on these claims is unlikely to result in discovery of a significant amount of uranium. They also state that the applicant disagrees with this interpretation. I concur with the Field Team's recommendation that Government assistance for exploration be denied.

Arthur P. Butler, Jr.

Arthur P. Butler, Jr.

Copy to: E. Wm. Ellis (2)

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
APR 24 1953

IN REPLY REFER TO:

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

E. Wm. Ellis, DMEA Member
Uranium Commodity Committee
Arthur P. Butler, Jr., USGS Member, Uranium Commodity Committee

April 21, 1953

Field Team Report, DMEA Docket 2693, Lakota Mining and Exploration Company, Little Windy-Eagle Aerie Claim groups, Tps. 7 and 8 S., Rs. 2 and 3 E., Fall River County, South Dakota.

I have reviewed the report of the examining members of the Field Team concerning the property identified in the subject above. As a result of examination of the property, the Field Team concludes that distribution and small size of the deposits located in the areas adjacent to and included in this application are such that exploration on these claims is unlikely to result in discovery of a significant amount of uranium. They also state that the applicant disagrees with this interpretation. I concur with the Field Team's recommendation that Government assistance for exploration be denied.

Arthur P. Butler, Jr.

Copy to: E. Wm. Ellis (2)

4/20/53 gla

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

~~WASHINGTON 25, D.C.~~
Region V
2908 Colfax Avenue South
Minneapolis 8, Minnesota

April 14, 1953

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
APR 16 1953

Memorandum

To: Operating Committee, Defense Minerals Exploration Administration, Interior Building, Washington 25, D. C.

From: Executive Officer, Field Team, Region V

Subject: Docket DMEA-2693, Lakota Mining and Exploration Co. Fall River County, S. Dak.

Reference is made to the letter of February 6, 1953, transmitting the subject referral.

Here are the original and three copies of the Field Team Report denying the application for a contract because of poor mineralization and improbability of making a significant discovery.

The report was delayed because weather conditions precluded examination until the middle of March and further delay was in the Mines office. The U.S.G.S. had their part of the report ready shortly after the field work was done.

A. B. Needham
Executive Officer, Field Team
Region V

Attachments

Reviewed by
DMEA OPERATING COMMITTEE
4-20-53
(date)

UNITED STATES

DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION V

Little Windy - Eagle's Aerie Claim Group

Fall River County, South Dakota

E. O. Binyon, Mining Engineer
U. S. Bureau of Mines

J. A. Redden, Geologist
U. S. Geological Survey

April 9, 1953

Released by
DMEA [illegible]
4-20-53
[illegible]

DEFENSE MINERALS EXPLORATION ADMINISTRATION
Report of Field Examination

by

E. O. Binyon, Mining Engineer
U. S. Bureau of Mines

J. A. Redden, Geologist
U. S. Geological Survey

Docket No:	2693
Applicant:	Lakota Mining & Exploration Company
Property:	Little Windy - Eagle's Aerie Claim Groups
Commodity:	Uranium

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The applicant is the Lakota Mining and Exploration Company, a Nebraska Corporation, with mailing address at Scottsbluff National Bank Building, Scottsbluff, Nebraska. All correspondence to date has been directed to Harry Pinneker, Secretary and Treasurer of the Company at the given address.

Company holdings which are held under lease agreement consist of two widely separated groups of 5 and 3 claims respectively known as the Little Windy and Eagles Aerie group. The Little Windy claims are in Section 25, T. 7S, R. 2E and Section 30, T. 7S., R. 3E., B.H.B.M. and the Eagle's Aerie group is approximately 3 miles to the southeast in Section 4, T. 8S., R. 3E., B.M.B.M., Fall River County, S. Dak. The Little Windy group is approximately 10 miles and the Eagle's Aerie group approximately 7 miles, by road, north of Edgemont. Both groups of claims are accessible by fair roads during periods of good weather, but operations would be limited or have to cease entirely during a good part of the winter months.

The application was received on February 13th but owing to weather conditions the property could not be examined until March 18, 1953. It was examined by the field team on this date in company with William Braddock and Arthur Rose of the U. S. Geological Survey stationed at the AEC office in Hot Springs, S. Dak. Approximately 3 hours were spent in examining the two groups of claims. Prior to the examination a discussion of the general area was held with members of the AEC staff at the Hot Springs office.

Based on the extremely poor indications of mineralization

as noted in the few small discovery pits which are the only workings on the property, as well as the geologic data which indicates very limited extension of similar showings of mineralization in the area, it is concluded that the probabilities of making a significant discovery do not warrant exploration of the property and it is recommended that the application be denied.

Also other factors such as the poor results obtained from fairly extensive exploration conducted by two large mining companies in the immediate vicinity, and the type and extent of mineralization as indicated by the core drilling being done by AEC on Love Mountain a short distance to the north, have been considered in making the recommendation for denial of the application.

In addition most of the mineralized outcrops are on very steep canyon rims and core drilling would be required to adequately explore an area for any distance horizontally back from the rims. The cost of exploration would be excessive and out of proportion to any return that can reasonably be expected from any ore deposits that might be disclosed by the drilling.

NAME, LOCATION AND DESCRIPTION OF THE PROPERTY

The property known as the Eagle's Aerie and Little Windy groups consist of 8 unpatented lode mining claims divided into one group of 3 claims, the Eagle's Aerie No. 2, 3 and 4, and the Little Windy group of 5 claims the Little Windy No. 1, 2 and 3, the Lucky Toss No. 2 and the Little Loraine.

The Eagle's Aerie claims are in Section 4, T. 8S, R. 3E, B.H.B.M., Fall River County, S. Dak. and one approximately 7 miles north and slightly east of Edgemont. The Little Windy group approximately 3 miles to the northwest and up Craven Canyon is about 10 miles from Edgemont.

Roads to either group are only fair and access to the property during a part of the winter months or periods of bad weather would be difficult if not impossible.

The discovery workings on the claims are all located on canyon rims of varying steepness. For the most part the rims are so steep that exploration of the exposures horizontally back of the rims by drilling would, in most instances, require core drilling.

PROPERTY RIGHTS

The applicant hold both groups of claims under lease agreement with Earl E. Stevens and brother, Edgemont, S. Dak. The claims are recorded by the owners at the County Recorder's Office in Hot Springs, S. Dak.

GEOLOGY

The Little Windy No. 2 claim contains one small prospect from which approximately 100 pounds of uranium bearing sandstone has been removed. The sandstone is from the middle or lower Lakota formation and is relatively massive. All of the ore has been removed and radioactivity is very low along the edges of the prospect pit.

The ore occurances on the Little Windy No. 1 claim duplicates that on the Little Windy No. 2 claim. Approximately 100 pounds of ore has been removed from a single small prospect pit at approximately the same stratigraphic location as that on the first claim.

The Lucky Toss No. 2 claim contains three small occurrences of uranium mineralization which has been prospected. The occurrences are approximately at the same stratigraphic level as those on the Little Windy claims. The better exposures are in vertical cliffs of massive sandstone of the lower Lakota formation and in talus blocks from these exposures. Blasting has removed nearly all traces of mineralization. The carnotite tends to stain joints and bedding plains along the surface outcrop but does not continue inward. Possibly a few hundred pounds of ore were removed by the prospecting work. A small amount of float mineralization was noted on the Little Loraine claim.

The Eagle's Aerie No. 2 and No. 3 and No. 4 claims apparently lack any substantial surface outcrops of mineralization. The Eagle's Aerie No. 1 claim was visited although it is not leased by the applicant. Two small prospects on this claim have produced an estimated 400 pounds of carnotite ore from a two foot thick massive sandstone interlayered with shaly beds. Both prospects indicate that the ore occurrence was very small and does not extend any great distance into the canyon wall.

Rather extensive exploration by two larger mining companies in the immediate vicinity of these claims in similar type rock, but with considerably more promising outcrops of ore, having failed to show extension of this type of deposit to any great distance from the rims.

All mineralized exposures are extremely small, and for the most part little, if any, mineralization remains in the walls and faces of the very shallow prospect pits that were examined. It appears very unlikely that there will be any substantial extension of the mineralization back of the present outcrops. It is assumed that the area has been rather thoroughly prospected by radioactive prospecting devices and that the mineralized outcrop, which as stated, are extremely small, were the only occurrences that were discovered.

Diamond drill exploration by the Atomic Energy Commission of Love Mountain located a short distance to the north is believed to indicate that mineralized areas are very thin and do not continue from one drill hole to the next. Each individual ore body is apparently separate and lanses out very rapidly.

The exposed mineralization occurs on very steep canyon rims and exploration by wagon drilling would necessarily be confined to small areas extending only a very short distance (horizontally) back into the rims from the outcrops, or else it would be necessary to drill extremely long holes, in most cases deeper than the maximum limit for wagon drilling, to reach the same mineralized horizons.

The cost of exploration would be unusually high and without more favorable surfade exposures the probabilities of making a significant discovery are not sufficient to warrant even exploration at less cost. The cost of any exploration would be unusually high, and if undertaken at all, should require more favorable surface exposures.

CONCLUSIONS AND RECOMMENDATIONS

Considering all factors it is concluded that the probabilities of making a significant discovery are insufficient to warrant exploration of the property. It is recommended that the application be denied.

The conclusions and probability of an unfavorable recommendation by the local field team were discussed by one of the members (E. O. Binyon) at some length with Mr. John Donnelly who stated that he was connected with the Lakota Mining and Exploration Company. He was in disagreement with the conclusion.

4/21/53 gla

Circulate and Bulletin

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

~~WASHINGTON 25, D.C.~~
Region V
2500 Colfax Avenue South
Minneapolis 8, Minnesota

April 14, 1953

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
APR 16 1953

Memorandum

To: Operating Committee, Defense Minerals Exploration Administration, Interior Building, Washington 25, D. C.

From: Executive Officer, Field Team, Region V

Subject: Docket DMEA-2693, Lakota Mining and Exploration Co. Fall River County, S. Dak.

Reference is made to the letter of February 6, 1953, transmitting the subject referral.

Here are the original and three copies of the Field Team Report denying the application for a contract because of poor mineralization and improbability of making a significant discovery.

The report was delayed because weather conditions precluded examination until the middle of March and further delay was in the Mines office. The U.S.G.S. had their part of the report ready shortly after the field work was done.

A. B. Needham
Executive Officer, Field Team
Region V

Attachments

Reviewed by
DMEA OPERATING COMMITTEE
4-20-53
(Date)

UNITED STATES

DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION V

Little Windy - Eagle's Aerie Claim Group

Fall River County, South Dakota

R. C. Binyon, Mining Engineer
U. S. Bureau of Mines

J. A. Redden, Geologist
U. S. Geological Survey

April 9, 1953

Reviewed by
DMEA QUALITY CONTROL

4-20-53
(date)

DEFENSE MINERALS EXPLORATION ADMINISTRATION
Report of Field Examination

by

E. O. Bingon, Mining Engineer
U. S. Bureau of Mines

J. A. Redden, Geologist
U. S. Geological Survey

Docket No: 2693
Applicant: Lakota Mining & Exploration Company
Property: Little Windy - Eagle's Aerie Claim Groups
Commodity: Uranium

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The applicant is the Lakota Mining and Exploration Company, a Nebraska Corporation, with mailing address at Scottsbluff National Bank Building, Scottsbluff, Nebraska. All correspondence to date has been directed to Harry Pinneker, Secretary and Treasurer of the Company at the given address.

Company holdings which are held under lease agreement consist of two widely separated groups of 5 and 3 claims respectively known as the Little Windy and Eagles Aerie group. The Little Windy claims are in Section 25, T. 73, R. 2E and Section 30, T. 73., R. 3E., B.H.B.M. and the Eagle's Aerie group is approximately 3 miles to the southeast in Section 4, T. 8S., R. 3E., B.H.B.M., Fall River County, S. Dak. The Little Windy group is approximately 10 miles and the Eagle's Aerie group approximately 7 miles, by road, north of Edgemont. Both groups of claims are accessible by fair roads during periods of good weather, but operations would be limited or have to cease entirely during a good part of the winter months.

The application was received on February 13th but owing to weather conditions the property could not be examined until March 18, 1953. It was examined by the field team on this date in company with William Braddock and Arthur Rose of the U. S. Geological Survey stationed at the AEC office in Hot Springs, S. Dak. Approximately 3 hours were spent in examining the two groups of claims. Prior to the examination a discussion of the general area was held with members of the AEC staff at the Hot Springs office.

Based on the extremely poor indications of mineralization

as noted in the few small discovery pits which are the only workings on the property, as well as the geologic data which indicates very limited extension of similar showings of mineralization in the area, it is concluded that the probabilities of making a significant discovery do not warrant exploration of the property and it is recommended that the application be denied.

Also other factors such as the poor results obtained from fairly extensive exploration conducted by two large mining companies in the immediate vicinity, and the type and extent of mineralization as indicated by the core drilling being done by AEC on Lava Mountain a short distance to the north, have been considered in making the recommendation for denial of the application.

In addition most of the mineralized outcrops are on very steep canyon rims and core drilling would be required to adequately explore an area for any distance horizontally back from the rims. The cost of exploration would be excessive and out of proportion to any return that can reasonably be expected from any ore deposits that might be disclosed by the drilling.

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The property known as the Eagle's Aerie and Little Windy groups consist of 8 unpatented lode mining claims divided into one group of 3 claims, the Eagle's Aerie No. 2, 3 and 4, and the Little Windy group of 5 claims the Little Windy No. 1, 2 and 3, the Lucky Toss No. 2 and the Little Loraine.

The Eagle's Aerie claims are in Section 4, T. 8S, R. 3E, B.H.M., Fall River County, S. Dak. and one approximately 7 miles north and slightly east of Edgemont. The Little Windy group approximately 3 miles to the northwest and up Craven Canyon is about 10 miles from Edgemont.

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CONCLUSIONS AND RECOMMENDATIONS

Considering all factors it is concluded that the probabilities of making a significant discovery are insufficient to warrant exploration of the property. It is recommended that the application be denied.

The conclusions and probability of an unfavorable recommendation by the local field team were discussed by one of the members (E. O. Bingen) at some length with Mr. John Donnelly who stated that he was connected with the Lakota Mining and Exploration Company. He was in disagreement with the conclusion.

FILE COPY
SURNAME:

700

F.H. Knouse
Ellis
Hedges
Kurtz

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

FEB 6 1953

Lakota Mining and Exploration Company
c/o Mr. Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

Re: Docket No. DMA-2693 (Uranium)
Little Windy, Maple Aerie, Little
Lorraine and Lucky Rose Group of
Claims
Fall River County, South Dakota

Dear Sirs:

The application for assistance in exploring your property in Fall River County, South Dakota, under the above captioned docket number, has been reviewed by the Rare and Miscellaneous Metals Division of the Defense Minerals Exploration Administration. Your application has been referred for a field examination to the Executive Officer of Region V at the following address:

Mr. W. B. Needham
Executive Officer, Region V
DMA Field Team
2908 Colfax Ave., South
Minneapolis 8, Minnesota

The Regional Office will contact you at the earliest opportunity in regard to your project.

Sincerely yours,

C. O. Mittendorf (for) F.H. 2-6-53

Administrator

FHKnouse/jem
2/4/53
cc to: Adm. Reading File
Docket
Messrs. Ellis
Knouse
Field Team, Region V (2)

FILE COPY
780 RNAME:

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

FEB 6 1953

Mr. A. B. Needham
Executive Officer, Region V
DMEA Field Team
2908 Colfax Ave., South
Minneapolis 8, Minnesota

Re: Docket No. DMEA-2693 (Uranium)
Lakota Mining and Exploration Co.
Little Windy, Eagle Peric, Little
Lorraine and Lucky Loss Group of
Claims
Fall River County, South Dakota

Dear Mr. Needham:

The captioned application is referred to your office for a field examination.

Copies of memoranda from Mr. Arthur F. Butler, Jr., dated January 28, 1953, and Mr. H. D. Keiser, dated February 4, 1953, outlining questions to be covered in the examining engineers' reports are enclosed.

If your office recommends either the proposed program submitted by the Applicant, or an alternate one approved by the Applicant, kindly furnish us with the detailed information required to draft a contract. This information should include any property controlled by the Applicant that will benefit from a recommended exploration program, also the required copies signed by the property owners of Form 9-203 "Owner's Consent to Lien" covering any property to be included in the contract that is not owned by the Applicant for which these forms have not been submitted.

Under the date of September 11, 195., copies of the application and related data were transmitted to your office. We are also attaching a copy of the Amended Application with related data.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee
FLKnouse/jen 2/4/53
cc to: Adm. Reading File
Docket
Messrs. HDKeiser-3641
A.Butler-3206 GSA
J.Hosted-3210 GSA
Ellis Knouse (pr. Com.
Field Team, Reg. V

Enclosures
As Rev. Jt

J. H. Hedges
Member, Bureau of Mines

A. R. Kinkel, Jr.
Member, Geological Survey

FLK
Ellis
Selfridge

P.H.
2-6-53

2/4/53 gla

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C. February 4, 1953

Memorandum

To: Ernest William Ellis, DMEA Member,
Uranium Commodity Committee, Room 4640

From: H. D. Keiser, Bureau of Mines Member,
Uranium Commodity Committee

Subject: Supplemental material, DMEA Docket 2693, Lakota Mining & Exploration Co., c/o Harry Pinneker, Scottsbluff National Bank, Scottsbluff, Nebraska.

I have reviewed the subject supplemental material and discussed it with Arthur P. Butler, Geological Survey Member, and Joseph O. Hosted, representative of the Atomic Energy Commission.

It is recommended that the basic application and the supplemental material be referred to the field team for examination and report, and that the field team be requested to review the application with the representatives of both the Geological Survey and Atomic Energy Commission stationed at Hot Springs, South Dakota.

H. D. Keiser

H. D. Keiser

Attachments

STANDARD FORM NO. 64

2/3/53 jer

Office Memorandum • UNITED STATES GOVERNMENT

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
FEB 2 1953

TO : E. Wm. Ellis, DMEA Member, Uranium Commodity Committee

DATE: January 28, 1953

FROM : A. P. Butler, Jr., USGS Member, Uranium Commodity Committee

SUBJECT: DMEA Docket 2693 (Uranium Revised Application. Lokata Mining and Exploration Company, Scottsbluff, Nebraska - Applicant: Little Windy Group, Little Lorraine Claim, Eagle Aerie Claims, and Lucky Toss Claim, Craven Canyon Area, South Dakota.

Comment

No specific information pertaining to this application is available in the Washington files of the Geological Survey. The claims are situated, however, in a potentially uranium-bearing area. In addition, the information supplied in the consultant's report, which accompanies the revised application, furnishes some specific evidence of a presence of uranium in probable commercial grade. The data, however, are inadequate for a satisfactory appraisal of the amount and layout of the exploration that might be desirable on the applicant's properties. These factors can be determined only by field examination.

Recommendation

I recommend that this application be referred to the field team for determination of its merits. I suggest strongly that the members of the field team consult with the local Geological Survey party stationed at Hot Springs, South Dakota, and also with the staff of the AEC stationed in the same town to obtain the benefits of the information and suggestions that those groups may be able to furnish with respect to the applicant's property.

Arthur P. Butler Jr.
A. P. Butler, Jr.

Copy to: E. Wm. Ellis

IN REPLY REFER TO:

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

E. Wm. Ellis, DMEA Member, Uranium Commodity Committee

September 17, 1952

A. P. Butler, Jr., USGS Member, Uranium Commodity Committee

Department of the Interior
Defense Minerals Administration
RECEIVED
FEB 2 1953

DMEA Docket 2693 (Uranium) Lakota Mining and Exploration Company, Scottsbluff, Nebraska - Applicant: Little Windy Group, Little Lorraine Claim, Eagle Aerie Claims, and Lucky Toss Claim, Craven Canyon Area, South Dakota.

Although the properties of the applicant identified in the subject above are in an area of potentially promising new deposits of carnotite, the application is deficient in the respects set forth below, and until these are remedied the geological merit of the proposal cannot be determined and it should be returned to the applicant for correction:

1. The location of the claims with respect to significant geological features and mineralized ground is not shown either by description or map.

2. The relation of proposed exploration to mineralized ground and possible ore bodies also is not shown. It is, therefore, impossible to relate the applicant's proposal to the features that he intends to explore.

According to the map contained in Geological Survey Circular 175, submitted with the application, some of the claims that the applicant proposes to explore appear to overlap grounds covered by other claims.

Arthur P. Butler, Jr.

Copy to: E. Wm. Ellis

January 5, 1953

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 8 1953

United States Department of Interior
Defense Minerals Exploration Administration
Washington 25, D. C.
Att: Mr. Ernest William Ellis

Re: Docket No DMEA-2693 Uranium
Amended Loan Application

Sirs:

In answer to your letter of September 26, 1952, we are herein inclosing the necessary information required by your office.

1. The assignment and consent of assignments transferring the lease agreements from Mr. Harry Pinneker to the Lakota Mining and Exploration Company.

2. The original and five copies of the owner consent to lien (Form MF-203).

3 & 4. Maps and sketches drawn to scale of claims, available geological information, location of proposed drill holes etc.. Four copies under separate cover, this being an engineers report by Mr. John I. Schumacher of Grand Junction, Colorado.

Upon close study of our original application and the amount of work possible (Terrain difficulties etc.) we have greatly lessened the amount of work proposed, and furthermore, have decided to contract the drilling on a per foot basis to Mr. Robert Williams of Norwood Colorado. Inclosed are four copies of his bid proposal.

On page 7 of Mr. Schumacher's report under "Cost of Exploration" is 10,800 feet of wagon drilling at $0.95/ft. This is an average between William's bid of $0.85 and $ 1.10 per foot.

So our loan application will be for $ 14,080.00 instead of our previous figure of $ 51,840.00.

We are in the process of securing some additional geological information from the A.E.C. office in Hot Springs, South Dakota and will forward it on to you upon receiving it.

This application and engineers report was written around the lode claim Eagle Aerie # 1, however, due to unforeseen circumstances, to date, we have not been able to secure the lease. If we do secure the lease on this we will send the necessary papers on to the D.M.E.A. If we do not secure the lease, naturally our loan will not apply to this claim and our proposed work will be that much less.

We cannot wait until we definitely know the disposition of this claim because of the time element involved.

Sincerely yours,

Harry Pinneker

Harry Pinneker, Secretary and Treas.
Lakota Mining and Exploration Company
Scottsbluff National Bank
Scottsbluff, Nebraska

January 5, 1953

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 8 1953

United States Department of Interior
Defense Minerals Exploration Administration
Washington 25, D. C.
Att: Mr. Ernest Lister Ellis

Re: Docket No. M-2-93 Uranium
Amended Loan Application

Gentlemen:

In answer to your letter of September 26, 1952, we are herein including the necessary information required by your office.

1. The assignment and consent of assignments transferring the lease agreements from Mr. Harry Pinneker to the Dakota Mining and Exploration Company.

2. The original and five copies of the owner consent to lien (Form DMEA-23).

3 & 4. Maps and sketches drawn to scale of claims, available geological information, location of proposed drill holes etc.. Four copies under separate cover, this being an engineers report by Mr. John I. Schumacher of Grand Junction, Colorado.

Upon close study of our original application and the amount of work possible (terrain difficulties etc.) we have greatly lessened the amount of work proposed, and furthermore, have decided to contract the drilling on a per foot basis to Mr. Robert Williams of Norwood Colorado. Inclosed are four copies of his bid proposal.

In paragraph of Mr. Schumacher's report under "Cost of Exploration" is listed [illegible] feet of [illegible] drilling at [illegible].95/ft. This is an average between Williams's bid of [illegible].6 and [illegible] per foot.

Our loan application will be for [illegible], [illegible].00 instead of our previous figure of $[illegible],[illegible].00.

We are in the process of securing some additional geological information from the A.E.C. office in Rapid City, South Dakota and will forward it on to you upon receiving it.

This application and engineers report was written prior to the [illegible] deadline, however, due to unforeseen circumstances, [illegible], we have not been able to secure the loan. If we do secure the loan [illegible] we will send the necessary [illegible] to the D.M.E.A. [illegible] we do not secure the loan, naturally our loan will lapse [illegible] this application and our proposed work will be that much less.

We cannot wait until we definitely know the [illegible] because of the [illegible] involved.

Yours truly,

Harry Pinneker

Harry Pinneker, President
Dakota Mining and Exploration Company
Scottsbluff National Bank
Scottsbluff, Nebraska

Norwood, Colorado
December 27, 1952

Ivan C. Lovett
2001 4th Avenue
Scotts Bluff, Nebraska

Dear Sir:

Listed below are the prices per foot of wagon drilling for various depths per your request:

0 - 50 feet.	$ .85
50 - 100 feet	1.10

I understand that the requirements for this drilling will be similar to the specifications set up at the A. E. C. and U. S. Geological survey.

This price includes the food and living facilities for my own men.

My equipment consists of two wagon drills with 18 foot change of steel and 315 cubic feet compressor, similar to those used on Government contracts.

Very truly yours,

Robert Williams

Robert Williams

January 5, 1952

Mr. Harry Sandler
Gates Mining and Exploration Company
Scottsbluff National Bank
Scottsbluff, Nebraska

Dear Sir:

I am enclosing herewith, four (4) copies of a bid on magnesite drilling made by Mr. Robert W. Williams of Morrison, Colorado.

I talked to Mr. Williams by phone just before he came down and he is a member of directors of the Gates Mining and Exploration Company and he is very anxious to do it.

Sincerely,

Ivan C. Lovett, M.D.

ICL/vc

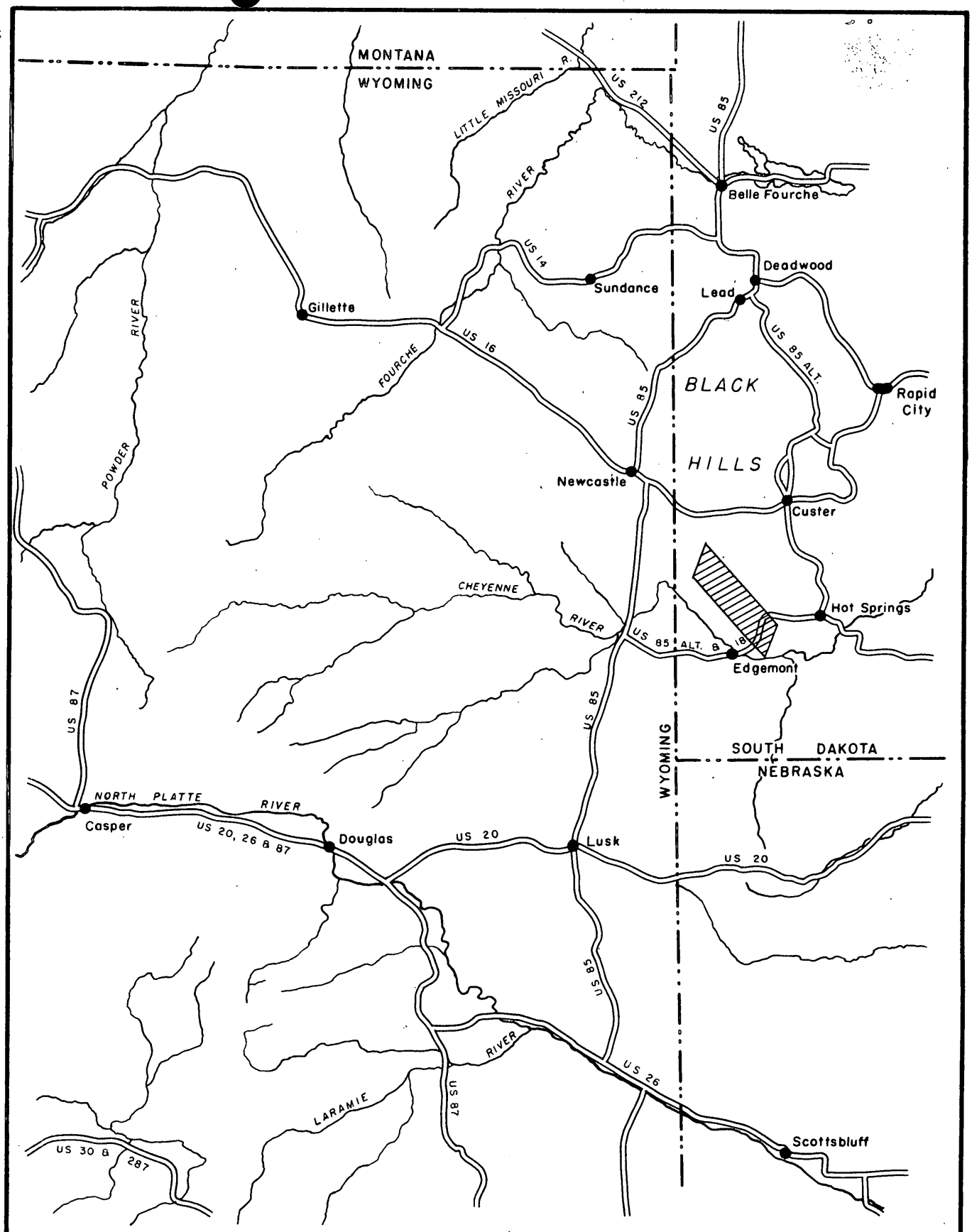


FIGURE I

INDEX MAP OF EDGEMONT AREA

FALL RIVER COUNTY, SOUTH DAKOTA

REPORT OF INVESTIGATION OF THE LITTLE WINDY AND EAGLE AERIE GROUPS, FALL RIVER COUNTY, SOUTH DAKOTA

INTRODUCTION

This report written as part of a Defense Minerals Exploration Loan application covers the following claims:

Little Windy Group

Little Windy No. 1
Little Windy No. 2
Little Windy No. 3
Little Lorraine
Lucky Toss No. 2

Eagle Aerie Group

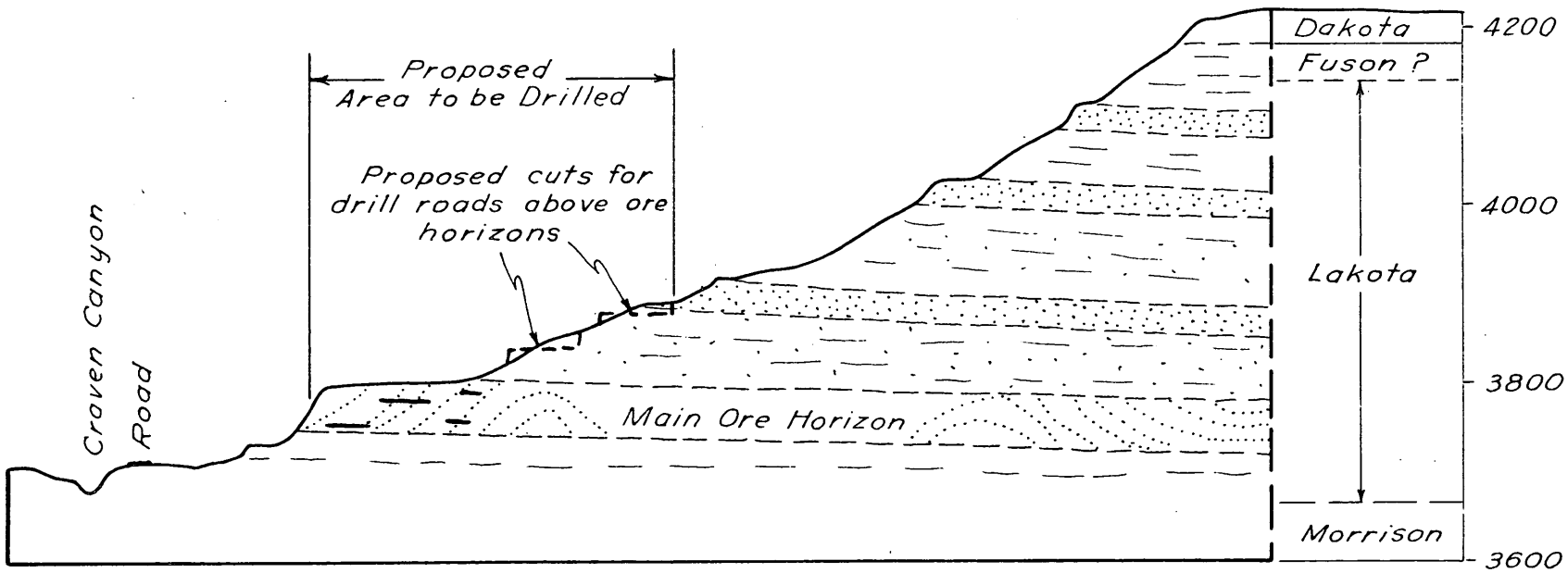
Eagle Aerie No. 1
Eagle Aerie No. 2
Eagle Aerie No. 3
Eagle Aerie No. 4

The claims are owned by the Steven's brothers of Edgemont, South Dakota and are controlled by Mr. Harry Pinneker of Scottsbluff, Nebraska by lease agreement. These claims were located by the Steven's brothers in early 1952 shortly after the area came into prominence.

LOCATION AND PHYSIOGRAPHY

The claims are located approximately 8 miles north of Edgemont, South Dakota in Fall River County. The Little Windy Group lie in Section 25, T 7 S, R 2 E, and in Section 30, T 7 S, R 3 E along Craven Canyon. The Eagle Aerie Group lie in Section 4, T 8 S, R 3 E, near the junction of Craven Canyon with Red Canyon.

The elevation ranges from 3500 in the bottoms of the canyons to 4500 on the higher rims. The weather is mild in summer and moderately severe in winters but not bad enough to suspend mining or drilling operations.



Scale 1" = 200 ft. approx.

FIGURE 2

TYPICAL SECTION – EDGEMONT AREA

THROUGH THE LUCKY TOSS NO. 2

The Edgemont area in general lies on the edge of the sediments which have been uplifted to dip about 2 to 3 degrees to the south and southwest. These relatively flat sediments have been cut by a series of streams flowing in a southeast to a southwest direction. The upper benches between the canyons form gradual dipping grass covered slopes while the debris covered canyon sides have a plentiful supply of pine trees. Steep, well exposed, rims and benches as those which characterize the carnotite producing areas of Colorado are not common in this area and prospecting by surface features is more difficult. Road construction and development drilling, however, should be less costly because of the less severe topography.

GENERAL GEOLOGY

The Edgemont, South Dakota area lies on the southwest flank of the Black Hills uplift which tilted the relatively flat sediments two or three degrees in a south westerly direction.

The general geology of this area has been described at length in several publications including Edgemont Folio N. 108, USGS 1904; Carnotite Prospects of the Craven Canyon Area, USGS, Cir. No. 175, 1952 and Carnotite Deposits Near Edgemont, South Dakota, AEC, Feb. 1952. No further detail description is necessary here, however, a typical geologic section is shown on Figure 2 and it is similar to sections through all the claims in this report. Since the slopes are soil and tree covered structural features and even contacts are difficult to determine in most places.

In general the area is capped with the Dakota formation which averages about 35 feet thick. This is underlain by the Fuson, an inconspicuous formation made up of thin bedded clays, shales and sandstones. Below the Fuson is the Lakota which consists of a series of thick, soft sandstone

lenses with thin shale and clay partings.

No major faults, fractures or folds were recognized in or near the ore horizons. Some minor fractures or joints near the ore are filled with high grade carnotite, however, there is no apparent relation of structural features to the deposition of the ore.

ORE DEPOSITS

The majority of the outcrops occur in the thick sandstones of the lower Lakota formation, however, one deposit was seen in the Fuson and recently several commercial deposits have been mined in the Dakota. Outcrops of the Little Windy Group and the Eagle Aerie Group are in the lower Lakota and below the thick, black carbonaceous shale bed that forms a prominent marker in several areas.

With the small amount of development work that has been done on these claims and the area in general, it is difficult to determine the origin or habits of the ore, however, from the outcrops seen it is evident that the ore generally occurs in a thick light brown to red, course-grained, sandstone which shows some signs of alteration. Some of the more apparent evidence such as rich carnotite fracture filling, alteration, give indications that the ore may have been deposited by the upward or downward perculation of solutions or gasses after the sands had been deposited and solidified. The presence of carbon was noted but it does not appear to be a definite favorable characteristic. More exploration and development work will be required before guides can be established.

The ore bodies are irregular in shape and range from small pods containing about a ton of ore to large masses of carnotite impregnated sandstone up to several thousand tons.

The outcrops on the Lucky Toss No. 2 are found at different levels within the thick favorable sandstone. Sample No. 2 was cut near the top of this sandstone and shows 0.22 U_3O_8. Sample No. 3 which was cut along the bottom of this sandstone rim assayed 0.31 U_3O_8. There seems to be no continuity between these bodies of ore which are approximately 35 feet apart stratigraphically and within the same sand lens. The outcrop at the Little Windy No. 1 is on the same horizon and analysis shows this sample to contain 0.14 U_3O_8. Another outcrop was found on the Little Windy No. 2 and on the Eagle Aerie No. 1

INDIVIDUAL OUTCROPS

The most favorable outcrop as for the number of exposures of ore grade and development possibilities is that of the Lucky Toss No. 2. Three mineralized sandstone lenses show ore grade material that varies from three feet to six inches in thickness. The length which is difficult to determine without a considerable number of check samples appears to range from four to twenty feet. Visual estimation is extremely difficult in this type ore, however, high counter readings can be obtained all along the exposed rim on the point where the ore outcrops.

The exposures of ore on the Little Windy No. 1 and No. 2 in the discovery cuts is difficult to evalutate on the basis of size and shape because of the small amount of work done in opening up these outcrops. The ore appears to be disseminated irregularly in the sandstone and true thickness and grade are not apparent.

The outcrop of mineralized material on the Eagle Aerie No. 1 has been picked up about 50 feet along the rim by surface exposure and float. The part of the relatively flat lying bed from which the sample was taken varies from two feet to six inches in places where it is exposed in the surface cut.

HISTORY

The two groups of claims, Little Windy and the Eagle Aerie were prospected and located by the Steven's brothers in Early 1952.

The Atomic Energy Commission field representatives visited some of the claims and sampled the deposits but little or no exploration or development work has been done.

DEVELOPMENT

Aside from the initial discovery cut on the claims, little work has been done on the claims. Ore is exposed in the discovery cut on the Little Windy No. 1, Little Windy No. 2 and the Lucky Toss No. 2 and also on the Eagle Aerie No. 1. Samples were taken from several ore exposures and they are listed below with their descriptions:

SAMPLE NO.	U_3O_8	V_2O_5	CLAIM	DESCRIPTION
1	0.14	0.13	Little Windy No. 1	Grab sample at discovery cut
2	0.22	0.08	Lucky Toss No. 2	20 in. cut across well mnlz. zone top of sandstone rim
3	0.31	0.17	Lucky Toss No. 2	Mnlz. zone at bottom of same rim as No. 2
4	0.15	0.18	Eagle Aerie No. 1	Grab sample at discovery cut

EXPLORATION PLANS

Exploration would consist mainly of wagon drill (percussion) holes spaced at 25 foot intervals around the outcrops and at 50 or 100 foot spacing away from the outcrops. Two roads, one constructed on top of the main ore sandstone and one 50 foot above and behind the top of the ore sandstone would provide enough drilling sites to test the favorability to within the limits of the wagon drilling. The proposed roads are shown on Figures 3 and 4. Deeper drilling at this time which would require a diamond drill would be impractical until the favorability and geologic criteria to intelligently guide a deep drilling program were recognized.

First Phase Drilling

Holes should be spaced at 20 foot intervals around the outcrops on the Little Andy No. 1 and Little Andy No. 2, Lucky Coon No. 2 and the Eagle Aerie No. 1. A small bench behind the outcrops on the Lucky Coon appears to be one of the most favorable places to drill. Four min outcrops exposed on three sides give reason to believe this ore may continue through the bench. It is estimated that it will require twenty holes 60 feet deep on this claim to complete the initial phase of drilling and 900 feet of drilling should be done around each of the other three outcrops. Total footage on this phase would require 3300 feet.

Second Phase

Wide spaced drilling (100 foot intervals) along a drill road at the top of the ore horizon would find other favorable zones that are not exposed because of surface debris. Favorable zone is criteria may be determined on the relatively close-spaced initial phase which should be helpful in selecting more favorable zones on a wider spacing. It is estimated that this phase of drilling would require 20 holes averaging 60 feet deep on the Eagle Aerie Group and 10 holes on the Little Andy Group which averages 60 feet in depth. Total for this phase would be 3600 feet.

Third Phase

This phase would consist of blocking out the mineralized and favorable holes found on the first two phases. It is estimated that this phase would require 50 percent of the initial two phases or 3600 feet. Total for all three phases would be 10,800 feet.

COST OF EXPLORATION

Contractural Costs	
Wagon drilling 10800 feet @ 0.95/ft.	$10260.00
Road building 160 hrs. @ $12.00/hr.	1920.00
Other Costs	
Analysis 100 samples @ $5.00	500.00
Engineering 2½ months @ $500.00 mo.	1250.00
Vehicle operation incidental to project 1500 miles @ 0.10/mi.	150.00
Total Cost of Exploration	$14080.00
Cost per foot	1.372

LABOR AND LIVING CONDITIONS

Unskilled labor is in adequate supply while skilled labor, such as drillers and miners are scarce, however, the work planned on this proposed project would be done by contract and labor would be no problem.

Contractors would furnish their own housing and no problems would be encountered. The town of Edgemont, eight miles south of the area, has adequate housing facilities.

SUPPLIES

Supplies of all kinds needed for this project can be purchased in Edgemont or Hot Springs, South Dakota which is serviced by the Chicago, Burlington and Quincy Railroad.

An AEC ore purchasing depot has been established at Edgemont as of December 1, 1952.

ACCESS ROADS

The area covered by this report has an adequate network of roads through the main districts which are good in dry weather but muddy in wet

weather. Ore shipments, however, would not be held up for periods of longer than two or three days during rains or thaws.

The access road from Red Canyon through Cravon Canyon to the Little Windy Group needs grading in places where the seasonal showers have washed the road in the creek bottoms making the road impassable. The cost of re-grading which would require only a small expenditure of approximately three hundred dollars has been included in this project.

CONCLUSION

The Edgemont Area in general and the Little Windy and Eagle Aerie Groups in particular have had little development and exploration work to prove the merits of these areas. These areas compare favorably in grade of ore and size of deposits with those of the Colorado Plateau in its early stages of development. An exploration project as described herein might help to evaluate the area as a whole and may assist in developing the much needed reserves for our rapidly expanding Atomic Energy Program.

Since little has been done to establish geologic criteria favorable for the deposition of ore in the area, considerable reliance must be placed on the judgment of the qualified operators to take full advantage of the initial drilling to guide the wide-spaced drilling.

The Little Windy Group offers an excellent opportunity to prove or disapprove the continuity of the ore deposits. The number of mineralized outcrops in this area as compared to the amount of rim exposed far exceeds the proportion in the Colorado Plateau and this leads the author to believe that large ore bodies may exist behind the rims that can be found only by drilling.

The Eagle Aerie Group shows only one mineralized outcrop, however, radioactivity has been picked up with field counters at other places along the ore horizon, and radio-active anomolies have been plotted by the Atomic Energy Commission's Airborne survey crews near or on the Eagle Aerie Claims. More

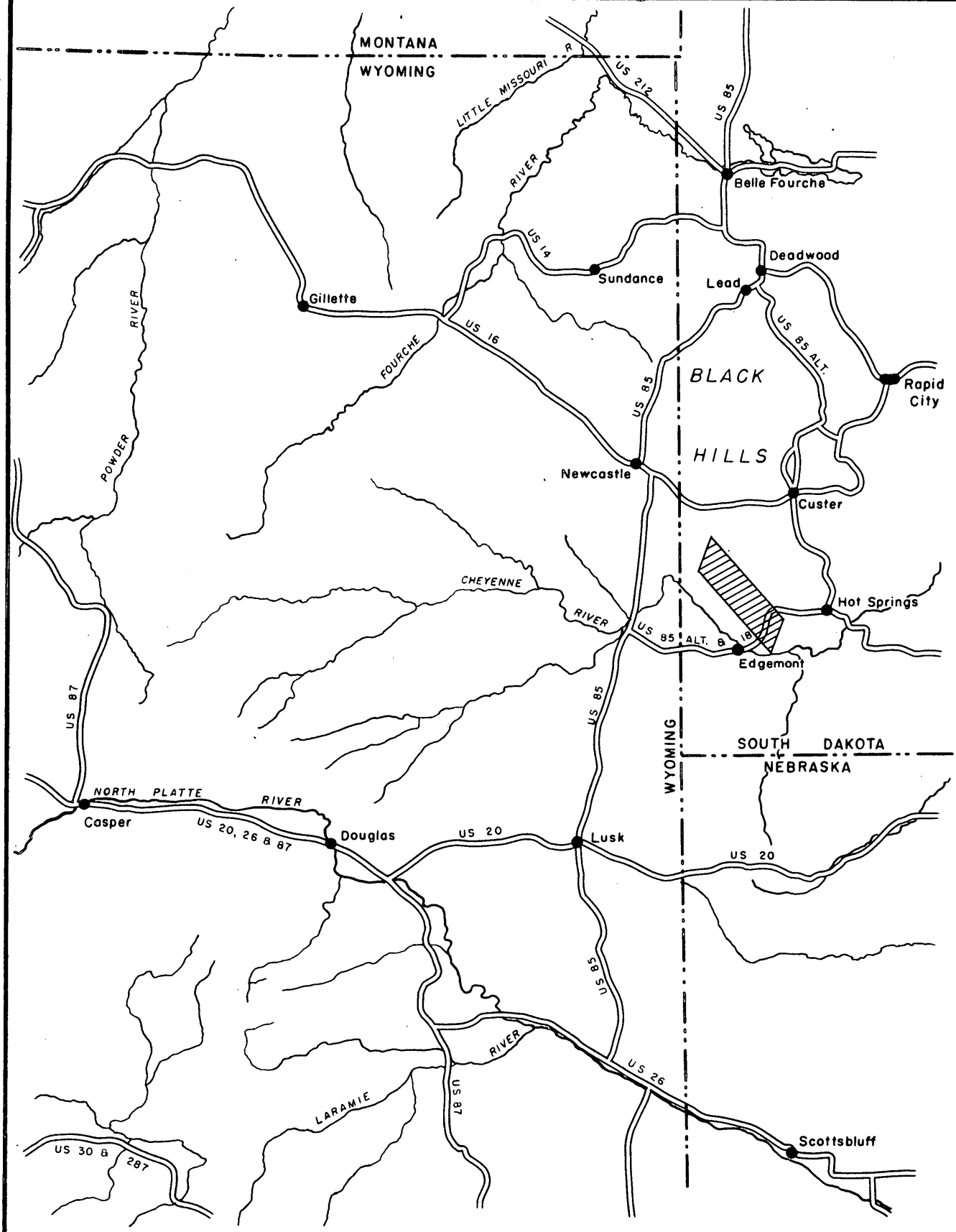
detailed information on these anomolies will be forwarded when it is received from the Atomic Energy Commission Office.

JOHN I. SCHUMACHER

A point on the rim showing three exposures of ore on the Lucky Toss No. 2, Craven Canyon

Looking across Craven Canyon from the Little Windys to the Lucky Toss No. 2 Claim. Ore rim is about 100 feet above canyon floor.

Looking from the valley floor along the Eagle Aerie No. 1 to the west end of Eagle Aerie No. 3 and No. 4.



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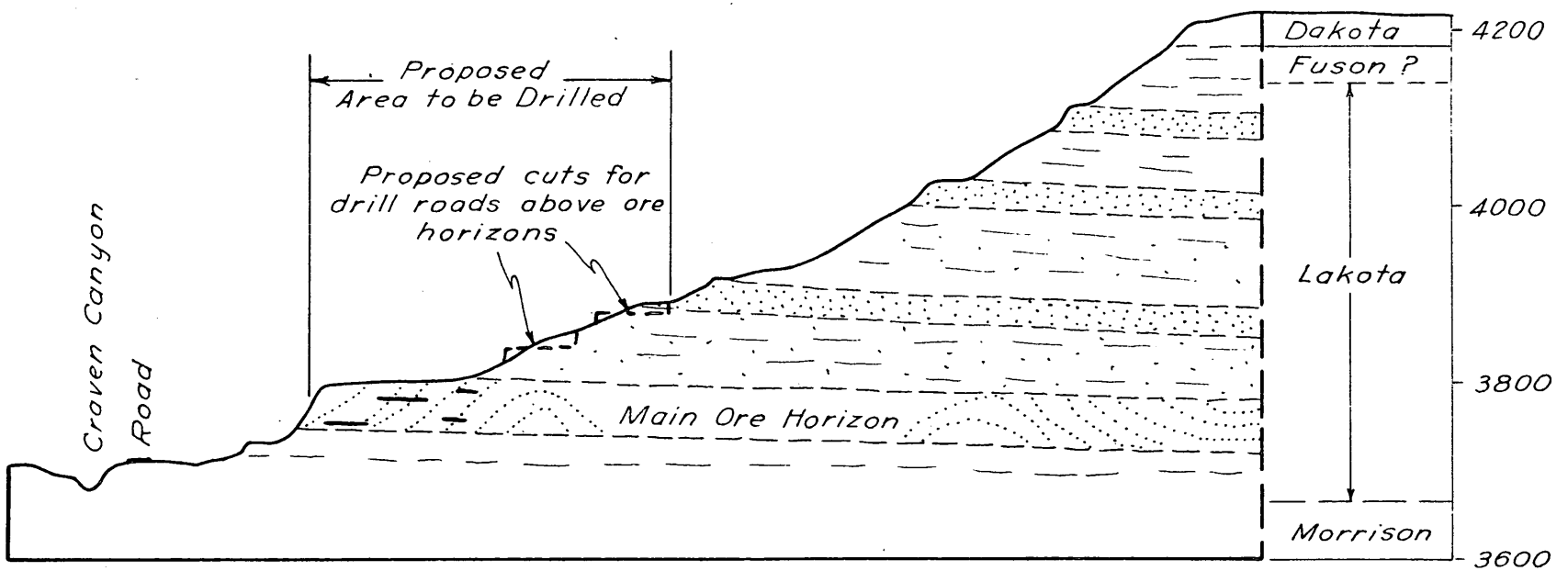
LOCATION AND PHYSIOGRAPHY

The claims are located approximately 8 miles north of Edgemont, South Dakota in Fall River County. The Little Windy Group lie in Section 25, T 7 S, R 2 E, and in Section 30, T 7 S, R 3 E along Craven Canyon. The Eagle Aerie Group lie in Section 4, T 8 S, R 3 E, near the junction of Craven Canyon with Red Canyon.

The elevation ranges from 3500 in the bottoms of the canyons to 4500 on the higher rims. The weather is mild in summer and moderately severe in winters but not bad enough to suspend mining or drilling operations.



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First Phase Drilling

Holes should be spaced at 25 foot intervals around the outcrops on the Little Windy No. 1 and Little Windy No. 3, Lucky Toss No. 2 and the Eagle Aerie No. 1. A small bench behind the outcrops on the Lucky Toss appears to be one of the most favorable places to drill. Four rim outcrops exposed on three sides give reason to believe this ore may continue through the bench. It is estimated that it will require twenty holes 60 feet deep on this claim to complete the initial phase of drilling and 900 feet of drilling should be done around each of the other three outcrops. Total footage on this phase would require 3900 feet.

Second Stage

Wide spaced drilling (100 foot intervals) along a drill road at the top of the ore horizon would find other favorable zones that are not exposed because of surface debris. Favorable geologic criteria may be determined on the relatively close-spaced initial phase which should be helpful in selecting more favorable areas on a wider spacing. It is estimated that this phase of drilling would require 36 holes averaging 60 feet deep on the Eagle Aerie Group and 19 holes on the Little Windy Group which averages 60 feet in depth. Total for this phase would be 3300 feet.

Third Phase

This phase would consist of blocking out the mineralized and favorable holes found on the first two phases. It is estimated that this phase would require 50 percent of the initial two phases or 3600 feet. Total for all three phases would be 10,800 feet.

COST OF EXPLORATION

Contractural Costs	
Wagon drilling 10800 feet @ 0.95/ft.	$10260.00
Road building 160 hrs. @ $12.00/hr.	1920.00
Other Costs	
Analysis 100 samples @ $5.00	500.00
Engineering 2½ months @ $500.00 mo.	1250.00
Vehicle operation incidental to project 1500 miles @ 0.10/mi.	150.00
Total Cost of Exploration	$14080.00
Cost per foot	1.372

LABOR AND LIVING CONDITIONS

Unskilled labor is in adequate supply while skilled labor, such as drillers and miners are scarce, however, the work planned on this proposed project would be done by contract and labor would be no problem.

Contractors would furnish their own housing and no problems would be encountered. The town of Edgemont, eight miles south of the area, has adequate housing facilities.

SUPPLIES

Supplies of all kinds needed for this project can be purchased in Edgemont or Hot Springs, South Dakota which is serviced by the Chicago, Burlington and Quincy Railroad.

An AEC ore purchasing depot has been established at Edgemont as of December 1, 1952.

ACCESS ROADS

The area covered by this report has an adequate network of roads through the main districts which are good in dry weather but muddy in wet

weather. Ore shipments, however, would not be held up for periods of longer than two or three days during rains or thaws.

The access road from Red Canyon through Craven Canyon to the Little Windy Group needs grading in places where the seasonal showers have washed the road in the creek bottoms making the road impassable. The cost of re-grading which would require only a small expenditure of approximately three hundred dollars has been included in this project.

CONCLUSION

The Edgemont Area in general and the Little Windy and Eagle Aerie Groups in particular have had little development and exploration work to prove the merits of these areas. These areas compare favorably in grade of ore and size of deposits with those of the Colorado Plateau in its early stages of development. An exploration project as described herein might help to evaluate the area as a whole and may assist in developing the much needed reserves for our rapidly expanding Atomic Energy Program.

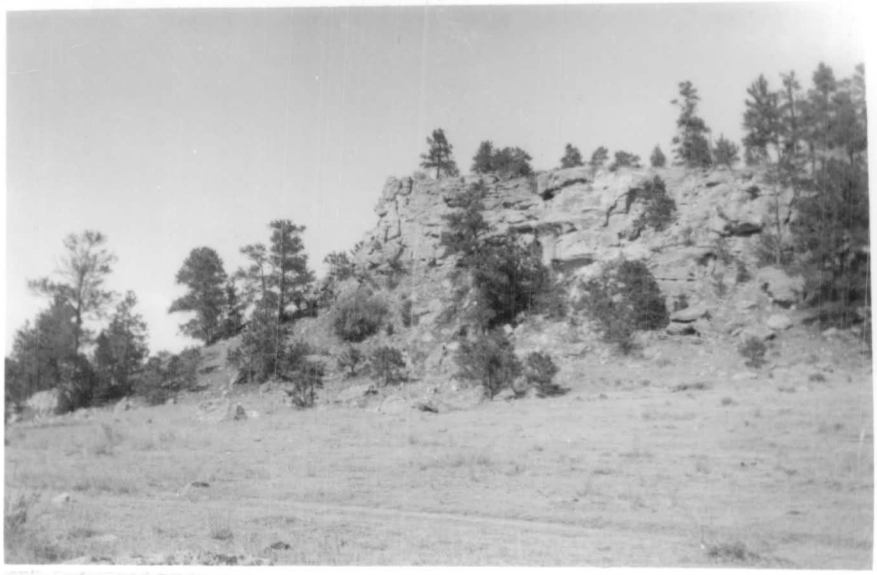
Since little has been done to establish geologic criteria favorable for the deposition of ore in the area, considerable reliance must be placed on the judgment of the qualified operators to take full advantage of the initial drilling to guide the wide-spaced drilling.

The Little Windy Group offers an excellent opportunity to prove or disapprove the continuity of the ore deposits. The number of mineralized outcrops in this area as compared to the amount of rim exposed far exceeds the proportion in the Colorado Plateau and this leads the author to believe that large ore bodies may exist behind the rims that can be found only by drilling.

The Eagle Aerie Group shows only one mineralized outcrop, however, radioactivity has been picked up with field counters at other places along the ore horizon, and radio-active anomolies have been plotted by the Atomic Energy Commission's Airborne survey crews near or on the Eagle Aerie Claims. More

detailed information on these anomolies will be forwarded when it is received from the Atomic Energy Commission Office.

John I. Schumacher
JOHN I. SCHUMACHER



A point on the rim showing three exposures of ore on the Lucky Toss No. 2, Craven Canyon.

Looking across Craven Canyon from the Little Windys to the Lucky Toss No. 2 Claim. Ore rim is about 100 feet above canyon floor.

Looking from the valley floor along the Eagle Aerie No. 1 to the west end of Eagle Aerie No. 3 and No. 4.

Norwood, Colorado
December 27, 1952

Ivan C. Lovett
2001 4th Avenue
Scotts Bluff, Nebraska

Dear Sir:

Listed below are the prices per foot of wagon drilling for various depths per your request:

0 - 50 feet.	$ .85
50 - 100 feet	1.10

I understand that the requirements for this drilling will be similar to the specifications set up at the A. E. C. and U. S. Geological survey.

This price includes the food and living facilities for my own men.

My equipment consists of two wagon drills with 18 foot change of steel and 315 cubic feet compressor, similar to those used on Government contracts.

Very truly yours,

Robert Williams

Robert Williams

IVAN C. LOVETT, M. D.
34 WELLER BUILDING
SCOTTSBLUFF, NEBRASKA

January 5, 1952

Mr. Harry Pinneker
Lakota Mining and Exploration Company
Scottsbluff National Bank
Scottsbluff, Nebraska

Dear Sir:

I am enclosing herewith, four (4) copies of a bid on wagon drilling made by Mr. Robert Williams of Norwood, Colorado.

I talked to Mr. Williams by phone just before he sent these estimates and being a member of directors of The Lakota Mining and Exploration Company these were erroneously sent to me.

Sincerely,

Ivan C. Lovett

Ivan C. Lovett, M. D.

ICL/veg

700 FILE COPY
SURNAME:

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

F. L. Knouse
Ellis
Mathews

DEC 18 1952

Lakota Mining and Exploration Company
c/o Mr. Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

Re: Docket No. DMEA-2693 (Uranium)
Little Windy, Eagle Aerie, Little Lorraine and Lucky Toss group of claims, Fall River County, S. Dak.

Dear Sirs:

A review of your application of September 6, 1952, for an exploration contract in the amount of $51,840.00, reveals that a letter dated September 26, 1952, requested additional information necessary to process your application.

Inasmuch as we have received no reply, we assume that you no longer desire to proceed with the application. We wish to cooperate with you in the matter of allowing ample time, but if the needed data has not been received by January 19, 1953, we will then consider the docket closed.

Sincerely yours,

SIGNED

Ernest Wm. Ellis, Chief
Rare and Misc. Metals Division

F.L. 12-18-52

FLKnouse/gla
12-17-52
cc to: Adm. Reading File
Docket
Messrs. A. P. Butler, Jr. Rm. 3206 GSA
H. D. Keiser, Rm. 3647
Mr. Ellis
Mr. Knouse
DMEA Field Team, Region V (2)

FILE COPY
SURNAME:

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C. SEP 26 1952

Lakota Mining and Exploration Company
c/o Mr. Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

Re: Docket No. DMEA-2693 (Uranium)
Little Windy, Eagle Aerie, Little
Lorraine and Lucky Toss group of claims
Fall River County, South Dakota

Dear Sirs:

Reference is made to the captioned application being processed by this office. Before we can proceed further with this processing we will require the following data:

1. The leases covering the mining claims to be explored are to be transferred to the Applicant (Lakota Mining and Exploration Company) with the owners' consent, and copies of these transferred leases, with evidence that these transfers have the owners' approval, are required by this office.

2. We will require from each property owner an original and five signed copies of "Form MF-203 Owner's Consent to Lien". (Fifty-four copies of this form are enclosed.)

3. Furnish maps or sketches drawn to scale outlining the known uranium mineralization, on plan and section, showing geology, sample data, and location of proposed drill holes in relation to the mining claim lines as justification for the proposed work.

4. Supply a mining claim map of the property to be explored, showing the township, range and section lines.

Upon receipt of the above information we will be able to continue processing this application.

FLKnouse/gla 9-25-52
cc to: Adm. Reading File
Docket
Messrs. A.P.Butler, Jr. Rm. 3206 GSA
H.D.Keiser, Rm. 1347
Ellis
Knouse
DMEA Field Team, Region V (2)

Sincerely yours,

signed
9-26-52

Ernest Wm. Ellis, Chief
Rare and Misc. Metals Division

Enclosures-54 copies MF-203

9/19/52 gla

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

September 18, 1952

Memorandum

To: Ernest William Ellis, DMEA Member,
Uranium Commodity Committee, Room 4640

From: H. D. Keiser, Bureau of Mines Member,
Uranium Commodity Committee

Subject: DMEA Docket 2693, Lakota Mining & Exploration Co., c/o Harry Pinneker, Scottsbluff National Bank, Scottsbluff, Nebraska

I have reviewed the application included in the subject docket and discussed it with Arthur P. Butler, Geological Survey Member.

It is recommended that the application be returned to the applicant for inclusion of (1) a map showing the location of the claims listed and the location of drill holes within the claims, and (2) a statement relating the proposed drilling to the geology of and the uranium occurrences on the claims. In summary, the applicant has not presented sufficient evidence as to his proposed drilling program to substantiate the funds that he has requested.

H. D. Keiser

Enclosure

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
SEP 18 1952

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

September 18, 1952

Memorandum

To: Ernest William Ellis, DMEA Member,
Uranium Commodity Committee, Room 4640

From: H. D. Keiser, Bureau of Mines Member,
Uranium Commodity Committee

Subject: DMEA Docket 2693, Lakota Mining & Exploration Co., c/o
Harry Pinneker, Scottsbluff National Bank, Scottsbluff, Nebraska

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H. D. Keiser

STANDARD FORM NO. 64

9/18/52 gfa

Office Memorandum • UNITED STATES GOVERNMENT

TO : E. Wm. Ellis, DMEA Member, Uranium Commodity Committee

DATE: September 17, 1952

FROM : A. P. Butler, Jr., USGS Member, Uranium Commodity Committee

SUBJECT: DMEA Docket 2693 (Uranium) Lakota Mining and Exploration Company, Scottsbluff, Nebraska - Applicant: Little Windy Group, Little Lorraine Claim, Eagle Aerie Claims, and Lucky Toss Claim, Craven Canyon Area, South Dakota.

Although the properties of the applicant identified in the subject above are in an area of potentially promising new deposits of carnotite, the application is deficient in the respects set forth below, and until these are remedied the geological merit of the proposal cannot be determined and it should be returned to the applicant for correction:

1. The location of the claims with respect to significant geological features and mineralized ground is not shown either by description or map.

2. The relation of proposed exploration to mineralized ground and possible ore bodies also is not shown. It is, therefore, impossible to relate the applicant's proposal to the features that he intends to explore.

According to the map contained in Geological Survey Circular 175, submitted with the application, some of the claims that the applicant proposes to explore appear to overlap grounds covered by other claims.

Arthur P. Butler, Jr.

Arthur P. Butler, Jr.

Copy to: E. Wm. Ellis

DEPARTMENT
Dolores

SEP 17 1952

Mr. Harry Pinneker
Lakota Mining and Exploration Co.
Scottsbluff National Bank
Scottsbluff, Nebraska

Subject: DMEA-2693
Re: Exploration Assistance
Little Windy Claims, etc.
September 11, 1952

My dear Mr. Pinneker:

The receipt of your application dated September 6, 1952, for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-2693 and referred to the Rare and Miscellaneous Metals Division.

Kindly refer to DMEA-2693 in any future correspondence relating to your application.

Sincerely yours,

ROBERT E. ADAMS

Robert E. Adams
Chief, Operation's Control
and Statistics Division

25451

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
SEP 10 1952

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska
September 6, 1952

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

Gentlemen:

Herein I am submitting 4(four) copies of form MF103 applications, with attached papers, for your approval.

Any irregularities in the application will be corrected at your request.

Very truly yours

Harry Pinneker

Harry Pinneker

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

SEP 10 1952

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. DMEA-2693
Metal or Mineral
Date Received 9-10-52
Estimated Cost
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Lakota Mining and Exploration Company,
% Harry Pinneker - % Scottsbluff National Bank,
Scottsbluff, Nebraska

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

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

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

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

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract

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

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

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property.

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

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

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes.

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

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

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

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

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

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc.

(*c*) The work will start within 30 days and be completed within 24 months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations.

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

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

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

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

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

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

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

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

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

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

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

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

☐ Money ☐ Use of equipment owned by you ☐ Other

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated September 6, 1952, 195...

Lakota Mining and Exploration Co.
(Applicant)

By Harry Pinneker

Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

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

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

Lakota Mining and Exploration Company
c/o Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

1 a. Lakota Mining and Exploration Company
c/o Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

b. Incorporated in the State of South Dakota

c. President: John Donnelly
3144 West 22
Denver, Colo.
Vice-Pres: I. C. Lovett
2001 4th Ave.
Scottsbluff, Nebraska
Sec-Treas: Harry Pinneker
c/o Scottsbluff National Bank
Scottsbluff, Nebraska

d. Not applicable.

3 a. Legal description of claim as recorded in county court house at Hot Springs, South Dakota:

Little Windy #1: No adequate description. W½Sec 30 T7R 3E Due W 700 ft. Sec. 25, E½. Signed by L. H. Stevens; R. M. Miller, J. E. Lenz.

Little Windy #2: Lease received in mail today. Same objections to description.

Little Windy #3: No adequate description: In Craven Canyon. Located W½Sec 30 T7R3 Due West 700 ft. Sec 25. East Half Running parallel to Little Windy #1 Joining on South Side. Located by Phyllis E. Lenz and Patricia M. Miller
Little Lorraine: Inadequate description. The width being the distance between Little Windy I, II, III and the Lucky Toss #2 and the length being 1000 feet following the thread of the stream in Northerly direction. T7Sec. 30 R3E in W½ of Sec. 30. Located by Lola P. Stevens and Lorraine C. Stevens.

Eagle Aerie #1: No adequate description. W½Sec 4 TS 8R3E. Located by Earl Stevens.
Eagle Aerie #2: No adequate description. W½Sec 4T S8R3E S 600 feet of Eagle Aerie #2. Runs parallel with N 600 feet of Eagle Aerie #1. Located by Earl Stevens.
Eagle Aerie #3: No adequate description. NW¼ S4T8R3E abbuttal to Eagle Aerie #2, on Eagle Aerie #2 West boundary. Located by Gilford E. Stevens.
Eagle Aerie #4: No adequate description. NW¼ Sec 4 T8R3E abbuttal to Eagle Aerie #2 and Eagle Aerie #3. Located by Gilford E. Stevens.
Lucky Toss #2: No description at all. Jest T7Sec 30 R3 Fall River County. Located by Earl Stevens and Gilford E. Stevens.

b. Not Applicable.

c. Lessee

d. See Attached Forms.

e. Not applicable

f. Filing Data: Ranch 23 Misc P.1; Little Windy #2 Book 31 Misc P.145; Lucky Toss #2 28M361 1/29/51; Little Windy #3 31M165 6/4/52; Little Lorraine 31M173 6/25/52; Eagle Aerie #2 31M304 6/2/52; Little Windy #1 31M145 4/14/52; Eagle Aerie #3 31M181 7/26/52; Eagle Aerie #1 31M260 5/6/52.

4.
a. Physical Description:

No mining or exploration (for radioactive minerals) has ever been conducted on any of the above mentioned land. However, visual inspection, trenching and blasting work has been done to complete assessment work. All this work was done along the exposed outcrops of the claims. Discovery exploration consisted of visual inspection and varifying that radio-active minerals were present by the use of a gieger counter. The Gieger counter reading on the various claimes have been consistantly on the higher scale range. Trenching and blasting, where the Gieger counter has responded, has exposed better and more concentrated ore. The best visual location of radio-active mineral was found on the Lucky Toss #2 claim. Here the Lakota sand has a vertical exposure with large crevices running back underneath the overlaying strata.

L[illegible]ota Mining and Exploration Com[illegible]
c/o Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

Visual investigation back into the crevices showed the ore was a better grade than that shown on the face of the exposure. A Gieger counter was placed as far back into the crevice as possible. The Gieger counter showed readings on the higher range scale which verified the visual findings. Samples were taken at various levels on the exposures and sent to United States Vanadium Co. for assay. The assay report reads as follows:

Sample #	V205	U308
52-619	.11 of 1%	.27 of 1%
52-620	.33 of 1%	.72 of 1%
52-621	.11 of 1%	.19 of 1%

Another sample assay report showed the following results:

V205	U308
.14 of 1%	.37 of 1%
.22 of 1%	.52 of 1%
.07 of 1%	.11 of 1%
.14 of 1%	.35 of 1%

Grab samples showed an average of .79 of 1% U308 and .80 of 1% of V205 (USV sample #2706)
All claimes and land under lease can be reached easily with a pick-up truck. Roads into Craven Canyon consist of a forrest trail which is travelled throughout the year.

b. No production of radio-active ore is being taken from any of the land under lease. Exploration has been inadequate to determine the ore reserver.

c. Geology of the two groups of claims (The Windy Group plus the Little Lorraine, and the Eagle Aerie group plus the Stevens Ranch) follows very closely that outlined in Geological Survey Circular 175 which is enclosed with this application. The crossections of the Windy group and the Lucky Toss claim very closely follows the crossection of plate 4 of RMO-881 except that they average a slightly gentler slope (30' or less from the horizontal). The Eagle Aerie Group also follow R[illegible]O-881 very closely except that the slope is not as steep (10 to 20 from the horizontal). This shallow mess of slope should greatly expidite any drilling procedure. Due to the number and variety of radio-active ore bearing outcrops on these claims we believe there is a very good chance that commertial deposits may be discovered.

4.d. This project is very accessible as compared with most Colorado Plateau, projects. The Area under exploration is only 8 miles from a proposed AEC buying station in Edgemont, South Dakota.(See "Location and Accessibility," page 2 Geological Survey Circular 175) Local supply and residence points would be Edgemont 8 miles, Hot Springs 25 miles and Custer, South Dakota 35 miles.

E. Manpower is available. The additonal manpower to John Donnelly will consist of two men to run the "wagonjack". One lead man being a miner from Colorado and a helper being one of the claim owners. Another laborer (local) will be hired for miscellaneous work. Materials will be purchased in Denver from the Colorado Builders Supply Co. (Charley Barry, Manager) and the Union Supply Co. (C. A. Turnquist, Agent). They will have all Capital Equipment available by November 1st, 1952. Miscellaneous equipment will be purchased from various outlets in Grand Junction, Colorado. Operating Supplies (fuel, bits, tires etc.,) will be purchased locally in Fall River and Custer Counties, South Dakota. Water is available from a well on the Stevens Ranch but, very little will be needed for exploration. Power will be diesel (GMC Series 4-51) on the air compressor (Ingersoll Rand Model DR-210)

Lakota Mining and Exploration Company
C/O Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

5 a. Uranium and Vanadium Ores.

b. Exploration will consist of, first "Wagon Drilling" areas which have responded to the Geiger counter. Wagon Drilling is the accepted method of exploration drilling on the Colorado Plateau for deposits to 130 feet in depth where a core is not required.

The drilling will be done back of all out-crops and on the slopes in front of the out-crop where Geiger counter reactions have been noticed. The drilling will be done on 50 or 100 foot centers to a depth necessary to pass through the ore bearing formation. All drill holes will be logged a Scintillometer and sample cuttings from the will be sent to an assay-center for analysis. If any of the preliminary test holes show a mineralization of U 3 O 8 additional holes will be drilled on 25 and 12½ foot centers in a radiating pattern for the primary test hole.

c. See form MF 103

d. John Donnelly, of Denver Colrado, who at present is a service engineer with Ingersoll Rand Company will be the project manager and president of the Lakota Mining and Exploration Company. He is a graduate Mining Engineer from the Michigan College of Mines. Mr Donnelly has had operating experience as a miner, timberman etc., in Butte, the Coeur de Alenes, Park City, and Calumet Mines. He has worked with various Uranium producers in Colorado as Consultant on Mining equipment and the mechanization of mines for the past 2 years. In his work Mr. Donnelly has studied those phases of the mining business which were not in line with his duties. While working as a service engineer Mr Donnelly has visited most of the major and many of the smaller mines and exploration projects in the Colorado Plateau area.

Harry Pinneker is employed by the Scottsbluff National Bank, Scottsbluff, Nebraska. He has had several years of drilling experience working for the Conservation and Survey Division at the university of Nebraska on a ground water research program.

Jerry Brennan is an attorney at Rapid City, South Dakota and the original discoverer of Carnotite deposits in the Black Hills Area.

J. Murray Riddel of Houghton, Michigan, a stockholder, is a consulting Mining Engineer of International reputation and the Dean of the Mining Department at the Michigan College of Mining and Technology.

6 a. Assay charges @ $3.00 per assay: 1000 assays
To check Scintillometer assays — $3000.00
Bull-dozer operations (Roads, Trails, Stripping Etc)
@ $10.00 per hour: 100 Hours — $1000.00
Deep hole wagon drilling (from approximately 80' to 130' a depth beyond the reach of our equipment) @ 80¢ per foot
Estimated 3000 feet — $2400.00
$6400.00

b. Figures on a 12 months basis at 48 hours a week.
The labor expense will be as follows:

General Manager and Project Engineer @ $380.00 /month	$4560.00
Miner @ $1.85 /hour ($1.85/hr x 52 hrs x 50 weeks)	$4810.00
Miners helper @ $1.50/hr. ($1.50 x52 x 50 weeks)	$3900.00
Geological & Engineering Consultant (Surveying etc.)	$600.00
Bookkeeper and Accountant @ $50.00 per month	$600.00
Common labor @ $1.40 /hr. ($1.40 x 52 x 25 weeks)	$1820.00
	$16,290.00

c. 450 Borium tipped AO sandsone bits ¢$2.50/bit
(average life about 200feet per bit -90,000 feet of drilling) $900.00

800 feet of air hose @ 80¢ per foot $640.00

Air hose apuds, Stems, clamps, hosemenders, clamping tools, couplings, hose nuts, nipples, bushings, manifolds, etc. for the 12 months period $450.00

Drill steel 8' lenght

Lakota Mining and Exploration Company
c/o Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

6 c. (continued)

Drill steel 8' lengths sym C 1 E @ $13.60 / length. (GA double diamond alloy 1" hexagonal) 400 pieces	$5440.00
Truck gasoline and repairs @ 6¢ per mile --60 miles/ day $3.60 per day for 300days	$1080.00
Compressor fuel 15 gallons per day @ 16¢ per gallon $2.40 /day for 300 days	$720.00
400 drill steel couplings @ $4.00	$1600.00
20 "O" ring shanks 1 1/8" @ $15.00	$300.00
Miscellaneous tools and equipment (fuel pumps, hammers, wrenchs,pry bars, block &tackle, ropes)	$500.00
	$11,630.00

d. Capital equipment will be new wherever possible. New equipment will minimize break down .

Ingersoll Rand Model DR 210 portable air compressor delivered Edgemont, South Dakota	$7600.00
Ingersoll Rand JHM Wagon Drill for 8' steel change	$1420.00
Minerals Engineering Company Scintillometer and Accessories	$600.00
Willys 4 wheel drive pick-up truck	$2500.00
	$12,120.00

e. None

f. Equipment and repair shed with small oil heater	$1200.00

g. Accounting charges ($600.00 shown in 6b.)
Repairs figured on a flat rate under 6c. $1080.00

Compressor and drill repairs	$200.00
Workmens compensation, Liability insurance and payroll taxes	$1200.00
	$1400.00

H. Contingencies include possible major equipment break down, bad weather unforeseen equipment rental, more work than anticepated etc.

	$4000.00
Grand total	$51,840.00

7 a. Yes
b. Cash

DMF-103
(Revised April 1952)

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
SEP 10 1952

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. DMEA-2693
Metal or Mineral
Date Received 9-10-52
Estimated Cost
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Lakota Mining and Exploration Company,
% Harry Pinneker - % Scottsbluff National Bank,
Scottsbluff, Nebraska

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

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

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

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

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract

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

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

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property.

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

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

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes.

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

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

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

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

Uranium

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

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc.

(*c*) The work will start within 30 days and be completed within 24 months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations.

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

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

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

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

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

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

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

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

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

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

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

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

☐ Money ☐ Use of equipment owned by you ☐ Other

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated September 6, 1952, 195

Lakota Mining ~~and~~ Exploration Co.
(Applicant)

By Harry Pinneker

Harry Pinneker
~~C/O Scottsbluff, National Bank~~
Scottsbluff, Nebraska

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

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

Lakota Mining and Exploration Company
c/o Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

1 a. Lakota Mining and Exploration Company
c/o Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

b. Incorporated in the State of South Dakota

c. President: John Donnelly
3144 West 22
Denver, Colo.
Vice-Pres: I. C. Lovett
2001 4th Ave.
Scottsbluff, Nebraska
Sec-Treas: Harry Pinneker
c/o Scottsbluff National Bank
Scottsbluff, Nebraska

d. Not applicable.

3 a. Legal description of claim as recorded in county court house at Hot Springs, South Dakota:

Little Windy #1: No adequate description. W½Sec 30 T7R 3E Due W 700 ft. Sec. 25, M½. Signed by L. H. Stevens; R. M. Miller, J. E. Lenz.

Little Windy #2: Lease received in mail today. Same objections to description.

Little Windy #3: No adequate description: In Craven Canyon. Located W½Sec 30 T7R3 Due West 700 ft. Sec 25. East Half Running parallel to Little Windy #1 Joining on South Side. Located by Phyllis E. Lenz and Patricia M. Miller
Little Lorraine: Inadequate description. The width being the distance between Little Windy I, II, III and the Lucky Toss #2 and the length being 1000 feet following the thread of the stream in Northerly direction. T7Sec. 30 R3E in W½ of Sec. 30. Located by Lola P. Stevens and Lorraine C. Stevens.

Eagle Aerie #1: No adequate description. W½Sec 4 TS 8R3E. Located by Earl Stevens.
Eagle Aerie #2: No adequate description. W½Sec 4T S8R3E S 600 feet of Eagle Aerie #2. Runs parallel with N 600 feet of Eagle Aerie #1. Located by Earl Stevens.
Eagle Aerie #3: No adequate description. NW¼ S4T8R3E abbuttal to Eagle Aerie #2, on Eagle Aerie #2 West boundary. Located by Gilford E. Stevens.
Eagle Aerie #4: No adequate description. NW¼ Sec 4 T8R3E abbuttal to Eagle Aerie #2 and Eagle Aerie #3. Located by Gilford E. Stevens.
Lucky Toss #2: No description at all. Jest T7Sec 30 R3 Fall River County. Located by Earl Stevens and Gilford E. Stevens.

b. Not Applicable.

c. Lessee

d. See Attached Forms.

e. Not applicable

f. Filing Data: Ranch 23 Misc P.1; Little Windy #2 Book 31 Misc P.145; Lucky Toss #2 28M361 1/29/51; Little Windy #3 31M165 6/4/52; Little Lorraine 31M173 6/25/52; Eagle Aerie #2 31M304 6/2/52; Little Windy #1 31M145 4/14/52; Eagle Aerie #3 31M181 7/26/52; Eagle Aerie #1 31M260 5/6/53.

4.
a. Physical Description:

No mining or exploration (for radioactive minerals) has ever been conducted on any of the above mentioned land. However, visual inspection, trenching and blasting work has been done to complete assessment work. All this work was done along the exposed outcrops of the claims. Discovery exploration consisted of visual inspection and varifying that radio-active minerals were present by the use of a gieger counter. The Gieger counter reading on the various claimes have been consistantly on the higher scale range. Trenching and blasting, where the Gieger counter has responded, has exposed better and more concentrated ore. The best visual location of radio-active mineral was found on the Lucky Toss #2 claim. Here the Lakota sand has a vertical exposure with large crevices running back underneath the overlaying strata.

Dakota Mining and Exploration Company
c/o Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

Visual investigation back into the crevices showed the ore was a better grade than that shown on the face of the exposure. A Gieger counter was placed as far back into the crevice as possible. The Gieger counter showed readings on the higher range scale which verified the visual findings. Samples were taken at various levels on the exposures and sent to United States Vanadium Co. for assay. The assay report reads as follows:

Sample #	V205	U308
52-619	.11 of 1%	.27 of 1%
52-620	.33 of 1%	.72 of 1%
52-621	.11 of 1%	.19 of 1%

Another sample assay report showed the following results:

V205	U308
.14 of 1%	.37 of 1%
.22 of 1%	.52 of 1%
.07 of 1%	.11 of 1%
.14 of 1%	.35 of 1%

Grab samples showed an average of .79 of 1% U308 and .80 of 1% of V205 (USV sample #2706)
All claimes and land under lease can be reached easily with a pick-up truck. Roads into Craven Canyon consist of a forrest trail which is travelled throughout the year.

b. No production of radio-active ore is being taken from any of the land under lease. Exploration has been inadequate to determine the ore reserver.

c. Geology of the two groups of claims (The Windy Group plus the Little Lorraine, and the Eagle Aerie group plus the Stevens Ranch) follows very closely that outlined in Geological Survey Circular 175 which is enclosed with this application. The crossections of the Windy group and the Lucky Toss claim very closely follows the crossection of plate 4 of RMO-881 except that they average a slightly gentler slope (30' or less from the horizontal). The Eagle Aerie Group also follow RMO-881 very closely except that the slope is not as steep (10 to 20 from the horizontal). This shallow mess of slope should greatly expidite any drilling procedure. Due to the number and variety of radio-active ore bearing outcrops on these claims we believe there is a very good chance that commercial deposits may be discovered.

4.d. This project is very accessible as compared with most Colorado Plateau, projects. The Area under exploration is only 8 miles from a proposed AEC buying station in Edgemont, South Dakota.(See "Location and Accessibility," page 2 Geological Survey Circular 175) Local supply and residence points would be Edgemont 8 miles, Hot Springs 25 miles and Custer, South Dakota 35 miles.

e. Manpower <u>is</u> available. The additonal manpower to John Donnelly will consist of two men to run the "wagonjack". One lead man being a miner from Colorado and a helper being one of the claim owners. Another laborer (local) will be hired for miscellaneous work. Materials will be purchased in Denver from the Colorado Builders Supply Co. (Charley Barry, Manager) and the Union Supply Co. (C. A. Turnquist, Agent). They will have all Capital Equipment available by November 1st, 1952. Miscellaneous equipment will be purchased from various outlets in Gran Junction, Colorado. Operating Supplies (fuel, bits, tires etc.,) will be purchased locally in Fall River and Custer Counties, South Dakota. Water is available from a well on the Stevens Ranch but, very little will be needed for exploration. Power will be diesel (GMC Series 4-51) on the air compressor (Ingersoll Rand Model DR-210)

Lakota Mining and Exploration Company
C/O Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

5 a. Uranium and Vanadium Ores.

b. Exploration will consist of, first Wagon Drilling areas which have responded to the Geiger counter. Wagon Drilling is the accepted method of exploration drilling on the Colorado Plateau for deposits to 130 feet in depth where a core is not required.

The drilling will be done back of all out-crops and on the slopes in front of the out-crop where Geiger counter reactions have been noticed. The drilling will be done on 50 or 100 foot centers to a depth necessary to pass through the ore bearing formation. All drill holes will be logged a Scintillometer and sample cuttings from the will be sent to an assay-center for analysis. If any of the preliminary test holes show a mineralization of U 3 O 8 additional holes will be drilled on 25 and 12½ foot centers in a radiating pattern for the primary test hole.

c. See form MF 103

d. John Donnelly, of Denver Colrado, who at present is a service engineer with Ingersoll Rand Company will be the project manager and president of the Lakota Mining and Exploration Company. He is a graduate Mining Engineer from the Michigan College of Mines. Mr Donnelly has had operating experience as a miner, timberman etc., in Butte, the Coeur de Alenes, Park City, and Calumet Mines. He has worked with various Uranium producers in Colorado as Consultant on Mining equipment and the mechanization of mines for the past 2 years. In his work Mr. Donnelly has studied those phases of the mining business which were not in line with his duties. While working as a service engineer Mr Donnelly has visited most of the major and many of the smaller mines and exploration projects in the Colorado Plateau area.

Harry Pinneker is employed by the Scottsbluff National Bank, Scottsbluff, Nebraska. He has had several years of drilling experience working for the Conservation and Survey Division at the university of Nebraska on a ground water research program.

Jerry Brennan is an attorney at Rapid City, South Dakota and the original discoverer of Carnotite deposits in the Black Hills Area.

J. Murray Hidal of Houghton, Michigan, a stockholder, is a consulting Mining Engineer of International reputation and the Dean of the Mining Department at the Michigan College of Mining and Technology.

6 a. Assay charges @ $3.00 per assay: 1000 assays
To check Scintillometer assays — $3000.00
Bull-dozer operations (Roads, Trails, Stripping Etc)
@ $10.00 per hour: 100 Hours — $1000.00
Deep hole wagon drilling (from approximately 80' to 130' a depth beyond the reach of our equipment) @ 80¢ per foot
Estimated 3000 feet — $2400.00
$6400.00

b. Figures on a 12 months basis at 48 hours a week.
The labor expense will be as follows:

General Manager and Project Engineer @$380.00 /month	$4560.00
Miner @ $1.85 /hour ($1.85/hr x 52 hrs x 50 weeks)	$4810.00
Miners helper @ $1.50/hr. ($1.50 x52 x 50 weeks)	$3900.00
Geological & Engineering Consultant (Surveying etc.)	$600.00
Bookkeeper and Accountant @ $50.00per month	$600.00
Common labor @ $1.40 /hr. ($1.40 x 52 x 25 weeks)	$1820.00
	$16,290.00

c. 450 Borium tipped AO sandsone bits ¢$2.50/bit
(average life about 200feet per bit -90,000 feet of drilling) — $900.00

800 feet of air hose @ 80¢ per foot — $640.00

Air hose apuds, Stems, clamps, hosemenders, clamping tools, couplings, hose nuts, nipples, bushings, manifolds, etc. for the 12 months period — $450.00

Drill steel 8' lenght

Lakota Mining and Exploration Company
c/o Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

6 c. (continued)

Drill steel 8' lengths sym C 1 E @ $13.60 / length. (CA double diamond alloy 1" hexagonal) 400 pieces	$5440.00
Truck gasoline and repairs @ 6¢ per mile --60 miles/ day $3.60 per day for 300days	$1080.00
Compressor fuel 15 gallons per day @ 16¢ per gallon $2.40 /day for 300 days	$720.00
400 drill steel couplings @ $4.00	$1600.00
20 "O" ring shanks 1 1/8" @ $15.00	$300.00
Miscellaneous tools and equipment (fuel pumps, hammers, wrenches, pry bars, block &tackle, ropes)	$500.00
	$11,630.00

d. Capital equipment will be new wherever possible. New equipment will minimize break down .

Ingersoll Rand Model DR 210 portable air compressor delivered Edgemont, South Dakota	$7600.00
Ingersoll Rand JHM Wagon Drill for 8' steel change	$1420.00
Minerals Engineering Company Scintillometer and Accessories	$600.00
Willys 4 wheel drive pick-up truck	$2500.00
	$12,120.00

e. None

f. Equipment and repair shed with small oil heater $1200.00

g. Accounting charges ($600.00 shown in 6b.)
Repairs figured on a flat rate under 6c. $1080.00

Compressor and drill repairs	$300.00
Workmens compensation, Liability insurance and payroll taxes	$1200.00
	$1400.00

H. Contingencies include possible major equipment break down, bad weather unforeseen equipment rental, more work than anticepated etc. $4000.00

Grand total $51,840.00

am

7 a. Yes
b. Cash

MF-103
(Revised April 1951)

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
SEP 10 1952

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. DMEA - 2693
Metal or Mineral
Date Received 9-10-52
Estimated Cost
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Lakota Mining and Exploration Company,
% Harry Pinneker - % Scottsbluff National Bank
Scottsbluff, Nebraska

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

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

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

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

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract

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

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

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property.

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

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

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes.

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

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

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

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

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

(b) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc.

(c) The work will start within 30 days and be completed within 24 months from the date of an exploration project contract.

(d) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations.

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

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

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

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

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

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

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

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

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

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

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

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

☐ Money ☐ Use of equipment owned by you ☐ Other

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated September 6, 1952, 195__

Lakota Mining and Exploration Co.
(Applicant)

By Harry Runneker
c/o Scottsbluff National Bank
Scottsbluff Nebraska.

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

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

Lakota Mining and Exploration Company
c/o Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

1 a. Lakota Mining and Exploration Company
c/o Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

b. Incorporated in the State of South Dakota

c. President: John Donnelly
3144 West 22
Denver, Colo.
Vice-Pres: I. C. Lovett
2001 4th Ave.
Scottsbluff, Nebraska
Sec-Treas: Harry Pinneker
c/o Scottsbluff National Bank
Scottsbluff, Nebraska

d. Not applicable.

3 a. Legal description of claim as recorded in county court house at Hot Springs, South Dakota:

Little Windy #1: No adequate description. W½Sec 30 T7R 3E Due W 700 ft. Sec. 25, E½. Signed by L. H. Stevens; R. M. Miller, J. E. Lenz.

Little Windy #2: Lease received in mail today. Same objections to description.

Little Windy #3: No adequate description: In Craven Canyon. Located W½Sec 30 T7R3 Due West 700 ft. Sec 25. East Half Running parallel to Little Windy #1 Joining on South Side. Located by Phyllis E. Lenz and Patricia M. Miller
Little Lorraine: Inadequate description. The width being the distance between Little Windy I, II, III and the Lucky Toss #2 and the length being 1000 feet following the thread of the stream in Northerly direction. T7Sec. 30 R3E in W½ of Sec. 30. Located by Lola P. Stevens and Lorraine C. Stevens.

Eagle Aerie #1: No adequate description. W½Sec 4 TS 8R3E. Located by Earl Stevens.
Eagle Aerie #2: No adequate description. W½Sec 4T S8R3E S 600 feet of Eagle Aerie #2. Runs parallel with N 600 feet of Eagle Aerie #1. Located by Earl Stevens.
Eagle Aerie #3: No adequate description. NW¼ S4T8R3E abbuttal to Eagle Aerie #2, on Eagle Aerie #2 West boundary. Located by Gilford E. Stevens.
Eagle Aerie #4: No adequate description. NW¼ Sec 4 T8R3E abbuttal to Eagle Aerie #2 and Eagle Aerie #3. Located by Gilford E. Stevens.
Lucky Toss #2: No description at all. Jest T7Sec 30 R3 Fall River County. Located by Earl Stevens and Gilford E. Stevens.

b. Not Applicable.

c. Lessee

d. See Attached Forms.

e. Not applicable

f. Filing Data: Ranch 23 Misc P.1; Little Windy #2 Book 31 Misc P.145; Lucky Toss #2 28M361 1/29/51; Little Windy #3 31M165 6/4/52; Little Lorraine 31M173 6/25/52; Eagle Aerie #2 31M304 6/2/52; Little Windy #1 31M145 4/14/52; Eagle Aerie #3 31M181 7/26/52; Eagle Aerie #1 31M260 5/6/52.

4.
a. Physical Description:

No mining or exploration (for radioactive minerals) has ever been conducted on any of the above mentioned land. However, visual inspection, trenching and blasting work has been done to complete assessment work. All this work was done along the exposed outcrops of the claims. Discovery exploration consisted of visual inspection and varifying that radio-active minerals were present by the use of a gieger counter. The Gieger counter reading on the various claimes have been consistantly on the higher scale range. Trenching and blasting, where the Gieger counter has responded, has exposed better and more concentrated ore. The best visual location of radio-active mineral was found on the Lucky Toss #2 claim. Here the Lakota sand has a vertical exposure with large crevices running back underneath the overlaying strata.

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c/o Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

Visual investigation back into the crevices showed the ore was a better grade than that shown on the face of the exposure. A Gieger counter was placed as far back into the crevice as possible. The Gieger counter showed readings on the higher range scale which verified the visual findings. Samples were taken at various levels on the exposures and sent to United States Vanadium Co. for assay. The assay report reads as follows:

Sample #	V205	U308
52-619	.11 of 1%	.27 of 1%
52-62D	.33 of 1%	.72 of 1%
52-621	.11 of 1%	.19 of 1%

Another sample assay report showed the following results:

V205	U308
.14 of 1%	.37 of 1%
.22 of 1%	.52 of 1%
.07 of 1%	.11 of 1%
.14 of 1%	.35 of 1%

Grab samples showed an average of .79 of 1% U308 and .80 of 1% of V205 (USV sample #2706)
All claimes and land under lease can be reached easily with a pick-up truck. Roads into Craven Canyon consist of a forrest trail which is travelled throughout the year.

b. No production of radio-active ore is being taken from any of the land under lease. Exploration has been inadequate to determine the ore reserver.

c. Geology of the two groups of claims (The Windy Group plus the Little Lorraine, and the Eagle Aerie group plus the Stevens Ranch) follows very closely that outlined in Geological Survey Circular 175 which is enclosed with this application. The crossections of the Windy group and the Lucky Toss claim very closely follows the crossection of plate 4 of RMO-881 except that they average a slightly gentler slope (30' or less from the horizontal). The Eagle Aerie Group also follow RMO-881 very closely except that the slope is not as steep (10 to 20 from the horizontal). This shallow mess of slope should greatly expidite any drilling procedure. Due to the number and variety of radio-active ore bearing outcrops on these claims we believe there is a very good chance that commercial deposits may be discovered.

4.d. This project is very accessible as compared with most Colorado Plateau, projects. The Area under exploration is only 8 miles from a proposed AEC buying station in Edgemont, South Dakota.(See "Location and Accessibility," page 2 Geological Survey Circular 175) Local supply and residence points would be Edgemont 8 miles, Hot Springs 25 miles and Custer, South Dakota 35 miles.

e. Manpower <u>is</u> available. The additonal manpower to John Donnelly will consist of two men to run the "wagonjack". One lead man being a miner from Colorado and a helper being one of the claim owners. Another laborer (local) will be hired for miscellaneous work. Materials will be purchased in Denver from the Colorado Builders Supply Co. (Charley Barry, Manager) and the Union Supply Co. (C. A. Turnquist, Agent). They will have all Capital Equipment available by November 1st, 1952. Miscellaneous equipment will be purchased from various outlets in Grand Junction, Colorado. Operating Supplies (fuel, bits, tires etc.,) will be purchased locally in Fall River and Custer Counties, South Dakota. Water is available from a well on the Stevens Ranch but, very little will be needed for exploration. Power will be diesel (GMC Series 4-51) on the air compressor (Ingersoll Rand Model DR-210)

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Scottsbluff, Nebraska

5 a. Uranium and Vanadium Ores.

b. Exploration will consist of, first "Wagon Drilling" areas which have responded to the Geiger counter. Wagon Drilling is the accepted method of exploration drilling on the Colorado Plateau for deposits to 130 feet in depth where a core is not required.

The drilling will be done back of all out-crops and on the slopes in front of the out-crop where Geiger counter reactions have been noticed. The drilling will be done on 50 or 100 foot centers to a depth necessary to pass through the ore bearing formation. All drill holes will be logged a Scintillometer and sample cuttings from the will be sent to an assay-center for analysis. If any of the preliminary test holes show a mineralization of U 3 O 8 additional holes will be drilled on 25 and 12½ foot centers in a radiating pattern for the primary test hole.

c. See form MF 103

d. John Donnelly, of Denver Colrado, who at present is a service engineer with Ingersoll Rand Company will be the project manager and president of the Lakota Mining and Exploration Company. He is a graduate Mining Engineer from the Michigan College of Mines. Mr Donnelly has had operating experience as a miner, timberman etc., in Butte, the Coeur de Alenes, Park City, and Calumet Mines. He has worked with various Uranium producers in Colorado as Consultant on Mining equipment and the mechanization of mines for the past 2 years. In his work Mr. Donnelly has studied those phases of the mining business which were not in line with his duties. While working as a service engineer Mr Donnelly has visited most of the major and many of the smaller mines and exploration projects in the Colorado Plateau area.

Harry Pinneker is employed by the Scottsbluff National Bank, Scottsbluff, Nebraska. He has had several years of drilling experience working for the Conservation and Survey Division at the university of Nebraska on a ground water research program.

Jerry Brennan is an attorney at Rapid City, South Dakota and the original discoverer of Carnotite deposits in the Black Hills Area.

J. Murray Riddel of Houghton, Michigan, a stockholder, is a consulting Mining Engineer of International reputation and the Dean of the Mining Department at the Michigan College of Mining and Technology.

6 a. Assay charges @ $3.00 per assay: 1000 assays
To check Scintillometer assays — $3000.00
Bull-dozer operations (Roads, Trails, Stripping Etc)
@ $10.00 per hour: 100 Hours — $1000.00
Deep hole wagon drilling (from approximately 80' to 130' a depth beyond the reach of our equipment) @ 80¢ per foot
Estimated 3000 feet — $2400.00
$6400.00

b. Figures on a 12 months basis at 48 hours a week.
The labor expense will be as follows:

General Manager and Project Engineer @ $380.00 /month	$4560.00
Miner @ $1.85 /hour ($1.85/hr x 52 hrs x 50 weeks)	$4810.00
Miners helper @ $1.50/hr. ($1.50 x52 x 50 weeks)	$3900.00
Geological & Engineering Consultant (Surveying etc.)	$600.00
Bookkeeper and Accountant @ $50.00 per month	$600.00
Common labor @ $1.40 /hr. ($1.40 x 52 x 25 weeks)	$1820.00
	$16,290.00

c. 450 Borium tipped AO sandsone bits @ $2.50/bit
(average life about 200 feet per bit - 90,000 feet of drilling) — $900.00

800 feet of air hose @ 80¢ per foot — $640.00

Air hose apuds, Stems, clamps, hosemenders, clamping tools, couplings, hose nuts, nipples, bushings, manifolds, etc. for the 12 months period — $450.00

Drill steel 8' lenght

Lakota Mining and Exploration Company
c/o Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska

6 c. (continued)

Drill steel 8' lengths sym C 1 E @ $13.60 / length. (CA double diamand alloy 1" hexagonal) 400 pieces	$5440.00
Truck gasoline and repairs @ 6¢ per mile --60 miles/ day $3.60 per day for 300days	$1080.00
Compressor fuel 15 gallons per day @ 16¢ per gallon $2.40 /day for 300 days	$720.00
400 drill steel couplings @ $4.00	$1600.00
20 "O" ring shanks 1 1/8" @ $15.00	$300.00
Miscellaneous tools and equipment (fuel pumps, hammers, wrenchs,pry bars, block &tackle, ropes)	$500.00
	$11,630.00

d. Capital equipment will be new wherever possible. New equipment will minimize break down .

Ingersoll Rand Model DR 210 portable air compressor delivered Edgemont, South Dakota	$7600.00
Ingersoll Rand JHM Wagon Drill for 8' steel change	$1420.00
Minerals Engineering Company Scintillometer and Accessories	$600.00
Willys 4 wheel drive pick-up truck	$2500.00
	$12,120.00

e. None

f. Equipment and repair shed with small oil heater	$1200.00

g. Accounting charges ($600.00 shown in 6b.)
Repairs figured on a flat rate under 6c. $1080.00

Compressor and drill repairs	$200.00
Workmens compensation, Liability insurance and payroll taxes	$1200.00
	$1400.00

H. Contingencies include possible major equipment break down, bad weather unforeseen equipment rental, more work than anticepated etc.

$4000.00

Grand total $51,840.00

7 a. Yes
b. Cash

CONSENT TO ASSIGNMENT OF MINING CLAIM

We, the undersigned, the owners of mining claims:

Little Lorraine

in Fall River County, South Dakota, hereby consent to Harry Pinneker assigning to Lakota Mining and Exploration Company, a South Dakota Corporation, the lease or leases given to him by us on the 28 day of ~~November~~ July, 19 52.

Dated this 3 day of ~~October,~~ November 1952.

Lorraine C. Stevens

Lola P. Stevens

STATE OF SOUTH DAKOTA)
)ss.
COUNTY OF FALL RIVER)

Now on this 3 day of ~~October,~~ November 1952, before me, a Notary Public duly commissioned, qualified and acting in and for said state and county, personally appeared Lorraine C. Stevens and Lola P. Stevens

to me known to be the identical persons who executed the above and foregoing consent andthey acknowledged to me the same to be their

voluntary act and deed for the uses and purposes therein recited.

Jerry Brennan
Notary Public

Commission Expires: Sept 14, 1953

A_S_S_I_G_N_M_E_N_T

I, Harry Pinneker, for One and no/100 -($1.00) - - Dollars and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, do hereby assign and set unto Lakota Mining and Exploration Company, a South Dakota Corporation, all of my interest in and to the lease covering the above identified mining claim.

Dated this 3 day of ~~October~~ November, 1952.

Harry Pinneker

STATE OF SOUTH DAKOTA)
) ss.
COUNTY OF FALL RIVER)

Now on this 3 day of ~~October~~ November, 1952, before me, a Notary Public, duly commissioned, qualified and acting in and for said state and county, personally appeared Harry Pinneker to me known to be the identical person who executed the above and foregoing assignment and he acknowledged to me the same to be his voluntary act and deed for the uses and purposes therein recited.

Jerry Brennan
Notary Public

Commission Expires: Sept. 14. 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of ~~Fall River~~, described as follows: 1/

Little Lorraine

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production 3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 1952.

Lorraine C. Stevens [Seal]

Lola P. Stevens [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-25-52, and recorded in book 317 page 173 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of ~~Fall River~~, described as follows: 1/

[redacted] Little Lorraine

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production 3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 1952.

Lorraine C Stevens [Seal]

Lola P. Stevens [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-25-52, and recorded in book 31M page 173 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of ~~Fall River~~, described as follows:1/

Lit~~[illegible]~~ Little Lorraine

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ ~~Lakota Mining and Exploration Co.~~

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Lorraine C. Stevens [Seal]

Lola P. Stevens [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-25-52, and recorded in book 31M page 123 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of ~~South Dakota~~, County of ~~Fall River~~, described as follows:1/

~~Little Lorrine~~

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ ~~Lekota Mining and Exploration Co.~~

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2

Lorraine C. Stevens [Seal]

Lola P. Stevens [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-2-52, and recorded in book 31M page 173 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Little Lorraine

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakpt Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Lorraine C Stevens [Seal]

Lola P. Stevens [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-2-52, and recorded in book 31 M page 173 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 8 1953

CONSENT TO ASSIGNMENT OF MINING CLAIM

We, the undersigned, the owners of mining claims:

WINDY # 1

in Fall River County, South Dakota, hereby consent to Harry Pinneker assigning to Lakota Mining and Exploration Company, a South Dakota Corporation, the lease or leases given to him by us on the 28 day of July, 1952.

Dated this 3 day of ~~October~~ November, 1952.

Robert M Miller

JeRome E. Levy

L. H. Stevens

STATE OF SOUTH DAKOTA)
) ss.
COUNTY OF FALL RIVER)

Now on this 3 day of ~~October~~ November, ~~1952~~ 1952, before me, a Notary Public duly commissioned, qualified and acting in and for said state and county, personally appeared Robert M Miller, JeRome E. Levy, L H Stevens

to me known to be the identical persons who executed the above and foregoing consent and they acknowledged to me the same to be their

voluntary act and deed for the uses and purposes therin recited.

Notary Public

Commission Expires:

Sept. 14. 1953

A_S_S_I_G_N_M_E_N_T

I, Harry Pinneker, for One and no/100 -($1.00) - - Dollars and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, do hereby assign and set unto Lakota Mining and Exploration Company, a South Dakota Corporation, all of my interest in and to the lease covering the above identified mining claim.

Dated this 3 day of ~~October~~ November, 1952.

STATE OF ~~SOUTH DAKOTA~~ Nebraska }
COUNTY OF ~~FALL RIVER~~ Scottsbluff } SS.

Now on this 6 day of ~~October~~ January, 1952, before me, a Notary Public, duly commissioned, qualified and acting in and for said state and county, personally appeared Harry Pinneker to me known to be the identical person who executed the above and foregoing assignment and he acknowledged to me the same to be his voluntary act and deed for the uses and purposes therein recited.

Notary Public

Commission Expires:
March 2-1956.

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Little Wind #1

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ ~~Lakota Mining~~ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2

J. H. Stevens [Seal]

R M Miller [Seal]

JeRoome E. Lenz [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 4-24-52, and recorded in book 317 page 185 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

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DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
Section
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Little Wendy #1

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ ~~[illegible]~~ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

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3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 1952.

J. H. Stevens [Seal]

R M Miller [Seal]

JeRoane E. Levy [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 4-24-52, and recorded in book 31M page 185 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

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3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

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DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Little Wendy #1

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ ~~Intermountain~~ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

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3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 2 day of November, 195 2.

L. H. Stevens [Seal]

R M Miller [Seal]

Jerome E. Lenz [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 4-14-52, and recorded in book 31M page ~~145~~ 145 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

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3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such; these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Gold Dust, described as follows:1/

Little Wendy #1

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Intermountain Potash Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 1952.

T. H. Stevens [Seal]

R M Miller [Seal]

Jerome E. Lang [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 4-14-52, and recorded in book 31M page 145 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Little Wendy #1

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Northwestern Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

F. H. Stevens [Seal]

R M Milley [Seal]

Jerome C. Levy [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 4-14-52, and recorded in book 31 M page 145 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
APPROVED
JAN 8 1953

CONSENT TO ASSIGNMENT OF MINING CLAIM

We, the undersigned, the owners of mining claims:

WINDY #2

in Fall River County, South Dakota, hereby consent to Harry Zimmerer assigning to Dakota Mining and Exploration Company, a South Dakota Corporation, the lease or leases given to him by us on the 28 day of July, 19 52.

Dated this 3 day of ~~October~~ November, 1952.

Earl E. Stevens

W. A. Meier

L. H. Stevens

Robert M Miller

Gilford E. Stevens

J. Rome E. Levy

STATE OF SOUTH DAKOTA)
)ss.
COUNTY OF FALL RIVER)

Now on this 3 day of ~~October~~ November, 1952, before me, a Notary Public duly commissioned, qualified and acting in and for said state and county, personally appeared Earl E Stevens, W A Meier, L H. Stevens, Robert M Miller, Gilford Stevens, J. Rome E Levy

to me known to be the identical persons who executed the above and foregoing consent and they acknowledged to me the same to be their

voluntary act and deed for the uses and purposes therein recited.

Notary Public

Commission Expires:

Sept 14 - 1953

A S S I G N M E N T

I, Harry Pinneker, for One and no/100 -($1.00) - - Dollars and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, do hereby assign and set unto Lakota Mining and Exploration Company, a South Dakota Corporation, all of my interest in and to the lease covering the above identified mining claim.

Dated this 3 day of ~~October~~ November, 1952.

STATE OF ~~COLORADO~~ Nebraska }
COUNTY OF ~~[illegible]~~ Scotts Bluff } ss.

Now on this 6 day of ~~October~~ January, 1953, before me, a Notary Public, duly commissioned, qualified and acting in and for said state and county, personally appeared Harry Pinneker to me known to be the identical person who executed the above and foregoing assignment and he acknowledged to me the same to be his voluntary act and deed for the uses and purposes therein recited.

Notary Public

Commission Expires:
March 2, 1956

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Little Windy #2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Gordon E. Stevens — Earl E. Stevens [Seal]

Jerome E. Lenz — Wesley Meier [Seal]

L. G. Stevens [Seal]

Robert M. Miller

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 4-24-52, and recorded in book 31M page 145 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of ~~South Dakota~~, County of ~~Fall River~~, described as follows:1/

Little Windy 2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ ~~Lakota Mining and Exploration Co.~~

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Delford E. Stevens — Earl E. Stevens [Seal]

Jerome E. Lenz — W. A. Miller [Seal]

L. H. Stevens [Seal]

Robert M. Miller

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 4-21-52, and recorded in book 31M page 145 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Little Windy 2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2

Earl E. Stevens — Earl E. Stevens [Seal]

Jerome E. Lenz — W. A. Miller [Seal]

L. J. Stevens [Seal]

Robert M. Miller

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 4-21-52, and recorded in book 31 M page 145 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
JAN 3 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of ~~Fall River~~, described as follows: 1/

Little Windy 2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ ~~Lakota Mining and Exploration Co.~~

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production 3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2

Gilford E. Stevens — Earl E. Stevens [Seal]

Jerome E. Levy — W. A. Meier [Seal]

J. H. Stewart [Seal]

Robert M. Miller

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 4-21-52, and recorded in book 31M page 145 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 3 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of ~~South Dakota~~, County of ~~Fall River~~, described as follows:1/

~~Little Windy~~ 2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ ~~Lokota Mining and Exploration Co.~~

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

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3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Gilford E. Stevens — Earl E. Stevens [Seal]

Jerome E. Lenz — W. A. Meier [Seal]

L. H. Stevens [Seal]

Robert M. Miller

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 4-21-52, and recorded in book 317 page 145 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 8 1953

CONSENT TO ASSIGNMENT OF MINING CLAIM

We, the undersigned, the owners of mining claims:

LITTLE WINDY #3

in Fall River County, South Dakota, hereby consent to Harry Pinneker assigning to Lakota Mining and Exploration Company, a South Dakota Corporation, the lease or leases given to him by us on the 28 day of July, 1952.

Dated this 3 day of ~~October~~ November, 1952.

Patricia M. Miller

Phyllis E. Lang

STATE OF SOUTH DAKOTA)
)ss.
COUNTY OF FALL RIVER)

Now on this 3 day of ~~October~~ November, 1952, before me, a Notary Public duly commissioned, qualified and acting in and for said state and county, personally appeared Patricia M. Miller Phyllis E. Lang

to me known to be the identical persons who executed the above and foregoing consent andthey acknowledged to me the same to be their

voluntary act and deed for the uses and purposes therein recited.

Notary Public

Commission Expires:

Sept 14-1953

ASSIGNMENT

I, Harry Pinneker, for One and no/100 -($1.00) - - Dollars and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, do hereby assign and set unto Lakota Mining and Exploration Company, a South Dakota Corporation, all of my interest in and to the lease covering the above identified mining claim.

Dated this 3 day of ~~October~~ November, 1952.

Harry Pinneker

STATE OF ~~SOUTH DAKOTA~~ Nebraska }
COUNTY OF ~~BALL RIVER~~ Scottsbluff } ss.

Now on this 6 day of ~~October~~ January, 1953, before me, a Notary Public, duly commissioned, qualified and acting in and for said state and county, personally appeared Harry Pinneker to me known to be the identical person who executed the above and foregoing assignment and he acknowledged to me the same to be his voluntary act and deed for the uses and purposes therein recited.

Helen M. Burman
Notary Public

Commission Expires:
March 2-1956

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

~~Little Windy #3~~

Little Windy #3

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Patricia M. Miller [Seal]

Phyllis E. Jung [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-4-12, and recorded in book 31M page 165 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

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4/ Insert the maximum amount of the Government's contribution.

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(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

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DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Little Wendy #3

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

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Dated this 3 day of November, 195 2.

Patricia M. Miller [Seal]

Phyllis E. Young [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-4-52, and recorded in book 31M page 165 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

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(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

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(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Little Windy #3

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Patricia M. Miller [Seal]

Phyllis E. Jenny [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-4-52, and recorded in book 317 page 165 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Todd Dives, described as follows:1/

Little Wendy #3

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Roberts Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Patricia M. Miller [Seal]

Douglas E. Jones [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-9-52, and recorded in book 31 M page 165 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration

JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Bad River, described as follows:1/

Little Windy #3

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Dakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Patricia M. Miller [Seal]

Dolphis E. Young [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-4-52, and recorded in book 31M page 165 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
Washington
JAN 8 1953

CONSENT TO ASSIGNMENT OF MINING CLAIM

We, the undersigned, the owners of mining claims:

Lucky Toss #2

in Fall River County, South Dakota, hereby consent to Harry Pinneker assigning to Lakota Mining and Exploration Company, a South Dakota Corporation, the ~~Jelsp~~ or leases given to him by us on the 28 day of ~~XXXXXXX~~ November, 19 52.

Dated this 3 day of ~~XXXXXXX~~ November 1952.

Earl E. Stevens

Gilford E. Stevens

STATE OF SOUTH DAKOTA)
) ss.
COUNTY OF FALL RIVER)

Now on this 3 day of ~~October~~ November, 1952, before me, a Notary Public duly commissioned, qualified and acting in and for said state and county, personally appeared Earl E. Stevens & Gilford E. Stevens

to me known to be the identical persons who executed the above and foregoing consent and they acknowledged to me the same to be their

voluntary act and deed for the uses and purposes therein recited.

Notary Public

Commission Expires:

Sept 14 - 1953

A_S_S_I_G_N_M_E_N_T

I, Harry Pinneker, for One and no/100 -($1.00) - - Dollars and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, do hereby assign and set unto Lakota Mining and Exploration Company, a South Dakota Corporation, all of my interest in and to the lease covering the above identified mining claim.

Dated this 3 day of ~~October~~ November, 1952.

STATE OF ~~SOUTH DAKOTA~~ Nebraska }
COUNTY OF ~~FALL RIVER~~ Scotts Bluff } SS.

Now on this 6 day ~~of October~~ January, 1953, Before me, a Notary Public, duly commissioned, qualified and acting in and for said state and county, personally appeared Harry Pinneker to me known to be the identical person who executed the above and foregoing assignment and he acknowledged to me the same to be his voluntary act and deed for the uses and purposes therein recited.

Notary Public

Commission Expires:
March 1-1956

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Lucky Toss #2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Earl E. Stevens [Seal]

Delford E. Stevens [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 10-29-51, and recorded in book 487 page 361 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 3 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Lucky Toss 2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Earl E. Stevens [Seal]

Gilford E. Stevens [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 10-29-51, and recorded in book 284 page 361 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
Reading
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Lucky Toss 2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2

Earl E. Stevens [Seal]

Helford E. Stevens [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 10-29-51, and recorded in book 28 M page 361 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
JAN 3 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Lucky Toss 2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

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3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 1952.

Earl E. Stevens [Seal]

Delford E. Stevens [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated _____, and recorded in book _____ page _____ official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
SECTION
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Lucky Tom 2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 7 day of November, 1952.

Earl C. Stevens [Seal]

Gilford E. Stevens [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 10-29-51, and recorded in book 28 M page 361 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
Reference
JAN 8 1953

CONSENT TO ASSIGNMENT OF MINING CLAIM

We, the undersigned, the owners of mining claims:

Eagle Aerie #2

in Fall River County, South Dakota, hereby consent to Harry Hinnaker assigning to Dakota Mining and Exploration Company, a South Dakota Corporation, the lease or leases given to him by us on the 28 day of July, 1952.

Dated this 3 day of ~~October~~ November, 1952.

Earl E. Stevens

STATE OF SOUTH DAKOTA)
) ss.
COUNTY OF FALL RIVER)

Now on this 3 day of ~~October~~ November, 1952, before me, a Notary Public duly commissioned, qualified and acting in and for said state and county, personally appeared Earl E. Stevens

to me known to be the identical persons who executed the above and foregoing consent and they acknowledged to me the same to be their

voluntary act and deed for the uses and purposes therein recited.

Jerry Brewer
Notary Public

Commission Expires:

Sept. 14-1953

ASSIGNMENT

I, Harry Winneker, for One and no/100 -($1.00) - - Dollars and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, do hereby assign and set unto Lakota Mining and Exploration Company, a South Dakota Corporation, all of my interest in and to the lease covering the above identified mining claim.

Dated this 3 day of ~~October~~ November, ~~1958~~.

Harry Winneker

STATE OF ~~SOUTH DAKOTA~~ Nebraska
COUNTY OF ~~BLACK HILLS~~ Scotts-Bluff } SS.

Now on this 6 day of ~~October~~ January, 1959, Before me, a Notary Public, duly commissioned, qualified and acting in and for said state and county, personally appeared Harry Winneker to me known to be the identical person who executed the above and foregoing assignment and he acknowledged to me the same to be his voluntary act and deed for the uses and purposes therein recited.

Helen M. Bauman
Notary Public

Commission Expires:
March 2 - 1956

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Eagle Aerie # 2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 __.

Earl E. Stevens [Seal]

_____ [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-2-52, and recorded in book 31 M page 304 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

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RELEVANT CONTRACT PROVISIONS

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DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of ~~South Dakota~~, County of ~~Fall River~~, described as follows:1/

~~Eagle Aerie #~~ 2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ ~~Lakota Mining and Exploration Co.~~

hereinafter called the "Operator"; and

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1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Earl E. Stevens [Seal]

_____ [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-2-52, and recorded in book 31M page 304 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
JAN 8 1953

MF-203 OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of ~~Fall River~~, described as follows:1/

Eagle Aerie # 2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Earl E. Steven [Seal]

_____ [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-2-52, and recorded in book 31M page 304 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
Received
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of ~~South Dakota~~, County of ~~Fall River~~, described as follows:1/

~~Eagle Aerie #~~ 2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ ~~Lakota Mining and Exploration Co.~~

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 ___.

Earl E. Stevens [Seal]

_____ [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-2-52, and recorded in book 31M page 304 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
Received
JAN 8 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Eagle Aerie #2

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Earl E. Stevens [Seal]

_____ [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 6-2-52, and recorded in book 317 page 304 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
JAN 8 1953

CONSENT TO ASSIGNMENT OF MINING CLAIM

We, the undersigned, the owners of mining claims:

"Eagle Aerie #3 & 4

in Fall River County, South Dakota, hereby consent to Harry Pinnecker assigning to Dakota Mining and Exploration Company, a South Dakota Corporation, the lease or leases given to him by us on the 28 day of Jearly, 19 52.

Dated this 3 day of ~~October~~ November, 1952.

Gilford E. Stevens

STATE OF SOUTH DAKOTA)
)ss.
COUNTY OF FALL RIVER)

Now on this 3 day of ~~October~~ November, 1952, before me, a Notary Public duly commissioned, qualified and acting in and for said state and county, personally appeared Gilford E. Stevens

to me known to be the identical persons who executed the above and foregoing consent and they acknowledged to me the same to be their

voluntary act and deed for the uses and purposes therein recited.

Jerry Brennan
Notary Public

Commission Expires: Sept 14 1953

ASSIGNMENT

I, Harry Pinneker, for One and no/100 -($1.00) - - Dollars and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, do hereby assign and set unto Lakota Mining and Exploration Company, a South Dakota Corporation, all of my interest in and to the lease covering the above identified mining claim.

Dated this 3 day of ~~October~~ November, 1952.

Harry Pinneker

STATE OF ~~SOUTH DAKOTA~~ Nebraska)
~~Lawrence~~)ss.
COUNTY OF ~~FALL RIVER~~)

Now on this 3 day of ~~October~~ January, 1953, before me, a Notary Public, duly commissioned, qualified and acting in and for said state and county, personally appeared Harry Pinneker to me known to be the identical person who executed the above and foregoing assignment and he acknowledged to me the same to be his voluntary act and deed for the uses and purposes therein recited.

Jerry Brennan
Notary Public

Commission Expires: Sept 14. 1953

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of South Dakota, County of Fall River, described as follows:1/

Eagle Aerie # 3 and 4

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Lakota Mining and Exploration Co.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 3 day of November, 195 2.

Belford E. Stevens [Seal]

_____ [Seal]

_____ [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated 7-26-52, and recorded in book 31M page 181 official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

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DEPARTMENT OF THE INTERIOR
Defense [illegible]
[illegible] 53

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of ~~South Dakota~~, County of ~~Fall River~~, described as follows:1/

Eagle Aeri #3-4

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ ~~Lakota Mining and Exploration Co.~~

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

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Dated this 3 day of November, 195 2.

Delford E. Stevens [Seal]

_____ [Seal]

_____ [Seal]

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DEPARTMENT OF THE
Defense Minerals Administration

JAN 8 1953

MF-203

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Eagle Claims #3 - 4

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_____ [Seal]

_____ [Seal]

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DEPARTMENT OF THE INTERIOR
Defense Minerals Administration

JAN 8 1953

MF-203

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Eagle Aerie #3 - 4

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Dated this 3 day of November, 1952.

Bedford E. Stevens [Seal]

_____ [Seal]

_____ [Seal]

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DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
JAN 8 1953

MF-203

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Eagle Claim #3 — C/

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Gilford E. Stevens [Seal]

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DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
NEW YORK

JAN 8 1953

CIRC. 175

GEOLOGICAL SURVEY CIRCULAR 175

THE CARNOTITE PROSPECTS OF THE CRAVEN CANYON AREA FALL RIVER COUNTY SOUTH DAKOTA

By L. R. Page and J. A. Redden

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

Do not return

UNITED STATES DEPARTMENT OF THE INTERIOR
Oscar L. Chapman, Secretary

GEOLOGICAL SURVEY
W. E. Wrather, Director

GEOLOGICAL SURVEY CIRCULAR 175

THE CARNOTITE PROSPECTS OF THE CRAVEN CANYON AREA FALL RIVER COUNTY, SOUTH DAKOTA

By L. R. Page and J. A. Redden

This report concerns work done on behalf of the U. S. Atomic Energy Commission and is published with the permission of the Commission.

Washington, D. C., 1952.

Free on application to the Geological Survey, Washington 25, D. C.

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THE CARNOTITE PROSPECTS OF THE CRAVEN CANYON AREA, FALL RIVER COUNTY, SOUTH DAKOTA

By L. R. Page and J. A. Redden

ABSTRACT

Carnotite was discovered in June 1951 in the Craven Canyon area, secs. 24 and 25, T. 7 S., R. 2 E. and what would be secs. 19 and 30 of unsectioned T. 7 S., R. 3 E., Fall River County, S. Dak. Although little prospecting had been carried out before November 18, 1951, more than 28 claims had been staked by that date.

The known carnotite occurrences are restricted to the basal 100 to 150 feet of the Lower Cretaceous Lakota sandstone; most are within 50 feet of a distinctive, paper-weathering, nonradioactive, carbonaceous, 1- to 3-foot black shale that is 100 to 125 feet above the top of the underlying Morrison formation. Three favorable zones have been recognized: (1) a zone 20 to 30 feet above the carbonaceous shale horizon, (2) a zone 20 to 30 feet below the carbonaceous shale horizon, and (3) a zone about 25 feet below (2). Possibly a fourth zone may occur 20 feet below (3).

The deposits generally are parallel to bedding, but in detail are cross-cutting. Widespread carnotite stains coat fractures in and adjacent to the deposits. These stains are commonly associated with an unidentified, green mineral stain that contains uranium and vanadium.

The only exploitable ore bodies discovered by November 1951 are of small size, but the presence of many widespread and low-grade deposits suggests that additional commercial deposits may be found by further prospecting.

INTRODUCTION

Uranium was first discovered in the Craven Canyon area, Fall River County, S. Dak. (fig. 1), in June 1951, by Jerry G. Brennan of Rapid City S. Dak. The mineral was identified as carnotite at the South Dakota School of Mines, and the first mining claim, the Pictograph, was located by Brennan on September 4. About the same time adjoining claims were

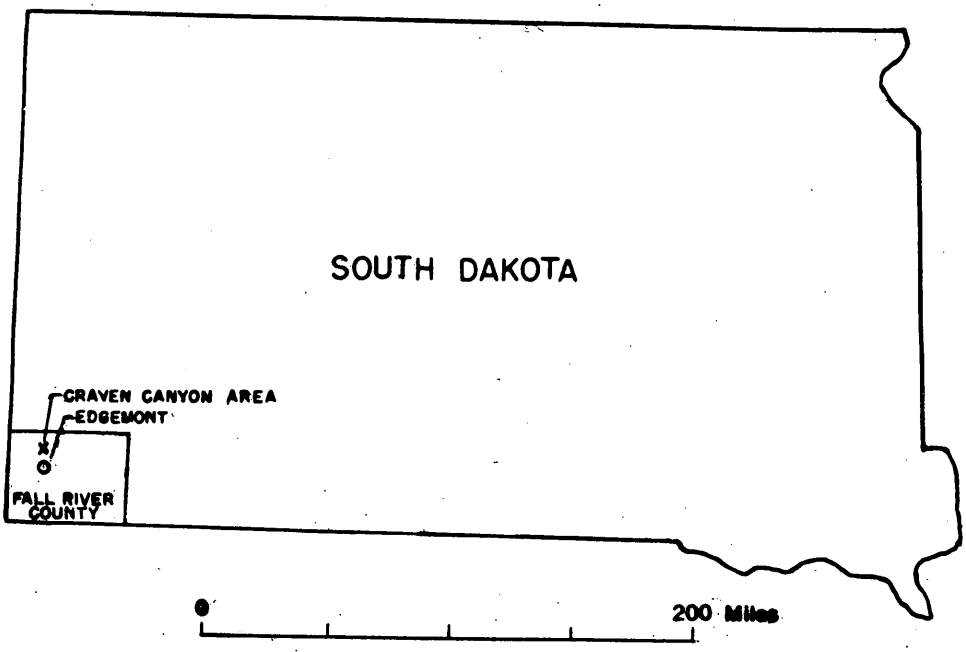

Figure 1.--Index map showing the location of Craven Canyon area, Fall River County, South Dakota.

staked by C. M. Rowe (Eggshell) and W. L. Roberts (Pigalle and M. Day) of Rapid City. Subsequently, additional claims were located by a group including L. E. Schaffer, E. H. Stevens, M. J. Voelker, E. R. Drevdahl, C. R. Kubler, and others of Rapid City; by local ranchers (the Stevens brothers); and by a Mr. Cord of the Yellow Cat area, Utah. At the time of the writers' visit, November 16 - 18, 1951, a total of at least 28 claims had been staked in Craven Canyon and a few claims were reported to have been staked in Coal Canyon—the next canyon to the west. The approximate location of 20 of these claims is shown on a map made by L. E. Schaffer (fig. 2).

Location and accessibility

The known carnotite prospects in Craven Canyon are in secs. 24 and 25, T. 7 S., R. 2 E. and in what would be secs. 19 and 30 of unsectioned T. 7 S., R. 3 E., about 15.5 miles from Minnekahta, the nearest point on

the Chicago, Burlington & Quincy Railroad. The prospects can be reached from Minnekahta by traveling about one mile west and south on U. S. Highway 85A and 18 to its junction with South Dakota Highway 89 and following the road log given below.

Miles	
0.0	Junction of U. S. Highway 85A and 18 with South Dakota Highway 89. Proceed north on gravel road, South Dakota Highway 89.
1.0	Turn left from Highway 89 on gravel road.
6.1	Turn left on dirt road down Red Canyon.
11.7	Turn right on fire road up Craven Canyon through the E. G. Stevens ranch.
12.4	Boundary of Harney Peak National Forest.
14.5	Pictograph claim. On small mesa east of pictographs on canyon wall.

The deposits are 8 miles north of Edgemont, S. Dak., and may be reached either by U. S. Highway 85A and 18 and the roads given in the above log, or by a graded dirt road from Edgemont, up Red Canyon to the mouth of Craven Canyon and thence by 2.8 miles of rough, ungraded road.

The northern part of the area can be reached by road and trail by traveling west to Craven from the Red Canyon road and thence either down Craven Canyon or south along the west rim of the canyon.

Field work

The Craven Canyon prospects were first examined and sampled on the behalf of the Atomic Energy Commission by J. A. Redden of the U. S. Geological Survey, in the company of L. E. Schaffer of the South Dakota School of Mines, on November 5, 1951. On November 16 the Dagmar, Imogene, Pictograph, and Eggshell claims were visited briefly by the writers, in the company of C. C. Towle, Jr., of the Atomic Energy Commission, J. G. Brennan, and W. L. Roberts. On the following day the Ophelia, Imogene, Helen, Flora, Lucy, and Gertrude were examined in the company of L. E. Schaffer, E. H. Stevens, E. R. Drevdahl, and J. O. Harder and an associate of the Homestake Mining Company. Harder had visited the Pictograph, Dagmar, and some other claims before joining the writers. Harder has kindly made available notes and pulps of his samples for use in preparing this report. On November 19 the best-exposed carnotite deposits on the Pictograph claim were mapped by Gurley Compass, tape, and hand level at a scale of 1 inch to 40 feet.

GENERAL GEOLOGY

The carnotite prospects of the Craven Canyon area are in the Lakota sandstone of Early Cretaceous age (Darton and Smith, 1904). On the higher

ridges this formation is overlain by the Fuson shale, and in the valley bottom the underlying Morrison formation is exposed.

The Lakota sandstone exposed in the Craven Canyon area is a white to buff, massive to thin-bedded sandstone containing many 1- to 6-inch beds of white to reddish-purple shale. Throughout the area studied, a 1- to 3-foot bed of dense, black carbonaceous shale is exposed about 110 feet above the base of the sandstone. This bed makes an excellent horizon marker because it weathers characteristically to gray, papery plates. It is reported that this shale grades laterally southward into a coal bed, but the writers saw no coal. On the Flora and Gertrude claims a second, but less carbonaceous shale bed of similar thickness was noted about 30 feet higher in the stratigraphic section. This bed, however, is more massive and does not weather to gray, papery plates.

The beds of the Lakota sandstone consist of uniformly fine grains of quartz and appreciable amounts of interstitial white clay. Locally, clay-pellet zones occur as thin beds or channel fillings as much as 3 feet thick. Concretionary structures occur throughout most of the formation. Quartz-rich concretions found at the discovery pit on the Imogene claim are as much as 4 feet in diameter. The lower 4 feet of the sandstone exposed on the Pictograph claim is ripple marked, but ripple marks are not common in other parts of the sandstone. Cross-bedding is common in many of the beds, but in the upper part of the sandstone it is a relatively inconspicuous feature. More commonly, thin-bedded and massive sandstone beds alternate and interfinger as indicated by the section measured on the Pictograph claim (p. 5).

Carnotite and limonite stains are abundant on the sandstone throughout the area. Manganese oxides coat fracture surfaces and occur as spots in carnotite-bearing sandstone. In many places, near or associated with carnotite, the sandstone surfaces are coated with an unidentified dark-green to olive stain. Preliminary chemical tests of this coating did not show the presence of copper, but did indicate the presence of uranium and vanadium.

The Morrison formation as exposed on the claims is composed predominately of gray-green shales and minor units of very evenly bedded, white sandstone layers that in places are as much as 5 feet thick. None of these sandstone beds is exposed on the Pictograph claim.

The detailed structure of the Craven Canyon area is little known. The area is on the southwest flank of the Black Hills uplift, and the beds have a general gentle dip to the southwest. To the south and east minor flexures have been mapped by Darton (Darton and Smith, 1904).

Thus far, no large faults have been recognized in the area, but the rocks on the Pictograph claim are strongly jointed. These joints are widely spaced and strike and dip N. 10° W., 75° NE.; N. 75° E., 85° SE.; N. 75° W., 80° SW.; N. 10° E., 70° NW.; and N. 10° W., vertical. Joints with similar attitudes were seen on the other claims.

Stratigraphic section, Lakota sandstone, west edge of Pictograph claim, Craven Canyon area, South Dakota.

	Thickness (feet)
Medium-bedded, white; beds 6 inches to 2 feet thick	94.0 - 99.0
Massive beds separated by thin, iron-stained layers. At 88.0 feet a 0.1 inch layer of high-grade carnotite ore extends for 4 feet along the strike	79.5 - 94.0
Discontinuous bed containing concretions 0.1- to 0.5-inch thick	79.0 - 79.5
Massive, white bed	73.7 - 79.0
Carnotite-rich, thin beds ranging from 0.2 inch to 0.8 inch in thickness	70.5 - 73.7
Massive, with small amount of surficial carnotite stain	67.6 - 70.5
Thin-bedded, with dark manganese stains on bedding surface. Beds average 0.2 inch in thickness	56.7 - 67.5
Massive, hard, stained with carnotite	54.2 - 56.7
Massive, very hard, white	52.5 - 54.2
Mostly thin-bedded, slightly stained by carnotite	50.5 - 52.5
Massive, white, with poorly defined bedding planes; carnotite stains on the surface	48.0 - 50.5
Medium-bedded, white, containing gray- and iron-stained beds ranging from 0.5 inch to 12 inches in thickness	40.0 - 48.0
Thick-bedded, massive, white; beds 2 to 4 feet thick	20.5 - 40.0
Discontinuous, cross-bedded	19.7 - 20.5
Massive, white to pale-brown bed with slightly pitted outcrop	11.7 - 19.7
Thin-bedded	11.5 - 11.7
Massive, thick-bedded	4.0 - 11.5
Thin-bedded, ripple-marked	0 - 4.0
Morrison formation	

ORE DEPOSITS

At the time of the writers' visit none of the carnotite deposits had been exposed more than 8 feet back from the surface; consequently, it was difficult to evaluate their size and attitude. Abundant carnotite stains on fractures and other surfaces made it equally difficult to localize the higher-grade deposits and to make accurate estimates of grade.

Mineralogy

At the time of this investigation the only uranium mineral identified in the Craven Canyon area was carnotite, a uranium vanadate. It occurs in irregular patches as coatings on or interstitial to sand grains; as layers as much as 2 inches thick parallel to bedding; as irregular, thin layers within sandstone beds; as veins, as much as half an inch thick along joints; and as a thin film, in places mixed with carbonate (?) and an unidentified green mineral, coating surface exposures. The carnotite is commonly associated with iron oxides and, in places, with small grains and specks of manganese oxides. On the Pictograph claim some of the richest ore is associated with casts of plant fossils containing carbonaceous material.

Size and shape

The size and shape of the carnotite deposits are little known because most of them are exposed in vertical cliff faces, and none has been exposed by mining. Two of the bodies sampled appear to contain high-grade ore. Of these, the richest ore appears to be in deposit A, 220 feet S. 20° W. of the discovery pit on the Pictograph claim (pl. 1). This body is exposed continuously for 25 feet and may continue for a total length of 65 feet. The maximum thickness is 3.2 feet; the average is about 1.5 feet. This deposit is parallel to bedding, but its blunt northern end cuts sharply across the beds. No information could be obtained about the extension of the plunge or dip, and the deposit could not be correlated directly with the high-grade ore found on the north and east sides of the mesa. It is probable, however, that with further mapping, deposits A, G, H, I, J, and E can be shown to be on the same stratigraphic horizon.

On the Gertrude claim an ore body was exposed on a relatively flat land surface that is almost parallel to the bedding. The long axis of this body trends N. 35° E. for 35 feet. It has a maximum width of 16 feet; the average is about 12 feet. The exposed western edge of the body is 1 foot thick, but its top has been eroded. The eastern end is at least 1 foot and probably 2 feet or more thick. Thinner and smaller high-grade lenses are common in other lower-grade deposits.

The lower-grade deposits are larger than those described above. On the Pictograph claim (pl. 1), 270 to 330 feet south of the discovery pit,

deposit E is exposed continuously for 38 feet along the east side of the mesa and undoubtedly is at the same horizon as exposures 30 feet to the south. It has a maximum thickness of 8 feet.

On the Ophelia and Flora claims, low-grade deposits of even larger size appear to be present, but additional mapping and study will be necessary before the size is known. Like those on the Pictograph claim, they appear to be essentially parallel to bedding, but thicken in areas cut by steeply dipping joints.

Localization of carnotite

The carnotite occurrences in the Craven Canyon area appear to be restricted to the lower 100 to 150 feet of the Lakota sandstone; most are within 50 feet of a distinctive, papery-weathering, nonradioactive, carbonaceous black shale that is 100 to 125 feet above the base of the formation. The richer deposits are, for the most part, in sandstone in which the individual beds are less than 2 feet thick, and commonly no more than 1 inch thick. The lower-grade deposits appear to be mainly in the more massive and thicker beds where the carnotite, for the most part, is present as a stain on weathered surfaces.

The deposits generally are parallel to bedding, but in detail they are cross cutting. In most of the deposits carnotite-rich layers coat cross-cutting veinlets and occur in thin zones that appear to have been more permeable than adjacent parts of the sandstone. In places the carnotite appears to be localized by plant fossils but elsewhere fossil-bearing beds lack any noticeable uranium minerals.

Three general, favorable zones have been recognized in the area and are, from top to bottom, (1) a zone 20 to 30 feet above the carbonaceous shale, (2) a zone 20 to 30 feet below the carbonaceous shale, and (3) a zone about 25 feet below (2). A fourth zone about 20 feet below (3) has been recognized in one place and may be found on further prospecting to be widespread.

RESERVES

The only exploitable ore bodies discovered in the Craven Canyon area are of small size (table 2). Most of the known deposits are small and are low in grade. The widespread and numerous low-grade deposits naturally exposed at the surface may be an indication of higher-grade ore. Further prospecting, particularly of covered benches above carnotite-stained areas, may show that the Craven Canyon area is an important source of uranium.

SUGGESTIONS FOR PROSPECTING

Because the owners of claims in the Craven Canyon area have not had sufficient time to prospect even the surface showings, the following suggestions are made for both surface and underground prospecting:

1. All exposures should be examined with either Geiger counters or scintillometers. Particular attention should be paid to exposures of thin-bedded sandstone within 30 feet vertically above and 70 feet below the carbonaceous shale that weathers to gray, papery flakes; to all yellow-stained and green-stained areas; and to all areas containing plant fossils or casts.

2. All benches between massive sandstone beds should be tested by sensitive Geiger counters or scintillometers and trenches should be dug in areas of high count. Where possible the trenches should be made across such areas at right angles to the cliffs.

3. All exposures containing carnotite parallel to bedding should be prospected by blasting; exposures parallel to steeply dipping or vertical joints are less favorable.

4. All exposed high-grade ore bodies should be mined out to get the trend of the deposits.

5. Carnotite-bearing rock mined during prospecting should be sorted to obtain ore containing 0.1 percent or more uranium, in order to determine the percentage of salable ore that could be mined from each deposit.

6. Many of the carnotite-bearing samples taken thus far are out of equilibrium; that is, the radioactivity is either more or less than expected from the results of chemical analyses for uranium. Therefore, it appears possible that higher-grade ore may be found underground beyond areas of surface leaching and precipitation.

DESCRIPTIONS OF PROSPECTS

Pictograph claim

The Pictograph claim (fig. 2) was located September 4, 1951, by Jerry G. Brennan of Rapid City, S. Dak. It extends north along the west edge of the NW¼ of sec. 30 in unsectioned T. 7 S., R. 3 E. The only workings, as of November 18, were at the discovery pit (deposit H, pl. 1) where two vertical faces, 15 feet in maximum height, have been cut on the northwest and east sides of the pit situated at the

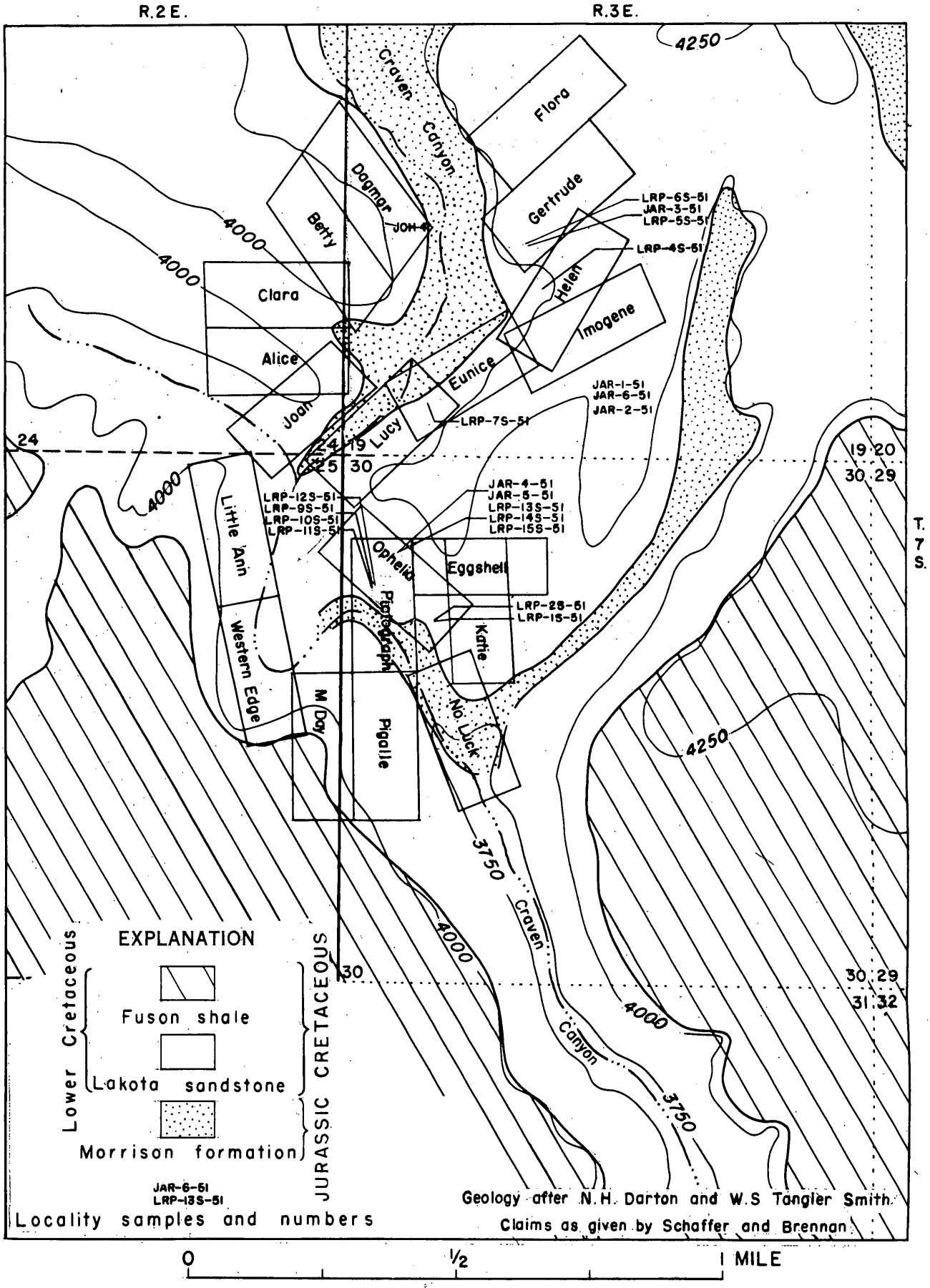

Figure 2. Geologic map showing the approximate location of claims in the Craven Canyon area, Fall River County, South Dakota, as of November 5, 1951

north end of a triangular-shaped mesa that is about 350 feet long and is 250 feet wide at the north end. Sixteen individual exposures of carnotite-bearing sandstone have been mapped on the low cliffs at the edges of this mesa, and other unmapped exposures occur on the east edge. Only a few of the known exposures can be projected as parts of the same body. Four of the exposures were sampled (table 1).

The carnotite occurs in lenses parallel to bedding in thin-bedded sandstone, but the ends of the lenses are blunt and cut sharply across bedding planes. Some of the lenses at deposit H on the north end of the mesa appear to be localized along beds containing casts of plant fossils; others, as at deposit A, are not associated with plant remains. Halos of lower-grade ore, in which the carnotite, for the most part, occurs as thin films on the quartz grains of the sandstone, surround the high-grade lenses. These films give a deceiving impression of the grade of ore. Carnotite also stains, coats, and fills joints above and below the ore lenses. These stains are commonly noticeable in the massive sandstone beds below the thin-bedded zones that contain the richer ore; some of these stained areas have been indicated on plate 1. At deposit H, on the north and east faces of the discovery pit, veinlets of solid carnotite are as much as half an inch thick and extend through the horizontal ore lenses for a total vertical extent of at least 12 feet. Such high-grade veinlets complicate sampling of the more important horizontal lenses for purposes of determining average grade. The available data on the size and vertical position of the known deposits on the claim are given in table 2. All of these deposits are in sandstone at least 10 feet below the carbonaceous shale horizon and appear to lie in three general zones: (1) deposits A, G, H, I, J, and E; (2) deposits B and D; and (3) deposit F. Other favorable zones might be found when the lower parts of the debris-covered slopes are prospected.

Ophelia claim

The Ophelia claim (fig. 2), adjoining the Pictograph claim on the east, is owned by C. R. Kubler and an associate who holds a tenth interest.

The Lakota sandstone on the Ophelia claim is exposed in a cliff near the southeast corner of the Pictograph claim. It is composed of massive beds, as much as 20 feet thick, in its lower 60 to 80 feet. These beds are overlain by about 20 feet of more thinly bedded sandstone that is directly below the carbonaceous shale. The discovery cut on the Ophelia claim is north and a little east of this cliff and about 20 feet below the carbonaceous shale. Carnotite occurs as stains on quartz grains in streaks as much as 2 inches thick. The streaks are parallel to the bedding. One carnotite-stained area, 2 feet by 2 feet, extends across the bedding, and at one place carnotite rims brown-stained, vertical plant fossil casts. One vertical channel sample, LRP-1s-51, was cut across a 2-foot zone that appeared to be representative of all material exposed in the cut. This sample contained 0.077 percent equivalent uranium, 0.095 percent uranium,

Table 1.--Analyses of samples, Pictograph claim

Sample number	Deposit (pl. 1)	Type of sample (pl. 1)	Length of sample (feet)	Equivalent uranium (percent)	Uranium (percent)	Vanadium (percent)
LRP-9s-51	A	Channel	2	0.17	0.22	0.12
LRP-10s-51	A	Channel	1.2	0.26	0.30	0.13
LRP-11s-51	C	Channel	4.5	0.045	0.049	0.04
LRP-12s-51	G	Channel	5	0.053	0.055	0.02
LRP-13s-51	H	Channel	4	0.047	0.052	0.02
LRP-14s-51	H	Channel	4.5	0.052	0.040	0.02
LRP-15s-51	H	Channel	2	0.14	0.23	0.08
JAR-4-51	H	Grab	---	0.070	0.078	n.d. 1/
JAR-5-51	H	Grab	---	1.1	2.0	n.d. 1/

1/ Not determined

Table 2.--Size and vertical position of carnotite deposits, Pictograph claim

Deposit (pl. 1)	Vertical position (altitude in feet)	Thickness		Length		Remarks
		Maximum (feet)	Average (feet)	Exposed (feet)	Total (feet)	
A	3925 - 3928.2	3.2	1.5	27	65(?)	Probably connected under surficial debris.
A1	3925 - 3926	1.0	1.0	11		
B	3941 - 3945	4.0	3.0	10	10	Possibly connected underground. Total length of zone would then be 65 feet.
B1	3943	0.1	0.1	4	4	
B2	3944 - 3948	4.0	3.0	25	25	
C	3925 - 3940	5.0	4.5	9	20(?)	Probably same zone as deposit D (50 feet to the southeast).
D	3935.5 - 3936.5	1.0	0.5	30	30	
E	3920 - 3928	8.0	6.0	38	75(?)	Probably parts of same ore body with dip length of about 40 feet. Same horizon covered to north, but may include deposits H, I, and J.
E	3923 - 3925	2.0	2.0	10		
E1	3924.5 - 3926.5	1.0	1.0	2		
E2	3922 - 3923	1.0	0.05	2		
F	3904.5 - 3905.5	1.0	1.0	5		Other part of horizon covered.
G	3926 - 3932	6.0	4.5	20	20	Probably same horizon as deposit A.
G1	3933 - 3933.5	0.5	0.5	4	4	Individual lens.

Table 2.--Size and vertical position of carnotite deposits, Pictograph claim (continued)

Deposit (pl. 1)	Vertical position (altitude in feet)	Thickness		Length		Remarks
		Maximum (feet)	Average (feet)	Exposed (feet)	Total (feet)	
H	3919 - 3931.5	12.5	8.5	42		
H1	3921 - 3924	3.0	3.0	12	100(?)	Probably more or less continuous zone at same horizon.
H2	3928 - 3931	3.0	3.0	15		
I	3916 - 3919(?)	3.0(?)	?	1.0	20(?)	Covered.
J	3920 - 3940	?	?	?	?	Not mapped.

and 0.06 percent vanadium. About 20 feet vertically below this discovery pit are yellow carnotite stains on the surface of the sandstone cliffs.

The richest exposure of carnotite ore on the Ophelia claim is 70 to 110 feet N. 60° E. of the discovery pit. This exposure is on a vertical face averaging 3 feet in thickness and having a maximum thickness of 4 feet. Sample LRP-2s-51, a grab sample of this ore, contained 0.14 percent equivalent uranium, 0.20 percent uranium, and 0.10 percent vanadium.

Northward along the cliffs this favorable zone was recognized at a point S. 80° E. of the discovery pit on the Pictograph claim. Another lens of carnotite-bearing sandstone, 18 feet long and 3 feet thick in the center, of grade similar to sample LRP-2s-51, was found N. 65° E. of the Pictograph discovery pit.

Eggshell claim

The Eggshell claim (fig. 2) adjoins the Ophelia claim on the north and is owned by C. M. Rowe of Rapid City, S. Dak. Where the two claims adjoin, or possibly overlap--N. 60° E. of the Pictograph discovery pit--carnotite occurs near a fracture zone that strikes N. 15° E. and dips 65° NW. One lens, 8 feet vertically by 6 feet horizontally, is at least 3 feet thick and is estimated to be of higher grade than sample LRP-2s-51. Another lens of similar size and grade is 7 feet below and 15 feet south of the first high-grade lens. These deposits are 20 to 25 feet below the carbonaceous shale.

Imogene claim

The Imogene claim (fig. 2) is on the east side of Craven Canyon in what would be the SW¼ of sec. 19, unsectioned T. 7 S., R. 3 E. It is owned by L. E. Shaffer, E. R. Drevdahl, E. H. Stevens, M. J. Voelker, and another partner who has a tenth interest in the claim; all are of Rapid City.

The only known carnotite deposit on the claim is at the discovery pit where a zone, 5.5 feet thick, is exposed on the corner of a cliff of relatively thin-bedded sandstone. The deposit crops out for about 15 feet west and about 15 feet north of the corner of the cliff and appears to pinch out in both directions. On the south and west side of the corner, high-grade carnotite ore occurs in a lens about 5 feet long and 2 feet thick. This ore is represented by sample JAR-6-51 taken from a decomposed talus block at the base of the cliff. This sample contained 0.23 percent equivalent uranium and 0.33 percent uranium. The higher content of uranium relative to equivalent uranium suggests that much of the carnotite observed on this claim has been recently precipitated. The distribution of carnotite in thin bands parallel to bedding, fractures, and plant

fossils appears to substantiate this conception. A chip sample across the 5.5-foot zone on the north and east side of the cliff corner is more representative of the ore available in the entire deposit. Sample JAR-1-51 represents this zone and contains 0.058 percent equivalent uranium and 0.054 percent uranium.

Helen claim

The Helen claim (fig. 2) adjoins and overlaps the Imogene claim on the north and has the same ownership. At the discovery pit, thin-bedded sandstone is exposed vertically for 8 feet. The upper 4.7 feet is white with a 6-inch carnotite layer at the top. The entire section is radioactive, though no uranium minerals are visible in the lower part of the zone. Sample LRP-4s-51 was taken at the southeast edge of the discovery cut across this zone. It contained 0.044 percent equivalent uranium, 0.049 percent uranium, and 0.04 percent vanadium. Lateral extensions of this zone are covered. Below the radioactive zone the thin-bedded sandstone is a pale purplish red. This zone probably can be correlated with the upper zone of the Ophelia, Eggshell, and Imogene claims because it too is 20 to 25 feet below the carbonaceous shale.

Carnotite stains can also be seen on an overhanging cliff, 20 to 30 feet below the Helen discovery pit, and additional prospecting will probably reveal other deposits on the Helen claim.

Gertrude claim

The Gertrude claim (fig. 2), north of the Helen claim and owned by the same persons, contains one of the largest high-grade ore bodies observed in the area. The ore is in relatively thin-bedded sandstone about 30 feet above the carbonaceous shale.

Carnotite is evenly disseminated in a 1- to 2-foot massive bed of sandstone that overlies much more thinly bedded sandstone. The latter is highly radioactive, but only lightly stained with carnotite.

The high-grade ore body is exposed for 35 feet north and south, has a maximum width of 16 feet (average 12 feet), and has a maximum observed thickness of 2 feet. The southwestern edge of this deposit, 1 foot thick, forms the top of a 3-foot vertical face in the discovery pit. One sample, JAR-3-51, taken across this exposure, contained 0.13 percent equivalent uranium and 0.16 percent uranium. The northern third of the body is exposed in a vertical face 2 feet high. This face appears to be above the bed exposed to the south, suggesting that the northern end of the deposit has a thickness of about 3 feet. Sample LRP-6s-51 represents the upper 2 feet of this part of the ore body and contains 0.16 percent equivalent uranium, 0.16 percent uranium, and 0.08 percent vanadium. A grab

sample collected by J. O. Harder as representative of this ore contained 0.19 percent equivalent uranium and 0.23 percent uranium.

Beneath the high-grade ore the radioactive, thin-bedded sandstone contains little visible carnotite. One sample (LRP-5s-51), taken across the 6-foot face exposed at the face of the discovery cut, contained 0.019 percent equivalent uranium, 0.019 percent uranium, and 0.04 percent vanadium. Channel samples collected by Harder at the same face contained 0.027 percent equivalent uranium and 0.034 percent uranium in the upper 2 feet, and 0.004 percent equivalent uranium and 0.002 percent uranium in the lower 2.5 feet.

The Gertrude claim has been poorly prospected, but any other occurrences of carnotite probably will be found to the north along the cliffs of Lakota sandstone on the east edge of Craven Canyon and below the carbonaceous shale.

Flora claim

The Flora claim (fig. 2) adjoins the Gertrude claim. It is owned by the same group that holds the Gertrude claim. As of November 17, no discovery pit had been made. Carnotite stains are visible about 20 feet above the papery-weathering, carbonaceous shale horizon and about 10 feet below another thin carbonaceous shale that does not weather into gray, papery plates. This zone may be continuous with the carnotite zone on the Gertrude claim. A second zone of carnotite occurs 15 to 20 feet above the non-papery carbonaceous shale. Talus blocks containing high-grade carnotite ore are common below the cliff. Time did not permit careful inspection or sampling of these deposits.

Lucy claim

The Lucy claim (fig. 2) is north of the Pictograph claim near the eastern common corner of secs. 24 and 25, T. 7 S., R. 2 E. It is owned by L. E. Schaffer, E. L. Drevdahl, E. H. Stevens, and an unnamed partner who has a tenth interest. The discovery cut is a narrow adit about 6 feet long at the base of a high vertical cliff of Lakota sandstone. The visible carnotite seems to be mainly a surface coating on coarse-grained, porous sandstone that is above a 1-foot bed of carbonaceous shale and below a 6-inch layer of thin-bedded sandstone. Some of this carnotite is localized near plant fossils. One 5-foot sample (LRP-7s-51) was cut across the two sandstone layers. This sample contained 0.030 percent equivalent uranium, 0.032 percent uranium, and 0.02 percent vanadium and is representative of a 20-foot length of exposure.

Eunice claim

The Eunice claim (fig. 2) lies between the Imogene and Lucy claims and overlaps both to some extent. It is owned by L. E. Schaffer, E. R. Drevdahl, and another partner who has a tenth interest in the claim; all are of Rapid City, S. Dak.

The discovery pit is located about 400 feet northwest of the Imogene discovery pit and at the base of a 50-foot cliff of massive sandstone that is about 35 feet above the base of the Lakota sandstone. The writers observed carnotite only at the discovery pit, but it was reported to occur elsewhere along the cliff. High-grade streaks of carnotite as much as 0.05 feet thick parallel the bedding; disseminated blebs of carnotite and carnotite stain are scattered throughout the massive sandstone. The observed plant fossils are most abundant in lenses above the upper limit of the carnotite. The carnotite ore occurs in relatively massive sandstone having a vertical thickness of 3.5 feet and a horizontal length of 20 feet. Apparently the carnotite ore pinches out in both directions from the discovery pit. One vertical channel sample was cut across 3.4 feet of the carnotite-bearing rock. This sample (JAR-2-51) contained 0.024 percent equivalent uranium, and 0.015 percent uranium. The ore lies at a horizon which is probably about the same as that of the exposed ore in the discovery shaft of the Lucy claim.

Dagmar claim

The Dagmar claim (fig. 2) adjoins the northeast side of the Betty claim and is across the canyon, north of the Eunice claim. It is owned by the group that owns the Eunice claim.

The discovery pit, 5 feet deep, is at the south corner of the claim. Carnotite was observed at the discovery pit and in float blocks. Half-inch thick stringers of rich carnotite ore occur parallel to bedding, and on steeply dipping joints and fractures. Yellow carnotite is disseminated throughout the ore zone. The carnotite extends from 3 to 5 feet vertically and for 15 feet horizontally. A channel sample (JOH-4) of 3 feet of carnotite-bearing gray sandstone, collected by J. O. Harder, assayed 0.062 percent equivalent uranium and 0.039 percent uranium.

Alice claim

The Alice claim (fig. 2) is owned by the group that owns the Dagmar claim. It is across the canyon to the west of the Eunice claim and adjoins the Clara and Joan claims.

The discovery pit exposes a 3- to 5-foot vertical thickness of carnotite ore. This occurrence is almost a duplicate of that in the Dagmar claim. The ore can be traced for about 40 feet along the strike and may extend farther. No samples have been taken from the Alice claim, but the ore is probably equivalent in grade to ore from the Dagmar.

REFERENCE CITED

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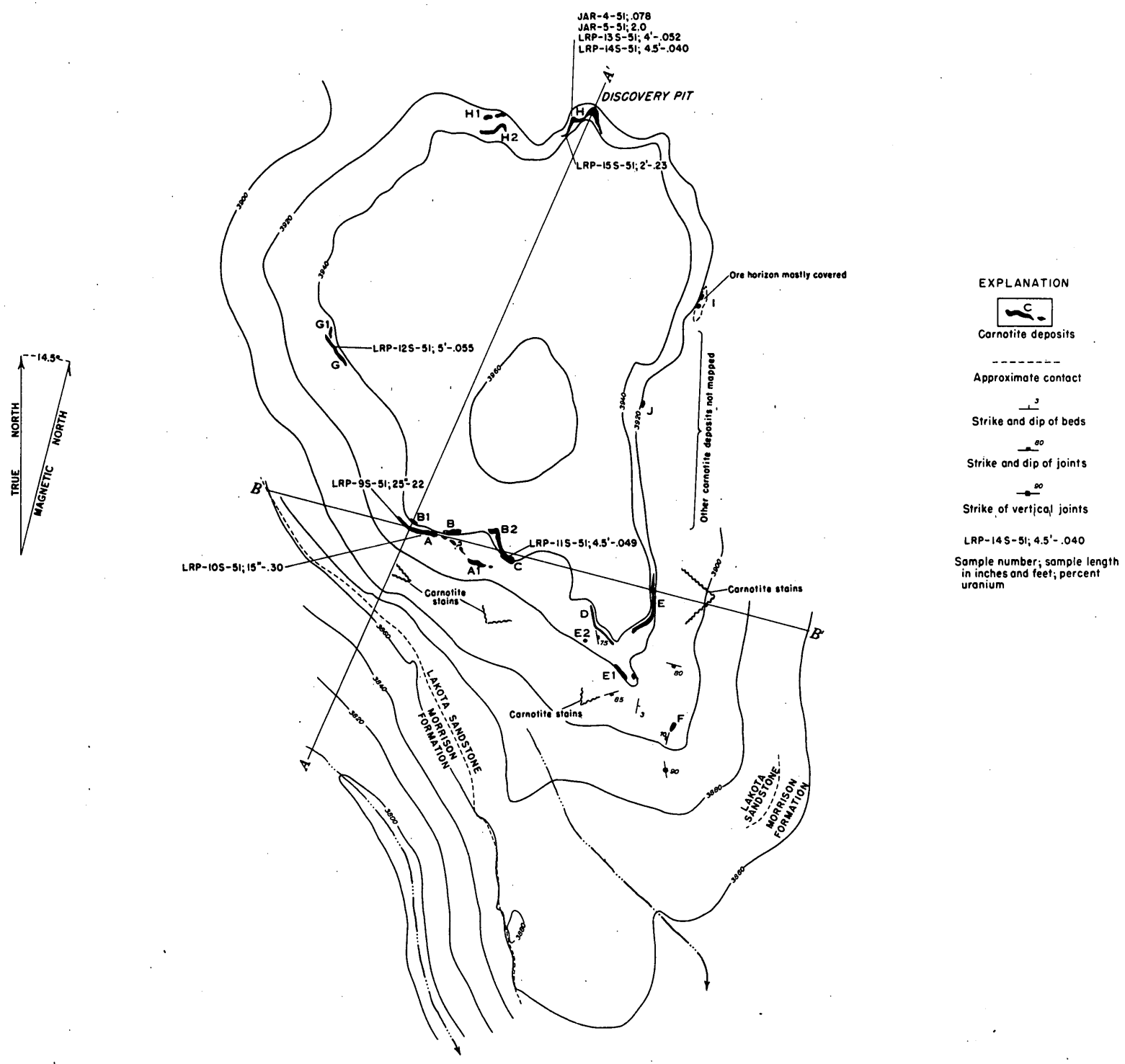

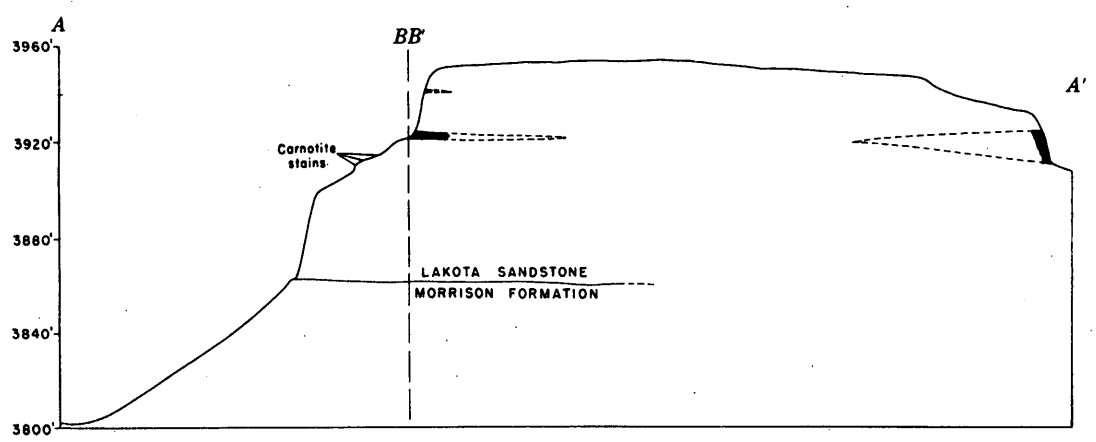

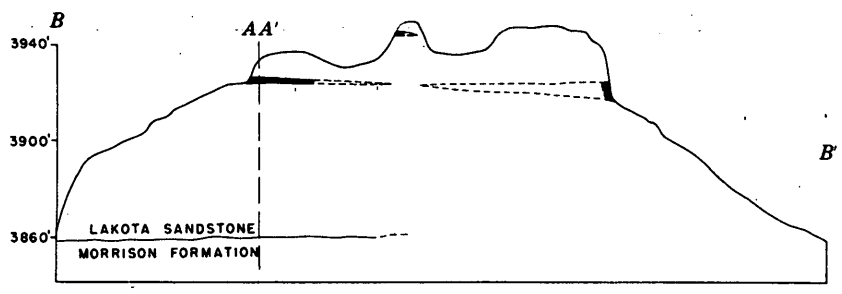

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Contour interval 20 feet
Datum is approximate mean sea level

Geology and topography by L. R. Page and J. A. Redden, November, 1951

GEOLOGIC MAP AND SECTIONS, PICTOGRAPH CLAIM, CRAVEN CANYON AREA, FALL RIVER COUNTY, SOUTH DAKOTA

CIRC. 175

GEOLOGICAL SURVEY CIRCULAR 175

THE CARNOTITE PROSPECTS OF THE CRAVEN CANYON AREA FALL RIVER COUNTY SOUTH DAKOTA

By L. R. Page and J. A. Redden

Lakota Mining and Exploration Co.
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C/O Scottsbluff National Bank
Scottsbluff, Nebraska

Do not return.

UNITED STATES DEPARTMENT OF THE INTERIOR
Oscar L. Chapman, Secretary

GEOLOGICAL SURVEY
W. E. Wrather, Director

GEOLOGICAL SURVEY CIRCULAR 175

THE CARNOTITE PROSPECTS OF THE CRAVEN CANYON AREA FALL RIVER COUNTY, SOUTH DAKOTA

By L. R. Page and J. A. Redden

This report concerns work done on behalf of the U. S. Atomic Energy Commission and is published with the permission of the Commission.

Washington, D. C., 1952.

Free on application to the Geological Survey, Washington 25, D. C.

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THE CARNOTITE PROSPECTS OF THE CRAVEN CANYON AREA, FALL RIVER COUNTY, SOUTH DAKOTA

By L. R. Page and J. A. Redden

ABSTRACT

Carnotite was discovered in June 1951 in the Craven Canyon area, secs. 24 and 25, T. 7 S., R. 2 E. and what would be secs. 19 and 30 of unsectioned T. 7 S., R. 3 E., Fall River County, S. Dak. Although little prospecting had been carried out before November 18, 1951, more than 28 claims had been staked by that date.

The known carnotite occurrences are restricted to the basal 100 to 150 feet of the Lower Cretaceous Lakota sandstone; most are within 50 feet of a distinctive, paper-weathering, nonradioactive, carbonaceous, 1- to 3-foot black shale that is 100 to 125 feet above the top of the underlying Morrison formation. Three favorable zones have been recognized: (1) a zone 20 to 30 feet above the carbonaceous shale horizon, (2) a zone 20 to 30 feet below the carbonaceous shale horizon, and (3) a zone about 25 feet below (2). Possibly a fourth zone may occur 20 feet below (3).

The deposits generally are parallel to bedding, but in detail are cross-cutting. Widespread carnotite stains coat fractures in and adjacent to the deposits. These stains are commonly associated with an unidentified, green mineral stain that contains uranium and vanadium.

The only exploitable ore bodies discovered by November 1951 are of small size, but the presence of many widespread and low-grade deposits suggests that additional commercial deposits may be found by further prospecting.

INTRODUCTION

Uranium was first discovered in the Craven Canyon area, Fall River County, S. Dak. (fig. 1), in June 1951, by Jerry G. Brennan of Rapid City S. Dak. The mineral was identified as carnotite at the South Dakota School of Mines, and the first mining claim, the Pictograph, was located by Brennan on September 4. About the same time adjoining claims were

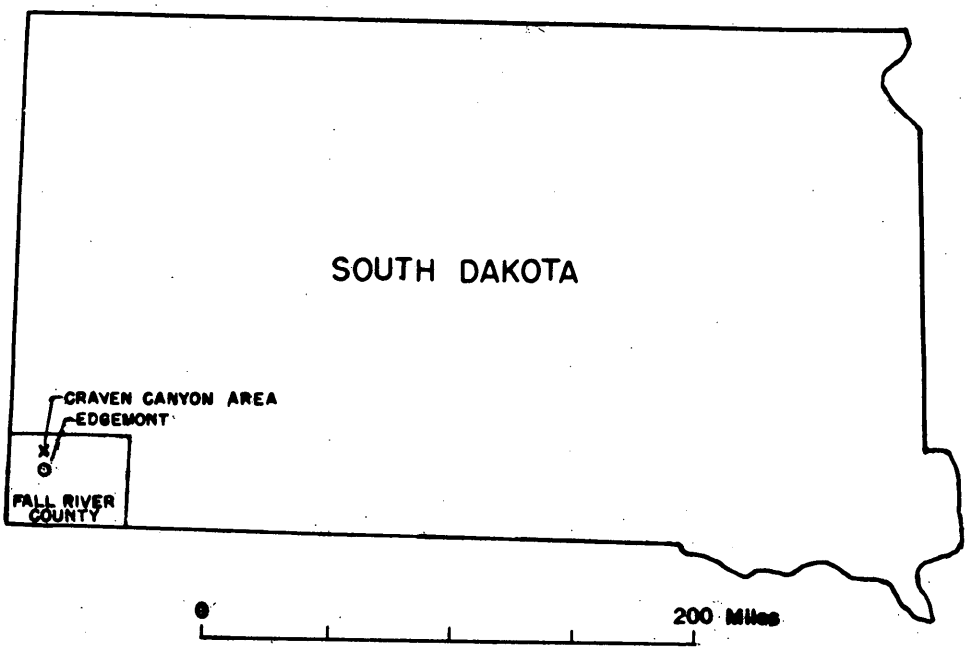

Figure 1.--Index map showing the location of Craven Canyon area, Fall River County, South Dakota.

staked by C. M. Rowe (Eggshell) and W. L. Roberts (Pigalle and M. Day) of Rapid City. Subsequently, additional claims were located by a group including L. E. Schaffer, E. H. Stevens, M. J. Voelker, E. R. Drevdahl, C. R. Kubler, and others of Rapid City; by local ranchers (the Stevens brothers); and by a Mr. Cord of the Yellow Cat area, Utah. At the time of the writers' visit, November 16 - 18, 1951, a total of at least 28 claims had been staked in Craven Canyon and a few claims were reported to have been staked in Coal Canyon—the next canyon to the west. The approximate location of 20 of these claims is shown on a map made by L. E. Schaffer (fig. 2).

Location and accessibility

The known carnotite prospects in Craven Canyon are in secs. 24 and 25, T. 7 S., R. 2 E. and in what would be secs. 19 and 30 of unsectioned T. 7 S., R. 3 E., about 15.5 miles from Minnekahta, the nearest point on

the Chicago, Burlington & Quincy Railroad. The prospects can be reached from Minnekahta by traveling about one mile west and south on U. S. Highway 85A and 18 to its junction with South Dakota Highway 89 and following the road log given below.

Miles

0.0 Junction of U. S. Highway 85A and 18 with South Dakota Highway 89. Proceed north on gravel road, South Dakota Highway 89.
1.0 Turn left from Highway 89 on gravel road.
6.1 Turn left on dirt road down Red Canyon.
11.7 Turn right on fire road up Craven Canyon through the E. G. Stevens ranch.
12.4 Boundary of Harney Peak National Forest.
14.5 Pictograph claim. On small mesa east of pictographs on canyon wall.

The deposits are 8 miles north of Edgemont, S. Dak., and may be reached either by U. S. Highway 85A and 18 and the roads given in the above log, or by a graded dirt road from Edgemont, up Red Canyon to the mouth of Craven Canyon and thence by 2.8 miles of rough, ungraded road.

The northern part of the area can be reached by road and trail by traveling west to Craven from the Red Canyon road and thence either down Craven Canyon or south along the west rim of the canyon.

Field work

The Craven Canyon prospects were first examined and sampled on the behalf of the Atomic Energy Commission by J. A. Redden of the U. S. Geological Survey, in the company of L. E. Schaffer of the South Dakota School of Mines, on November 5, 1951. On November 16 the Dagmar, Imogene, Pictograph, and Eggshell claims were visited briefly by the writers, in the company of C. C. Towle, Jr., of the Atomic Energy Commission, J. G. Brennan, and W. L. Roberts. On the following day the Ophelia, Imogene, Helen, Flora, Lucy, and Gertrude were examined in the company of L. E. Schaffer, E. H. Stevens, E. R. Drevdahl, and J. O. Harder and an associate of the Homestake Mining Company. Harder had visited the Pictograph, Dagmar, and some other claims before joining the writers. Harder has kindly made available notes and pulps of his samples for use in preparing this report. On November 19 the best-exposed carnotite deposits on the Pictograph claim were mapped by Gurley Compass, tape, and hand level at a scale of 1 inch to 40 feet.

GENERAL GEOLOGY

The carnotite prospects of the Craven Canyon area are in the Lakota sandstone of Early Cretaceous age (Darton and Smith, 1904). On the higher

ridges this formation is overlain by the Fuson shale, and in the valley bottom the underlying Morrison formation is exposed.

The Lakota sandstone exposed in the Craven Canyon area is a white to buff, massive to thin-bedded sandstone containing many 1- to 6-inch beds of white to reddish-purple shale. Throughout the area studied, a 1- to 3-foot bed of dense, black carbonaceous shale is exposed about 110 feet above the base of the sandstone. This bed makes an excellent horizon marker because it weathers characteristically to gray, papery plates. It is reported that this shale grades laterally southward into a coal bed, but the writers saw no coal. On the Flora and Gertrude claims a second, but less carbonaceous shale bed of similar thickness was noted about 30 feet higher in the stratigraphic section. This bed, however, is more massive and does not weather to gray, papery plates.

The beds of the Lakota sandstone consist of uniformly fine grains of quartz and appreciable amounts of interstitial white clay. Locally, clay-pellet zones occur as thin beds or channel fillings as much as 3 feet thick. Concretionary structures occur throughout most of the formation. Quartz-rich concretions found at the discovery pit on the Imogene claim are as much as 4 feet in diameter. The lower 4 feet of the sandstone exposed on the Pictograph claim is ripple marked, but ripple marks are not common in other parts of the sandstone. Cross-bedding is common in many of the beds, but in the upper part of the sandstone it is a relatively inconspicuous feature. More commonly, thin-bedded and massive sandstone beds alternate and interfinger as indicated by the section measured on the Pictograph claim (p. 5).

Carnotite and limonite stains are abundant on the sandstone throughout the area. Manganese oxides coat fracture surfaces and occur as spots in carnotite-bearing sandstone. In many places, near or associated with carnotite, the sandstone surfaces are coated with an unidentified dark-green to olive stain. Preliminary chemical tests of this coating did not show the presence of copper, but did indicate the presence of uranium and vanadium.

The Morrison formation as exposed on the claims is composed predominately of gray-green shales and minor units of very evenly bedded, white sandstone layers that in places are as much as 5 feet thick. None of these sandstone beds is exposed on the Pictograph claim.

The detailed structure of the Craven Canyon area is little known. The area is on the southwest flank of the Black Hills uplift, and the beds have a general gentle dip to the southwest. To the south and east minor flexures have been mapped by Darton (Darton and Smith, 1904).

Thus far, no large faults have been recognized in the area, but the rocks on the Pictograph claim are strongly jointed. These joints are widely spaced and strike and dip N. 10° W., 75° NE.; N. 75° E., 85° SE.; N. 75° W., 80° SW.; N. 10° E., 70° NW.; and N. 10° W., vertical. Joints with similar attitudes were seen on the other claims.

Stratigraphic section, Lakota sandstone, west edge of Pictograph claim, Craven Canyon area, South Dakota.

	Thickness (feet)
Medium-bedded, white; beds 6 inches to 2 feet thick	94.0 - 99.0
Massive beds separated by thin, iron-stained layers. At 88.0 feet a 0.1 inch layer of high-grade carnotite ore extends for 4 feet along the strike	79.5 - 94.0
Discontinuous bed containing concretions 0.1- to 0.5-inch thick	79.0 - 79.5
Massive, white bed	73.7 - 79.0
Carnotite-rich, thin beds ranging from 0.2 inch to 0.8 inch in thickness	70.5 - 73.7
Massive, with small amount of surficial carnotite stain	67.6 - 70.5
Thin-bedded, with dark manganese stains on bedding surface. Beds average 0.2 inch in thickness	56.7 - 67.5
Massive, hard, stained with carnotite	54.2 - 56.7
Massive, very hard, white	52.5 - 54.2
Mostly thin-bedded, slightly stained by carnotite	50.5 - 52.5
Massive, white, with poorly defined bedding planes; carnotite stains on the surface	48.0 - 50.5
Medium-bedded, white, containing gray- and iron-stained beds ranging from 0.5 inch to 12 inches in thickness	40.0 - 48.0
Thick-bedded, massive, white; beds 2 to 4 feet thick	20.5 - 40.0
Discontinuous, cross-bedded	19.7 - 20.5
Massive, white to pale-brown bed with slightly pitted outcrop	11.7 - 19.7
Thin-bedded	11.5 - 11.7
Massive, thick-bedded	4.0 - 11.5
Thin-bedded, ripple-marked	0 - 4.0
Morrison formation	

ORE DEPOSITS

At the time of the writers' visit none of the carnotite deposits had been exposed more than 8 feet back from the surface; consequently, it was difficult to evaluate their size and attitude. Abundant carnotite stains on fractures and other surfaces made it equally difficult to localize the higher-grade deposits and to make accurate estimates of grade.

Mineralogy

At the time of this investigation the only uranium mineral identified in the Craven Canyon area was carnotite, a uranium vanadate. It occurs in irregular patches as coatings on or interstitial to sand grains; as layers as much as 2 inches thick parallel to bedding; as irregular, thin layers within sandstone beds; as veins, as much as half an inch thick along joints; and as a thin film, in places mixed with carbonate (?) and an unidentified green mineral, coating surface exposures. The carnotite is commonly associated with iron oxides and, in places, with small grains and specks of manganese oxides. On the Pictograph claim some of the richest ore is associated with casts of plant fossils containing carbonaceous material.

Size and shape

The size and shape of the carnotite deposits are little known because most of them are exposed in vertical cliff faces, and none has been exposed by mining. Two of the bodies sampled appear to contain high-grade ore. Of these, the richest ore appears to be in deposit A, 220 feet S. 20° W. of the discovery pit on the Pictograph claim (pl. 1). This body is exposed continuously for 25 feet and may continue for a total length of 65 feet. The maximum thickness is 3.2 feet; the average is about 1.5 feet. This deposit is parallel to bedding, but its blunt northern end cuts sharply across the beds. No information could be obtained about the extension of the plunge or dip, and the deposit could not be correlated directly with the high-grade ore found on the north and east sides of the mesa. It is probable, however, that with further mapping, deposits A, G, H, I, J, and E can be shown to be on the same stratigraphic horizon.

On the Gertrude claim an ore body was exposed on a relatively flat land surface that is almost parallel to the bedding. The long axis of this body trends N. 35° E. for 35 feet. It has a maximum width of 16 feet; the average is about 12 feet. The exposed western edge of the body is 1 foot thick, but its top has been eroded. The eastern end is at least 1 foot and probably 2 feet or more thick. Thinner and smaller high-grade lenses are common in other lower-grade deposits.

The lower-grade deposits are larger than those described above. On the Pictograph claim (pl. 1), 270 to 330 feet south of the discovery pit,

deposit E is exposed continuously for 38 feet along the east side of the mesa and undoubtedly is at the same horizon as exposures 30 feet to the south. It has a maximum thickness of 8 feet.

On the Ophelia and Flora claims, low-grade deposits of even larger size appear to be present, but additional mapping and study will be necessary before the size is known. Like those on the Pictograph claim, they appear to be essentially parallel to bedding, but thicken in areas cut by steeply dipping joints.

Localization of carnotite

The carnotite occurrences in the Craven Canyon area appear to be restricted to the lower 100 to 150 feet of the Lakota sandstone; most are within 50 feet of a distinctive, papery-weathering, nonradioactive, carbonaceous black shale that is 100 to 125 feet above the base of the formation. The richer deposits are, for the most part, in sandstone in which the individual beds are less than 2 feet thick, and commonly no more than 1 inch thick. The lower-grade deposits appear to be mainly in the more massive and thicker beds where the carnotite, for the most part, is present as a stain on weathered surfaces.

The deposits generally are parallel to bedding, but in detail they are cross cutting. In most of the deposits carnotite-rich layers coat cross-cutting veinlets and occur in thin zones that appear to have been more permeable than adjacent parts of the sandstone. In places the carnotite appears to be localized by plant fossils but elsewhere fossil-bearing beds lack any noticeable uranium minerals.

Three general, favorable zones have been recognized in the area and are, from top to bottom, (1) a zone 20 to 30 feet above the carbonaceous shale, (2) a zone 20 to 30 feet below the carbonaceous shale, and (3) a zone about 25 feet below (2). A fourth zone about 20 feet below (3) has been recognized in one place and may be found on further prospecting to be widespread.

RESERVES

The only exploitable ore bodies discovered in the Craven Canyon area are of small size (table 2). Most of the known deposits are small and are low in grade. The widespread and numerous low-grade deposits naturally exposed at the surface may be an indication of higher-grade ore. Further prospecting, particularly of covered benches above carnotite-stained areas, may show that the Craven Canyon area is an important source of uranium.

SUGGESTIONS FOR PROSPECTING

Because the owners of claims in the Craven Canyon area have not had sufficient time to prospect even the surface showings, the following suggestions are made for both surface and underground prospecting:

1. All exposures should be examined with either Geiger counters or scintillometers. Particular attention should be paid to exposures of thin-bedded sandstone within 30 feet vertically above and 70 feet below the carbonaceous shale that weathers to gray, papery flakes; to all yellow-stained and green-stained areas; and to all areas containing plant fossils or casts.

2. All benches between massive sandstone beds should be tested by sensitive Geiger counters or scintillometers and trenches should be dug in areas of high count. Where possible the trenches should be made across such areas at right angles to the cliffs.

3. All exposures containing carnotite parallel to bedding should be prospected by blasting; exposures parallel to steeply dipping or vertical joints are less favorable.

4. All exposed high-grade ore bodies should be mined out to get the trend of the deposits.

5. Carnotite-bearing rock mined during prospecting should be sorted to obtain ore containing 0.1 percent or more uranium, in order to determine the percentage of salable ore that could be mined from each deposit.

6. Many of the carnotite-bearing samples taken thus far are out of equilibrium; that is, the radioactivity is either more or less than expected from the results of chemical analyses for uranium. Therefore, it appears possible that higher-grade ore may be found underground beyond areas of surface leaching and precipitation.

DESCRIPTIONS OF PROSPECTS

Pictograph claim

The Pictograph claim (fig. 2) was located September 4, 1951, by Jerry G. Brennan of Rapid City, S. Dak. It extends north along the west edge of the NW¼ of sec. 30 in unsectioned T. 7 S., R. 3 E. The only workings, as of November 18, were at the discovery pit (deposit H, pl. 1) where two vertical faces, 15 feet in maximum height, have been cut on the northwest and east sides of the pit situated at the

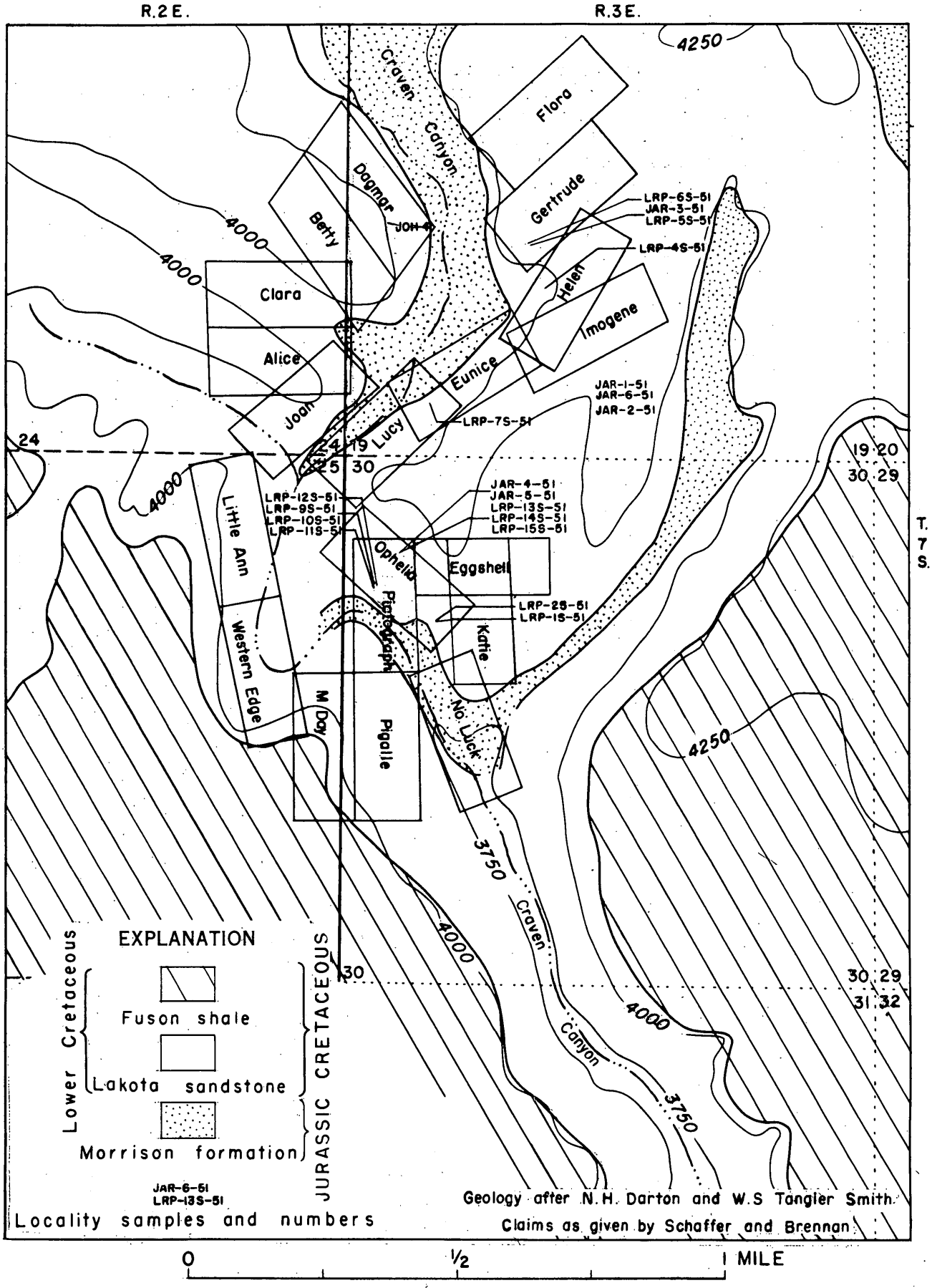

Figure 2. Geologic map showing the approximate location of claims in the Craven Canyon area, Fall River County, South Dakota, as of November 5, 1951

north end of a triangular-shaped mesa that is about 350 feet long and is 250 feet wide at the north end. Sixteen individual exposures of carnotite-bearing sandstone have been mapped on the low cliffs at the edges of this mesa, and other unmapped exposures occur on the east edge. Only a few of the known exposures can be projected as parts of the same body. Four of the exposures were sampled (table 1).

The carnotite occurs in lenses parallel to bedding in thin-bedded sandstone, but the ends of the lenses are blunt and cut sharply across bedding planes. Some of the lenses at deposit H on the north end of the mesa appear to be localized along beds containing casts of plant fossils; others, as at deposit A, are not associated with plant remains. Halos of lower-grade ore, in which the carnotite, for the most part, occurs as thin films on the quartz grains of the sandstone, surround the high-grade lenses. These films give a deceiving impression of the grade of ore. Carnotite also stains, coats, and fills joints above and below the ore lenses. These stains are commonly noticeable in the massive sandstone beds below the thin-bedded zones that contain the richer ore; some of these stained areas have been indicated on plate 1. At deposit H, on the north and east faces of the discovery pit, veinlets of solid carnotite are as much as half an inch thick and extend through the horizontal ore lenses for a total vertical extent of at least 12 feet. Such high-grade veinlets complicate sampling of the more important horizontal lenses for purposes of determining average grade. The available data on the size and vertical position of the known deposits on the claim are given in table 2. All of these deposits are in sandstone at least 10 feet below the carbonaceous shale horizon and appear to lie in three general zones: (1) deposits A, G, H, I, J, and E; (2) deposits B and D; and (3) deposit F. Other favorable zones might be found when the lower parts of the debris-covered slopes are prospected.

Ophelia claim

The Ophelia claim (fig. 2), adjoining the Pictograph claim on the east, is owned by C. R. Kubler and an associate who holds a tenth interest.

The Lakota sandstone on the Ophelia claim is exposed in a cliff near the southeast corner of the Pictograph claim. It is composed of massive beds, as much as 20 feet thick, in its lower 60 to 80 feet. These beds are overlain by about 20 feet of more thinly bedded sandstone that is directly below the carbonaceous shale. The discovery cut on the Ophelia claim is north and a little east of this cliff and about 20 feet below the carbonaceous shale. Carnotite occurs as stains on quartz grains in streaks as much as 2 inches thick. The streaks are parallel to the bedding. One carnotite-stained area, 2 feet by 2 feet, extends across the bedding, and at one place carnotite rims brown-stained, vertical plant fossil casts. One vertical channel sample, LRP-1s-51, was cut across a 2-foot zone that appeared to be representative of all material exposed in the cut. This sample contained 0.077 percent equivalent uranium, 0.095 percent uranium,

Table 1.--Analyses of samples, Pictograph claim

Sample number	Deposit (pl. 1)	Type of sample (pl. 1)	Length of sample (feet)	Equivalent uranium (percent)	Uranium (percent)	Vanadium (percent)
LRP-9s-51	A	Channel	2	0.17	0.22	0.12
LRP-10s-51	A	Channel	1.2	0.26	0.30	0.13
LRP-11s-51	C	Channel	4.5	0.045	0.049	0.04
LRP-12s-51	G	Channel	5	0.053	0.055	0.02
LRP-13s-51	H	Channel	4	0.047	0.052	0.02
LRP-14s-51	H	Channel	4.5	0.052	0.040	0.02
LRP-15s-51	H	Channel	2	0.14	0.23	0.08
JAR-4-51	H	Grab	---	0.070	0.078	n.d. 1/
JAR-5-51	H	Grab	---	1.1	2.0	n.d. 1/

1/ Not determined

Table 2.--Size and vertical position of carnotite deposits, Pictograph claim

Deposit (pl. 1)	Vertical position (altitude in feet)	Thickness		Length		Remarks
		Maximum (feet)	Average (feet)	Exposed (feet)	Total (feet)	
A	3925 - 3928.2	3.2	1.5	27	65(?)	Probably connected under surficial debris.
A1	3925 - 3926	1.0	1.0	11		
B	3941 - 3945	4.0	3.0	10	10	Possibly connected underground. Total length of zone would then be 65 feet.
B1	3943	0.1	0.1	4	4	
B2	3944 - 3948	4.0	3.0	25	25	
C	3925 - 3940	5.0	4.5	9	20(?)	Probably same zone as deposit D (50 feet to the southeast).
D	3935.5 - 3936.5	1.0	0.5	30	30	
E	3920 - 3928	8.0	6.0	38	75(?)	Probably parts of same ore body with dip length of about 40 feet. Same horizon covered to north, but may include deposits H, I, and J.
E	3923 - 3925	2.0	2.0	10		
E1	3924.5 - 3926.5	1.0	1.0	2		
E2	3922 - 3923	1.0	0.05	2		
F	3904.5 - 3905.5	1.0	1.0	5		Other part of horizon covered.
G	3926 - 3932	6.0	4.5	20	20	Probably same horizon as deposit A.
G1	3933 - 3933.5	0.5	0.5	4	4	Individual lens.

Table 2.--Size and vertical position of carnotite deposits, Pictograph claim (continued)

Deposit (pl. 1)	Vertical position (altitude in feet)	Thickness		Length		Remarks
		Maximum (feet)	Average (feet)	Exposed (feet)	Total (feet)	
H	3919 - 3931.5	12.5	8.5	42		
H1	3921 - 3924	3.0	3.0	12	100(?)	Probably more or less continuous zone at same horizon.
H2	3928 - 3931	3.0	3.0	15		
I	3916 - 3919(?)	3.0(?)	?	1.0	20(?)	Covered.
J	3920 - 3940	?	?	?	?	Not mapped.

and 0.06 percent vanadium. About 20 feet vertically below this discovery pit are yellow carnotite stains on the surface of the sandstone cliffs.

The richest exposure of carnotite ore on the Ophelia claim is 70 to 110 feet N. 60° E. of the discovery pit. This exposure is on a vertical face averaging 3 feet in thickness and having a maximum thickness of 4 feet. Sample LRP-2s-51, a grab sample of this ore, contained 0.14 percent equivalent uranium, 0.20 percent uranium, and 0.10 percent vanadium.

Northward along the cliffs this favorable zone was recognized at a point S. 80° E. of the discovery pit on the Pictograph claim. Another lens of carnotite-bearing sandstone, 18 feet long and 3 feet thick in the center, of grade similar to sample LRP-2s-51, was found N. 65° E. of the Pictograph discovery pit.

Eggshell claim

The Eggshell claim (fig. 2) adjoins the Ophelia claim on the north and is owned by C. M. Rowe of Rapid City, S. Dak. Where the two claims adjoin, or possibly overlap--N. 60° E. of the Pictograph discovery pit--carnotite occurs near a fracture zone that strikes N. 15° E. and dips 65° NW. One lens, 8 feet vertically by 6 feet horizontally, is at least 3 feet thick and is estimated to be of higher grade than sample LRP-2s-51. Another lens of similar size and grade is 7 feet below and 15 feet south of the first high-grade lens. These deposits are 20 to 25 feet below the carbonaceous shale.

Imogene claim

The Imogene claim (fig. 2) is on the east side of Craven Canyon in what would be the SW¼ of sec. 19, unsectioned T. 7 S., R. 3 E. It is owned by L. E. Shaffer, E. R. Drevdahl, E. H. Stevens, M. J. Voelker, and another partner who has a tenth interest in the claim; all are of Rapid City.

The only known carnotite deposit on the claim is at the discovery pit where a zone, 5.5 feet thick, is exposed on the corner of a cliff of relatively thin-bedded sandstone. The deposit crops out for about 15 feet west and about 15 feet north of the corner of the cliff and appears to pinch out in both directions. On the south and west side of the corner, high-grade carnotite ore occurs in a lens about 5 feet long and 2 feet thick. This ore is represented by sample JAR-6-51 taken from a decomposed talus block at the base of the cliff. This sample contained 0.23 percent equivalent uranium and 0.33 percent uranium. The higher content of uranium relative to equivalent uranium suggests that much of the carnotite observed on this claim has been recently precipitated. The distribution of carnotite in thin bands parallel to bedding, fractures, and plant

fossils appears to substantiate this conception. A chip sample across the 5.5-foot zone on the north and east side of the cliff corner is more representative of the ore available in the entire deposit. Sample JAR-1-51 represents this zone and contains 0.058 percent equivalent uranium and 0.054 percent uranium.

Helen claim

The Helen claim (fig. 2) adjoins and overlaps the Imogene claim on the north and has the same ownership. At the discovery pit, thin-bedded sandstone is exposed vertically for 8 feet. The upper 4.7 feet is white with a 6-inch carnotite layer at the top. The entire section is radioactive, though no uranium minerals are visible in the lower part of the zone. Sample LRP-4s-51 was taken at the southeast edge of the discovery cut across this zone. It contained 0.044 percent equivalent uranium, 0.049 percent uranium, and 0.04 percent vanadium. Lateral extensions of this zone are covered. Below the radioactive zone the thin-bedded sandstone is a pale purplish red. This zone probably can be correlated with the upper zone of the Ophelia, Eggshell, and Imogene claims because it too is 20 to 25 feet below the carbonaceous shale.

Carnotite stains can also be seen on an overhanging cliff, 20 to 30 feet below the Helen discovery pit, and additional prospecting will probably reveal other deposits on the Helen claim.

Gertrude claim

The Gertrude claim (fig. 2), north of the Helen claim and owned by the same persons, contains one of the largest high-grade ore bodies observed in the area. The ore is in relatively thin-bedded sandstone about 30 feet above the carbonaceous shale.

Carnotite is evenly disseminated in a 1- to 2-foot massive bed of sandstone that overlies much more thinly bedded sandstone. The latter is highly radioactive, but only lightly stained with carnotite.

The high-grade ore body is exposed for 35 feet north and south, has a maximum width of 16 feet (average 12 feet), and has a maximum observed thickness of 2 feet. The southwestern edge of this deposit, 1 foot thick, forms the top of a 3-foot vertical face in the discovery pit. One sample, JAR-3-51, taken across this exposure, contained 0.13 percent equivalent uranium and 0.16 percent uranium. The northern third of the body is exposed in a vertical face 2 feet high. This face appears to be above the bed exposed to the south, suggesting that the northern end of the deposit has a thickness of about 3 feet. Sample LRP-6s-51 represents the upper 2 feet of this part of the ore body and contains 0.16 percent equivalent uranium, 0.16 percent uranium, and 0.08 percent vanadium. A grab

sample collected by J. O. Harder as representative of this ore contained 0.19 percent equivalent uranium and 0.23 percent uranium.

Beneath the high-grade ore the radioactive, thin-bedded sandstone contains little visible carnotite. One sample (LRP-5s-51), taken across the 6-foot face exposed at the face of the discovery cut, contained 0.019 percent equivalent uranium, 0.019 percent uranium, and 0.04 percent vanadium. Channel samples collected by Harder at the same face contained 0.027 percent equivalent uranium and 0.034 percent uranium in the upper 2 feet, and 0.004 percent equivalent uranium and 0.002 percent uranium in the lower 2.5 feet.

The Gertrude claim has been poorly prospected, but any other occurrences of carnotite probably will be found to the north along the cliffs of Lakota sandstone on the east edge of Craven Canyon and below the carbonaceous shale.

Flora claim

The Flora claim (fig. 2) adjoins the Gertrude claim. It is owned by the same group that holds the Gertrude claim. As of November 17, no discovery pit had been made. Carnotite stains are visible about 20 feet above the papery-weathering, carbonaceous shale horizon and about 10 feet below another thin carbonaceous shale that does not weather into gray, papery plates. This zone may be continuous with the carnotite zone on the Gertrude claim. A second zone of carnotite occurs 15 to 20 feet above the non-papery carbonaceous shale. Talus blocks containing high-grade carnotite ore are common below the cliff. Time did not permit careful inspection or sampling of these deposits.

Lucy claim

The Lucy claim (fig. 2) is north of the Pictograph claim near the eastern common corner of secs. 24 and 25, T. 7 S., R. 2 E. It is owned by L. E. Schaffer, E. L. Drevdahl, E. H. Stevens, and an unnamed partner who has a tenth interest. The discovery cut is a narrow adit about 6 feet long at the base of a high vertical cliff of Lakota sandstone. The visible carnotite seems to be mainly a surface coating on coarse-grained, porous sandstone that is above a 1-foot bed of carbonaceous shale and below a 6-inch layer of thin-bedded sandstone. Some of this carnotite is localized near plant fossils. One 5-foot sample (LRP-7s-51) was cut across the two sandstone layers. This sample contained 0.030 percent equivalent uranium, 0.032 percent uranium, and 0.02 percent vanadium and is representative of a 20-foot length of exposure.

Eunice claim

The Eunice claim (fig. 2) lies between the Imogene and Lucy claims and overlaps both to some extent. It is owned by L. E. Schaffer, E. R. Drevdahl, and another partner who has a tenth interest in the claim; all are of Rapid City, S. Dak.

The discovery pit is located about 400 feet northwest of the Imogene discovery pit and at the base of a 50-foot cliff of massive sandstone that is about 35 feet above the base of the Lakota sandstone. The writers observed carnotite only at the discovery pit, but it was reported to occur elsewhere along the cliff. High-grade streaks of carnotite as much as 0.05 feet thick parallel the bedding; disseminated blebs of carnotite and carnotite stain are scattered throughout the massive sandstone. The observed plant fossils are most abundant in lenses above the upper limit of the carnotite. The carnotite ore occurs in relatively massive sandstone having a vertical thickness of 3.5 feet and a horizontal length of 20 feet. Apparently the carnotite ore pinches out in both directions from the discovery pit. One vertical channel sample was cut across 3.4 feet of the carnotite-bearing rock. This sample (JAR-2-51) contained 0.024 percent equivalent uranium, and 0.015 percent uranium. The ore lies at a horizon which is probably about the same as that of the exposed ore in the discovery shaft of the Lucy claim.

Dagmar claim

The Dagmar claim (fig. 2) adjoins the northeast side of the Betty claim and is across the canyon, north of the Eunice claim. It is owned by the group that owns the Eunice claim.

The discovery pit, 5 feet deep, is at the south corner of the claim. Carnotite was observed at the discovery pit and in float blocks. Half-inch thick stringers of rich carnotite ore occur parallel to bedding, and on steeply dipping joints and fractures. Yellow carnotite is disseminated throughout the ore zone. The carnotite extends from 3 to 5 feet vertically and for 15 feet horizontally. A channel sample (JOH-4) of 3 feet of carnotite-bearing gray sandstone, collected by J. O. Harder, assayed 0.062 percent equivalent uranium and 0.039 percent uranium.

Alice claim

The Alice claim (fig. 2) is owned by the group that owns the Dagmar claim. It is across the canyon to the west of the Eunice claim and adjoins the Clara and Joan claims.

The discovery pit exposes a 3- to 5-foot vertical thickness of carnotite ore. This occurrence is almost a duplicate of that in the Dagmar claim. The ore can be traced for about 40 feet along the strike and may extend farther. No samples have been taken from the Alice claim, but the ore is probably equivalent in grade to ore from the Dagmar.

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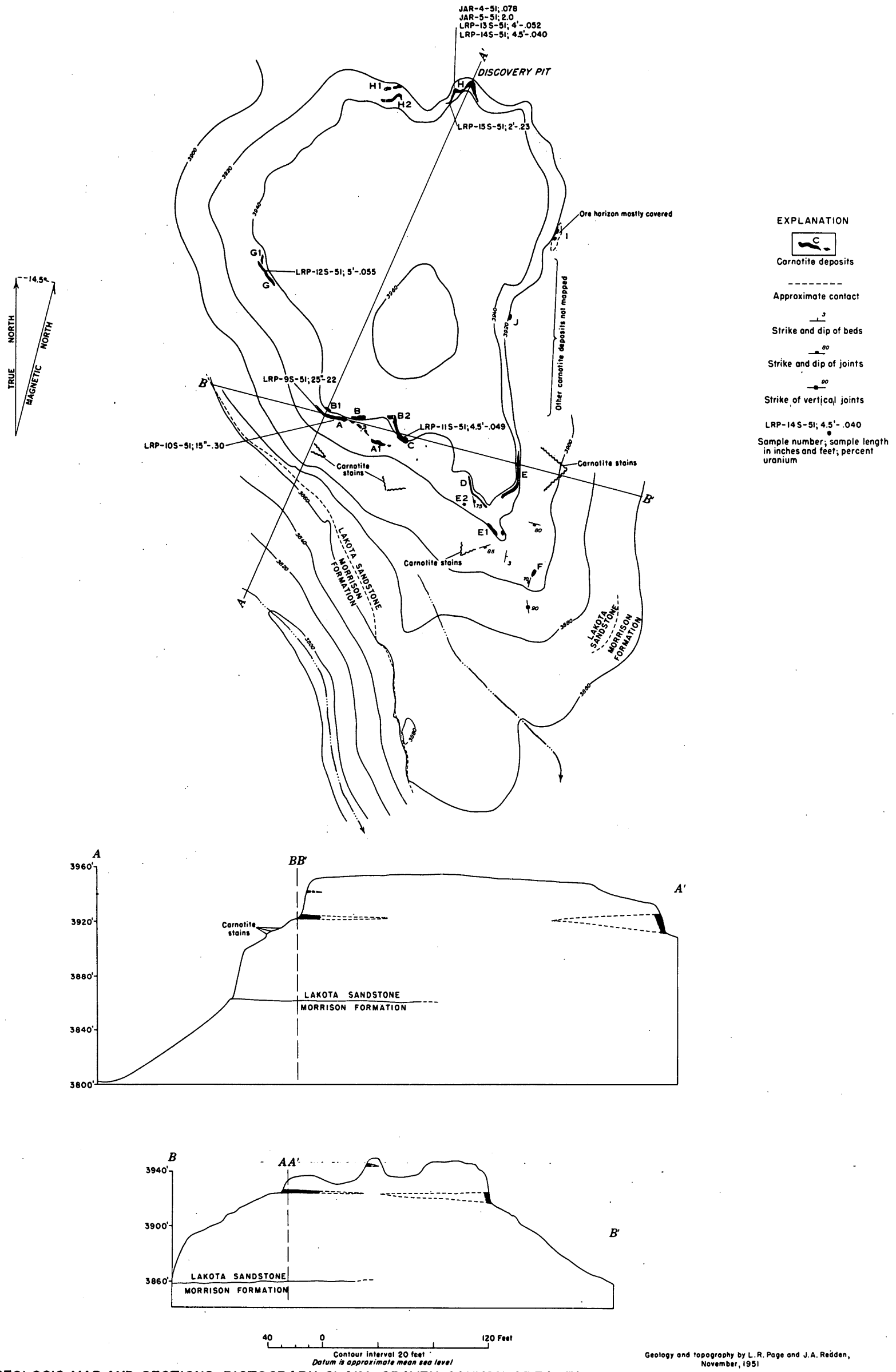

Geology and topography by L.R. Page and J.A. Redden, November, 1951

GEOLOGIC MAP AND SECTIONS, PICTOGRAPH CLAIM, CRAVEN CANYON AREA, FALL RIVER COUNTY, SOUTH DAKOTA

CIRC. 175

GEOLOGICAL SURVEY CIRCULAR 175

THE CARNOTITE PROSPECTS OF THE CRAVEN CANYON AREA FALL RIVER COUNTY SOUTH DAKOTA

By L. R. Page and J. A. Redden

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GEOLOGICAL SURVEY CIRCULAR 175

THE CARNOTITE PROSPECTS OF THE CRAVEN CANYON AREA FALL RIVER COUNTY, SOUTH DAKOTA

By L. R. Page and J. A. Redden

This report concerns work done on behalf of the U. S. Atomic Energy Commission and is published with the permission of the Commission.

Washington, D. C., 1952.

Free on application to the Geological Survey, Washington 25, D. C.

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THE CARNOTITE PROSPECTS OF THE CRAVEN CANYON AREA, FALL RIVER COUNTY, SOUTH DAKOTA

By L. R. Page and J. A. Redden

ABSTRACT

Carnotite was discovered in June 1951 in the Craven Canyon area, secs. 24 and 25, T. 7 S., R. 2 E. and what would be secs. 19 and 30 of unsectioned T. 7 S., R. 3 E., Fall River County, S. Dak. Although little prospecting had been carried out before November 18, 1951, more than 28 claims had been staked by that date.

The known carnotite occurrences are restricted to the basal 100 to 150 feet of the Lower Cretaceous Lakota sandstone; most are within 50 feet of a distinctive, paper-weathering, nonradioactive, carbonaceous, 1- to 3-foot black shale that is 100 to 125 feet above the top of the underlying Morrison formation. Three favorable zones have been recognized: (1) a zone 20 to 30 feet above the carbonaceous shale horizon, (2) a zone 20 to 30 feet below the carbonaceous shale horizon, and (3) a zone about 25 feet below (2). Possibly a fourth zone may occur 20 feet below (3).

The deposits generally are parallel to bedding, but in detail are cross-cutting. Widespread carnotite stains coat fractures in and adjacent to the deposits. These stains are commonly associated with an unidentified, green mineral stain that contains uranium and vanadium.

The only exploitable ore bodies discovered by November 1951 are of small size, but the presence of many widespread and low-grade deposits suggests that additional commercial deposits may be found by further prospecting.

INTRODUCTION

Uranium was first discovered in the Craven Canyon area, Fall River County, S. Dak. (fig. 1), in June 1951, by Jerry G. Brennan of Rapid City S. Dak. The mineral was identified as carnotite at the South Dakota School of Mines, and the first mining claim, the Pictograph, was located by Brennan on September 4. About the same time adjoining claims were

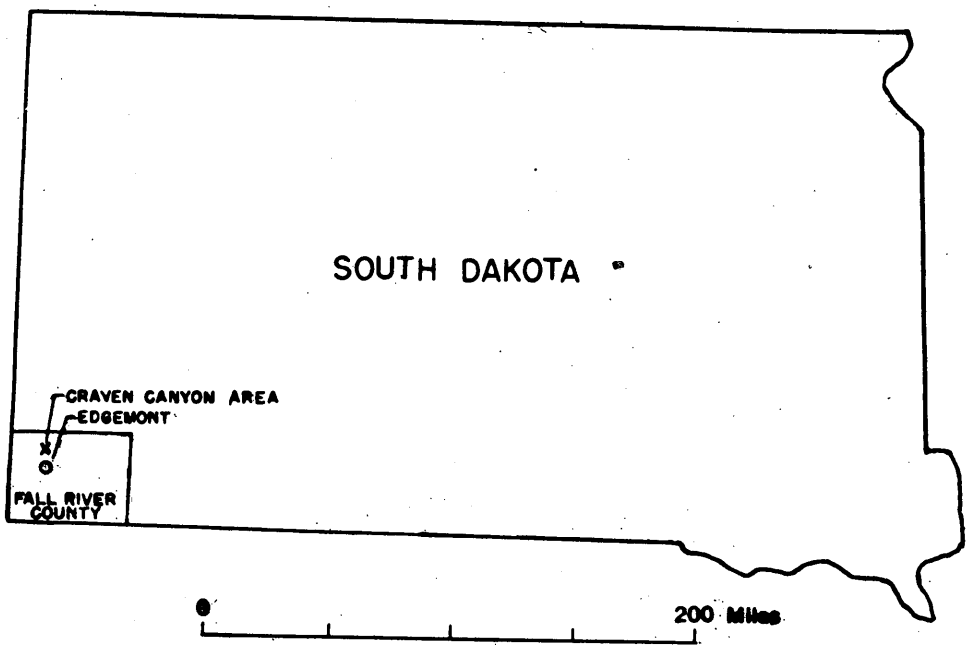


Figure 1.--Index map showing the location of Craven Canyon area, Fall River County, South Dakota.

staked by C. M. Rowe (Eggshell) and W. L. Roberts (Pigalle and M. Day) of Rapid City. Subsequently, additional claims were located by a group including L. E. Schaffer, E. H. Stevens, M. J. Voelker, E. R. Drevdahl, C. R. Kubler, and others of Rapid City; by local ranchers (the Stevens brothers); and by a Mr. Cord of the Yellow Cat area, Utah. At the time of the writers' visit, November 16 - 18, 1951, a total of at least 28 claims had been staked in Craven Canyon and a few claims were reported to have been staked in Coal Canyon—the next canyon to the west. The approximate location of 20 of these claims is shown on a map made by L. E. Schaffer (fig. 2).

Location and accessibility

The known carnotite prospects in Craven Canyon are in secs. 24 and 25, T. 7 S., R. 2 E. and in what would be secs. 19 and 30 of unsectioned T. 7 S., R. 3 E., about 15.5 miles from Minnekahta, the nearest point on

the Chicago, Burlington & Quincy Railroad. The prospects can be reached from Minnekahta by traveling about one mile west and south on U. S. Highway 85A and 18 to its junction with South Dakota Highway 89 and following the road log given below.

Miles

0.0 Junction of U. S. Highway 85A and 18 with South Dakota Highway 89. Proceed north on gravel road, South Dakota Highway 89.
1.0 Turn left from Highway 89 on gravel road.
6.1 Turn left on dirt road down Red Canyon.
11.7 Turn right on fire road up Craven Canyon through the E. G. Stevens ranch.
12.4 Boundary of Harney Peak National Forest.
14.5 Pictograph claim. On small mesa east of pictographs on canyon wall.

The deposits are 8 miles north of Edgemont, S. Dak., and may be reached either by U. S. Highway 85A and 18 and the roads given in the above log, or by a graded dirt road from Edgemont, up Red Canyon to the mouth of Craven Canyon and thence by 2.8 miles of rough, ungraded road.

The northern part of the area can be reached by road and trail by traveling west to Craven from the Red Canyon road and thence either down Craven Canyon or south along the west rim of the canyon.

Field work

The Craven Canyon prospects were first examined and sampled on the behalf of the Atomic Energy Commission by J. A. Redden of the U. S. Geological Survey, in the company of L. E. Schaffer of the South Dakota School of Mines, on November 5, 1951. On November 16 the Dagmar, Imogene, Pictograph, and Eggshell claims were visited briefly by the writers, in the company of C. C. Towle, Jr., of the Atomic Energy Commission, J. G. Brennan, and W. L. Roberts. On the following day the Ophelia, Imogene, Helen, Flora, Lucy, and Gertrude were examined in the company of L. E. Schaffer, E. H. Stevens, E. R. Drevdahl, and J. O. Harder and an associate of the Homestake Mining Company. Harder had visited the Pictograph, Dagmar, and some other claims before joining the writers. Harder has kindly made available notes and pulps of his samples for use in preparing this report. On November 19 the best-exposed carnotite deposits on the Pictograph claim were mapped by Gurley Compass, tape, and hand level at a scale of 1 inch to 40 feet.

GENERAL GEOLOGY

The carnotite prospects of the Craven Canyon area are in the Lakota sandstone of Early Cretaceous age (Darton and Smith, 1904). On the higher

ridges this formation is overlain by the Fuson shale, and in the valley bottom the underlying Morrison formation is exposed.

The Lakota sandstone exposed in the Craven Canyon area is a white to buff, massive to thin-bedded sandstone containing many 1- to 6-inch beds of white to reddish-purple shale. Throughout the area studied, a 1- to 3-foot bed of dense, black carbonaceous shale is exposed about 110 feet above the base of the sandstone. This bed makes an excellent horizon marker because it weathers characteristically to gray, papery plates. It is reported that this shale grades laterally southward into a coal bed, but the writers saw no coal. On the Flora and Gertrude claims a second, but less carbonaceous shale bed of similar thickness was noted about 30 feet higher in the stratigraphic section. This bed, however, is more massive and does not weather to gray, papery plates.

The beds of the Lakota sandstone consist of uniformly fine-grains of quartz and appreciable amounts of interstitial white clay. Locally, clay-pellet zones occur as thin beds or channel fillings as much as 3 feet thick. Concretionary structures occur throughout most of the formation. Quartz-rich concretions found at the discovery pit on the Imogene claim are as much as 4 feet in diameter. The lower 4 feet of the sandstone exposed on the Pictograph claim is ripple marked, but ripple marks are not common in other parts of the sandstone. Cross-bedding is common in many of the beds, but in the upper part of the sandstone it is a relatively inconspicuous feature. More commonly, thin-bedded and massive sandstone beds alternate and interfinger as indicated by the section measured on the Pictograph claim (p. 5).

Carnotite and limonite stains are abundant on the sandstone throughout the area. Manganese oxides coat fracture surfaces and occur as spots in carnotite-bearing sandstone. In many places, near or associated with carnotite, the sandstone surfaces are coated with an unidentified dark-green to olive stain. Preliminary chemical tests of this coating did not show the presence of copper, but did indicate the presence of uranium and vanadium.

The Morrison formation as exposed on the claims is composed predominately of gray-green shales and minor units of very evenly bedded, white sandstone layers that in places are as much as 5 feet thick. None of these sandstone beds is exposed on the Pictograph claim.

The detailed structure of the Craven Canyon area is little known. The area is on the southwest flank of the Black Hills uplift, and the beds have a general gentle dip to the southwest. To the south and east minor flexures have been mapped by Darton (Darton and Smith, 1904).

Thus far, no large faults have been recognized in the area, but the rocks on the Pictograph claim are strongly jointed. These joints are widely spaced and strike and dip N. 10° W., 75° NE.; N. 75° E., 85° SE.; N. 75° W., 80° SW.; N. 10° E., 70° NW.; and N. 10° W., vertical. Joints with similar attitudes were seen on the other claims.

Stratigraphic section, Lakota sandstone, west edge of Pictograph claim, Craven Canyon area, South Dakota.

	Thickness (feet)
Medium-bedded, white; beds 6 inches to 2 feet thick	94.0 - 99.0
Massive beds separated by thin, iron-stained layers. At 88.0 feet a 0.1 inch layer of high-grade carnotite ore extends for 4 feet along the strike	79.5 - 94.0
Discontinuous bed containing concretions 0.1- to 0.5-inch thick	79.0 - 79.5
Massive, white bed	73.7 - 79.0
Carnotite-rich, thin beds ranging from 0.2 inch to 0.8 inch in thickness	70.5 - 73.7
Massive, with small amount of surficial carnotite stain	67.6 - 70.5
Thin-bedded, with dark manganese stains on bedding surface. Beds average 0.2 inch in thickness	56.7 - 67.5
Massive, hard, stained with carnotite	54.2 - 56.7
Massive, very hard, white	52.5 - 54.2
Mostly thin-bedded, slightly stained by carnotite	50.5 - 52.5
Massive, white, with poorly defined bedding planes; carnotite stains on the surface	48.0 - 50.5
Medium-bedded, white, containing gray- and iron-stained beds ranging from 0.5 inch to 12 inches in thickness	40.0 - 48.0
Thick-bedded, massive, white; beds 2 to 4 feet thick	20.5 - 40.0
Discontinuous, cross-bedded	19.7 - 20.5
Massive, white to pale-brown bed with slightly pitted outcrop	11.7 - 19.7
Thin-bedded	11.5 - 11.7
Massive, thick-bedded	4.0 - 11.5
Thin-bedded, ripple-marked	0 - 4.0
Morrison formation	

ORE DEPOSITS

At the time of the writers' visit none of the carnotite deposits had been exposed more than 8 feet back from the surface; consequently, it was difficult to evaluate their size and attitude. Abundant carnotite stains on fractures and other surfaces made it equally difficult to localize the higher-grade deposits and to make accurate estimates of grade.

Mineralogy

At the time of this investigation the only uranium mineral identified in the Craven Canyon area was carnotite, a uranium vanadate. It occurs in irregular patches as coatings on or interstitial to sand grains; as layers as much as 2 inches thick parallel to bedding; as irregular, thin layers within sandstone beds; as veins, as much as half an inch thick along joints; and as a thin film, in places mixed with carbonate (?) and an unidentified green mineral, coating surface exposures. The carnotite is commonly associated with iron oxides and, in places, with small grains and specks of manganese oxides. On the Pictograph claim some of the richest ore is associated with casts of plant fossils containing carbonaceous material.

Size and shape

The size and shape of the carnotite deposits are little known because most of them are exposed in vertical cliff faces, and none has been exposed by mining. Two of the bodies sampled appear to contain high-grade ore. Of these, the richest ore appears to be in deposit A, 220 feet S. 20° W. of the discovery pit on the Pictograph claim (pl. 1). This body is exposed continuously for 25 feet and may continue for a total length of 65 feet. The maximum thickness is 3.2 feet; the average is about 1.5 feet. This deposit is parallel to bedding, but its blunt northern end cuts sharply across the beds. No information could be obtained about the extension of the plunge or dip, and the deposit could not be correlated directly with the high-grade ore found on the north and east sides of the mesa. It is probable, however, that with further mapping, deposits A, G, H, I, J, and E can be shown to be on the same stratigraphic horizon.

On the Gertrude claim an ore body was exposed on a relatively flat land surface that is almost parallel to the bedding. The long axis of this body trends N. 35° E. for 35 feet. It has a maximum width of 16 feet; the average is about 12 feet. The exposed western edge of the body is 1 foot thick, but its top has been eroded. The eastern end is at least 1 foot and probably 2 feet or more thick. Thinner and smaller high-grade lenses are common in other lower-grade deposits.

The lower-grade deposits are larger than those described above. On the Pictograph claim (pl. 1), 270 to 330 feet south of the discovery pit,

deposit E is exposed continuously for 38 feet along the east side of the mesa and undoubtedly is at the same horizon as exposures 30 feet to the south. It has a maximum thickness of 8 feet.

On the Ophelia and Flora claims, low-grade deposits of even larger size appear to be present, but additional mapping and study will be necessary before the size is known. Like those on the Pictograph claim, they appear to be essentially parallel to bedding, but thicken in areas cut by steeply dipping joints.

Localization of carnotite

The carnotite occurrences in the Craven Canyon area appear to be restricted to the lower 100 to 150 feet of the Lakota sandstone; most are within 50 feet of a distinctive, papery-weathering, nonradioactive, carbonaceous black shale that is 100 to 125 feet above the base of the formation. The richer deposits are, for the most part, in sandstone in which the individual beds are less than 2 feet thick, and commonly no more than 1 inch thick. The lower-grade deposits appear to be mainly in the more massive and thicker beds where the carnotite, for the most part, is present as a stain on weathered surfaces.

The deposits generally are parallel to bedding, but in detail they are cross cutting. In most of the deposits carnotite-rich layers coat cross-cutting veinlets and occur in thin zones that appear to have been more permeable than adjacent parts of the sandstone. In places the carnotite appears to be localized by plant fossils but elsewhere fossil-bearing beds lack any noticeable uranium minerals.

Three general, favorable zones have been recognized in the area and are, from top to bottom, (1) a zone 20 to 30 feet above the carbonaceous shale, (2) a zone 20 to 30 feet below the carbonaceous shale, and (3) a zone about 25 feet below (2). A fourth zone about 20 feet below (3) has been recognized in one place and may be found on further prospecting to be widespread.

RESERVES

The only exploitable ore bodies discovered in the Craven Canyon area are of small size (table 2). Most of the known deposits are small and are low in grade. The widespread and numerous low-grade deposits naturally exposed at the surface may be an indication of higher-grade ore. Further prospecting, particularly of covered benches above carnotite-stained areas, may show that the Craven Canyon area is an important source of uranium.

SUGGESTIONS FOR PROSPECTING

Because the owners of claims in the Craven Canyon area have not had sufficient time to prospect even the surface showings, the following suggestions are made for both surface and underground prospecting:

1. All exposures should be examined with either Geiger counters or scintillometers. Particular attention should be paid to exposures of thin-bedded sandstone within 30 feet vertically above and 70 feet below the carbonaceous shale that weathers to gray, papery flakes; to all yellow-stained and green-stained areas; and to all areas containing plant fossils or casts.

2. All benches between massive sandstone beds should be tested by sensitive Geiger counters or scintillometers and trenches should be dug in areas of high count. Where possible the trenches should be made across such areas at right angles to the cliffs.

3. All exposures containing carnotite parallel to bedding should be prospected by blasting; exposures parallel to steeply dipping or vertical joints are less favorable.

4. All exposed high-grade ore bodies should be mined out to get the trend of the deposits.

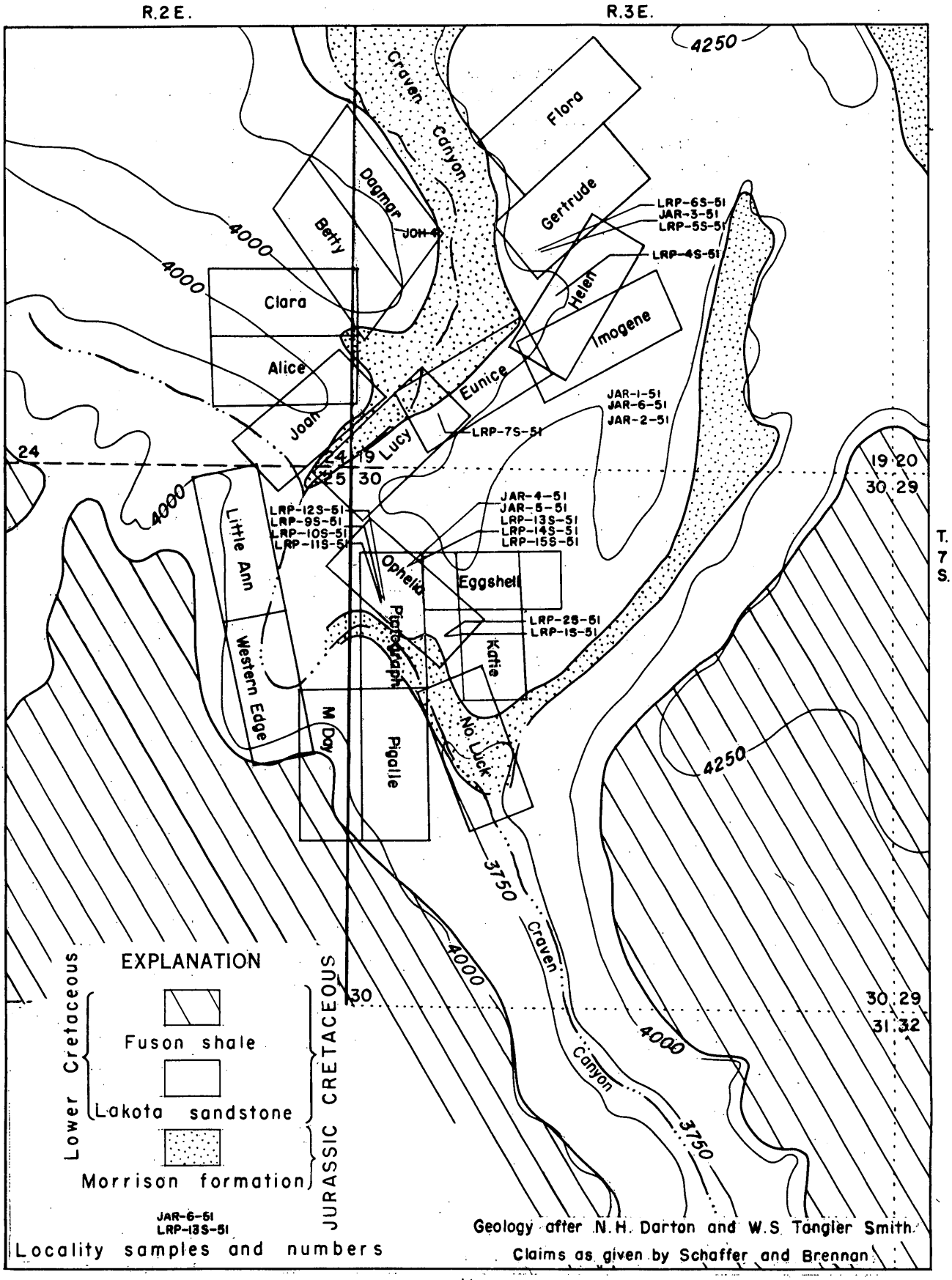
5. Carnotite-bearing rock mined during prospecting should be sorted to obtain ore containing 0.1 percent or more uranium, in order to determine the percentage of salable ore that could be mined from each deposit.

6. Many of the carnotite-bearing samples taken thus far are out of equilibrium; that is, the radioactivity is either more or less than expected from the results of chemical analyses for uranium. Therefore, it appears possible that higher-grade ore may be found underground beyond areas of surface leaching and precipitation.

DESCRIPTIONS OF PROSPECTS

Pictograph claim

The Pictograph claim (fig. 2) was located September 4, 1951, by Jerry G. Brennan of Rapid City, S. Dak. It extends north along the west edge of the NW¼ of sec. 30 in unsectioned T. 7 S., R. 3 E. The only workings, as of November 18, were at the discovery pit (deposit H, pl. 1) where two vertical faces, 15 feet in maximum height, have been cut on the northwest and east sides of the pit situated at the



Contour interval 250 feet
Datum is approximate mean sea level

Figure 2. Geologic map showing the approximate location of claims in the Craven Canyon area, Fall River County, South Dakota, as of November 5, 1951

north end of a triangular-shaped mesa that is about 350 feet long and is 250 feet wide at the north end. Sixteen individual exposures of carnotite-bearing sandstone have been mapped on the low cliffs at the edges of this mesa, and other unmapped exposures occur on the east edge. Only a few of the known exposures can be projected as parts of the same body. Four of the exposures were sampled (table 1).

The carnotite occurs in lenses parallel to bedding in thin-bedded sandstone, but the ends of the lenses are blunt and cut sharply across bedding planes. Some of the lenses at deposit H on the north end of the mesa appear to be localized along beds containing casts of plant fossils; others, as at deposit A, are not associated with plant remains. Halos of lower-grade ore, in which the carnotite, for the most part, occurs as thin films on the quartz grains of the sandstone, surround the high-grade lenses. These films give a deceiving impression of the grade of ore. Carnotite also stains, coats, and fills joints above and below the ore lenses. These stains are commonly noticeable in the massive sandstone beds below the thin-bedded zones that contain the richer ore; some of these stained areas have been indicated on plate 1. At deposit H, on the north and east faces of the discovery pit, veinlets of solid carnotite are as much as half an inch thick and extend through the horizontal ore lenses for a total vertical extent of at least 12 feet. Such high-grade veinlets complicate sampling of the more important horizontal lenses for purposes of determining average grade. The available data on the size and vertical position of the known deposits on the claim are given in table 2. All of these deposits are in sandstone at least 10 feet below the carbonaceous shale horizon and appear to lie in three general zones: (1) deposits A, G, H, I, J, and E; (2) deposits B and D; and (3) deposit F. Other favorable zones might be found when the lower parts of the debris-covered slopes are prospected.

Ophelia claim

The Ophelia claim (fig. 2), adjoining the Pictograph claim on the east, is owned by C. R. Kubler and an associate who holds a tenth interest.

The Lakota sandstone on the Ophelia claim is exposed in a cliff near the southeast corner of the Pictograph claim. It is composed of massive beds, as much as 20 feet thick, in its lower 60 to 80 feet. These beds are overlain by about 20 feet of more thinly bedded sandstone that is directly below the carbonaceous shale. The discovery cut on the Ophelia claim is north and a little east of this cliff and about 20 feet below the carbonaceous shale. Carnotite occurs as stains on quartz grains in streaks as much as 2 inches thick. The streaks are parallel to the bedding. One carnotite-stained area, 2 feet by 2 feet, extends across the bedding, and at one place carnotite rims brown-stained, vertical plant fossil casts. One vertical channel sample, LRP-1s-51, was cut across a 2-foot zone that appeared to be representative of all material exposed in the cut. This sample contained 0.077 percent equivalent uranium, 0.095 percent uranium,

Table 1.--Analyses of samples, Pictograph claim

Sample number	Deposit (pl. 1)	Type of sample (pl. 1)	Length of sample (feet)	Equivalent uranium (percent)	Uranium (percent)	Vanadium (percent)
LRP-9s-51	A	Channel	2	0.17	0.22	0.12
LRP-10s-51	A	Channel	1.2	0.26	0.30	0.13
LRP-11s-51	C	Channel	4.5	0.045	0.049	0.04
LRP-12s-51	G	Channel	5	0.053	0.055	0.02
LRP-13s-51	H	Channel	4	0.047	0.052	0.02
LRP-14s-51	H	Channel	4.5	0.052	0.040	0.02
LRP-15s-51	H	Channel	2	0.14	0.23	0.08
JAR-4-51	H	Grab	---	0.070	0.078	n.d. 1/
JAR-5-51	H	Grab	---	1.1	2.0	n.d. 1/

1/ Not determined

Table 2.--Size and vertical position of carnotite deposits, Pictograph claim

Deposit (pl. 1)	Vertical position (altitude in feet)	Thickness		Length		Remarks
		Maximum (feet)	Average (feet)	Exposed (feet)	Total (feet)	
A	3925 - 3928.2	3.2	1.5	27	65(?)	Probably connected under surficial debris.
A1	3925 - 3926	1.0	1.0	11		
B	3941 - 3945	4.0	3.0	10	10	Possibly connected underground. Total length of zone would then be 65 feet.
B1	3943	0.1	0.1	4	4	
B2	3944 - 3948	4.0	3.0	25	25	
C	3925 - 3940	5.0	4.5	9	20(?)	Probably same zone as deposit D (50 feet to the southeast).
D	3935.5 - 3936.5	1.0	0.5	30	30	
E	3920 - 3928	8.0	6.0	38	75(?)	Probably parts of same ore body with dip length of about 40 feet. Same horizon covered to north, but may include deposits H, I, and J.
E	3923 - 3925	2.0	2.0	10		
E1	3924.5 - 3926.5	1.0	1.0	2		
E2	3922 - 3923	1.0	0.05	2		
F	3904.5 - 3905.5	1.0	1.0	5		Other part of horizon covered.
G	3926 - 3932	6.0	4.5	20	20	Probably same horizon as deposit A.
G1	3933 - 3933.5	0.5	0.5	4	4	Individual lens.

Table 2.--Size and vertical position of carnotite deposits, Pictograph claim (continued)

Deposit (pl. 1)	Vertical position (altitude in feet)	Thickness		Length		Remarks
		Maximum (feet)	Average (feet)	Exposed (feet)	Total (feet)	
H	3919 - 3931.5	12.5	8.5	42		
H1	3921 - 3924	3.0	3.0	12	100(?)	Probably more or less continuous zone at same horizon.
H2	3928 - 3931	3.0	3.0	15		
I	3916 - 3919(?)	3.0(?)	?	1.0	20(?)	Covered.
J	3920 - 3940	?	?	?	?	Not mapped.

and 0.06 percent vanadium. About 20 feet vertically below this discovery pit are yellow carnotite stains on the surface of the sandstone cliffs.

The richest exposure of carnotite ore on the Ophelia claim is 70 to 110 feet N. 60° E. of the discovery pit. This exposure is on a vertical face averaging 3 feet in thickness and having a maximum thickness of 4 feet. Sample LRP-2s-51, a grab sample of this ore, contained 0.14 percent equivalent uranium, 0.20 percent uranium, and 0.10 percent vanadium.

Northward along the cliffs this favorable zone was recognized at a point S. 80° E. of the discovery pit on the Pictograph claim. Another lens of carnotite-bearing sandstone, 18 feet long and 3 feet thick in the center, of grade similar to sample LRP-2s-51, was found N. 65° E. of the Pictograph discovery pit.

Eggshell claim

The Eggshell claim (fig. 2) adjoins the Ophelia claim on the north and is owned by C. M. Rowe of Rapid City, S. Dak. Where the two claims adjoin, or possibly overlap--N. 60° E. of the Pictograph discovery pit--carnotite occurs near a fracture zone that strikes N. 15° E. and dips 65° NW. One lens, 8 feet vertically by 6 feet horizontally, is at least 3 feet thick and is estimated to be of higher grade than sample LRP-2s-51. Another lens of similar size and grade is 7 feet below and 15 feet south of the first high-grade lens. These deposits are 20 to 25 feet below the carbonaceous shale.

Imogene claim

The Imogene claim (fig. 2) is on the east side of Craven Canyon in what would be the SW¼ of sec. 19, unsectioned T. 7 S., R. 3 E. It is owned by L. E. Shaffer, E. R. Drevdahl, E. H. Stevens, M. J. Voelker, and another partner who has a tenth interest in the claim; all are of Rapid City.

The only known carnotite deposit on the claim is at the discovery pit where a zone, 5.5 feet thick, is exposed on the corner of a cliff of relatively thin-bedded sandstone. The deposit crops out for about 15 feet west and about 15 feet north of the corner of the cliff and appears to pinch out in both directions. On the south and west side of the corner, high-grade carnotite ore occurs in a lens about 5 feet long and 2 feet thick. This ore is represented by sample JAR-6-51 taken from a decomposed talus block at the base of the cliff. This sample contained 0.23 percent equivalent uranium and 0.33 percent uranium. The higher content of uranium relative to equivalent uranium suggests that much of the carnotite observed on this claim has been recently precipitated. The distribution of carnotite in thin bands parallel to bedding, fractures, and plant

fossils appears to substantiate this conception. A chip sample across the 5.5-foot zone on the north and east side of the cliff corner is more representative of the ore available in the entire deposit. Sample JAR-1-51 represents this zone and contains 0.058 percent equivalent uranium and 0.054 percent uranium.

Helen claim

The Helen claim (fig. 2) adjoins and overlaps the Imogene claim on the north and has the same ownership. At the discovery pit, thin-bedded sandstone is exposed vertically for 8 feet. The upper 4.7 feet is white with a 6-inch carnotite layer at the top. The entire section is radioactive, though no uranium minerals are visible in the lower part of the zone. Sample LRP-4s-51 was taken at the southeast edge of the discovery cut across this zone. It contained 0.044 percent equivalent uranium, 0.049 percent uranium, and 0.04 percent vanadium. Lateral extensions of this zone are covered. Below the radioactive zone the thin-bedded sandstone is a pale purplish red. This zone probably can be correlated with the upper zone of the Ophelia, Eggshell, and Imogene claims because it too is 20 to 25 feet below the carbonaceous shale.

Carnotite stains can also be seen on an overhanging cliff, 20 to 30 feet below the Helen discovery pit, and additional prospecting will probably reveal other deposits on the Helen claim.

Gertrude claim

The Gertrude claim (fig. 2), north of the Helen claim and owned by the same persons, contains one of the largest high-grade ore bodies observed in the area. The ore is in relatively thin-bedded sandstone about 30 feet above the carbonaceous shale.

Carnotite is evenly disseminated in a 1- to 2-foot massive bed of sandstone that overlies much more thinly bedded sandstone. The latter is highly radioactive, but only lightly stained with carnotite.

The high-grade ore body is exposed for 35 feet north and south, has a maximum width of 16 feet (average 12 feet), and has a maximum observed thickness of 2 feet. The southwestern edge of this deposit, 1 foot thick, forms the top of a 3-foot vertical face in the discovery pit. One sample, JAR-3-51, taken across this exposure, contained 0.13 percent equivalent uranium and 0.16 percent uranium. The northern third of the body is exposed in a vertical face 2 feet high. This face appears to be above the bed exposed to the south, suggesting that the northern end of the deposit has a thickness of about 3 feet. Sample LRP-6s-51 represents the upper 2 feet of this part of the ore body and contains 0.16 percent equivalent uranium, 0.16 percent uranium, and 0.08 percent vanadium. A grab

sample collected by J. O. Harder as representative of this ore contained 0.19 percent equivalent uranium and 0.23 percent uranium.

Beneath the high-grade ore the radioactive, thin-bedded sandstone contains little visible carnotite. One sample (LRP-5s-51), taken across the 6-foot face exposed at the face of the discovery cut, contained 0.019 percent equivalent uranium, 0.019 percent uranium, and 0.04 percent vanadium. Channel samples collected by Harder at the same face contained 0.027 percent equivalent uranium and 0.034 percent uranium in the upper 2 feet, and 0.004 percent equivalent uranium and 0.002 percent uranium in the lower 2.5 feet.

The Gertrude claim has been poorly prospected, but any other occurrences of carnotite probably will be found to the north along the cliffs of Lakota sandstone on the east edge of Craven Canyon and below the carbonaceous shale.

Flora claim

The Flora claim (fig. 2) adjoins the Gertrude claim. It is owned by the same group that holds the Gertrude claim. As of November 17, no discovery pit had been made. Carnotite stains are visible about 20 feet above the papery-weathering, carbonaceous shale horizon and about 10 feet below another thin carbonaceous shale that does not weather into gray, papery plates. This zone may be continuous with the carnotite zone on the Gertrude claim. A second zone of carnotite occurs 15 to 20 feet above the non-papery carbonaceous shale. Talus blocks containing high-grade carnotite ore are common below the cliff. Time did not permit careful inspection or sampling of these deposits.

Lucy claim

The Lucy claim (fig. 2) is north of the Pictograph claim near the eastern common corner of secs. 24 and 25, T. 7 S., R. 2 E. It is owned by L. E. Schaffer, E. L. Drevdahl, E. H. Stevens, and an unnamed partner who has a tenth interest. The discovery cut is a narrow adit about 6 feet long at the base of a high vertical cliff of Lakota sandstone. The visible carnotite seems to be mainly a surface coating on coarse-grained, porous sandstone that is above a 1-foot bed of carbonaceous shale and below a 6-inch layer of thin-bedded sandstone. Some of this carnotite is localized near plant fossils. One 5-foot sample (LRP-7s-51) was cut across the two sandstone layers. This sample contained 0.030 percent equivalent uranium, 0.032 percent uranium, and 0.02 percent vanadium and is representative of a 20-foot length of exposure.

Eunice claim

The Eunice claim (fig. 2) lies between the Imogene and Lucy claims and overlaps both to some extent. It is owned by L. E. Schaffer, E. R. Drevdahl, and another partner who has a tenth interest in the claim; all are of Rapid City, S. Dak.

The discovery pit is located about 400 feet northwest of the Imogene discovery pit and at the base of a 50-foot cliff of massive sandstone that is about 35 feet above the base of the Lakota sandstone. The writers observed carnotite only at the discovery pit, but it was reported to occur elsewhere along the cliff. High-grade streaks of carnotite as much as 0.05 feet thick parallel the bedding; disseminated blebs of carnotite and carnotite stain are scattered throughout the massive sandstone. The observed plant fossils are most abundant in lenses above the upper limit of the carnotite. The carnotite ore occurs in relatively massive sandstone having a vertical thickness of 3.5 feet and a horizontal length of 20 feet. Apparently the carnotite ore pinches out in both directions from the discovery pit. One vertical channel sample was cut across 3.4 feet of the carnotite-bearing rock. This sample (JAR-2-51) contained 0.024 percent equivalent uranium, and 0.015 percent uranium. The ore lies at a horizon which is probably about the same as that of the exposed ore in the discovery shaft of the Lucy claim.

Dagmar claim

The Dagmar claim (fig. 2) adjoins the northeast side of the Betty claim and is across the canyon, north of the Eunice claim. It is owned by the group that owns the Eunice claim.

The discovery pit, 5 feet deep, is at the south corner of the claim. Carnotite was observed at the discovery pit and in float blocks. Half-inch thick stringers of rich carnotite ore occur parallel to bedding, and on steeply dipping joints and fractures. Yellow carnotite is disseminated throughout the ore zone. The carnotite extends from 3 to 5 feet vertically and for 15 feet horizontally. A channel sample (JOH-4) of 3 feet of carnotite-bearing gray sandstone, collected by J. O. Harder, assayed 0.062 percent equivalent uranium and 0.039 percent uranium.

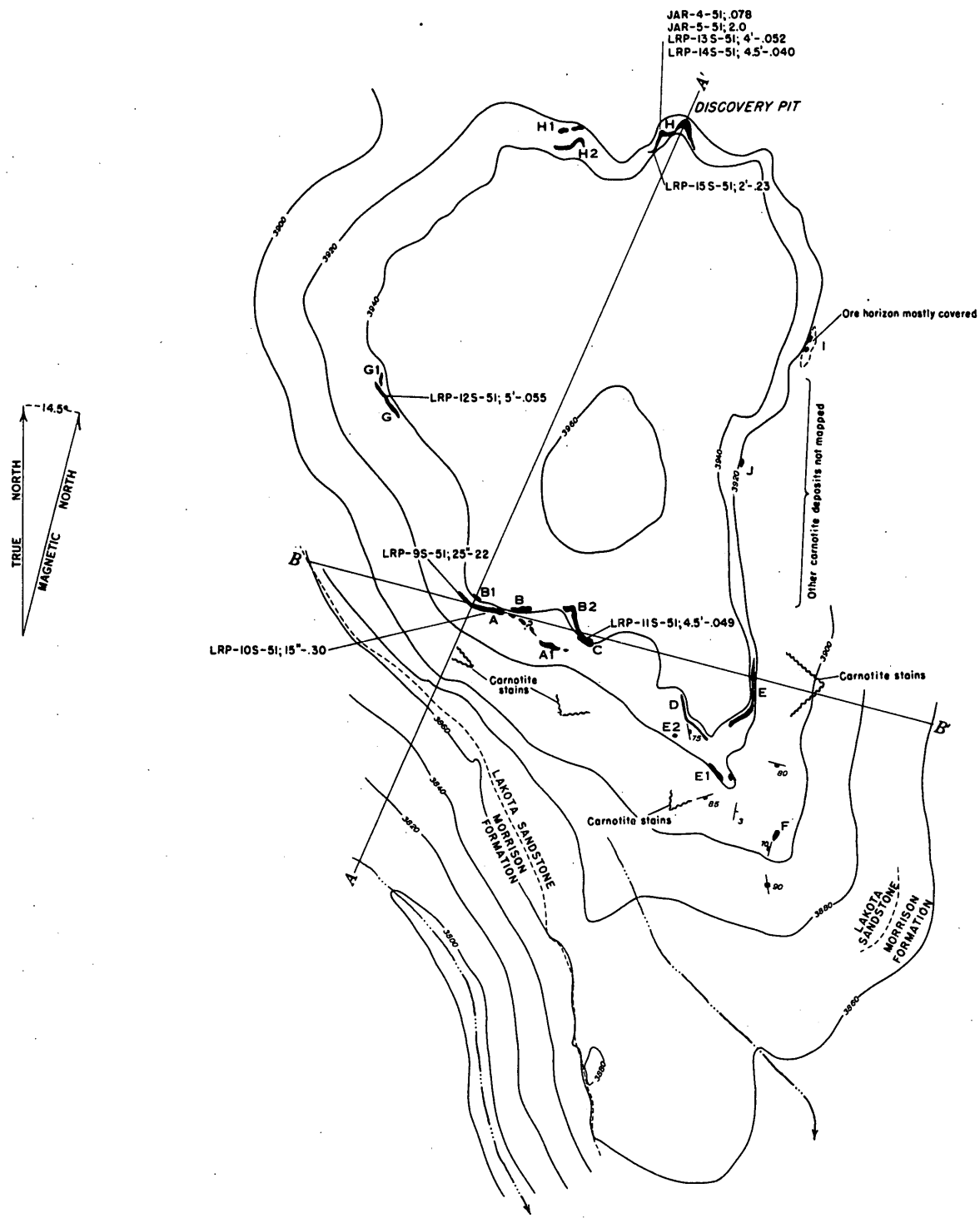
Alice claim

The Alice claim (fig. 2) is owned by the group that owns the Dagmar claim. It is across the canyon to the west of the Eunice claim and adjoins the Clara and Joan claims.

The discovery pit exposes a 3- to 5-foot vertical thickness of carnotite ore. This occurrence is almost a duplicate of that in the Dagmar claim. The ore can be traced for about 40 feet along the strike and may extend farther. No samples have been taken from the Alice claim, but the ore is probably equivalent in grade to ore from the Dagmar.

REFERENCE CITED

Darton, N. H., and Smith, W. S. T., 1904, U. S. Geol. Survey, Geol. Atlas, Edgemont folio (No. 108).



EXPLANATION

C
Carnotite deposits

Approximate contact

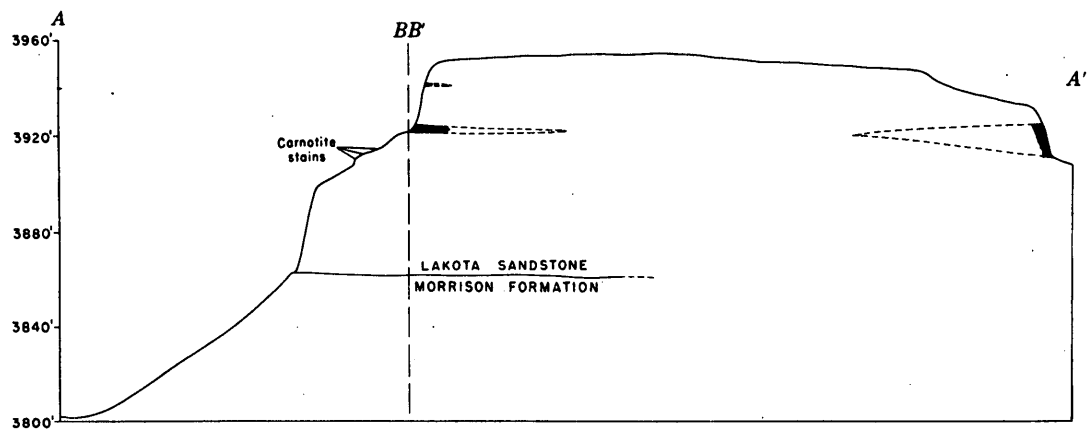
Strike and dip of beds

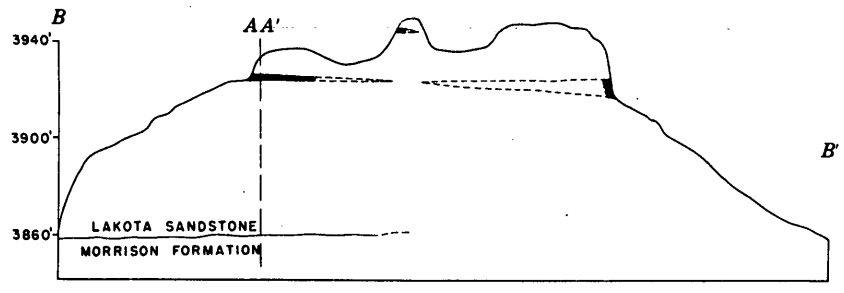
Strike and dip of joints

Strike of vertical joints

LRP-14S-51; 4.5'-.040

Sample number; sample length in inches and feet; percent uranium





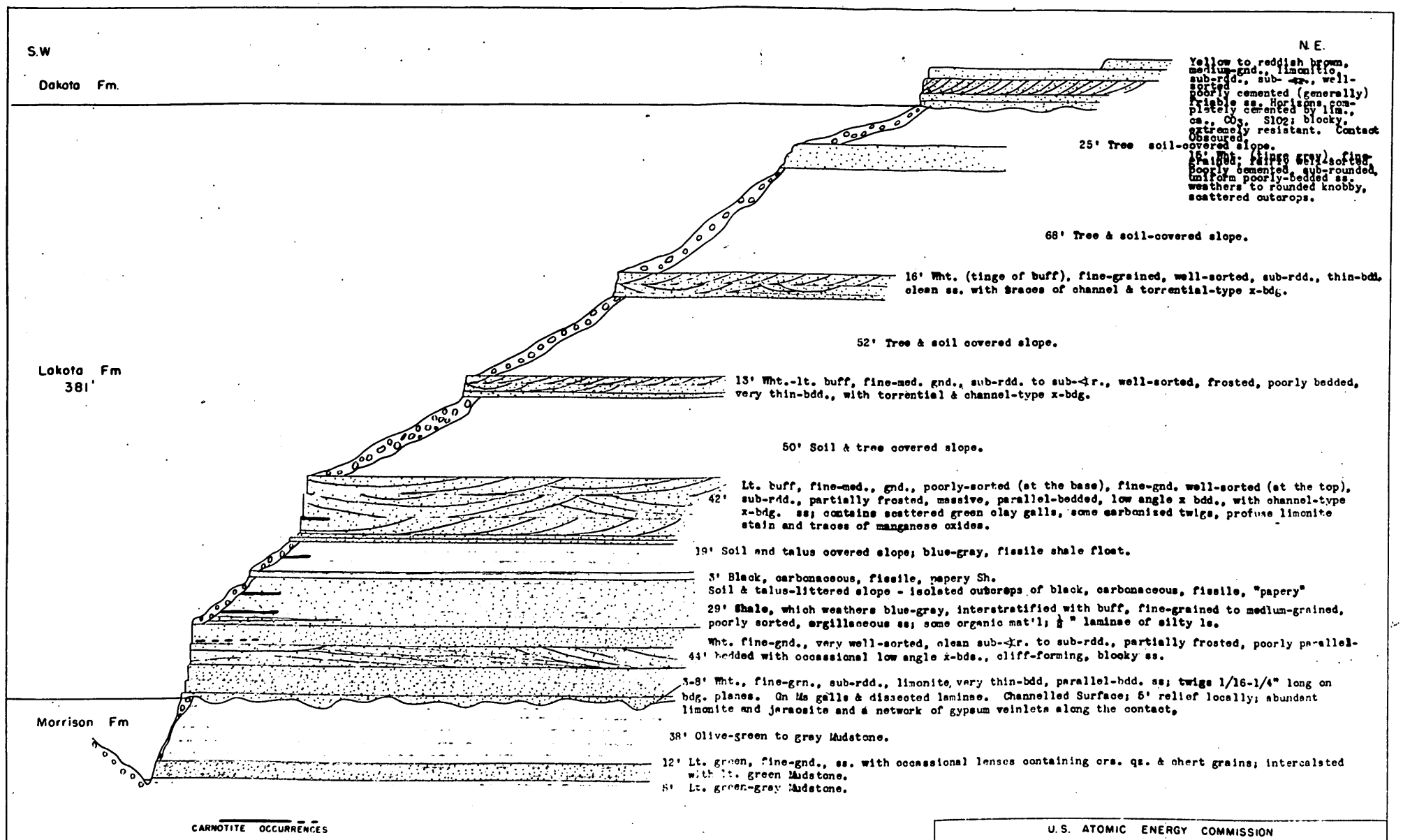
40 0 120 Feet

Contour interval 20 feet
Datum is approximate mean sea level

Geology and topography by L.R. Page and J.A. Redden, November, 1951

GEOLOGIC MAP AND SECTIONS, PICTOGRAPH CLAIM, CRAVEN CANYON AREA, FALL RIVER COUNTY, SOUTH DAKOTA

Lakota Mining and Exploration Co
Harry Finnelos
C/O Scottsbluff National Bank
Scottsbluff, Nebraska



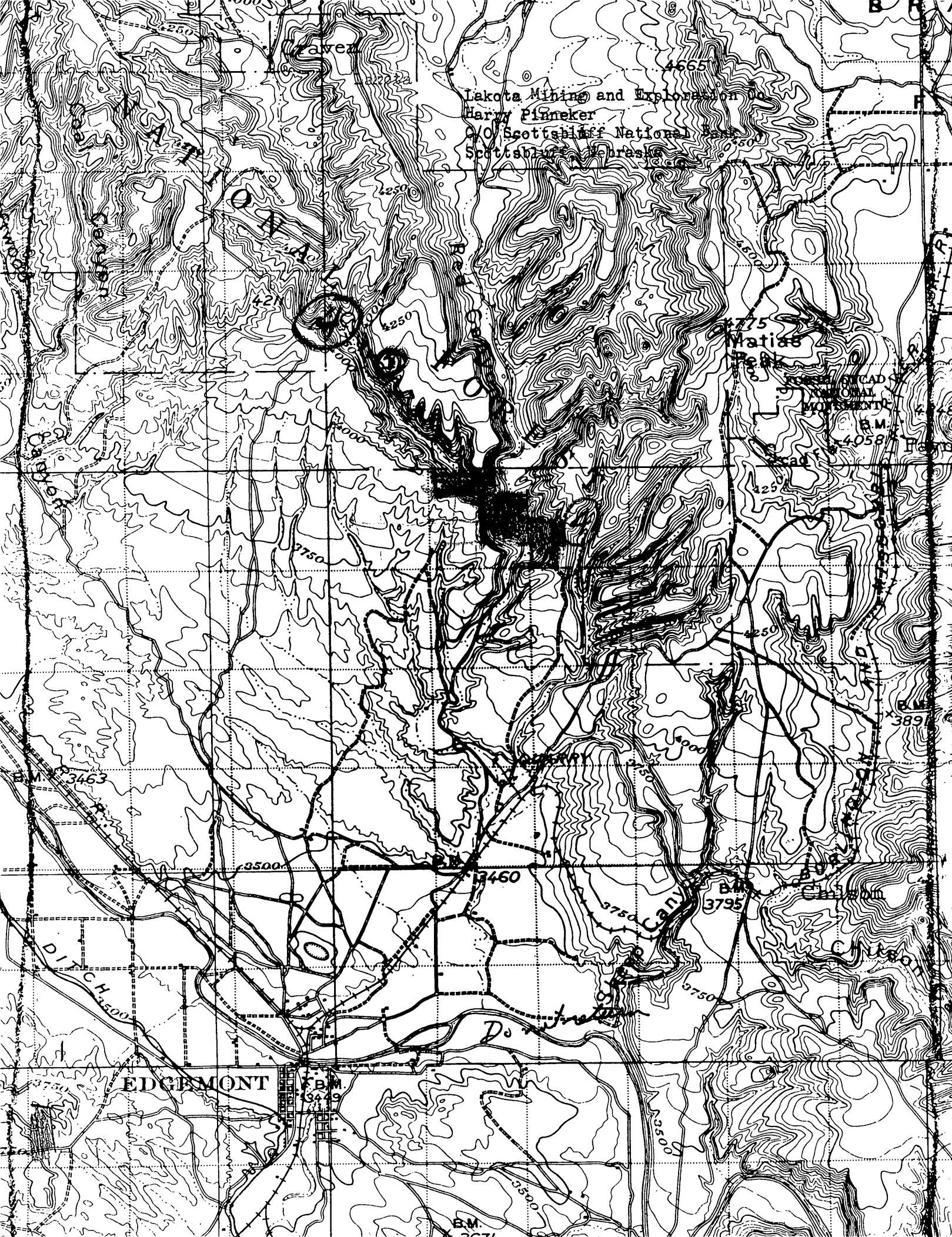
U.S. ATOMIC ENERGY COMMISSION
DENVER EXPLORATION BRANCH, DIVISION OF RAW MATERIALS

STRATIGRAPHIC SECTION OF CRAVEN CANYON
FALL RIVER COUNTY, S.D.
SECTION 1 TO 2 MILES S.E. OF PICTOGRAPH MESA

SCALE 0 50 FEET	CONTOUR INTERVAL
ACCOMPANIES R.M.O. 881	PLATE 4 DATE JAN. 1952
PREPARED BY: I. RAPAPORT	DRAWN BY: R.D.S.
APPROVED BY: C.C.T.	

not returned

Craven
Dakota Mining and Exploration Co
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska
4665
4775
Matias Peak
FORT ORCAD NATIONAL MONUMENT
B.M.
4058
Orcad
4250
4000
3750
3500
B.M.
3463
B.M.
3460
B.M.
3795
Chimney
Canyon
DITCH
EDGEMONT
B.M.
3449
B.M.
3891


Lakota Mining and Exploration Co.
Harry Plimeker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska
Crawford
NATIONAL
4665
4775
Matias Peak
4058
B.M.
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Chilson
EDGEMONT
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3449
DITCH
Canyon
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4250
4000

Lakota Mining and Exploration
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Scottsbluff, National
Craven
Matias Peak
FORT ORCAD NATIONAL MONUMENT
B.M. 4058
Quarry
B.M. 3463
B.M. 3460
B.M. 3795
Chilson
Canyon
DITCH
EDGEMONT
B.M. 3449
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Lakota Mines and Exploration Co
Harry Rancher
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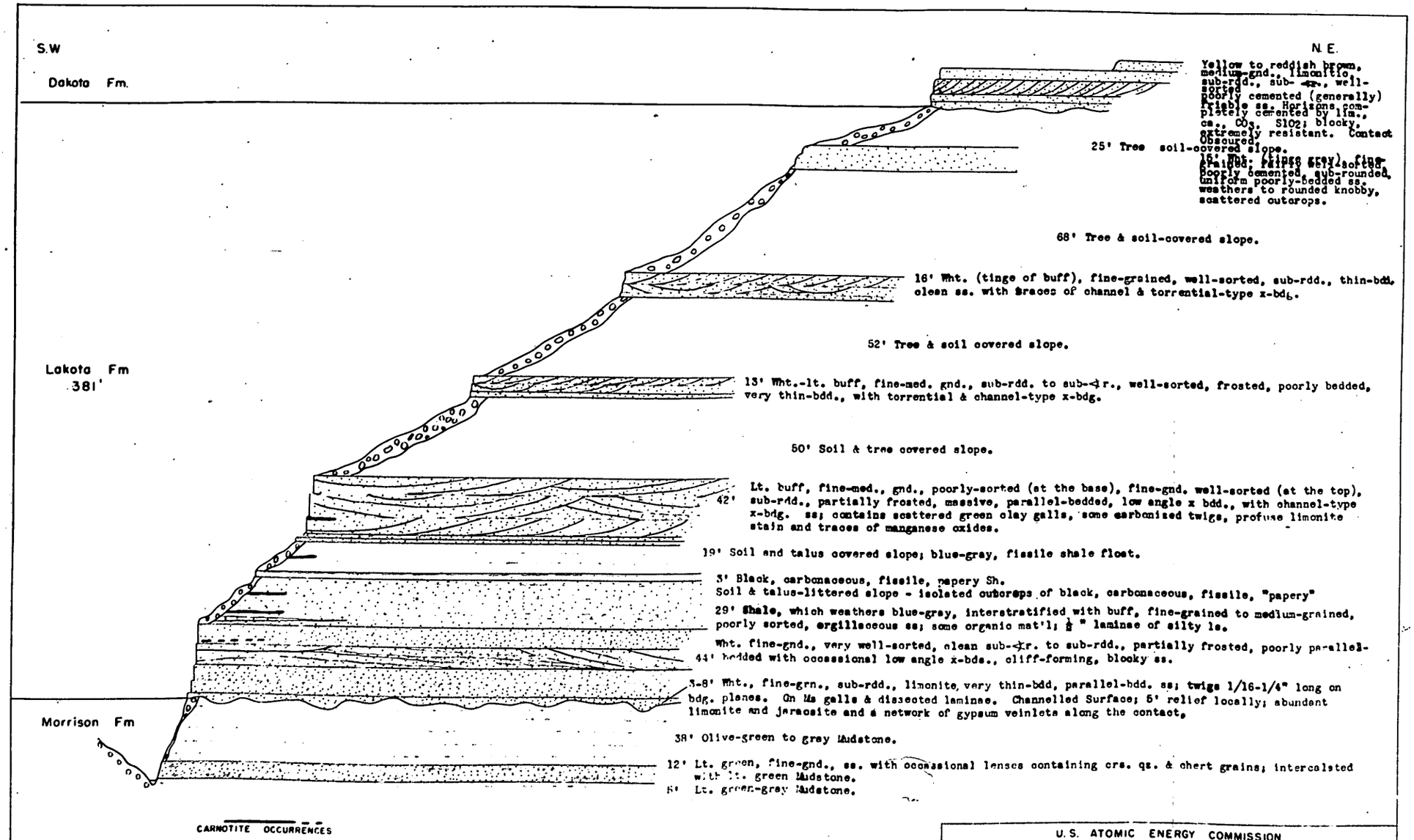
Scottsbluff, National



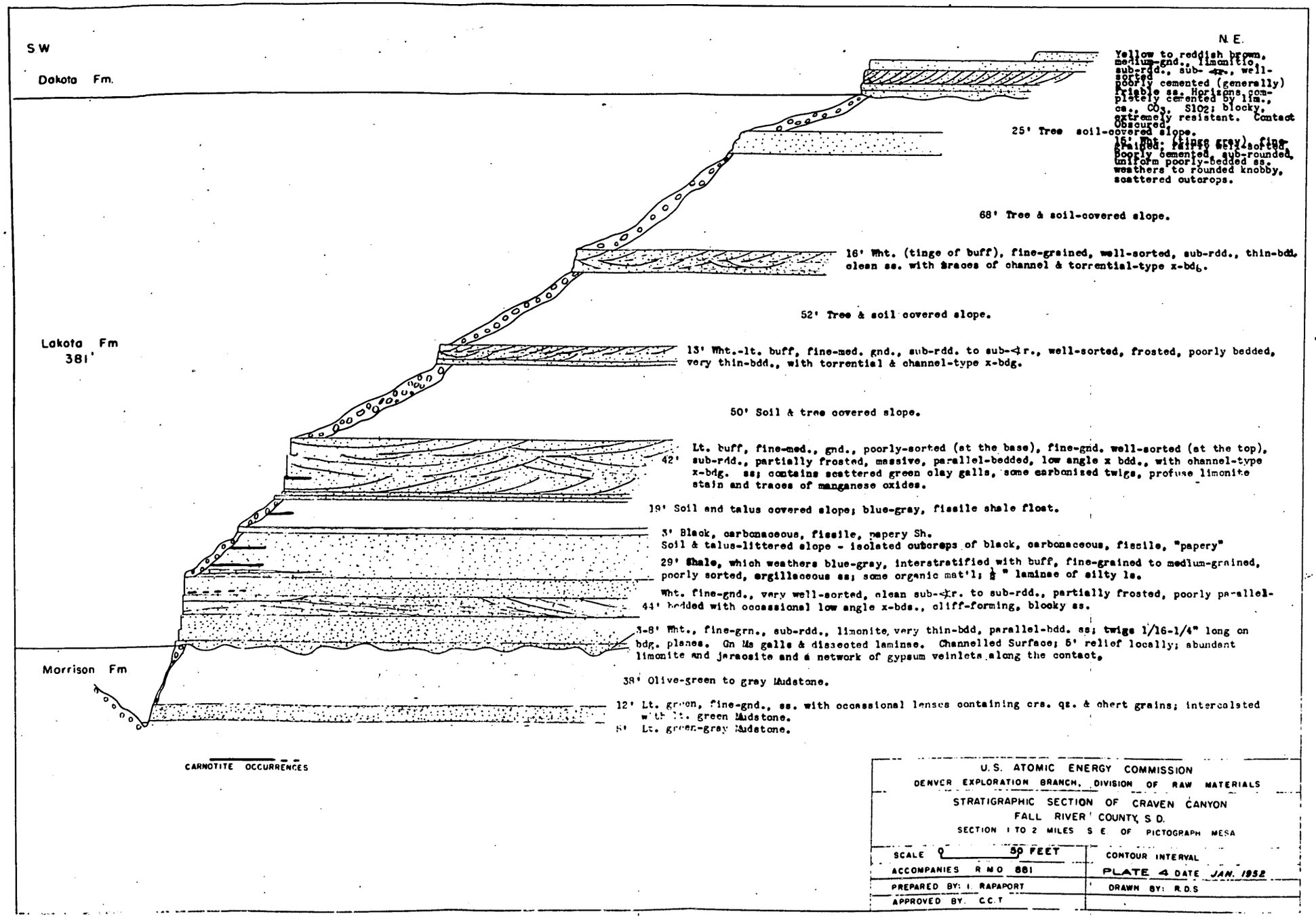
U.S. ATOMIC ENERGY COMMISSION
DENVER EXPLORATION BRANCH, DIVISION OF RAW MATERIALS

STRATIGRAPHIC SECTION OF CRAVEN CANYON
FALL RIVER COUNTY, S.D.
SECTION 1 TO 2 MILES S.E. OF PICTOGRAPH MESA

SCALE 0 50 FEET	CONTOUR INTERVAL
ACCOMPANIES R M O 881	PLATE 4 DATE JAN. 1952
PREPARED BY: I. RAPAPORT	DRAWN BY: R.D.S.
APPROVED BY: C.C.T.	

Do not return

Lakota Mining and Exploration Co.
Harry Pinneker
Scottsbluff National Bank
Scottsbluff, Nebraska



U.S. ATOMIC ENERGY COMMISSION
DENVER EXPLORATION BRANCH, DIVISION OF RAW MATERIALS

STRATIGRAPHIC SECTION OF CRAVEN CANYON
FALL RIVER COUNTY, S.D.
SECTION 1 TO 2 MILES S.E. OF PICTOGRAPH MESA

SCALE 0 — 50 FEET	CONTOUR INTERVAL
ACCOMPANIES R.M.O. 881	PLATE 4 DATE JAN. 1952
PREPARED BY: I. RAPAPORT	DRAWN BY: R.D.S.
APPROVED BY: C.C.T.	

Don't return

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between Earl Stevens and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Eagle Aerie #1 (Also known as Eagle Areie #1), a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 260, recorded on 5--6-52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%----------8 1/3%
20/100 of 1% to 29/100 of 1%-------- 10%
30/100 of 1% to 49/100 of 1%-------- 12½%
50/100 of 1% to 99/100 of 1%-------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if miningoperations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to continue for 5 years and as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

(EAGLE AEIRE #1)

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day ofJuly, 1952.

Earl Stevens

Harry Pinneker

State of South Dakota)
County of Pennington)ss

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Earl Stevens and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)
My Commission Expires Sept. 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

MINING LEASE

THIS INDENTURE made the 28th day of July, 1952 between Gilford E. Stevens and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Eagle Aerie #3 Lode Claim (Lode also being known as Eagle Areie #3) in the NW¼ Sec.4 Township 8 Range 3 East of the Black Hills Meridian, abbuttal to Eagle Aerie (Areie) #2, or Eagle Aerie (Areie) #2 west boundary. Recorded as a Lode Claim in the office of the Register of Deeds of Fall River County South Dakota in Book 31 Misc. Page 180; recording date 7-26-52.

Also, Eagle Aerie (Areie)#4, a Lode Claim recorded in the said office of the Register of Deeds for Fall River County, South Dakota, in Book 31 Misc. Page 181; said recording date being 7-26-52.

all being located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%-------- 8 1/3%
20/100 of 1% to 29/100 of 1%---10%
30/100 of 1% to 49/100 of 1%-- 12½%
50/100 of 1% to 99/100 of 1%-- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The term of this lease is to extend for 5 years or as long thereafter as mining or exploration is being done.

Lakota M ining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

(EAGLE AERIE #3; EAGLE AERIE #4)

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premiseswithout the written consent of the lessor first had and obtained.

The parties further agree the term mining shall be construed to include exploration, drilling, trenching, developments, drifts, shafts and all activity of a similar nature.

The parties further agree that the Second Party shall have all rights to any bonus of any nature whatsoever, as well as the right to participate in any government grant, loan, or benefit in the same manner as the First Party would have had if this lease did not exist, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

_____
Gilford E. Stevens

_____
Harry Pinneker

State of South Dakota)
County of _____)ss

On this 28th day of July, 1952 before me, _____ a Notary Public in and for the County of _____ and State of South Dakota, appeared Gilford E. Stevens and Harry Pinneker, known to me, who acknowledge they executed the foregoing instrument for the purposes stated therein.

_____
NOTARY PUBLIC

(SEAL)
My Commission Expires _____

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between Lola P. Stevens, Lorraine C. Stevens; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold ppssession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Little Lorraine, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 173, recorded on 6-25--52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1% ----------8 1/3%
20/100 of 1% to 29/100 of 1% ---------10%
30/100 of 1% to 49/100 of 1% -------- 12½%
50/100 of 1% to 99/100 of 1%--------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to continue for 5 years and as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

Lola P. Stevens

Lorraine C. Stevens

Harry Pinneker

State of South Dakota)
ss
County of Pennington)

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Lola P. Stevens and Lorraine C. Stevens and Harry Pinneker, known to me who acknowledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)

My Commission Expires Sept. 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 20th day of July, 1952 between E. G. Stevens and Capitola Stevens; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: W½SW¼ of Sec. 4 and SE¼NE¼ and NE¼SE¼ of Sec. 5, T8SR3E B.H.M.; Lots 1 and 2 of the Sec. 6 T8S3E.B.H.M. and the SW¼NE¼ and theNW¼SE¼ Sec. 5 T8SR3E.B.H.M. South Dakota containing 163.22 Acres.

THE PARTIES FURTHER AGREE that as additional consideration for thislease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5); ores.

Less than 20/100 of 1% ----------8 1/3%
20/100 of 1% to 29/100 of 1% ----------10%
30/100 of 1% to 49/100 of 1% ----------12½%
50/100 of 1% to 99/100 of 1%----------16 2/3%
All over 1% ----------20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be considered necessary in conducting the saidoperation.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

This lease will extend 5 years or as long thereafter as there is mining or exploration work being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said property, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

E.G. Stevens

Capitola Stevens

Harry Pinneker

State of South Dakota)
County of Pennington) ss

On this 28th day of July, 1952 before me, Jerry Brennan, a Notary Public in and for the County of Pennington and state of South Dakota, appeared Earl Stevens and Harry Pinneker, known to me, who acknowledged that they executed theforegoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)
My Commission Expires September 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between L. H. Stevens, R. M. Miller, J. E. Lenz; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Little Windy #1, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 145, recorded on 4-14-52, and located in Fall River County South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:
Less than 20/100 of 1% ---------- 8 1/3%
20/100 of 1% to 29/100 of 1%-------- 10%
30/100 of 1% to 49/100 of 1%-------- 12½%
50/100 of 1% to 99/100 of 1%-------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration, drilling, trenching, developments drifts, shafts, and all activity of a similar nature.

The term of this lease is to continue for 5 years and as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the perce ntages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

L. H. Stevens

R. M. MIller

J. E. Lenz

Harry Pinneker

State of South Dakota)
County of Pennington)ss

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared L.H. Stevens, R.M. Miller, J. E. Lenz, and Harry Pinneker, known to me, who acknow--ledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)

My Commission Expires Setpember 14, 1953

Lakota Mining and Exploration Co.
~~Scottsbluff,~~ Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952, between Phyllis E. Lenz, Patricia M. Miller; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged for the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Little Windy #3, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 165, recorded on 6-4-52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%	8 1/3%
20/100 of 1% to 29/100 of 1%	10%
30/100 of 1% to 49/100 of 1%	12½%
50/100 of 1% to 99/100 of 1%	16 2/3%
All over 1%	20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration; drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to continue for 5 years and as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
~~Scottsbluffxx~~ Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to a participatio;n in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid theFirst Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

_____
Phyllis E. Lenz

_____
Patricia M. Miller

_____
Harry Pinneker

State of South Dakota)
County ofPennington) ss

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Phyllis E. Lenz, Patricia M. Miller, and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

_____
NOTARY PUBLIC

(SEAL)
My Commission Expires Sept. 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
~~xScottsbluff, xNationalxBankx~~
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between Earl Stevens and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Eagle Aerie #2 (Also known as Eagle Areie #2), a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Miscellaneous page 304, recorded on 6-2-52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%----------8 1/3%
20/100 of 1% to 29/100 of 1%-------- 10%
30/100 of 1% to 49/100 of 1%-------- 12½ %
50/100 of 1% to 99/100 of 1%-------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall be construed to include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to extend 5 years or as long thereafter as there is mining or exploration work being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
~~xScottsbluffxNationalBankx~~
Scottsbluff, Nebraska

(EAGLE AERIE #2)

The parties further agree that the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

_____
Earl Stevens

_____
Harry Pinneker

State of South Dakota)
County of Pennington)ss

On this 28th day of July, 1952 before me, Jerry Brennan, a Notary Public in and for the County of Pennington and state of South Dakota, appeared Earl Stevens and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

_____
NOTARY PUBLIC

(SEAL)
My Commission Expires September 14, 1953

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff, National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between Earl Stevens, and Gilford E. Stevens; and Harry Pinneker, called First Party, and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and, of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Lucky Toss #2, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 28 Misc. Page 361, recorded on 10-29-51 and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of paymentsshall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%---------- 8 1/3%
20/100 of 1% to 29/100 of 1%-------- 10%
30/100 of 1% to 49/100 of 1%-------- 12½%
50/100 of 1% to 99/100 of 1%-------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

This lease term is to continue for 5 years and as long thereafter as mining or exploration work is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff, National Bank
Scottsbluff, Nebraska

(LUCKY TOSS #2)

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

_____
Earl Stevens

_____
Gilford E. Stevens

_____
Harry Pinneker

State of South Dakota)
County of Pennington)ss

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Earl Stevens and Gilford E. Stevens and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

_____
NOTARY PUBLIC

(SEAL)

My Commission Expires September 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff, National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE MADE the 28th day of July, 1952 between Louis Stevens, JeRome E. Lenz, Robert N. Miller, Walter Myers, Gilford Stevens, Earl Stevens; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of thesaid Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right ofentering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Little Windy #2, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 145, recorded on 4-21-52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration forthis lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%---------- 6 1/3%
20/100 of 1% to 29/100 of 1%---------- 10%
30/100 of 1% to 49/100 of 1%---------- 12½%
50/100 of 1% to 99/100 of 1%---------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall be construed to include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to extend 5 years or as long thereafter as there is mining or exploration work being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff, National Bank
Scottsbluff, Nebraska

The parties further agree that the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the FirstParty according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

Louis Stevens

1

JeRome E. Lenz

Robert M. Miller

Walter Myers

Gilford Stevens

Earl Stevens

Harry Pinneker

State of South Dakota)
ss
County of Pennington)

On this 28th day of July, 1952 before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Louis Stevens, JeRome Lenz, Robert M. Miller, Walter Myers, Gilford Stevens, Earl Stevens, and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)
My Commission Expires September 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952, between Phyllis E. Lenz, Patricia M. Miller; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged for the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Little Windy #3, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 165, recorded on 6-4-52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%	8 1/3%
20/100 of 1% to 29/100 of 1%	10%
30/100 of 1% to 49/100 of 1%	12½%
50/100 of 1% to 99/100 of 1%	16 2/3%
All over 1%	20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration; drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to continue for 5 years and as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to a participatio;n in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid theFirst Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

Phyllis E. Lenz

Patricia M. Miller

Harry Pinneker

State of South Dakota)
County ofPennington) ss

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Phyllis E. Lenz, Patricia M. Miller, and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)
My Commission Expires Sept. 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between Gilford E. Stevens and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Eagle Aerie #3 Lode Claim (Lode also being known as Eagle Areie #3) in the NW¼ Sec.4 Township 8 Range 3 East of the Black Hills Meridian, abbuttal to Eagle Aerie (Areie) #2, or Eagle Aerie (Areie) #2 west boundary. Recorded as a Lode Claim in the office of the Register of Deeds of Fall River County South Dakota in Book 31 Misc. Page 180; recording date 7-26-52.

Also, Eagle Aerie (Areie)#4, a Lode Claim recorded in the said office of the Register of Deeds for Fall River County, South Dakota, in Book 31 Misc. Page 181; said recording date being 7-26-52.

all being located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%-------- 8 1/3%
20/100 of 1% to 29/100 of 1%---10%
30/100 of 1% to 49/100 of 1%-- 12½%
50/100 of 1% to 99/100 of 1%-- 15 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The term of this lease is to extend for 5 years or as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

(EAGLE AERIE #3; EAGLE AERIE #4)

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premiseswithout the written consent of the lessor first had and obtained.

The parties further agree the term mining shall be construed to include exploration, drilling, trenching, developments, drifts, shafts and all activity of a similar nature.

The parties further agree that the Second Party shall have all rights to any bonus of any nature whatsoever, as well as the right to participate in any government grant, loan, or benefit in the same manner as the First Party would have had if this lease did not exist, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

_____
Gilford E. Stevens

_____
Harry Pinneker

State of South Dakota)
County of _____)ss

On this 28th day of July, 1952 before me, _____ _____ a Notary Public in and for the County of _____ and State of South Dakota, appeared Gilford E. Stevens and Harry Pinneker, known to me, who acknowledge they executed the foregoing instrument for the purposes stated therein.

_____
NOTARY PUBLIC

(SEAL)
My Commission Expires _____

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between L. H. Stevens, R. M. Miller, J. E. Lenz; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Little Windy #1, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 145, recorded on 4-14-52, and located in Fall River County South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:
Less than 20/100 of 1% ---------- 8 1/3%
20/100 of 1% to 29/100 of 1%-------- 10%
30/100 of 1% to 49/100 of 1%-------- 12½%
50/100 of 1% to 99/100 of 1%-------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration, drilling, trenching, developments drifts, shafts, and all activity of a similar nature.

The term of this lease is to continue for 5 years and as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the perce ntages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

L. H. Stevens

R. M. Miller

J. E. Lenz

Harry Pinneker

State of South Dakota)
County of Pennington)ss

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared L.H. Stevens, R.M. Miller, J. E. Lenz, and Harry Pinneker, known to me, who acknow--ledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)

My Commission Expires Setpember 14, 1953

50/100 of 1% to 99/100 of 1%-------- 15 2/9%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if miningoperations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to continue for 5 years and as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the perce ntages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

L. H. Stevens

R. M. MIller

J. E. Lenz

Harry Pinneker

State of South Dakota)
County of Pennington)ss

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared L.H. Stevens, R.M. Miller, J. E. Lenz, and Harry Pinneker, known to me, who acknow--ledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)

My Commission Expires Setpember 14, 1953

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between Earl Stevens and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Eagle Aerie #1 (Also known as Eagle Areie #1), a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 260, recorded on 5--6-52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%----------8 1/3%
20/100 of 1% to 29/100 of 1%-------- 10%
30/100 of 1% to 49/100 of 1%-------- 12½%
50/100 of 1% to 99/100 of 1%-------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if miningoperations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term <u>mining</u> shall include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to continue for 5 years and as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

(EAGLE AEIRE #1)

1. The parties of the second Party shall have all rights to any bonus of any nature whatsoever as [redacted] participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

Earl Stevens

Harry Pinneker

State of South Dakota)
County of Pennington)ss

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Earl Stevens and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)
My Commission Expires Sept. 14, 1953.

Lakota Mining and Exploration Co
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between E. G. Stevens and Capitola Stevens; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: W½SW¼ of Sec. 4 and SE¼NE¼ and NE¼SE¼ of Sec. 5, T8SR3E B.H.M.; Lots 1 and 2 of the Sec. 6 T8S3E.B.H.M. and the SW¼NE¼ and theNW¼SE¼ Sec. 5 T8SR3E.B.H.M. South Dakota containing 163.22 Acres.

THE PARTIES FURTHER AGREE that as additional consideration for thislease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5); ores.

Less than 20/100 of 1% ----------8 1/3%
20/100 of 1% to 29/100 of 1% ----------10%
30/100 of 1% to 49/100 of 1% ----------12½%
50/100 of 1% to 99/100 of 1%----------16 2/3%
All over 1% ----------20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be considered necessary in conducting the saidoperation.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

This lease will extend 5 years or as long thereafter as there is mining or exploration work being done.

Lakota Mining and Exploration Co
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said property, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

E.G. Stevens

Capitola Stevens

Harry Pinneker

State of South Dakota)
County of Pennington) ss

On this 28th day of July, 1952 before me, Jerry Brennan, a Notary Public in and for the County of Pennington and state of South Dakota, appeared Earl Stevens and Harry Pinneker, known to me, who acknowledged that they executed theforegoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)
My Commission Expires September 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National ?Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE MADE the 28th day of July, 1952 between Louis Stevens, JeRome E. Lenz, Robert ". Miller, Walter Myers, Gilford Stevens, Earl Stevens; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of thesaid Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right ofentering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Little Windy #2, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 145, recorded on 4-21-52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration forthis lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%---------- 6 1/3%
20/100 of 1% to 29/100 of 1%---------- 10%
30/100 of 1% to 49/100 of 1%---------- 12½%
50/100 of 1% to 99/100 of 1%---------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall be construed to include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to extend 5 years or as long thereafter as there is mining or exploration work being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree that the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the FirstParty according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

Louis Stevens

1

JeRome E. Lenz

Robert M. Miller

Walter Myers

Gilford Stevens

Earl Stevens

Harry Pinneker

State of South Dakota)
ss.
County of Pennington)

On this 28th day of July, 1952 before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Louis Stevens, JeRome Lenz, Robert M. Miller, Walter Myers, Gilford Stevens, Earl Stevens, and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)
My Commission Expires September 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between Earl Stevens, and Gilford E. Stevens; and Harry Pinneker, called First Party, and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Lucky Toss #2, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 28 Misc. Page 361, recorded on 10-29-51 and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of paymentsshall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%---------- 8 1/3%
20/100 of 1% to 29/100 of 1%-------- 10%
30/100 of 1% to 49/100 of 1%-------- 12½%
50/100 of 1% to 99/100 of 1%-------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

This lease term is to continue for 5 years and as long thereafter as mining or exploration work is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

(LUCKY TOSS #2)

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

_____
Earl Stevens

_____
Gilford E. Stevens

_____
Harry Pinneker

State of South Dakota)
County of Pennington) ss

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Earl Stevens and Gilford E. Stevens and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

_____
NOTARY PUBLIC

(SEAL)

My Commission Expires September 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between Earl Stevens and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Eagle Aerie #2 (Also known as Eagle Arcie #2), a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Miscellaneous page 304, recorded on 6-2-52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%----------8 1/3%
20/100 of 1% to 29/100 of 1%--------- 10%
30/100 of 1% to 49/100 of 1%--------- 12½ %
50/100 of 1% to 99/100 of 1%--------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term <u>mining</u> shall be construed to include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to extend 5 years or as long thereafter as there is mining or exploration work being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff, National Bank
Scottsbluff, Nebraska

(EAGLE AERIE #2)

The parties further agree that the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

Earl Stevens

Harry Pinneker

State of South Dakota)
County of Pennington)ss

On this 28th day of July, 1952 before me, Jerry Brennan, a Notary Public in and for the County of Pennington and state of South Dakota, appeared Earl Stevens and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)
My Commission Expires September 14, 1953

Lakota Mining and Exploration Co.
Harry Pinneker
C/o Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between Lola P. Stevens, Lorraine C. Stevens; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold ppssession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Little Lorraine, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 173, recorded on 6-25--52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1% ----------8 1/3%
20/100 of 1% to 29/100 of 1% ---------10%
30/100 of 1% to 49/100 of 1% -------- 12½%
50/100 of 1% to 99/100 of 1%--------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term <u>mining</u> shall include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to continue for 5 years and as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

Lola P. Stevens

Lorraine C. Stevens

Harry Pinneker

State of South Dakota)
ss
County of Pennington)

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Lola P. Stevens and Lorraine C. Stevens and Harry Pinneker, known to me who acknowledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)

My Commission Expires Sept. 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952, between Phyllis E. Lenz, Patricia M. Miller; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged for the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Little Windy #3, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 165, recorded on 6-4-52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1% ---------- 8 1/3%
20/100 of 1% ----------
to 29/100 of 1%---------- 10%
30/100 of 1% to 49/100 of 1%-------- 12½%
50/100 of 1% to 99/100 of 1%-------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term <u>mining</u> shall include exploration; drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to continue for 5 years and as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to a participation in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

Phyllis E. Lenz

Patricia M. Miller

Harry Pinneker

State of South Dakota)
County of Pennington) ss

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Phyllis E. Lenz, Patricia M. Miller, and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)
My Commission Expires Sept. 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between Gilford E. Stevens and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Eagle Aerie #3 Lode Claim (Lode also being known as Eagle Areie #3) in the NW¼ Sec.4 Township 8 Range 3 East of the Black Hills Meridian, abbuttal to Eagle Aerie (Areie) #2, or Eagle Aerie (Areie) #2 west boundary. Recorded as a Lode Claim in the office of the Register of Deeds of Fall River County South Dakota in Book 31 Misc. Page 180; recording date 7-26-52.

Also, Eagle Aerie (Areie)#4, a Lode Claim recorded in the said office of the Register of Deeds for Fall River County, South Dakota, in Book 31 Misc. Page 181; said recording date being 7-26-52.

all being located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%-------- 8 1/3%
20/100 of 1% to 29/100 of 1%---10%
30/100 of 1% to 49/100 of 1%-- 12½%
50/100 of 1% to 99/100 of 1%-- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The term of this lease is to extend for 5 years or as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

(EAGLE AERIE #3; EAGLE AERIE #4)

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premiseswithout the written consent of the lessor first had and obtained.

The parties further agree the term mining shall be construed to include exploration, drilling, trenching, developments, drifts, shafts and all activity of a similar nature.

The parties further agree that the Second Party shall have all rights to any bonus of any nature whatsoever, as well as the right to participate in any government grant, loan, or benefit in the same manner as the First Party would have had if this lease did not exist, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

_____
Gilford E. Stevens

_____
Harry Pinneker

State of South Dakota)
County of _____)ss

On this 28th day of July, 1952 before me, _____ _____ a Notary Public in and for the County of _____ and State of South Dakota, appeared Gilford E. Stevens and Harry Pinneker, known to me, who acknowledge they executed the foregoing instrument for the purposes stated therein.

_____
NOTARY PUBLIC

(SEAL)
My Commission Expires _____

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between Lola P. Stevens, Lorraine C. Stevens; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold ppssession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Little Lorraine, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 173, recorded on 6-25--52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1% ----------8 1/3%
20/100 of 1% to 29/100 of 1% ----------10%
30/100 of 1% to 49/100 of 1% -------- 12½%
50/100 of 1% to 99/100 of 1%--------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term <u>mining</u> shall include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to continue for 5 years and as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

Lola P. Stevens

Lorraine C. Stevens

Harry Pinneker

State of South Dakota)
ss
County of Pennington)

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Lola P. Stevens and Lorraine C. Stevens and Harry Pinneker, known to me who acknowledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)

My Commission Expires Sept. 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between Earl Stevens and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Eagle Aerie #2 (Also known as Eagle Areie #2), a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Miscellaneous page 304, recorded on 6-2-52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%----------8 1/3%
20/100 of 1% to 29/100 of 1%-------- 10%
30/100 of 1% to 49/100 of 1%-------- 12½ %
50/100 of 1% to 99/100 of 1%-------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term <u>mining</u> shall be construed to include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to extend 5 years or as long thereafter as there is mining or exploration work being done.

Lakota Mingnf and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

(EAGLE AERIE #2)

The parties further agree that the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

Earl Stevens

Harry Pinneker

State of South Dakota)
County of Pennington)ss

On this 28th day of July, 1952 before me, Jerry Brennan, a Notary Public in and for the County of Pennington and state of South Dakota, appeared Earl Stevens and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)
My Commission Expires September 14, 1953

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff Nationall Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between E. G. Stevens and Capitola Stevens; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: W½SW¼ of Sec. 4 and SE¼NE¼ and NE¼SE¼ of Sec. 5, T8SR3E B.H.M.; Lots 1 and 2 of the Sec. 6 T8S3E.B.H.M. and the SW¼NE¼ and theNW¼SE¼ Sec. 5 T8SR3E.B.H.M. South Dakota containing 163.22 Acres.

THE PARTIES FURTHER AGREE that as additional consideration for thislease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5); ores.

Less than 20/100 of 1% ----------8 1/3%
20/100 of 1% to 29/100 of 1% ----------10%
30/100 of 1% to 49/100 of 1% ----------12½%
50/100 of 1% to 99/100 of 1%----------16 2/3%
All over 1% ----------20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be considered necessary in conducting the saidoperation.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

This lease will extend 5 years or as long thereafter as there is mining or exploration work being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said property, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

E.G. Stevens

Capitola Stevens

Harry Pinneker

State of South Dakota)
County of Pennington) ss

On this 28th day of July, 1952 before me, Jerry Brennan, a Notary Public in and for the County of Pennington and state of South Dakota, appeared Earl Stevens and Harry Pinneker, known to me, who acknowledged that they executed theforegoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)
My Commission Expires September 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE MADE the 28th day of July, 1952 between Louis Stevens, JeRome E. Lenz, Robert N. Miller, Walter Myers, Gilford Stevens, Earl Stevens; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of thesaid Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right ofentering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Little Windy #2, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 145, recorded on 4-21-52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration forthis lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%---------- 6 1/3%
20/100 of 1% to 29/100 of 1%---------- 10%
30/100 of 1% to 49/100 of 1%---------- 12½%
50/100 of 1% to 99/100 of 1%---------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall be construed to include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to extend 5 years or as long thereafter as there is mining or exploration work being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree that the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the FirstParty according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

Louis Stevens

1

JeRome E. Lenz

Robert M. Miller

Walter Myers

Gilford Stevens

Earl Stevens

Harry Pinneker

State of South Dakota)
ss
County of Pennington)

On this 28th day of July, 1952 before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Louis Stevens, JeRome Lenz, Robert M. Miller, Walter Myers, Gilford Stevens, Earl Stevens, and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)
My Commission Expires September 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between Earl Stevens, and Gilford E. Stevens; and Harry Pinneker, called First Party, and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Lucky Toss #2, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 28 Misc. Page 361, recorded on 10-29-51 and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of paymentsshall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%---------- 8 1/3%
20/100 of 1% to 29/100 of 1%-------- 10%
30/100 of 1% to 49/100 of 1%-------- 12½%
50/100 of 1% to 99/100 of 1%-------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

This lease term is to continue for 5 years and as long thereafter as mining or exploration work is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

(LUCKY TOSS #2)

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

_____
Earl Stevens

_____
Gilford E. Stevens

_____
Harry Pinneker

State of South Dakota)
County of Pennington)ss

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Earl Stevens and Gilford E. Stevens and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

_____
NOTARY PUBLIC

(SEAL)

My Commission Expires September 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between Earl Stevens and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Eagle Aerie #1 (Also known as Eagle Areie #1), a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 260, recorded on 5--6-52, and located in Fall River County, South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:

Less than 20/100 of 1%----------8 1/3%
20/100 of 1% to 29/100 of 1%-------- 10%
30/100 of 1% to 49/100 of 1%-------- 12½%
50/100 of 1% to 99/100 of 1%-------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if miningoperations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration, drilling, trenching, developments, drifts, shafts, and all activity of a similar nature.

The term of this lease is to continue for 5 years and as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

(EAGLE AEIRE #1)

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the percentages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day ofJuly, 1952.

Earl Stevens

Harry Pinneker

State of South Dakota)
County of Pennington)ss

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared Earl Stevens and Harry Pinneker, known to me, who acknowledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)
My Commission Expires Sept. 14, 1953.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

M I N I N G L E A S E

THIS INDENTURE made the 28th day of July, 1952 between L. H. Stevens, R. M. Miller, J. E. Lenz; and Harry Pinneker, called First Party and Second Party respectively hereinafter.

WITNESSETH: That the said First Party for and in consideration of the covenants and agreements hereinafter contained on the part of the said Second Party, and of One Dollar in hand paid to the said party, the receipt whereof is hereby acknowledged by the First Party, doth hereby grant and convey to the said Second Party, his heirs, executors, administrators, and assigns, the right of entering in and upon the lands hereinafter described for the purpose of searching for uranium and vanadium ores and of conducting mining and quarrying operations, to any extent he may deem advisable; but not to hold possession of any part of said lands for any other purpose whatsoever, for the term of five (5) years from the date hereof, the said lands being as follows: Little Windy #1, a lode mining claim recorded in the office of the Register of Deeds of Fall River County, South Dakota in Book 31 Misc. Page 145, recorded on 4-14-52, and located in Fall River County South Dakota.

THE PARTIES FURTHER AGREE that as additional consideration for this lease agreement, the following schedule of payments shall be made to the lessor or lessors for ore shipments:

Uranium (U_3O_8) and Vanadium (V_2O_5) ores:
Less than 20/100 of 1% ---------- 8 1/3%
20/100 of 1% to 29/100 of 1%-------- 10%
30/100 of 1% to 49/100 of 1%-------- 12½%
50/100 of 1% to 99/100 of 1%-------- 16 2/3%
All over 1%---------- 20%

Ore to be assayed at the buying station on a truckload basis.

And the Second Party further covenants that he, his heirs, executors, administrators, or assigns will cause no damage to be done to or upon the said lands and premises other than may be necessary in conducting the said operations.

PROVIDED that this indenture shall determine and be null and void if mining operations be not commenced and pursued actively within the period of twelve (12) months from the date hereof.

The Second Party promises to make no assignment of this lease or of any interest hereunder, nor to sublet the whole or any part of the demised premises without the written consent of the lessor first had and obtained.

The parties further agree the term mining shall include exploration, drilling, trenching, developments drifts, shafts, and all activity of a similar nature.

The term of this lease is to continue for 5 years and as long thereafter as mining or exploration is being done.

Lakota Mining and Exploration Co.
Harry Pinneker
C/O Scottsbluff National Bank
Scottsbluff, Nebraska

The parties further agree the Second Party shall have all rights to any bonus of any nature whatsoever as well as the right to participate in any government grant, loan, or benefit in the same manner as he would if he were the locator or owner of said claim, except that any and all bonuses shall be computed as a part of the money to be paid the First Party according to the perce ntages outlined above.

IN WITNESS WHEREOF we have hereunto set our hands and seals this 28th day of July, 1952.

L. H. Stevens

R. M. MIller

J. E. Lenz

Harry Pinneker

State of South Dakota)
County of Pennington)ss

On this 28th day of July, 1952, before me, Jerry Brennan, a Notary Public in and for the County of Pennington and State of South Dakota, appeared L.H. Stevens, R.M. Miller, J. E. Lenz, and Harry Pinneker, known to me, who acknow--ledged that they executed the foregoing instrument for the purposes stated therein.

NOTARY PUBLIC

(SEAL)

My Commission Expires Setpember 14, 1953

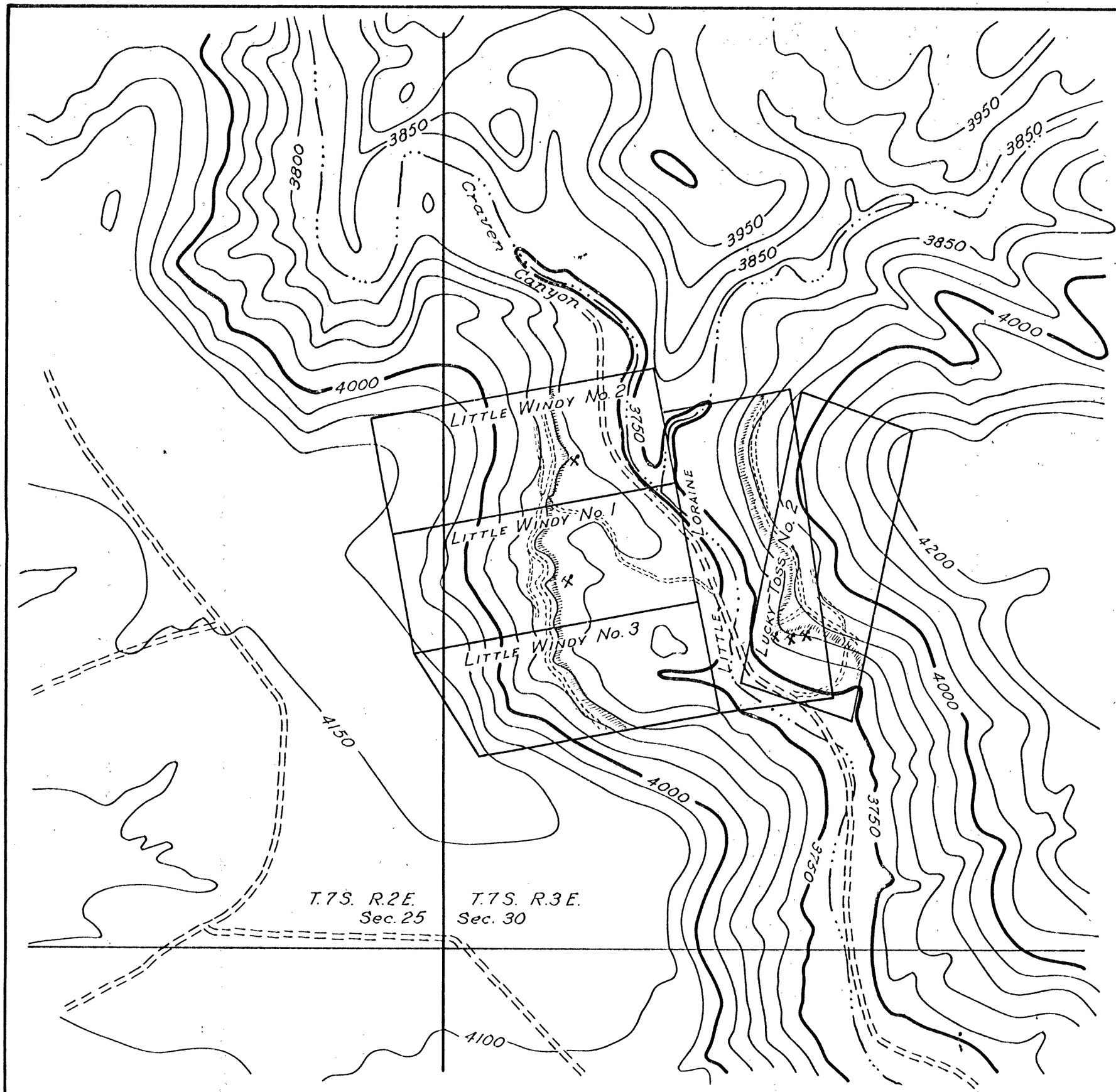


FIGURE 3

LITTLE WINDY GROUP

FALL RIVER COUNTY, SOUTH DAKOTA

SCALE 1" = 500' CONTOUR INTERVAL 50'

H. SCHWARCHER

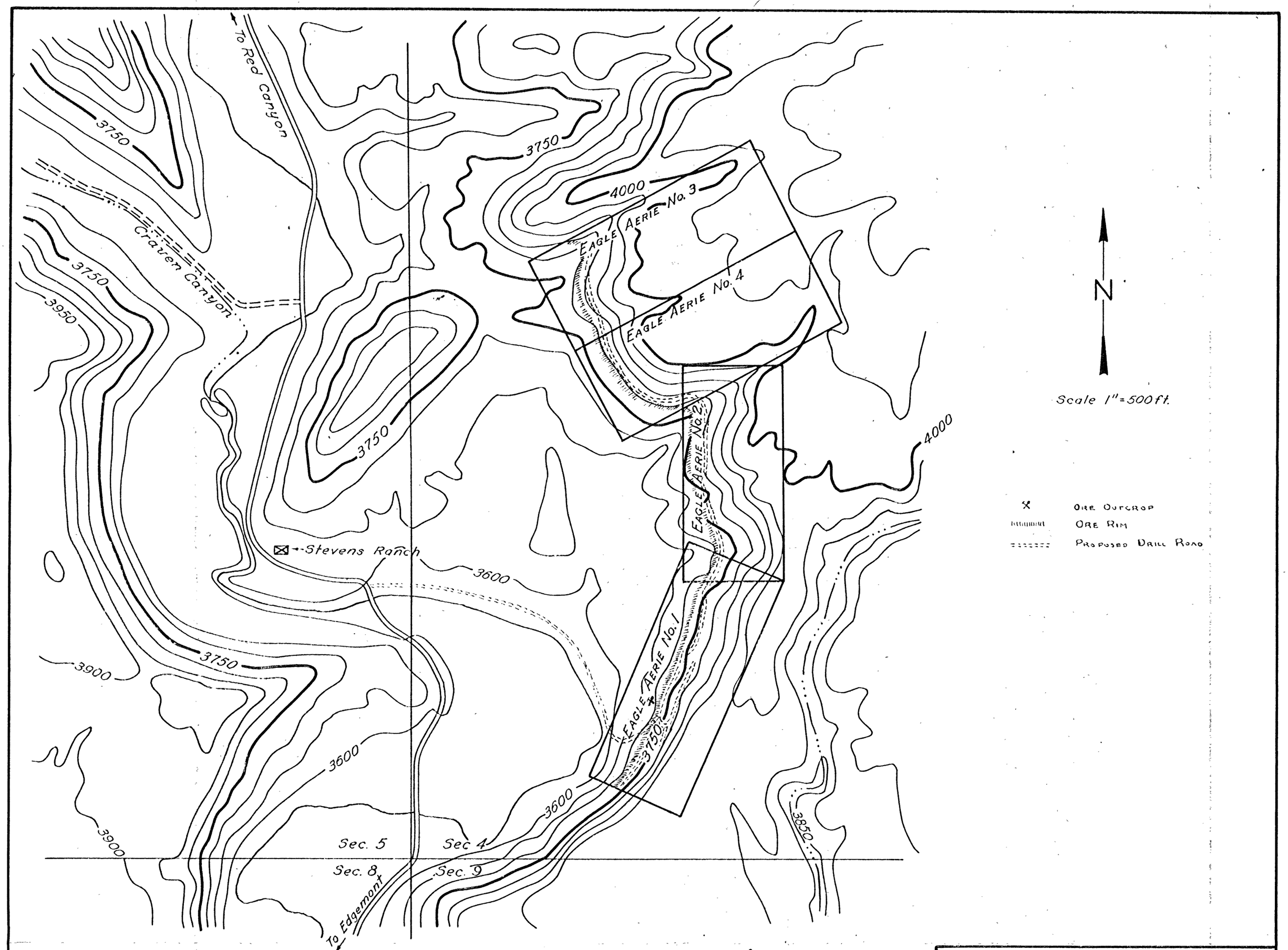


FIGURE 4

EAGLE AERIE GROUP

FALL RIVER COUNTY, SOUTH DAKOTA

SCALE 1" = 500' CONTOUR INTERVAL 50'

J. Schumacher

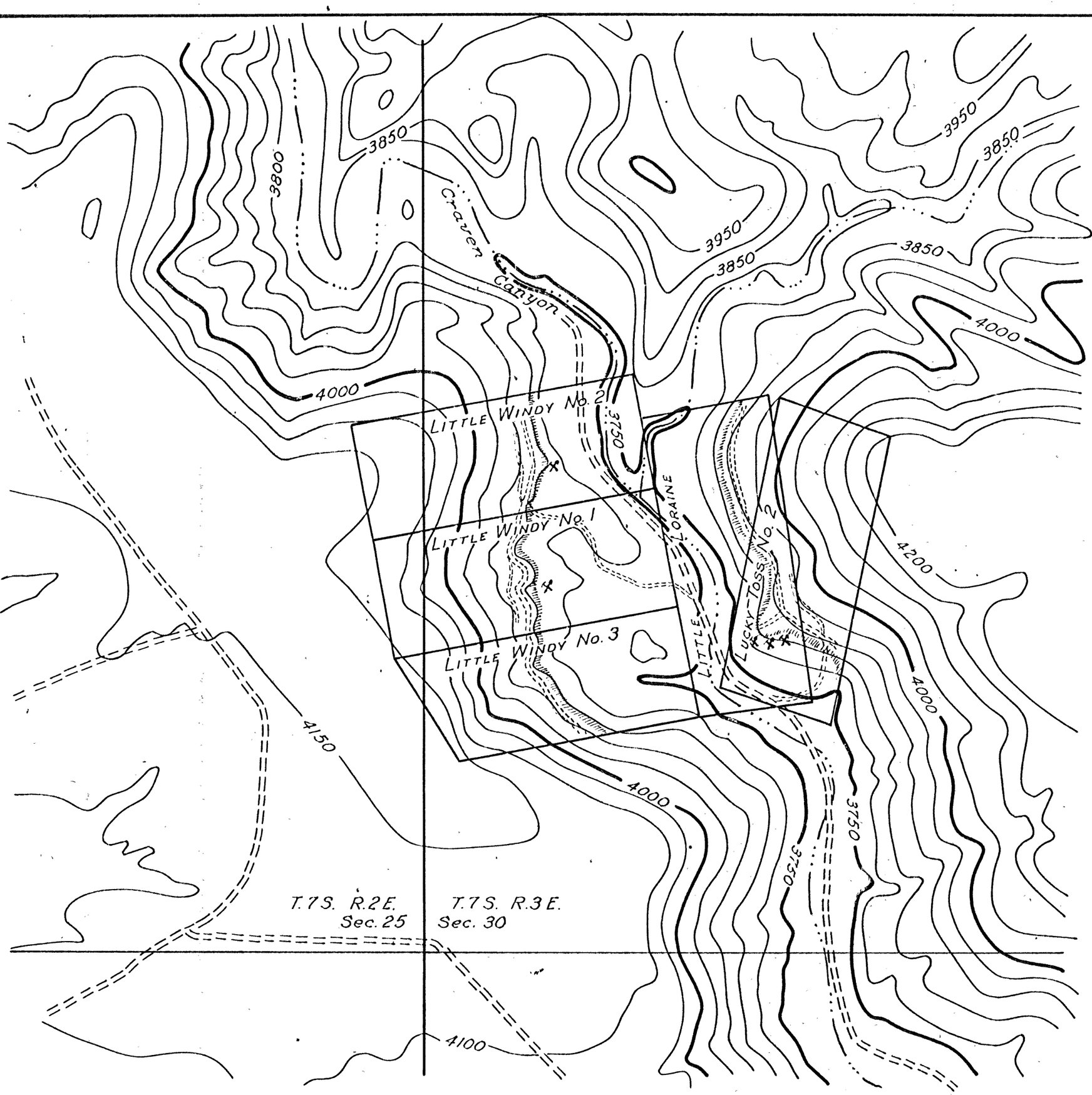


FIGURE 3

LITTLE WINDY GROUP

FALL RIVER COUNTY, SOUTH DAKOTA

SCALE 1" = 500' CONTOUR INTERVAL 50'

H. Schumacher