DMA Form 1

DEFENSE MINERALS ADMINISTRATION
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CONTROLLED DOCUMENT

DMA Docket No. 3495

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Cys to USBM & USGS

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To:	400	Date	9/22/54
To:	Oper Com	Date	9/27/54
To:	Oper Com	Date	2-1-55
To:	Oper Com	Date	4-5-55
To:	Oper Com	Date	5-19-55
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CONTROLLED DOCUMENT

400

MAY 2 3 1955

Mr. W. R. Wade
Marysville, Montana

Re: Docket No. DMEA 3695 - Tungsten
Windy Ridge Property
Lewis and Clark County, Montana

Dear Mr. Wade:

Your application for aid for an exploration project and other data available to us in Washington relating to the above noted property have been carefully reviewed.

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

Careful study of all our information, although noting scattered showings of tungsten mineralization on your property, indicates to us that the probability of disclosing minable ore reserves by your proposed program is not sufficiently promising to justify Government participation. We regret to advise you, therefore, that your application is denied.

We wish to thank you for your interest in the Defense Minerals Exploration Administration program and for bringing your property to our attention.

Sincerely yours,

R. O. Mittendorf

Administrator

TLChapman:fcc
5-18-55
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.
FT. BEG.I - MW DIST.
Messrs. Holliday, USBM
Kiilsgaard, USGS

May 18, 1955

MEMORANDUM

To: Administrator

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of application for exploration assistance to the amount of $252,900.00
Docket No. DMEA 3495 - Tungsten
W. R. Wade
Windy Ridge Mine
Lewis and Clark County, Montana

Denial of the subject application is recommended by this Division and is based on the following information:

1. The applicant, W. R. Wade, Marysville, Montana, requested exploration assistance to the amount of $252,900.00, for the purpose of road construction, compressor and shop building, 2,900 feet of crosscut adits, 1,500 feet of drifting and 1,500 feet of inclined raises.

2. The property consisted of 7 unpatented lode mining claims, as follows:

	Book No.	Page No.
Windy Ridge No. 1	28	549
Windy Ridge No. 2	28	547
Windy Ridge No. 3	28	548
Last Chance	28	551
Last Chance No. 1	28	551
Jeep	28	552
Jeep No. 2	28	552

Located in sections 22, 23, 26 and 27, T. 12 N., R. 6 W.
Lewis and Clark County, Montana

3. A one-quarter interest in the claims is held by W. R. Wade and the other three-quarters is held under a lease dated September 8, 1954, from Ten Williams and Frank Hijasica, Marysville, Montana, Herbert Obendorf, 1155 Olive Street, Redding, California and Claudia A. Wade, 9715 49th Street, Seattle, Washington.

4. The predominant rocks of the area are sedimentaries, mainly shales which have been intruded by quartz diorite dikes. At and along the contact zones tactites have been formed in the metamorphised rocks in irregular sporadic sequences. Scattered scheelite is found disseminated in the tactite zones.

5. The area was originally prospected for gold and a number of shallow shafts sunk, but no minable ore was found. Several pits, trenches and location holes have been opened up in the tactite zone. Thirteen samples taken showed an average of 0.07 percent WO_3, the highest sample being 0.24 percent WO_3. The application was based on the possibility of finding a large low grade deposit of tungsten ores that would average 0.30 percent WO_3. The scattered tactites indicated little possibility of locating any large bodies of minable ores.

6. The Field Team and the Commodity Divisions of the Geological Survey and the Bureau of Mines recommend that the application be denied.

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

TLChapman:foc
5-18-55
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.

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

[redacted]

So. 157 Howard Street
Spokane 4, Washington

400

May 2, 1955

Mr. George C. Selfridge, Chairman
Operating Committee, DMEA
Department of the Interior
Washington 25, D. C.

WSM

Re: Docket No. DMEA-645 (tungsten)
W. R. Weeks
Windy Ridge property
Lewis and Clark County, Montana

Dear Mr. Selfridge:

Enclosed is a memorandum from Robert A. Weeks and James J. Quinlan, U. S. Geological Survey, recommending a denial of an application for the exploration of the Windy Ridge property in Lewis and Clark County, Montana. The property under consideration is a tactite body which has some tungsten-bearing beds.

Careful examination and sampling has indicated that the tungsten content of the tactite beds is much lower than that expected by the operator. In addition, the tungsten-bearing tactite beds are intercalated with barrefels beds with practically no tungsten which lowers the grade even more.

On the basis of the sampling there is not, in our opinion, any justification for full exploration of this deposit.

By Field Team, Region I, N/ District

Closed
5/11/55

A. E. Weissenborn, Executive Officer
U. S. Geological Survey

Ring G. Agnew, Member
U. S. Bureau of Mines

Enclosure
cc: USGS (2)
USBM(SPO)
Weeks
Quinlan

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 9 - 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
So. 157 Howard Street
Spokane 4, Washington

April 14, 1955

MEMORANDUM

To: DMEA Field Team, Region I, Northwest District

From: Robert A. Weeks and James J. Quinlan, Geologists
U. S. Geological Survey

Subject: Docket No. DMEA-3495 (tungsten), Field Examination Report, W. R. Wade, Windy Ridge property, Lewis and Clark County, Montana.

Introduction

The Windy Ridge property was examined between September 18 and 22, 1954, with reference to the subject DMEA application for exploration assistance. Members of the examining team included J. D. Bardill, Bureau of Mines, and R. A. Weeks and J. J. Quinlan, Geological Survey. W. R. Wade, the applicant, assisted during part of the examination.

The Windy Ridge property is within the contact aureole surrounding the Marysville stock. Although a large tonnage of tactitic material containing minor amounts of scheelite is present on the property, the tungsten content is too scant for the material to be of economic interest as tungsten ore under present or foreseeable market conditions. The highest grade sample of 15 samples taken across tactite beds exposed on the property was only 0.247 percent tungsten trioxide. This sample was cut across a width of 4.1 feet. The average grade of all 15 samples was only 0.07 percent tungsten trioxide.

Recommendation

It is recommended that W. R. Wade's application for DMEA assistance to explore the Windy Ridge property for tungsten be denied.

Applicant

The applicant is W. R. Wade of Marysville, Montana. Mr. Wade is a competent mining engineer with over 50 years of experience which is quite extensive and impressive. He has held

engineering, supervisory, and managerial positions with New Jersey Zinc Company, American Metal Company, Phelps Dodge Corporation, and Park City Consolidated Mines. He is at present owner of the Drumlummon mine at Marysville, Montana, and is reported to be independently wealthy.

In February 1953, W. R. Wade and H. G. Obendorf entered into Exploration Project Contract No. Idm-4490 with the Government to explore the Prentice property at Marysville, Montana, for tungsten (see Docket No. DMEA-2658). Work on this project has been under the direct supervision of W. R. Wade and has been carried out in an efficient and workmanlike manner. If the Windy Ridge property merited exploration, Mr. Wade would be fully qualified and financially able to undertake such a project.

Location

The Windy Ridge property is in secs. 22, 23, 26, and 27, T. 12 N., R. 6 W., M.P.M., Marysville mining district, Lewis and Clark County, Montana. It is about 2 miles northwest of the mining town of Marysville and lies along the ridge separating Drinkwater Gulch and the west fork of Deer Creek. The nearest point of supply is Helena, Montana, 25 miles by good road southeast of Marysville.

Property and Ownership

The Windy Ridge property consists of seven unpatented quartz lode mining claims. At the time of the inspection only five of the seven claims had been recorded. The five recorded claims are the Windy Ridge No. 1, Windy Ridge No. 2, Windy Ridge No. 3, Last Chance, and Jeep. These five claims are reported to be recorded in Book 28 on pages 247, 248, 249, 550, and 551 of the Lewis and Clark County records of quartz lode mining claims. The two unrecorded claims are the Last Chance No. 2 and Jeep No. 2 claims. All seven claims are shown on the map accompanying the application, a copy of which is attached to this memorandum.

The seven claims are owned by the following persons and their interest in the claims appears opposite their names:

W. R. Wade	Marysville, Montana	one-fourth
Tom Williams	do.	do.
Frank Myaskie	do.	do.
Claudia A. Wade	Seattle, Washington	one-twelfth
Herbert Obendorf	Redding, California	one-sixth

The other owners have leased their interest in the claims to W. R. Wade under the terms of a lease and option agreement dated September 8, 1954. A copy of this lease and option agreement was filed with the application.

History

Little is known about the early history of the property, but several shallow shafts and adits attest to early prospecting for gold; a small amount reportedly was mined many years ago from the land now covered by the Last Chance claim and neighboring Piegan claim (see applicant's map).

Scheelite was first identified in tactite from Windy Ridge in the spring of 1942, shortly after it had been discovered in the Marysville district. Although a number of claims were staked at that time, nothing was done as the tactite was too low grade in tungsten to be of any interest. Brief mention of the Windy Ridge deposit is made in a two-page unpublished Geological Survey memorandum report by Adolph Knopf dated December 28, 1942, entitled, "Tungsten Deposits at Marysville, Montana."

Workings

Several shallow shafts and adits explore gold-bearing structures on the property, but only a few shallow pits test any of the scheelite-bearing tactite beds. The absence of workings on tactite beds does not greatly hinder evaluation of them as a possible source of tungsten because of the excellent exposures in many places, particularly along the upper parts of Windy Ridge. The applicant has done a small amount of dozer trenching on the property, presumably as location work.

Geology

The Marysville district was studied and geologically mapped by Joseph Barrell in 1901. The results of his studies were published as U. S. Geol. Survey Professional Paper 57, "Geology of the Marysville Mining District." Plate 1 accompanying the professional paper is a geologic map of the district. The Windy Ridge property lies within the area studied and mapped by Barrell. Although Windy Ridge is not named on Barrell's geologic map (pl. 1), it is the ridge that forms the divide between Drinkwater Gulch and the west fork of Deer Creek.

Barrell's map shows that the property is within the contact metamorphic zone surrounding the Marysville stock. Most of it is underlain by metamorphosed sedimentary rocks which are a part of the Empire shale, a formation of the Belt series, pre-Cambrian age. Generally, within the vicinity of the property these rocks strike northwesterly and dip 19° - 42° northeasterly. A small tonguelike body of quartz diorite, an apophysis from the main mass of the Marysville stock, intrudes the rock in the western part of the property. Small quartz diorite dikes and sills are found at many places on the property, particularly along the upper parts of Windy Ridge.

The shale and calcareous shale beds of the Empire shale have been converted to hornfels and tactite in the immediate vicinity of the property. Metamorphism has been most intense adjacent to dikes and sills. Although, in general, the original nature of the sedimentary rocks has largely determined the end product of metamorphism, there undoubtedly has been a considerable amount of metasomatic replacement. At a few places thin stringers of coarse-grained garnet-rich tactite can be seen cutting fine-grained light greenish-gray hornfels, and it is evident that these thin stringers are the end product of metasomatism along small joints or fractures. This is in essential agreement with the processed of metamorphism as described by Barrell from a locality very close to the Windy Ridge area (see pages 121-125). He believes (p. 134) that the garnet beds are of metasomatic origin. He describes the Windy Ridge locality (p. 134) "along the ridge to the west of Deer Creek there is a continuous exposure of the strata, and for 1,000 feet along the higher part of the ridge occur beds of brown garnet from 1 foot to 5 feet in width intercalated in strata of hard, light-colored hornstones, some of which still hold a small amount of calcite. The garnetiferous bands form from 10 to 15 percent of the whole series -- the large amount of iron in these garnet beds and the discontinuity sometimes observed when they are traced along the strike lead to the belief that in all probability they are formed largely or entirely through metasomatic replacement of calcareous rocks."

Barrell failed to recognize scheelite in the tactite beds, but this is not too surprising considering that it is present as a minor accessory mineral of very erratic distribution and is very fine grained. Also, it must be remembered that at the time Barrell worked in the district, scheelite was not a critical industrial mineral nor were tactite deposits recognized as a potential source of tungsten.

Lamping of the property showed that most tactite beds contain at least a few grains of scheelite but that even in beds containing the most scheelite it is of very erratic distribution and only a minor accessory mineral. Although tactite beds are found at many places on the property, they are much more numerous along the upper parts of Windy Ridge. Lamping also indicated that the beds in this area contain more scheelite than beds in other areas. Therefore, this area was mapped and sampled in some detail as it was considered to be the best tungsten area (see map 1), and if exploration was warranted, this area should be the first to be tested.

Tabulated on the following page are the results of sampling of tactite beds along the upper part of Windy Ridge; for location of the individual beds see map 1 accompanying this report. Where practicable, several channels were cut along the strike of individual beds or series of beds and combined to make a composite sample of the bed.

Sample No.	Bed No.	Thickness	WO_3*	Remarks
WR-1	1, 2, & 3	6.8	0.070	Cut 50 feet west of ridge.
WR-2	4	5.9	0.013	Cut 75 feet west of ridge.
WR-3	5, 6, & 7	10.2	0.143	Cut where beds best exposed from ridge to point 90 feet west of ridge.
WR-4	8, 9, & 10	2.6	0.039	Cut on ridge.
WR-5	11	4.6	0.048	Cut on ridge.
WR-6	12	2.8	0.101	Composite of two channels cut 25 and 95 feet west of ridge.
WR-7	13, 14, & 15	3.0	0.076	Cut on ridge.
WR-8	16	5.1	0.054	Cut on ridge.
WR-9	17, 18, & 19	4.8	0.030	Cut on ridge.
WR-9a	18	4.0	0.058	Composite of four samples along strike.
WR-10	20, 21, & 22	8.7	0.003	Cut near ridge.
WR-11	23	2.0	0.170	Represents composite of four channel cuts at various points from ridge to point 80 feet west of ridge.
WR-12	24 & 25	4.1	0.247	Represents composite of two channels--one cut on ridge, the other 15 feet east of ridge.
WR-13	26, 27, 28, & 29	5.9	0.060	Cut on ridge.

*Assays by Montana Laboratory Company, Philipsburg, Montana.

In addition to the foregoing samples from the upper part of Windy Ridge, one sample was cut across a 9-foot tactite bed on a small spur ridge along the west side of Windy Ridge. This spur ridge is designated by the applicant as Little Windy Ridge and the sample was cut at the place where lamping showed the greatest concentration of scheelite along this ridge. This sample assayed a trace of gold and 0.037 percent tungsten trioxide.

The highest grade sample of the 15 samples taken during the examination assayed only 0.247 percent tungsten trioxide. The weighted average of the assay results on samples from the upper part of Windy Ridge is 0.074 percent tungsten trioxide, and the over-all weighted average is 0.070 percent tungsten trioxide.

The applicant reports that a composite sample taken from thirty beds along the upper part of Windy Ridge assayed 0.35 percent tungsten trioxide. The applicant reports, however, that the sample was taken by a man inexperienced in sampling and that local assayers have had trouble assaying the ore.

The DMEA samples were assayed by Montana Laboratory Company of Philipsburg, Montana, and the assay results reported are those given by them. The pulps of the DMEA samples have also been assayed by the Bureau of Mines Laboratory at Albany, Oregon, and these assays closely check the results reported by Montana Laboratory Company.

From Barrell's discussion and from field examination the following geologic factors are specifically pointed out as suggesting the property is not amenable to a large-scale open-pit mining of scheelite:

(1) The tactite is not developed as complete replacement of a simple bed or beds but is sporadically developed within favorable beds and near fractures which permitted access for tactitizing emanations; these fractures are most abundant near the top of Windy Ridge.

(2) In the outcrop beds that have, in part, been converted to tactite form only from 10 to perhaps 20 percent of the stratigraphic sequence. The remaining 80 to 90 percent of the sequence comprises barren hornfels.

(3) The tactite beds are topographically more resistant than the hornfels and tend to form outcrops; thus the percentage of tactite is probably somewhat less than that evident in outcrops.

(4) The scheelite mineralization occurs principally in tactite, but it is not coextensive with the tactite, being slightly later, and more restricted.

(5) The tungsten content nowhere on Windy Ridge appears to be of commercial grade, and the occasional small pods of high-grade scheelite would not lend themselves to commercial exploitation.

Applicant's proposal

The applicant proposes to undertake an exploration program costing a quarter of a million dollars to test the tactite strata along Windy Ridge. The applicant's proposed program is divided into four stages; it entails 200 hours of bulldozing for roads and trenches, construction and installation of facilities for an underground exploration program, 2,900 feet of crosscutting, 1,500 feet of drifting, and 1,500 feet of raising. The location of the proposed crosscuts are shown on the applicant's map. The location of drifts and raises is to be determined as work progresses.

By this program the applicant hopes to indicate a large tonnage of tactite ore averaging about 0.35 percent tungsten trioxide, the grade indicated by the applicant's one composite sample from the beds along the upper part of Windy Ridge. Instead of mining narrow, individual tactite beds, the applicant proposes to mine by open-pit methods both the hornfels and intercalated tactite which, in places, forms from 15 to 20 percent of the total section. (Applicant states only 10 percent but includes larger area.) He then proposes to separate the hornfels and scheelite-bearing tactite by some cheap concentration method, possibly heavy media. The tactite ore would be milled by a combination gravity-flotation method to obtain a commercial-grade tungsten product. The applicant estimates that on the basis of a 2,000 ton per day operation he will be able to mine and treat the ore at a cost of $1.20 per ton.

Although the type of operation that the applicant proposes to undertake (if exploration proves successful) is intriguing, he has done very little work to test its practicability. The Bureau of Mines Laboratory at Albany, Oregon, however, has done some preliminary work on the separation of scheelite from Windy Ridge tactite material. Material for these tests was obtained from the higher-grade beds near the top of Windy Ridge and contained 0.2 percent tungsten trioxide. Both gravity separation and flotation test were conducted. A recovery of 80.3 percent of the tungsten is reported to have been made by gravity separation, whereas 91.7 percent was recovered by flotation. By both methods a concentrate containing about 8 percent tungsten trioxide was obtained. It is further reported, however, that dry magnetic separation of the concentrate, for garnet rejection, may improve the grade. Although far from complete, these tests show that considerable metallurgical work would have to be done to test the applicant's exploitation proposal before any large amount of money was spent on exploration; however, the grade of the material indicated by limited sampling, namely, 0.07 percent tungsten trioxide, is so much lower than reported by the applicant that additional testing to work out a method of exploitation for this deposit does not appear justified.

Conclusion

Lamping and sampling by DMEA personnel failed to confirm the grade reported by the applicant but instead showed the deposit to be far too low grade to be of any interest now or even in the foreseeable future. The highest grade sample of tactite material, taken during the examination, assayed 0.247 percent tungsten trioxide and the average of all samples only 0.07 percent tungsten trioxide. Material of this grade would be of no interest even if it was in one large bed, let alone in a deposit where it is intercalated with hornfels at best in the ratio of 1:5. For this reason, it is recommended that the application be denied.

Enclosures
Distribution:
DMEA(4)
USBM(2)
USGS(SRO)
Docket
Weeks & Quinlan

6-303
(March 1947)

445,10

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

No. [illegible]

Report to Mr. [illegible]

Chemical Laboratory Report

Date received

Date reported March 30, 1955

Serial No.	DESCRIPTION	Sample No.	Lot No.	WO_3	MoO_3
14457	Windy Ridge Tungsten-Report	WR 13	365 150	<.02	
8	(Test. DMEA 650)	WR 8	154	<.02	
9		WR 7	5	<.02	
14860		WR 6	6	0.15	
1	Docket No. DMEA 3495	WR 5	7	<.02	
2		WR 4	8	<.02	
3		WR 2	160	0.06	
4		WR 1	1	0.07	
5		WR 10	2	<.02	
6		WR 9	3	<.07	
7		WR 9a	4	0.03	
8		WR 15	5	<.02	
7679		WR 12	151	0.17	0.19
7680		WR 11	2	0.06	0.07
3		WR 3	159	0.14	0.13
14924			16 30	0.14	0.13

U. S. GOVERNMENT PRINTING OFFICE 16 33553-3

Signed

For: Stephen M. Shelton

400

IN REPLY REFER TO:

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

Defense Minerals Administration
RECEIVED
MAY 18 1955

May 13, 1955

Re: DMEA-3495
W. R. Wade
Windy Ridge property
Lewis and Clark Co.,
Montana
$252,900 - Tungsten

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report

The competence and responsibility of this applicant lend importance to his application. Along with E. R. Shumdorf the applicant completed a contract, E490 (DMEA-2658) on the Prentice tungsten property near Maryesville. A certification of discovery probably has been made although no large tonnage of recoverable tungsten appears to have been discovered. In general the geologic conditions on Windy Ridge are similar to those at the Prentice property.

One lone sample would appear to be too few on which to base an application calling for a quarter of a million dollar expenditure. The Field Team's fourteen samples do better but considering the tonnage involved, might be too few.

Perhaps the applicant will attempt to establish his grade estimate. A line of drill holes would appear to be in order. In addition to providing good samples a hole or so could be used to establish the depth of the tactite, that is the distance to the main underlying quartz diorite mass.

As of this time the recommendation of denial of the Field Team is in order.

N. E. Nelson

NENelson:hlm
G-5/13/55

N. E. Nelson

Copy to: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
R. W. Holliday, 3513 Interior

402

[redacted]
So. 157 Howard Street
Spokane 4, Washington

April 21, 1955

Mr. George C. Selfridge, Chairman
Operating Committee, DMEA
Department of the Interior
Washington 25, D. C.

Copy retained 400

Re: Docket No. DMEA-3495 (tungsten)
W. R. Wade
Windy Ridge Mine
Lewis and Clark County, Montana

Dear Mr. Selfridge:

Regarding your letter of April 7, 1955, the report of the field examination of the Windy Ridge property is now being typed and will be forwarded to you in a few days.

Sincerely yours,

A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region I
Northwest District

cc: DMEM (2)
Quinlan

Copy retained 400

APR - 7 1955

Mr. A. E. Weissenborn, Executive Officer
DMEA Field Team, Region I - Northwest District
South 157 Howard Street
Spokane 4, Washington

Re: Docket No. DMEA 3495 - Tungsten
W. R. Wade
Windy Ridge mine
Lewis and Clark County, Montana

Dear Mr. Weissenborn:

Reference is made to the subject docket and your letter of October 15, 1954, reporting that a field examination of the Windy Ridge mine had been made.

Please advise when we may expect to receive the Field Team report and recommendations.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

APPROVED:

J. H. Hedges

Member, Bureau of Mines

Thor H. Kiilsgaard

Member, Geological Survey

FARutledge:fee
4-4-55
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.
FT. REG. I- N.W.DIST.
Messrs. Holliday, USBM
Kiilsgaard, USGS

400

FEB 3 1955

Mr. A. E. Weissenborn, Executive Officer
DMEA Field Team, Region I - Northwest District
South 157 Howard Street
Spokane 4, Washington

Re: Docket No. DMEA 3495 - Tungsten
W. R. Wade
Windy Ridge mine
Lewis and Clark County, Montana

Dear Mr. Weissenborn:

Reference is made to the subject docket and your letter of October 15, 1954.

In case an exploration project at the Windy Ridge mine is recommended by the Field Team, the new Owner's Contract to Lease forms should contain under Article 4, thereof, the insertion set forth under "Special Notice," Operating Committee Minutes No. 469, dated January 12, 1955, as follows: In paragraph 2 the words "the period fixed in the contract or any amendment thereof hereof" are substituted for "ten years hence."

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

APPROVED:

J. H. Hedges
Director, Bureau of Mines

Thor H. Kiilsgaard
Director, Geological Survey

FARutledge:fec
1-31-54
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.
FT. REG. I - Northwest District
W. McInnis, USBM
T. H. Kiilsgaard, USGS

400

XXXXXXXXXXXXXXXX
So. 157 Howard Street
Spokane 4, Washington

October 15, 1954

Mr. George C. Selfridge, Chairman
DMEA Operating Committee
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-5495 (tungsten)
W. R. Wade
Windy Ridge Mine
Lewis and Clark County, Montana

Dear Mr. Selfridge:

This will acknowledge your letter of September 27, 1954, in which you state that the Last Chance No. 2 and the Jeep No. 2 claims were not included under Article 3 of the application or in the Owner's Consent to Lien.

Although the examination has been made, the report of the examination is still in preparation, and we have not definitely determined whether or not we will make a favorable recommendation. Should we decide to make a favorable recommendation, we will investigate the propriety of including the two above-mentioned claims in the contract.

Sincerely yours,

A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region II

cc: USBM (2)
Quinlan

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

408

October 1, 1954

Memorandum

To: W. S. Martin, DMEA, Room 3538

From: R. W. Geehan

Subject: DMEA 3495 - Tungsten
W. R. Wade
Windy Ridge claims

The subject application should be referred to the Field Team.

The proposal is too extensive for a "prospect". Surface samples are needed as the first stage of the project if any work is justified. The records of the Bureau do not indicate a prior examination.

R. W. Geehan

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved.
Budget Bureau No.

RECEIVED
SEP 9 1954
U. S. G. S.
SPOKANE, WASH.

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. 3495
Metal or Mineral TUNGSTEN
Date Received
Estimated Cost $252,900
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: W. H. Wade, Marysville, Montana

(*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 Windy Ridge #1, #2, and #3. Last Chance and Jeep.

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

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise Owner of 1/4 interest and hold an option to purchase the other owners' interests.

(*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 No liens or encumbrances.

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. Windy Ridge #1, #2, and #3, recorded Book 28, page 247, 248, 249. Last Chance and Jeep recorded Book 28, page 550 and 551. L & C 6

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.

e exploration project.—(*a*) State the mineral or minerals for which you wish to explore Tungsten

(*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 20 days and be completed within 30 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. Mining Engineer & Mine Operator.

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

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

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

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

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

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

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

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

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

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

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

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

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

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated Sept. 4, 1954, 195__

W. R. Wade

W. R. Wade
(Applicant)

By

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

Attachment to MF-103.

4. Physical Description.

(a) There are some small shafts and some short tunnels on the claims that were driven many years ago, hoping to find gold ore. Also, on the Last Chance claim some gold ore was mined years ago. My interest in the property is that I am a 1/4 owner and I want to develop a large scale tungsten operation. This property apparently contains many million tons of scheelite ore as seen at the surface but this will have to be proven by development work. If the property proves out in depth the way it appears on the surface, the mine would support a 2,000 ton of ore a day operation for many years. The outcrops are all accessible and you can drive with a car to the lower ones with only a short walk to the upper outcrops.

(b) There is no present production of tungsten ore nor has there been any in the past.

(c) The scheelite occurs in beds of garnetized hornstone (tactite). These beds strike diagonally accross the hogback ridge called Windy Ridge. Some of the lower beds can be traced along the outcrops for a thousand feet or so. The beds vary from one to two feet in thickness up to ten and fourteen feet thick. Their general dip is about 30° to 35°. These beds are very numerous and in one stretch of 640 feet, 24 beds outcrop, of varying size up to ten or more feet thick. Some of the beds show high grade ore under the lamp and some are much leaner. In another stretch of 60 feet, there are four beds several feet thick each. I have counted over 50 beds dipping into this hogback shaped mountain. Sometimes the beds are only separated from each other by two or three feet of hornstone and at other places they are much further apart. There are two or three narrow quartz diorite sills outcropping between beds near the upper part of the ridge. There is a quartz diorite floor under the ridge as the granite (quartz diorite) forms the surface on the floor of the Drink Water Valley at the base of Windy Ridge. It is about 800 feet vertically below the top of the Ridge down to this valley. A composite sample taken of 30 of these beds coming down the hogback from discovery point on Windy Ridge #1 assayed 0.35 WO_3. The scheelite contains some molybdenum and is powellite in places. We have had trouble in getting it assayed by the local assayers. I estimate the hogback could have many million tons open pit mined. The hornstone could be separated from the garnet material carrying tungsten by some cheap concentration process such as heavy media and only the up-graded ore hauled to the concentrator. Two classes of concentrate made namely a high grade jig and table concentrate and the tailings retreated by further grinding and flotation, making a low grade flotation concentrate..
Water Supply: There is enough water at the property for all camp use and for the mine. Also for a heavy media rough separation plant. If, for example, 2,000 tons daily were up-graded to 200 tons of clean ore, this enriched product could be hauled three miles to Marysville or about 5½ miles to Prickly Pear Valley. At both places there is plenty of water for gravity and flotation concentration.
Cost of mining and milling per ton at 2,000 tons daily open pit:

W.R.Wade,Marysville,Montana

COPY

Attachment to MF-103 (Con't.).

Mining per ton open pit and later glory hole	.50
Crushing to 2" and heavy media separation	.30
Hauling 10% to Marysville at $1.00 per ton hauled (Cost per original ton)	.10
Gravity and flotation on 10% of tonnage (at $2.00) (Cost per original ton)	.20
	$1.10
Plant depreciation (Per original ton)	.10
Total:	$1.20

(d) Windy Ridge is 3½ miles out of Marysville. The present road is in part very steep and rocky. A good road can be built later down Deer Creek. A car can be driven right up on the property, and to some of the outcrops. Marysville is six miles from the Great Northern railroad at Silver City station. Supplies come by truck from Helena to Windy Ridge about 26 miles or are shipped to Silver City and hauled in 9 miles by truck. Residence point at present is the village of Marysville. There is a good site for a mining camp at the property and enough good water available there.

(e) Plenty of manpower, miners, etc., available from Helena, Butte, Great Falls, and enough men from Marysville locally for a crew to do the development work. Supplies are available in Helena. Equipment (compressor, cars, rock drills, steel, hose, pipe, machine shops, rails, bulldozers, trucks, tuggers) all available right in Marysville. Water supply running on surface about 50 gallons per minute. More could be developed. Enough for mining and domestic use in Drink Water Creek next to the property. Power: Montana Power Company high tension line is 2 miles away.

5. Experience of the Operator.

(d) Graduate of Lawrence Scientific School, Harvard University Cum Laude in Mining and Metallurgy in 1904. Engineer for New Jersey Zinc Company 1905. Manager Azure Mining Company after leaving Franklin, New Jersey (N.J. Zinc Co.) for eleven years. Superintendent of Pilares Mines, Nacozari, Mexico, Phelps Dodge Corp., producing 2500 tons copper ore daily from underground stopes. Later General Manager of Northern Ore Company and New York Zinc Company, producing concentrates containing about 40,000,000 pounds of zinc per annum. 1925 General Manager of American Metal Company Ltd. of Vermont. 1926 Assistant General Manager Minas de Matahambre (American Metal Co.), Cuba producing 2,000 tons of copper ore daily mining and milling same. 1928-1936, Partner of John Hays Hammond in mine exploration and mine development. President of Park City Consolidated Mines, 1930-1936. Mining silver ore 500 to 600 tons daily, Park City, Utah. 1936-1940, Consulting Engineer offices in San Francisco. 1941 to date, first partner in and now sole owner of Montana Rainbow Mining Co. Operate Drumlummon Mine at Marysville, Montana with total production around $27,000,000 in gold and silver. Recent production from new ore body over one million dollars in gold since taking over the property. Also consulting mine geologist and mining engineer for other interests.

6. Estimate of Costs. M.R.Wade, Marysville, Montana

COPY

Preliminary work:

Attachment to MP-103 (Con't.).

200 hours bulldozer work on roads, prospect trenches, etc, at $12.00 per hour	2400.00
Compressor house and change room 16' x 30'	2500.00
Material, lumber, grading, delivery on job, labor, insurance, moving and installing equipment	1600.00
	$6500.00
Stage 1: Tunnels 5½' x 7' 2 cross cut tunnels 600 feet each, 1200 feet at $40.00, one at elevation 6050 and one at 6150	48000.00
Stage 2: If cross cut tunnels cut favorable bed, 500 feet of drifting on best beds at $40.00	20000.00
500 feet of incline raises on best bed at $40.00	20000.00
	$40000.00
Stage 3: If stage #2 favorable 1700 foot x cut tunnel at elevation 5800 at $44.00 per foot	$74800.00
Stage 4: If long x cut tunnel at elevation 5800 cuts favorable beds 1000 feet of drifting on beds at $40.00	$40000.00
1000 feet of incline raises on beds at $40.00 at 5800 elevation	40000.00
	$80000.00
Contingencies	2000.00
TOTAL:	$251,300.00
Assaying 400 samples at $4	1,600.00
	$252,900.00

These costs are slightly higher than the D.M.E.A. contract with the Ottawa Tungsten Co. ($34.00 per foot) in Marysville because this Windy Ridge is too far from the power line and gasoline or diesel power will have to be furnished and there is a tough haul for supplies over the Edwards Mountain and in winter the present county road to this property is really tough. If the mine develops successfully, a very good road with a good grade can be made down Deer Creek, but at the present stage of this prospect, this cost is not necessary. Also, a camp will have to be established at the property to house the men, and provisions made to pump or haul drilling water up the mountain several hundred feet difference in elevation. Several thousand feet of compressed air line will have to be installed from Drink Water Valley where the compressor and power plant will have to be located, and this line prevented from freezing in the winter time. Therefore, a very fair estimate of costs per foot in this extremely hard tactite and hornstone under these adverse conditions is $40.00 per foot and for the long tunnel in Stage 3, a cost of $44.00 per foot because of the long tram and the ventilation needed.

W.E.Wade, Marysville, Montana

Attachment to MF-103 (Con't.)

(a) Independent Contracts -- None.

(b), (c), and (d) All these costs are included in the above cost estimate and the prices as set down here are the unit costs for which I will agree to have the work done.

(e) Rehabilitation and Repairs -- None.

(f) A small compressor and shop house with a stove, bench, vise, forge, and change for the men to change their wet clothes will be needed and I estimate this building (16' x 30') will cost $2,500.00, properly constructed including hauling in the lumber, etc.

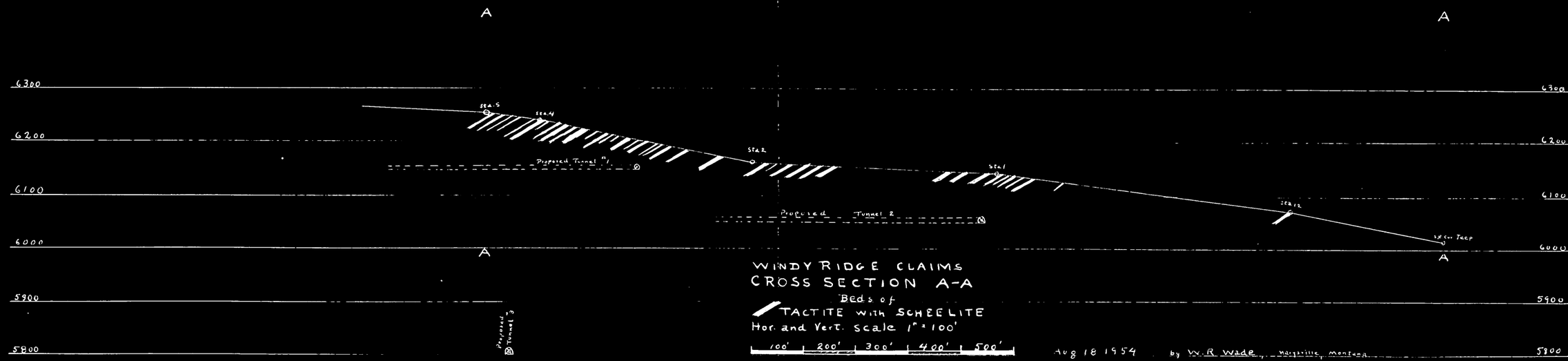
(g) None.

7. (a) Yes.

(b) I am prepared to furnish my share of the costs by use of equipment rent free, pipe, rails, ties, mine cars, compressor and engine to drive same, rock drills, steel, hose, truck, use of shop, small tools, welder, gas truck, pipe fittings, etc., and money.

W.R.Wade, Marysville, Montana

COPY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WINDY RIDGE CLAIMS
CROSS SECTION A-A
Beds of
TACTITE with SCHEELITE
Hor. and Vert. Scale 1" = 100'
100' 200' 300' 400' 500'
Aug 18 1954
by W. R. Wade, Helena, Montana

W. P. Wade

Marysville

Montana

SEP 27 1954

Mr. W. R. Wade
Marysville, Montana

Re: Docket No. DMEA 3495 - Tungsten
Windy Ridge mine
Lewis and Clark County, Montana

Dear Mr. Wade:

The above-docketed application for exploration assistance has been reviewed by the Iron and Ferro-Alloys Division of the Defense Minerals Exploration Administration and referred to Mr. A.E. Weissenborn, Executive Officer, DMEA Field Team, Region II, South 157 Howard Street, Spokane 4, Washington, for a field examination of the property.

Any assistance that you can render the members of the Field Team will be appreciated.

Sincerely yours,

Frank E. Johnson

ACTING Administrator

FARUTLEDGE:fec
9-23-54
cc to: Docket
Code 400
Adm. Reading File
Operating Committee
FT. REG. II
R. W. Geehan, USBM
Thor H. Kiilsgaard, USGS

SEP 27 1954

Mr. A. E. Weissenborn, Executive Officer
DMEA Field Team, Region II
South 157 Howard Street
Spokane 4, Washington

Re: Docket No. DMEA 3495 - Tungsten
W. R. Wade
Windy Ridge mine
Lewis and Clark County, Montana

Dear Mr. Weissenborn:

Reference is made to the subject docket and Mr. Vhay's letter of September 16, 1954, which states that a field examination of the property will be made.

We will, therefore, hold this application in abeyance until the report and recommendations by the Field Team are received.

In reviewing the subject application, it was noted that the Last Chance No. 2 and Jeep No. 2 claims, though listed in the Lease and Option Agreement attached to the application, were not included under Article 3 or in the Owner's Consent to Lien.

If these claims would benefit from the proposed exploration, the corresponding recording data and Owner's Consent to Lien forms will be needed if a project is recommended.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

APPROVED:

J. H. Hedges

Member, Bureau of Mines

Thor H. Kiilsgaard

Member, Geological Survey

FARutledge:foc
9-23-54
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.
FT. REG. II
R. W. Geehan, USBM
Thor H. Kiilsgaard, USGS

XXXXXXXXXXXXXXXXXX
So. 157 Howard Street
Spokane 4, Washington

September 16, 1954

3495

402

Mr. George C. Selfridge, Chairman
Operating Committee, DMEA
Department of the Interior
Washington 25, D. C.

Re: DMEA application (tungsten)
W. R. Wade
Windy Ridge Mine
Lewis and Clark County, Montana

Dear Mr. Selfridge:

Enclosed are the original and two copies of an application for a DMEA contract submitted by W. R. Wade, one copy of a Lease and Option Agreement, and six copies of an Owner's Consent to Lien agreement. One copy of the application has been retained for the files of this office.

There is an examiner in the vicinity of the property who is inspecting going contracts so he will evaluate the applicant's proposal and inspect the site of the proposed exploration project at the same time. A report on the findings will follow shortly.

Sincerely yours,

John S. Vhay
Acting Member, DMEA
Field Team, Region II

Enclosure (in trip.)

cc: USBM (2)
Weeks

DOCKET
SURNAME

400 Chapman
Martin
Holliday
Hodges
Kiilsgaard
Selfridge
Fleisman

MAY 2 3 1955

Mr. W. R. Wade
Maryville, Montana

Re: Docket No. DMEA 3h95 - Tungsten
Windy Ridge Property
Lewis and Clark County, Montana

Dear Mr. Wade:

Your application for aid for an exploration project and other data available to us in Washington relating to the above noted property have been carefully reviewed.

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

Careful study of all our information, although noting scattered showings of tungsten mineralization on your property, indicates to us that the probability of disclosing minable ore reserves by your proposed program is not sufficiently promising to justify Government participation. We regret to advise you, therefore, that your application is denied.

We wish to thank you for your interest in the Defense Minerals Exploration Administration program and for bringing your property to our attention.

Sincerely yours,

C. O. Mittendorf

Administrator

TLChapman:foc
5-18-55
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.
FT. REG.I - NW DIST.
Messrs. Holliday, USBM
Kiilsgaard, USGS

R.C.L.

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

May 18, 1955

MEMORANDUM

To: Administrator

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of application for exploration assistance to the amount of $252,900.00
Docket No. DMEA 3495 - Tungsten
W. R. Wade
Windy Ridge Mine
Lewis and Clark County, Montana

Denial of the subject application is recommended by this Division and is based on the following information:

1. The applicant, W. R. Wade, Marysville, Montana, requested exploration assistance to the amount of $252,900.00, for the purpose of road construction, compressor and shop building, 2,900 feet of crosscut adits, 1,500 feet of drifting and 1,500 feet of inclined raises.

2. The property consisted of 7 unpatented lode mining claims, as follows:

	Book No.	Page No.
Windy Ridge No. 1	28	549
Windy Ridge No. 2	28	547
Windy Ridge No. 3	28	548
Last Chance	28	551
Last Chance No. 1	28	551
Jeep	28	552
Jeep No. 2	28	552

Located in sections 22, 23, 26 and 27, T. 12 N., R. 6 W.
Lewis and Clark County, Montana

3. A one-quarter interest in the claims is held by W. R. Wade and the other three-quarters is held under a lease dated September 8, 1954, from Tom Williams and Frank Nijaska, Marysville, Montana, Herbert Obendorf, 1155 Olive Street, Redding, California and Claudia A. Wade, 9715 49th Street, Seattle, Washington.

4. The predominant rocks of the area are sedimentaries, mainly shales which have been intruded by quartz diorite dikes. At and along the contact zones tactites have been formed in the metamorphised rocks in irregular sporadic sequences. Scattered scheelite is found disseminated in the tactite zones.

5. The area was originally prospected for gold and a number of shallow shafts sunk, but no minable ore was found. Several pits, trenches and location holes have been opened up in the tactite zone. Thirteen samples taken showed an average of 0.07 percent WO_3, the highest sample being 0.24 percent WO_3. The application was based on the possibility of finding a large low grade deposit of tungsten ores that would average 0.30 percent WO_3. The scattered tactites indicated little possibility of locating any large bodies of minable ores.

6. The Field Team and the Commodity Divisions of the Geological Survey and the Bureau of Mines recommend that the application be denied.

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

DOCKET
SURNAME
Chapman
Martin

May 18, 1955

MEMORANDUM

To: Administrator

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of application for exploration assistance to the amount of $252,900.00
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W. S. Martin, Chief
Iron and Ferro-Alloys Division

TLChapman:foc
5-18-55
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.

Docket

IN REPLY REFER TO:

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

Defense Minerals Administration
RECEIVED
MAY 13 1955

May 13, 1955

Copy retained 200

Re: DMEA-3495
W. R. Wade
Windy Ridge property
Lewis and Clark Co.,
Montana
$252,900 - Tungsten

WSM

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report

The competence and responsibility of this applicant lend importance to his application. Along with H. R. Obendorf the applicant completed a contract, E490 (DMEA-2658) on the Prentice tungsten property near Marysville. A certification of discovery probably has been made although no large tonnage of recoverable tungsten appears to have been discovered. In general the geologic conditions on Windy Ridge are similar to those at the Prentice property.

One lone sample would appear to be too few on which to base an application calling for a quarter of a million dollar expenditure. The Field Team's fourteen samples do better but considering the tonnage involved, might be too few.

Perhaps the applicant will attempt to establish his grade estimate. A line of drill holes would appear to be in order. In addition to providing good samples a hole or so could be used to establish the depth of the tactite, that is the distance to the main underlying quartz diorite mass.

As of this time the recommendation of denial of the Field Team is in order.

N. E. Nelson

N. E. Nelson

Copy retained 200

IN REPLY REFER TO:

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

Mineral Exploration RECEIVED

May 13, 1955

Re: DMEA-3495
W. R. Wade
Windy Ridge property
Lewis and Clark Co.,
Montana
$252,980 - Tungsten

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: K. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report

The competence and responsibility of this applicant lend importance to his application. Along with E. R. Chenderf the applicant completed a cesarset, E490 (DMEA-2658) on the Prentice tungsten property near Maryesville. A certification of discovery probably has been made although no large tonnage of recoverable tungsten appears to have been discovered. In general the geologic conditions on Windy Ridge are similar to those at the Prentice property.

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K. E. Nelson

MKNelson:hlm
G-5/13/55

K. E. Nelson

Copy to: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
R. W. Holliday, 3513 Interior

IN REPLY REFER TO:

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

Defense Minerals Administration
RECEIVED

May 13, 1955

Re: DMEA-3495
W. E. Wade
Windy Ridge property
Lewis and Clark Co.,
Montana
$252,900 - Tungsten

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: H. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report

The competence and responsibility of this applicant lend importance to his application. Along with E. R. Chandler the applicant completed a contract, F800 (DMEA-2458) on the Prentice tungsten property near Marysville. A certification of discovery probably has been made although no large tonnage of recoverable tungsten appears to have been discovered. In general the geologic conditions on Windy Ridge are similar to those at the Prentice property.

One lone sample would appear to be too few on which to base an application calling for a quarter of a million dollar expenditure. The Field Team's fourteen samples do better but considering the tonnage involved, might be too few.

Perhaps the applicant will attempt to establish his grade estimate. A line of drill holes would appear to be in order. In addition to providing good samples a hole or so could be used to establish the depth of the tactite, that is the distance to the main underlying quartz diorite mass.

As of this time the recommendation of denial of the Field Team is in order.

H. E. Nelson

HENelson:hlm
G-5/13/55

H. E. Nelson

Copy to: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
R. W. Holliday, 3513 Interior

Docket

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D. C.~~
So. 157 Howard Street
Spokane 4, Washington

May 2, 1955

Mr. George C. Selfridge, Chairman
Operating Committee, DMEA
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-3495 (tungsten)
W. R. Wade
Windy Ridge property
Lewis and Clark County, Montana

Dear Mr. Selfridge:

Enclosed is a memorandum from Robert A. Weeks and James J. Quinlan, U. S. Geological Survey, recommending a denial of an application for the exploration of the Windy Ridge property in Lewis and Clark County, Montana. The property under consideration is a tactite body which has some tungsten-bearing beds.

Careful examination and sampling has indicated that the tungsten content of the tactite beds is much lower than that expected by the operator. In addition, the tungsten-bearing tactite beds are intercalated with hornfels beds with practically no tungsten which lowers the grade even more.

On the basis of the sampling there is not, in our opinion, any justification for ~~full~~ exploration of this deposit.

By Field Team, Region I, NW District

A. E. Weissenborn

A. E. Weissenborn, Executive Officer
U. S. Geological Survey

Reviewed by
DMEA OPERATING COMMITTEE
5-11-55
(date)

Wing G. Agnew

Wing G. Agnew, Member
U. S. Bureau of Mines

Enclosure
cc: USBM (2)
USGS(SRO)
Weeks
Quinlan

DMEA

OF THE INTERIOR
Administration
MAY 9 - 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
So. 157 Howard Street
Spokane 4, Washington

April 14, 1955

MEMORANDUM

To: DMEA Field Team, Region I, Northwest District

From: Robert A. Weeks and James J. Quinlan, Geologists
U. S. Geological Survey

Subject: Docket No. DMEA-3495 (tungsten), Field Examination Report, W. R. Wade, Windy Ridge property, Lewis and Clark County, Montana.

Introduction

The Windy Ridge property was examined between September 18 and 22, 1954, with reference to the subject DMEA application for exploration assistance. Members of the examining team included J. D. Bardill, Bureau of Mines, and R. A. Weeks and J. J. Quinlan, Geological Survey. W. R. Wade, the applicant, assisted during part of the examination.

The Windy Ridge property is within the contact aureole surrounding the Marysville stock. Although a large tonnage of tactitic material containing minor amounts of scheelite is present on the property, the tungsten content is too scant for the material to be of economic interest as tungsten ore under present or foreseeable market conditions. The highest grade sample of 15 samples taken across tactite beds exposed on the property was only 0.247 percent tungsten trioxide. This sample was cut across a width of 4.1 feet. The average grade of all 15 samples was only 0.07 percent tungsten trioxide.

Recommendation

It is recommended that W. R. Wade's application for DMEA assistance to explore the Windy Ridge property for tungsten be denied.

Applicant

The applicant is W. R. Wade of Marysville, Montana. Mr. Wade is a competent mining engineer with over 50 years of experience which is quite extensive and impressive. He has held

Reviewed by
DMEA OPERATING COMMITTEE
5-11-55
(date)

engineering, supervisory, and managerial positions with New Jersey Zinc Company, American Metal Company, Phelps Dodge Corporation, and Park City Consolidated Mines. He is at present owner of the Drumlummon mine at Marysville, Montana, and is reported to be independently wealthy.

In February 1953, W. R. Wade and H. G. Obendorf entered into Exploration Project Contract No. Idm-1490 with the Government to explore the Prentice property at Marysville, Montana, for tungsten (see Docket No. DMEA-2658). Work on this project has been under the direct supervision of W. R. Wade and has been carried out in an efficient and workmanlike manner. If the Windy Ridge property merited exploration, Mr. Wade would be fully qualified and financially able to undertake such a project.

Location

The Windy Ridge property is in secs. 22, 23, 26, and 27, T. 12 N., R. 6 W., M.P.M., Marysville mining district, Lewis and Clark County, Montana. It is about 2 miles northwest of the mining town of Marysville and lies along the ridge separating Drinkwater Gulch and the west fork of Deer Creek. The nearest point of supply is Helena, Montana, 25 miles by good road southeast of Marysville.

Property and Ownership

The Windy Ridge property consists of seven unpatented quartz lode mining claims. At the time of the inspection only five of the seven claims had been recorded. The five recorded claims are the Windy Ridge No. 1, Windy Ridge No. 2, Windy Ridge No. 3, Last Chance, and Jeep. These five claims are reported to be recorded in Book 28 on pages 247, 248, 249, 550, and 551 of the Lewis and Clark County records of quartz lode mining claims. The two unrecorded claims are the Last Chance No. 2 and Jeep No. 2 claims. All seven claims are shown on the map accompanying the application, a copy of which is attached to this memorandum.

The seven claims are owned by the following persons and their interest in the claims appears opposite their names:

W. R. Wade	Marysville, Montana	one-fourth
Tom Williams	do.	do.
Frank Myaskie	do.	do.
Claudia A. Wade	Seattle, Washington	one-twelfth
Herbert Obendorf	Redding, California	one-sixth

The other owners have leased their interest in the claims to W. R. Wade under the terms of a lease and option agreement dated September 8, 1954. A copy of this lease and option agreement was filed with the application.

History

Little is known about the early history of the property, but several shallow shafts and adits attest to early prospecting for gold; a small amount reportedly was mined many years ago from the land now covered by the Last Chance claim and neighboring Piegan claim (see applicant's map).

Scheelite was first identified in tactite from Windy Ridge in the spring of 1942, shortly after it had been discovered in the Marysville district. Although a number of claims were staked at that time, nothing was done as the tactite was too low grade in tungsten to be of any interest. Brief mention of the Windy Ridge deposit is made in a two-page unpublished Geological Survey memorandum report by Adolph Knopf dated December 28, 1942, entitled, "Tungsten Deposits at Marysville, Montana."

Workings

Several shallow shafts and adits explore gold-bearing structures on the property, but only a few shallow pits test any of the scheelite-bearing tactite beds. The absence of workings on tactite beds does not greatly hinder evaluation of them as a possible source of tungsten because of the excellent exposures in many places, particularly along the upper parts of Windy Ridge. The applicant has done a small amount of dozer trenching on the property, presumably as location work.

Geology

The Marysville district was studied and geologically mapped by Joseph Barrell in 1901. The results of his studies were published as U. S. Geol. Survey Professional Paper 57, "Geology of the Marysville Mining District." Plate 1 accompanying the professional paper is a geologic map of the district. The Windy Ridge property lies within the area studied and mapped by Barrell. Although Windy Ridge is not named on Barrell's geologic map (pl. 1), it is the ridge that forms the divide between Drinkwater Gulch and the west fork of Deer Creek.

Barrell's map shows that the property is within the contact metamorphic zone surrounding the Marysville stock. Most of it is underlain by metamorphosed sedimentary rocks which are a part of the Empire shale, a formation of the Belt series, pre-Cambrian age. Generally, within the vicinity of the property these rocks strike northwesterly and dip 19° - 42° northeasterly. A small tongue-like body of quartz diorite, an apophysis from the main mass of the Marysville stock, intrudes the rock in the western part of the property. Small quartz diorite dikes and sills are found at many places on the property, particularly along the upper parts of Windy Ridge.

The shale and calcareous shale beds of the Empire shale have been converted to hornfels and tactite in the immediate vicinity of the property. Metamorphism has been most intense adjacent to dikes and sills. Although, in general, the original nature of the sedimentary rocks has largely determined the end product of metamorphism, there undoubtedly has been a considerable amount of metasomatic replacement. At a few places thin stringers of coarse-grained garnet-rich tactite can be seen cutting fine-grained light greenish-gray hornfels, and it is evident that these thin stringers are the end product of metasomatism along small joints or fractures. This is in essential agreement with the processed of metamorphism as described by Barrell from a locality very close to the Windy Ridge area (see pages 121-125). He believes (p. 134) that the garnet beds are of metasomatic origin. He describes the Windy Ridge locality (p. 134) "along the ridge to the west of Deer Creek there is a continuous exposure of the strata, and for 1,000 feet along the higher part of the ridge occur beds of brown garnet from 1 foot to 5 feet in width intercalated in strata of hard, light-colored hornstones, some of which still hold a small amount of calcite. The garnetiferous bands form from 10 to 15 percent of the whole series -- the large amount of iron in these garnet beds and the discontinuity sometimes observed when they are traced along the strike lead to the belief that in all probability they are formed largely or entirely through metasomatic replacement of calcareous rocks."

Barrell failed to recognize scheelite in the tactite beds, but this is not too surprising considering that it is present as a minor accessory mineral of very erratic distribution and is very fine grained. Also, it must be remembered that at the time Barrell worked in the district, scheelite was not a critical industrial mineral nor were tactite deposits recognized as a potential source of tungsten.

Lamping of the property showed that most tactite beds contain at least a few grains of scheelite but that even in beds containing the most scheelite it is of very erratic distribution and only a minor accessory mineral. Although tactite beds are found at many places on the property, they are much more numerous along the upper parts of Windy Ridge. Lamping also indicated that the beds in this area contain more scheelite than beds in other areas. Therefore, this area was mapped and sampled in some detail as it was considered to be the best tungsten area (see map 1), and if exploration was warranted, this area should be the first to be tested.

Tabulated on the following page are the results of sampling of tactite beds along the upper part of Windy Ridge; for location of the individual beds see map 1 accompanying this report. Where practicable, several channels were cut along the strike of individual beds or series of beds and combined to make a composite sample of the bed.

Sample No.	Bed No.	Thickness	WO_3*	Remarks
WR-1	1, 2, & 3	6.8	0.070	Cut 50 feet west of ridge.
WR-2	4	5.9	0.013	Cut 75 feet west of ridge.
WR-3	5, 6, & 7	10.2	0.143	Cut where beds best exposed from ridge to point 90 feet west of ridge.
WR-4	8, 9, & 10	2.6	0.039	Cut on ridge.
WR-5	11	4.6	0.048	Cut on ridge.
WR-6	12	2.8	0.101	Composite of two channels cut 25 and 95 feet west of ridge.
WR-7	13, 14, & 15	3.0	0.076	Cut on ridge.
WR-8	16	5.1	0.054	Cut on ridge.
WR-9	17, 18, & 19	4.8	0.030	Cut on ridge.
WR-9a	18	4.0	0.058	Composite of four samples along strike.
WR-10	20, 21, & 22	8.7	0.003	Cut near ridge.
WR-11	23	2.0	0.170	Represents composite of four channel cuts at various points from ridge to point 80 feet west of ridge.
WR-12	24 & 25	4.1	0.247	Represents composite of two channels--one cut on ridge, the other 15 feet east of ridge.
WR-13	26, 27, 28, & 29	5.9	0.060	Cut on ridge.

*Assays by Montana Laboratory Company, Philipsburg, Montana.

In addition to the foregoing samples from the upper part of Windy Ridge, one sample was cut across a 9-foot tactite bed on a small spur ridge along the west side of Windy Ridge. This spur ridge is designated by the applicant as Little Windy Ridge and the sample was cut at the place where lamping showed the greatest concentration of scheelite along this ridge. This sample assayed a trace of gold and 0.037 percent tungsten trioxide.

The highest grade sample of the 15 samples taken during the examination assayed only 0.247 percent tungsten trioxide. The weighted average of the assay results on samples from the upper part of Windy Ridge is 0.074 percent tungsten trioxide, and the over-all weighted average is 0.070 percent tungsten trioxide.

The applicant reports that a composite sample taken from thirty beds along the upper part of Windy Ridge assayed 0.35 percent tungsten trioxide. The applicant reports, however, that the sample was taken by a man inexperienced in sampling and that local assayers have had trouble assaying the ore.

The DMEA samples were assayed by Montana Laboratory Company of Philipsburg, Montana, and the assay results reported are those given by them. The pulps of the DMEA samples have also been assayed by the Bureau of Mines Laboratory at Albany, Oregon, and these assays closely check the results reported by Montana Laboratory Company.

From Barrell's discussion and from field examination the following geologic factors are specifically pointed out as suggesting the property is not amenable to a large-scale open-pit mining of scheelite:

(1) The tactite is not developed as complete replacement of a simple bed or beds but is sporadically developed within favorable beds and near fractures which permitted access for tactitizing emanations; these fractures are most abundant near the top of Windy Ridge.

(2) In the outcrop beds that have, in part, been converted to tactite form only from 10 to perhaps 20 percent of the stratigraphic sequence. The remaining 80 to 90 percent of the sequence comprises barren hornfels.

(3) The tactite beds are topographically more resistant than the hornfels and tend to form outcrops; thus the percentage of tactite is probably somewhat less than that evident in outcrops.

(4) The scheelite mineralization occurs principally in tactite, but it is not coextensive with the tactite, being slightly later, and more restricted.

(5) The tungsten content nowhere on Windy Ridge appears to be of commercial grade, and the occasional small pods of high-grade scheelite would not lend themselves to commercial exploitation.

Applicant's proposal

The applicant proposes to undertake an exploration program costing a quarter of a million dollars to test the tactite strata along Windy Ridge. The applicant's proposed program is divided into four stages; it entails 200 hours of bulldozing for roads and trenches, construction and installation of facilities for an underground exploration program, 2,900 feet of crosscutting, 1,500 feet of drifting, and 1,500 feet of raising. The location of the proposed crosscuts are shown on the applicant's map. The location of drifts and raises is to be determined as work progresses.

By this program the applicant hopes to indicate a large tonnage of tactite ore averaging about 0.35 percent tungsten trioxide, the grade indicated by the applicant's one composite sample from the beds along the upper part of Windy Ridge. Instead of mining narrow, individual tactite beds, the applicant proposes to mine by open-pit methods both the hornfels and intercalated tactite which, in places, forms from 15 to 20 percent of the total section. (Applicant states only 10 percent but includes larger area.) He then proposes to separate the hornfels and scheelite-bearing tactite by some cheap concentration method, possibly heavy media. The tactite ore would be milled by a combination gravity-flotation method to obtain a commercial-grade tungsten product. The applicant estimates that on the basis of a 2,000 ton per day operation he will be able to mine and treat the ore at a cost of $1.20 per ton.

Although the type of operation that the applicant proposes to undertake (if exploration proves successful) is intriguing, he has done very little work to test its practicability. The Bureau of Mines Laboratory at Albany, Oregon, however, has done some preliminary work on the separation of scheelite from Windy Ridge tactite material. Material for these tests was obtained from the higher-grade beds near the top of Windy Ridge and contained 0.2 percent tungsten trioxide. Both gravity separation and flotation test were conducted. A recovery of 80.3 percent of the tungsten is reported to have been made by gravity separation, whereas 91.7 percent was recovered by flotation. By both methods a concentrate containing about 8 percent tungsten trioxide was obtained. It is further reported, however, that dry magnetic separation of the concentrate, for garnet rejection, may improve the grade. Although far from complete, these tests show that considerable metallurgical work would have to be done to test the applicant's exploitation proposal before any large amount of money was spent on exploration; however, the grade of the material indicated by limited sampling, namely, 0.07 percent tungsten trioxide, is so much lower than reported by the applicant that additional testing to work out a method of exploitation for this deposit does not appear justified.

Conclusion

Lamping and sampling by DMEA personnel failed to confirm the grade reported by the applicant but instead showed the deposit to be far too low grade to be of any interest now or even in the foreseeable future. The highest grade sample of tactite material, taken during the examination, assayed 0.247 percent tungsten trioxide and the average of all samples only 0.07 percent tungsten trioxide. Material of this grade would be of no interest even if it was in one large bed, let alone in a deposit where it is intercalated with hornfels at best in the ratio of 1:5. For this reason, it is recommended that the application be denied.

Enclosures
Distribution:
DMEA(4)
USBM(2)
USGS(SRO)
Docket
Weeks & Quinlan

6-303
(March 1947)

445,10

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

No. [illegible]

Report to Mr. Bendill

Chemical Laboratory Report

Date received

Date reported March 30, 1955

Serial No.	DESCRIPTION	Sample No.	Lot No.	WO_3	WO_3
14857	Windy Ridge Tungsten-Report	WR 13	USGS 150	<.02	
8	(Acct. DMPA 650)	WR 8	154	<.02	
9		WR 7	5	<.02	
14860		WR 6	6	0.19	
1	Docket No. DMPA 3405	WR 5	7	<.02	
2		WR 4	8	<.02	
3		WR 2	160	0.06	
4		WR 1	1	0.07	
5		WR 10	2	<.02	
6		WR 9	3	0.07	
7		WR 9a	4	0.03	
8		WR 15	5	<.02	
7079		WR 12	151	0.17	0.16
7080		WR 11	2	0.06	0.07
1		WR 3	159	0.14	0.13
10011			10 307	0.11	0.12

U. S. GOVERNMENT PRINTING OFFICE 16 -33553-3

Signed

For: Stephen M. Shelton.

Docket

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

April 21, 1955

WSM

Copy retained 400

Mr. George C. Selfridge, Chairman
Operating Committee, DMEA
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-3495 (tungsten)
W. R. Wade
Windy Ridge Mine
Lewis and Clark County, Montana

Dear Mr. Selfridge:

Regarding your letter of April 7, 1955, the report of the field examination of the Windy Ridge property is now being typed and will be forwarded to you in a few days.

Sincerely yours,

A. E. Weissenborn

A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region I
Northwest District

cc: USBM (2)
Quinlan

Copy retained 200

DOCKET
SURNAME

Rutledge
Newton
Selfridge
Mitchell

400

APR - 7 1955

Mr. A. E. Weissenborn, Executive Officer
DMEA Field Team, Region I - Northwest District
South 157 Howard Street
Spokane 4, Washington

Re: Docket No. DMEA 3495 - Tungsten
W. R. Wade
Windy Ridge mine
Lewis and Clark County, Montana

Dear Mr. Weissenborn:

Reference is made to the subject docket and your letter of October 15, 1954, reporting that a field examination of the Windy Ridge mine had been made.

Please advise when we may expect to receive the Field Team report and recommendations.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (JHB)

APPROVED:

J. H. Hedges (JHB)
Member, Bureau of Mines

Thor H. Kiilsgaard (JHB)
Member, Geological Survey

FARutledge:fec
4-4-55
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.
FT. REG. I- N.W.DIST.
Messrs. Holliday, USBM
Kiilsgaard, USGS

R.C.H.

DOCKET
SURNAME

400

Rutledge
McLain
Selfridge
Fryman
Mottenday

FEB 3 1955

Mr. A. E. Weissenborn, Executive Officer
DMEA Field Team, Region I - Northwest District
South 157 Howard Street
Spokane 4, Washington

Re: Docket No. DMEA 3495 - Tungsten
W. R. Wade
Windy Ridge mine
Lewis and Clark County, Montana

Dear Mr. Weissenborn:

Reference is made to the subject docket and your letter of October 15, 1954.

In case an exploration project at the Windy Ridge mine is recommended by the Field Team, the new Owner's Consent to Lease forms should contain under Article 4, thereof, the insertion set forth under "Special Matters," Operating Committee Minutes No. 469, dated January 21, 1955, as follows: In paragraph 2 the words "the period fixed in the contract or any amendment thereof has" are substituted for "ten years have."

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

APPROVED:

J. H. Hedges (JHB)
Member, Bureau of Mines

Thor H. Kiilsgaard (THK)
Member, Geological Survey

FARutledge:foc
1-31-54
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.
FT. REG. I - Northwest District
W. McInnis, USBM
T. H. Kiilsgaard, USGS

R.C.H.

Docket

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

October 15, 1954

WSM

Mr. George C. Selfridge, Chairman
DMEA Operating Committee
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-3495 (tungsten)
W. R. Wade
Windy Ridge Mine
Lewis and Clark County, Montana

Dear Mr. Selfridge:

This will acknowledge your letter of September 27, 1954, in which you state that the Last Chance No. 2 and the Jeep No. 2 claims were not included under Article 3 of the application or in the Owner's Consent to Lien.

Although the examination has been made, the report of the examination is still in preparation, and we have not definitely determined whether or not we will make a favorable recommendation. Should we decide to make a favorable recommendation, we will investigate the propriety of including the two above-mentioned claims in the contract.

Sincerely yours,

A. E. Weissenborn

A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region II

cc: USBM (2)
Quinlan

Docket

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

October 1, 1954

Memorandum

To: W. S. Martin, DMEA, Room 3538

From: R. W. Geehan

WSM

Subject: DMEA 3495 - Tungsten
W. R. Wade
Windy Ridge claims

The subject application should be referred to the Field Team.

The proposal is too extensive for a "prospect". Surface samples are needed as the first stage of the project if any work is justified. The records of the Bureau do not indicate a prior examination.

R. W. Geehan

R. W. Geehan

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

October 1, 1954

Memorandum

To: W. S. Martin, DMEA, Room 3538

From: R. W. Geehan

Subject: DMEA 3495 - Tungsten
W. R. Wade
Windy Ridge claims

The subject application should be referred to the Field Team.

The proposal is too extensive for a "prospect". Surface samples are needed as the first stage of the project if any work is justified. The records of the Bureau do not indicate a prior examination.

R. W. Geehan

400
DOCKET
SURNAME
Rutledge
Martin
Selfridge
H.E. Mason

SEP 27 1954

Mr. A. E. Weissenborn, Executive Officer
DMEA Field Team, Region II
South 157 Howard Street
Spokane 4, Washington

Re: Docket No. DMEA 3495 - Tungsten
W. R. Wade
Windy Ridge mine
Lewis and Clark County, Montana

Dear Mr. Weissenborn:

Reference is made to the subject docket and Mr. Vhay's letter of September 16, 1954, which states that a field examination of the property will be made.

We will, therefore, hold this application in abeyance until the report and recommendations by the Field Team are received.

In reviewing the subject application, it was noted that the Last Chance No. 2 and Jeep No. 2 claims, though listed in the Lease and Option Agreement attached to the application, were not included under Article 3 or in the Owner's Consent to Lien.

If these claims would benefit from the proposed exploration, the corresponding recording data and Owner's Consent to Lien forms will be needed if a project is recommended.

Sincerely yours,

George C. Selfridge
By ESF
Chairman, Operating Committee

APPROVED:

J. E. Hedges

Member, Bureau of Mines

Thor H. Kiilsgaard

Member, Geological Survey

FARutledge:foc
9-23-54
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.
FT. REG. II
R. W. Geehan, USBM
Thor H. Kiilsgaard, USGS

400
Docket
Surname
Rutledge
Martin
Kiilsgaard
Hedges
Selfridge
Johnson

SEP 27 1954

Mr. W. R. Wade
Marysville, Montana

Re: Docket No. DMEA 3495 - Tungsten
Windy Ridge mine
Lewis and Clark County, Montana

Dear Mr. Wade:

The above-docketed application for exploration assistance has been reviewed by the Iron and Ferro-Alloys Division of the Defense Minerals Exploration Administration and referred to Mr. A.E. Weissenborn, Executive Officer, DMEA Field Team, Region II, South 157 Howard Street, Spokane 4, Washington, for a field examination of the property.

Any assistance that you can render the members of the Field Team will be appreciated.

Sincerely yours,

Frank E. Johnson

ACTING Administrator

FARUTLEDGE:foc
9-23-54
cc to: Docket
Code 400
Adm. Reading File
Operating Committee
FT. REG. II
R. W. Geehan, USBM
Thor H. Kiilsgaard, USGS

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

September 22, 1954

Memorandum

To: Executive Officer, DMEA Field Team, Region II

From: Chief, Operation's Control and Statistics Division

Subject: Assignment of Docket Number

There is listed below the assigned docket number to an application recently received from Region II.

DMEA-3495 W. R. Wade

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

September 22, 1954

Mr. W. R. Wade
Marysville
Montana

Subject: DMEA-3495
Re: Exploration Assistance
Windy Ridge

Dear Sir:

The receipt of your application dated September 4, 1954 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-3495 and referred to the Iron and Ferro-Alloys Division.

Kindly refer to DMEA-3495 in any future correspondence relating to your application.

Sincerely yours,

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

September 16, 1954

Mr. George C. Selfridge, Chairman
Operating Committee, DMEA
Department of the Interior
Washington 25, D. C.

Re: DMEA application (tungsten)
W. R. Wade
Windy Ridge Mine
Lewis and Clark County, Montana

Dear Mr. Selfridge:

Enclosed are the original and two copies of an application for a DMEA contract submitted by W. R. Wade, one copy of a Lease and Option Agreement, and six copies of an Owner's Consent to Lien agreement. One copy of the application has been retained for the files of this office.

There is an examiner in the vicinity of the property who is inspecting going contracts so he will evaluate the applicant's proposal and inspect the site of the proposed exploration project at the same time. A report on the findings will follow shortly.

Sincerely yours,

John S. Vhay

John S. Vhay
Acting Member, DMEA
Field Team, Region II

Enclosure (in trip.)

cc: USBM (2)
Weeks

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

RECEIVED
SEP 9 1954
U. S. G. S.
SPOKANE, WASH.

RECEIVED
SEP 20 1954

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. 3495
Metal or Mineral Tungsten
Date Received
Estimated Cost $252,900
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: W. R. Wade, Marysville, Montana

(*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 Windy Ridge #1, #2, and #3. Last Chance and Jeep.

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

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise Owner of 1/4 interest and hold an option to purchase the other owners' interests.

(*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 No liens or encumbrances.

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. Windy Ridge #1, #2, and #3, recorded Book 28, page 247, 248, 249. Last Chance and Jeep recorded Book 28, page 550 and 551.

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

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

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

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

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

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

(*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 20 days and be completed within 30 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. Mining Engineer & Mine Operator.

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

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

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

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

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

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

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

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

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

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

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

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

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

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated Sept. 4, 1954, 195

W. R. Wade

W. R. Wade
(Applicant)

By

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

Attachment to MF-103.

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SEP 20 1954

4. Physical Description.

(a) There are some small shafts and some short tunnels on the claims that were driven many years ago, hoping to find gold ore. Also, on the Last Chance claim some gold ore was mined years ago. My interest in the property is that I am a 1/4 owner and I want to develop a large scale tungsten operation. This property apparently contains many million tons of scheelite ore as seen at the surface but this will have to be proven by development work. If the property proves out in depth the way it appears on the surface, the mine would support a 2,000 ton of ore a day operation for many years. The outcrops are all accessible and you can drive with a car to the lower ones with only a short walk to the upper outcrops.

(b) There is no present production of tungsten ore nor has there been any in the past.

(c) The scheelite occurs in beds of garnetized hornstone (tactite). These beds strike diagonally accross the hogback ridge called Windy Ridge. Some of the lower beds can be traced along the outcrops for a thousand feet or so. The beds vary from one to two feet in thickness up to ten and fourteen feet thick. Their general dip is about 30° to 35°. These beds are very numerous and in one stretch of 640 feet, 24 beds outcrop, of varying size up to ten or more feet thick. Some of the beds show high grade ore under the lamp and some are much leaner. In another stretch of 60 feet, there are four beds several feet thick each. I have counted over 50 beds dipping into this hogback shaped mountain. Sometimes the beds are only separated from each other by two or three feet of hornstone and at other places they are much further apart. There are two or three narrow quartz dionite sills outcropping between beds near the upper part of the ridge. There is a quartz dionite floor under the ridge as the granite (quartz dionite) forms the surface on the floor of the Drink Water Valley at the base of Windy Ridge. It is about 800 feet vertically below the top of the Ridge down to this valley. A composite sample taken of 30 of these beds coming down the hogback from discovery point on Windy Ridge #1 assayed 0.35 WO_3. The scheelite contains some molybdenum and is powellite in places. We have had trouble in getting it assayed by the local assayers. I estimate the hogback could have many million tons open pit mined. The hornstone could be separated from the garnet material carrying tungsten by some cheap concentration process such as heavy media and only the up-graded ore hauled to the concentrater. Two classes of concentrate made namely a high grade jig and table concentrate and the tailings retreated by further grinding and flotation, making a low grade flotation concentrate..
Water Supply: There is enough water at the property for all camp use and for the mine. Also for a heavy media rough separation plant. If, for example, 2,000 tons daily were up-graded to 200 tons of clean ore, this enriched product could be hauled three miles to Marysville or about 5½ miles to Prickly Pear Valley. At both places there is plenty of water for gravity and flotation concentration.
Cost of mining and milling per ton at 2,000 tons daily open pit:

W.R.Wade, Marysville, Montana

Attachment to MF-103 (Con't.).

Mining per ton open pit and later glory hole	.50
Crushing to 2" and heavy media separation	.30
Hauling 10% to Marysville at $1.00 per ton hauled (Cost per original ton)	.10
Gravity and flotation on 10% of tonnage (at $2.00) (Cost per original ton)	.20
	$1.10
Plant depreciation (Per original ton)	.10
Total:	$1.20

(d) Windy Ridge is 3½ miles out of Marysville. The present road is in part very steep and rocky. A good road can be built later down Deer Creek. A car can be driven right up on the property, and to some of the outcrops. Marysville is six miles from the Great Northern railroad at Silver City station. Supplies come by truck from Helena to Windy Ridge about 26 miles or are shipped to Silver City and hauled in 9 miles by truck. Residence point at present is the village of Marysville. There is a good site for a mining camp at the property and enough good water available there.

(e) Plenty of manpower, miners, etc., available from Helena, Butte, Great Falls, and enough men from Marysville locally for a crew to do the development work. Supplies are available in Helena. Equipment (compressor, cars, rock drills, steel, hose, pipe, machine shops, rails, bulldozers, trucks, tuggers) all available right in Marysville. Water supply running on surface about 50 gallons per minute. More could be developed. Enough for mining and domestic use in Drink Water Creek next to the property. Power: Montana Power Company high tension line is 2 miles away.

5. Experience of the Operator.

(d) Graduate of Lawrence Scientific School, Harvard University Cum Laude in Mining and Metallurgy in 1904. Engineer for New Jersey Line Company 1905. Manager Azure Mining Company after leaving Franklin, New Jersey (N.J. Zinc Co.) for eleven years. Superintendent of Pilares Mines, Nacozari, Mexico, Phelps Dodge Corp., producing 2500 tons copper ore daily from underground stopes. Later General Manager of Northern Ore Company and New York Zinc Company, producing concentrates containing about 40,000,000 pounds of zinc per anum. 1925 General Manager of American Metal Company Ltd. of Vermont. 1926 Assistant General Manager Minas de Matahambre (American Metal Co.), Cuba producing 2,000 tons of copper ore daily mining and milling same. 1928-1936, Partner of John Hays Hammond in mine exploration and mine development. President of Park City Consolidated Mines, 1930-1936. Mining silver ore 500 to 600 tons daily, Park City, Utah. 1936-1940, Consulting Engineer offices in San Francisco. 1941 to date, first partner in and now sole owner of Montana Rainbow Mining Co. Operate Drumlummon Mine at Marysville, Montana with total production around $27,000,000 in gold and silver. Recent production from new ore body over one million dollars in gold since taking over the property. Also consulting mine geologist and mining engineer for other interests.

6. Estimate of Costs.

W.R.Wade
Marysville, Montana

Preliminary work:

Attachment to MF-103 (Con't.).

200 hours bulldozer work on roads, prospect trenches, etc, at $12.00 per hour	2400.00
Compressor house and change room 16' x 30'	2500.00
Material, lumber, grading, delivery on job, labor, insurance, moving and installing equipment	1600.00
	$6500.00
<u>Stage 1</u>: Tunnels 5½' x 7' 2 cross cut tunnels 600 feet each, 1200 feet at $40.00, one at elevation 6050 and one at 6150	48000.00
<u>Stage 2</u>: If cross cut tunnels cut favorable bed, 500 feet of drifting on best beds at $40.00	20000.00
500 feet of incline raises on best bed at $40.00	20000.00
	$40000.00
<u>Stage 3</u>: If stage #2 favorable 1700 foot x cut tunnel at elevation 5800 at $44.00 per foot	$74800.00
<u>Stage 4</u>: If long x cut tunnel at elevation 5800 cuts favorable beds 1000 feet of drifting on beds at $40.00	$40000.00
1000 feet of incline raises on beds at $40.00 at 5800 elevation	40000.00
	$80000.00
Contingencies	2000.00
TOTAL:	$251,300.00
Assaying 400 samples at $4.-	1,600.00
	$252,900.00

These costs are slightly higher than the D.M.E.A. contract with the Ottawa Tungsten Co. ($34.00 per foot) in Marysville because this Windy Ridge is too far from the power line and gasoline or diesel power will have to be furnished and there is a tough haul for supplies over the Edwards Mountain and in winter the present county road to this property is really tough. If the mine develops successfully, a very good road with a good grade can be made down Deer Creek, but at the present stage of this prospect, this cost is not necessary. Also, a camp will have to be established at the property to house the men, and provisions made to pump or haul drilling water up the mountain several hundred feet difference in elevation. Several thousand feet of compressed air line will have to be installed from Drink Water Valley where the compressor and power plant will have to be located, and this line prevented from freezing in the winter time. Therefore, a very fair estimate of costs per foot in this extremely hard tactite and hornstone under these adverse conditions is $40.00 per foot and for the long tunnel in Stage 3, a cost of $44.00 per foot because of the long tram and the ventilation needed.

Attachment to MF-103 (Con't.)

(a) Independent Contracts — None.

(b), (c), and (d) All these costs are included in the above cost estimate and the prices as set down here are the unit costs for which I will agree to have the work done.

(e) Rehabilitation and Repairs — None.

(f) A small compressor and shop house with a stove, bench, vise, forge, and chance for the men to change their wet clothes will be needed and I estimate this building (16' x 30') will cost $2,500.00, properly constructed including hauling in the lumber, etc.

(g) None.

7. (a) Yes.

(b) I am prepared to furnish my share of the costs by use of equipment rent free, pipe, rails, ties, mine cars, compressor and engine to drive same, rock drills, steel, hose, truck, use of shop, small tools, welder, gas truck, pipe fittings, etc., and money.

W.R.Wade, Marysville, Montana

LEASE AND OPTION AGREEMENT

WHEREAS, the following named parties are the owners of the interests appearing opposite their names in certain unpatented mining claims, to-wit:

Tom Williams, Marysville, Montana	One-fourth (¼)
Frank Nyaskie, Marysville, Montana	One-fourth (¼)
Herbert Obendorf 1153 Olive St., Redding, California	One-sixth (1/6)
Claudia A. Wade 9715 - 49th Ave. N. E., Seattle, Wash.	One-twelfth (1/12)
W. R. Wade, Marysville, Montana	One-fourth (¼),

and,

WHEREAS, said unpatented mining claims in which said parties hold the fractional interest appearing opposite their names are described as follows, to-wit:

Windy Ridge No. 1
Windy Ridge No. 2
Windy Ridge No. 3
Last Chance
Last Chance No. 2
Jeep
Jeep No. 2

All of which are situate near the Drinkwater Creek, in the Marysville, Montana, Mining District, in Sections 22, 23, 26 and 27, Township 12 North, Range 6 West, in Lewis and Clark County, Montana, and to the east of Patented Lot 55 B, and to the south of Patented Claim Piegan,

and,

WHEREAS, the aforesaid W. R. Wade is desirous of leasing the interests of the aforesaid Tom Williams, Frank Nyaskie, Herbert Obendorf, and Claudia A. Wade, in the aforesaid mining claims, with an option to purchase said interests, and is desirous of exploring, developing, and mining said claims and in obtaining the assistance of the Defense Minerals Exploration Administration of the United States of America in exploring and developing said claims, and

WHEREAS, the aforesaid Tom Williams, Frank Nyaskie, Herbert Obendorf, and Claudia A. Wade are desirous of leasing their interests in said mining claims to said W. R. Wade, with an option to

buy, for the purposes aforesaid,

(3) NOW, THEREFORE, on this 8th day of September, 1954, the following agreement is made and entered into by and between Tom Williams of Marysville, Montana, Frank Nyaskie of Marysville, Montana, Herbert Obendorf of 1153 Olive Street, Redding, California, and Claudia A. Wade of 9715 - 49th Avenue N. E., Seattle, Washington, hereinafter referred to as Lessors, and W. R. Wade, doing business as Montana Rainbow Mining Company, of Marysville, Montana, hereinafter referred to as Lessee, WITNESSETH:
That for and in consideration of the covenants herein contained the Lessors have leased and by these presents do demise and lease all of their respective interests in the above described mining claims to the Lessee for a period of ten (10) years from date.

(4) The Lessee shall have the right to enter immediately upon said premises and to take full possession of same for the purpose of exploring, sampling, testing, developing, working and mining the same, and shall have full management and control thereof for the purpose of extracting and removing any and all minerals or ores contained therein, and for the purpose of treating, milling and selling same and the proceeds from such operations.

(5) Lessee agrees to enter said claims and explore, develop and mine the same in a manner conforming to good exploration, development and mining practices, and with due regard to the preservation of said claims as a workable mine. Lessee further agrees to make prompt application to the Defense Minerals Exploration Administration of the United State of America for assistance in exploring and developing said claims, and to diligently take all reasonable steps necessary to qualify for such assistance. In the furtherance of such efforts, it is understood and agreed that Lessee shall be reimbursed for all of his reasonable expenses

W.R.W. ~~prior to the payment of the royalties herein provided for, and it is understood and agreed that Lessee shall be entitled to compensation for his work and labor in exploration and development~~

WRW in securing the government loan, payable from ~~work, prior to the payment of~~ the royalties herein provided for.

(6) It is further understood and agreed that in the event Lessee is successful in selling the claims for any sum WRW ~~securing capital for the exploration, development or mining of said claims, from either governmental or private sources~~, in excess of $300,000.00, then Lessee shall be entitled to a commission of WRW 10 % of all amounts WRW ~~capital~~ in excess of $300,000.00 he may obtain, in addition to his reasonable expenses in connection therewith, and said excess less commission at 10% and expenses WRW shall be divided among all the owners in proportion to their interests WRW ~~to be paid from the proceeds of any ore sold prior to the payment of the royalties herein provided for.~~

(7) Lessee agrees to pay Lessors as royalty under this lease six per cent (6%) of the net proceeds, 15 days after the payments from the ore buyers are W.R.W received from the sale of the ore removed from the leased premises by Lessee after deducting all transportation costs, sales W.R.W. commissions, milling and smelting charges, refining costs, chemical treatment costs, and all sales and other taxes levied on the sale, shipment or processing of said ore, said royalty to be paid to the Lessors in proportion to their interests as above set forth. Payment of royalties are to be made into the Union Bank WRW + Trust Co. of Helena for the accounts of the lessors, individually W.R.W

(8) Lessor agrees to secure the performance of the necessary assessment work on said leased claims, and it is understood and agreed that the cost of the minimum assessment work for the term of this lease shall be borne by all of the owners in proportion to their interests as above set forth, and the cost thereof may be deducted from any returns from ore sold.

(9) It is understood and agreed between all the signers of this W.R.W ~~that the terms of this lease shall include and extend to any and all other claims, in addition to those herein enumerated, now held by any of the Lessors or the Lessee or which may be acquired or located by any of them during the life of this lease within 3,000 feet of the above named claims.~~ agreement that any claims located by any of them within 3000 feet shall be for the benefit of all in proportion to their present interest and that such claims are not a part of this lease, and this agreement to extend for the time this lease is in effect. WRW WRW

(10) It is understood and agreed that all of the parties hereto, including the Lessors and the Lessee, subrogate their respective interests in the above named claims, and their interests under this agreement, to any and all claims of the Defense Minerals

Exploration Administration of the United States of America, for any and all claims on account of funds to be advanced or assistance to be rendered in the exploration or development of said claims, and they do hereby consent to a lien of said Defense Minerals Exploration Administration therefor, to take priority over any and all interest which they may hold in said claims, or under this agreement.

(11) In consideration of the execution and acceptance of this agreement by the Lessee, and in consideration of the work, labor and development to be accomplished and performed hereunder by said Lessee, Lessors agree to sell their interest in the aforesaid mining claims to the Lessee for the total sum of $225,000.00 at the option of the Lessee, at any time during the life of this agreement, said price to be paid to Lessors in proportion to their interest in said claims as set forth above, and in the event Lessee elects to exercise his option, Lessors agree to deliver to Lessee, immediately upon payment of said sum of $225,000.00, except as is here before provided in paragraph (6) above mpw W.R.M. a good and sufficient conveyance of their interests in said claims. It is understood and agreed that any and all royalties paid to the Lessors hereunder shall be applied on said purchase price, and that in order to be entitled to a conveyance of the interests of the Lessors, Lessee shall only be obligated to pay the difference between $225,000.00 and the total amount of royalties received hereunder by the Lessors, except as provided herein before in paragraph (6) mpw

It is understood and agreed that this lease and option shall be forfeited and all of the terms and conditions hereof shall be void and of no force or effect in the event that the Lessee shall fail to secure the assistance of the Defense Minerals Exploration Administration of the United States of America in the exploration or development of the above named claims within one year from the date hereof.

Lessee may at any time reli nquish this lease and option, it being understood and agreed that in the event Lessor shall so

relinquish this lease and option all improvements made by him on the leased premises, or claims for services rendered, shall be forfeited as liquidated damages, and Lessors agree to accept such improvements and services as liquidated damages in full, without further penalty to Lessee. The lessee shall have the right to remove all his equipment supplies and structures, attached or otherwise during the term of this lease and for one year thereafter. W.R.W. W.R.W.

This agreement shall be binding upon the heirs, executors, administrators, and assigns of all of the parties hereto.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals the day and year appearing opposite their names.

Date	Name
Sept. 8,1954	Thomas E. Williams
Sept. 8,1054	Frank Niyaske
"	Herbert C Oberndorf
"	Claudia A. Wade

LESSORS

Sept. 8,1954	W.R.Wade

LESSEE

Administration
RECEIVED
SEP 20 1954

MF-203
(Revised July 1, 1954)

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 Montana, County Lewis & Clark described as follows:1/ Unpatented Mining Claims Windy Ridge No. 1 Recorded Book 28 page 549 Windy Ridge No. 2 Recorded Book 28 page 547 Windy Ridge No. 3 Recorded Book 28 page 548, Last Chance Recorded Book 28 page 551 Jeep Recorded Book 28 page 550 Jeep #2 Last Chance #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/ W. P. Wade
Maryville Montana

hereinafter called the "Operator"; and

WHEREAS, under the provisions of said contract the Government is entitled to a percentage royalty on production and to other rights and equities which do or may conflict with or be adverse to the rights of the undersigned:

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 there is hereby granted to the Government a lien upon the land above referred to and upon any production of minerals therefrom until said royalty is fully paid or ten years have elapsed from the date of the contract, whichever occurs first.

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.

(OVER)

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.

4. Changes and added provisions _____

_____

_____

_____

Dated this 31 day of August, 1954.

W. R. Wade [Seal]

Frank Ringasha [Seal]

Thomas E. Williams [Seal]

[illegible] [Seal]

Claudia A. Wade [Seal]

MF-203
(Revised July 1, 1954)

OWNER'S CONSENT TO LIEN

SEP 20 1954

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of Montana, County of Lewis + Clark, described as follows: 1/ Unpatented Mining Claims Windy Ridge No. 1 Recorded Book 28 page 549 Windy Ridge No 2 Recorded Book 28 page 547 Windy Ridge No. 3 Recorded Book 28 page 548. Last Chance Recorded Book 28 page 551 Joe's Recorded Book 28 page 550 Joe's #2 Last Chance #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/ W. R. Wade
Marysville Montana

hereinafter called the "Operator"; and

WHEREAS, under the provisions of said contract the Government is entitled to a percentage royalty on production and to other rights and equities which do or may conflict with or be adverse to the rights of the undersigned:

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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Dated this 31 day of August, 1954.

W. R. Wade [Seal]

Frank Grifasha [Seal]

Thomas E. Williams [Seal]

[illegible] [Seal]

Claudia A. Wade [Seal]

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2/ W. R. Wade
Marysville Montana

hereinafter called the "Operator"; and

WHEREAS, under the provisions of said contract the Government is entitled to a percentage royalty on production and to other rights and equities which do or may conflict with or be adverse to the rights of the undersigned:

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 there is hereby granted to the Government a lien upon the land above referred to and upon any production of minerals therefrom until said royalty is fully paid or ten years have elapsed from the date of the contract, whichever occurs first.

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.

(OVER)

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.

4. Changes and added provisions _____

_____

_____

_____

Dated this 31 day of August, 1954.

W. R. Wade [Seal]

Frank Ringsake [Seal]

Thomas E. Williams [Seal]

H. D. Chandler [Seal]

Claudia T. Wade [Seal]

Defense Materials Administration
RECEIVED
SEP 20 1954

MF-203
(Revised July 1, 1954)

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 Montana, County of Lewis & Clark described as follows: 1/ Unpatented Mining Claims Windy Ridge No. 1 Recorded Book 28 page 549 Windy Ridge No 2 Recorded Book 28 page 547 Windy Ridge No. 3 Recorded Book 28 page 548 Last Chance, Recorded Book 28 page 551 Jeff Recorded Book 28 page 550 Jeff #2 Last Chance #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/ W. R. Wade
Marysville Montana

hereinafter called the "Operator"; and

WHEREAS, under the provisions of said contract the Government is entitled to a percentage royalty on production and to other rights and equities which do or may conflict with or be adverse to the rights of the undersigned:

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

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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.

4. Changes and added provisions _____

Dated this 31 day of August, 1954.

W. R. Wade [Seal]

Frank Wisnasker [Seal]

Thomas E. Williams [Seal]

[illegible] [Seal]

Claudia R. Wade [Seal]

MF-203
(Revised July 1, 1954)

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 Montana, County of Lewis + Clark, described as follows:1/ Unpatented Mining Claims Windy Ridge No 1 Recorded Book 28 page 549 Windy Ridge No. 2 Recorded Book 28 page 547 Windy Ridge No. 3 Recorded Book 28 page 548. Last Chance Recorded Book 28 page 551 Jeff Recorded Book 28 page 550 Windy #2 Last Chance #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/ W. R. Wade
Marysville Montana

hereinafter called the "Operator"; and

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4. Changes and added provisions _____

_____

_____

_____

Dated this 31 day of August, 1954.

W. R. Wade [Seal]

Frank Winfasker [Seal]

Thomas E. Williams [Seal]

H. D. Clendon [Seal]

Claudia A. Wade [Seal]

MF-203
(Revised July 1, 1954)

OWNER'S CONSENT TO LIEN

Federal Mineral Administration
RECEIVED
SEP 20 1954

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of Montana, County of Lewis & Clark, described as follows:1/ Unpatented mining Claims Windy Ridge No. 1 Recorded Book 28 page 549 Windy Ridge No. 2 Recorded Book 28 page 547 Windy Ridge No. 3 Recorded Book 28 Page 548 Last Chance Recorded Book 28 page 551 Jeep Recorded Book 28 page 550 Jeep #2 Last Chance #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/ W. R. Wade of Marysville Montana

hereinafter called the "Operator"; and

WHEREAS, under the provisions of said contract the Government is entitled to a percentage royalty on production and to other rights and equities, which do or may conflict with or be adverse to the rights of the undersigned:

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4. Changes and added provisions _____

_____

_____

_____

Dated this 31st day of August, 1954.

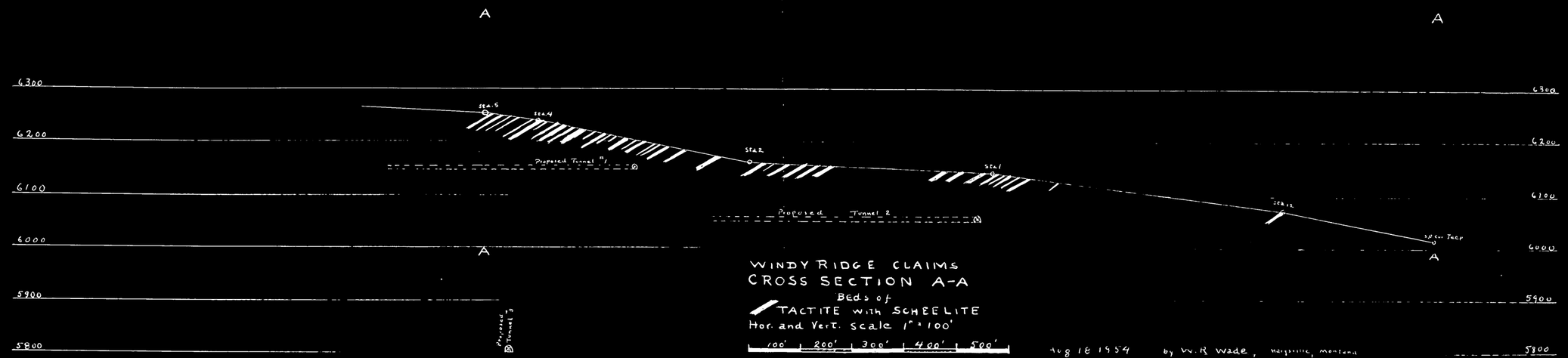
N. R. Wade [Seal]

Frank Ninfasha [Seal]

Thomas E. Williams [Seal]

H. S. Chandler [Seal]

Claudia A. Wade [SEAL]



WINDY RIDGE CLAIMS
CROSS SECTION A-A
Beds of
TACTITE with SCHEELITE
Hor. and Vert. scale 1" = 100'

100' 200' 300' 400' 500'

Aug 18 1954 by W. R. Wade, Helena, Montana

W. R. Wade

Marysville

Montana

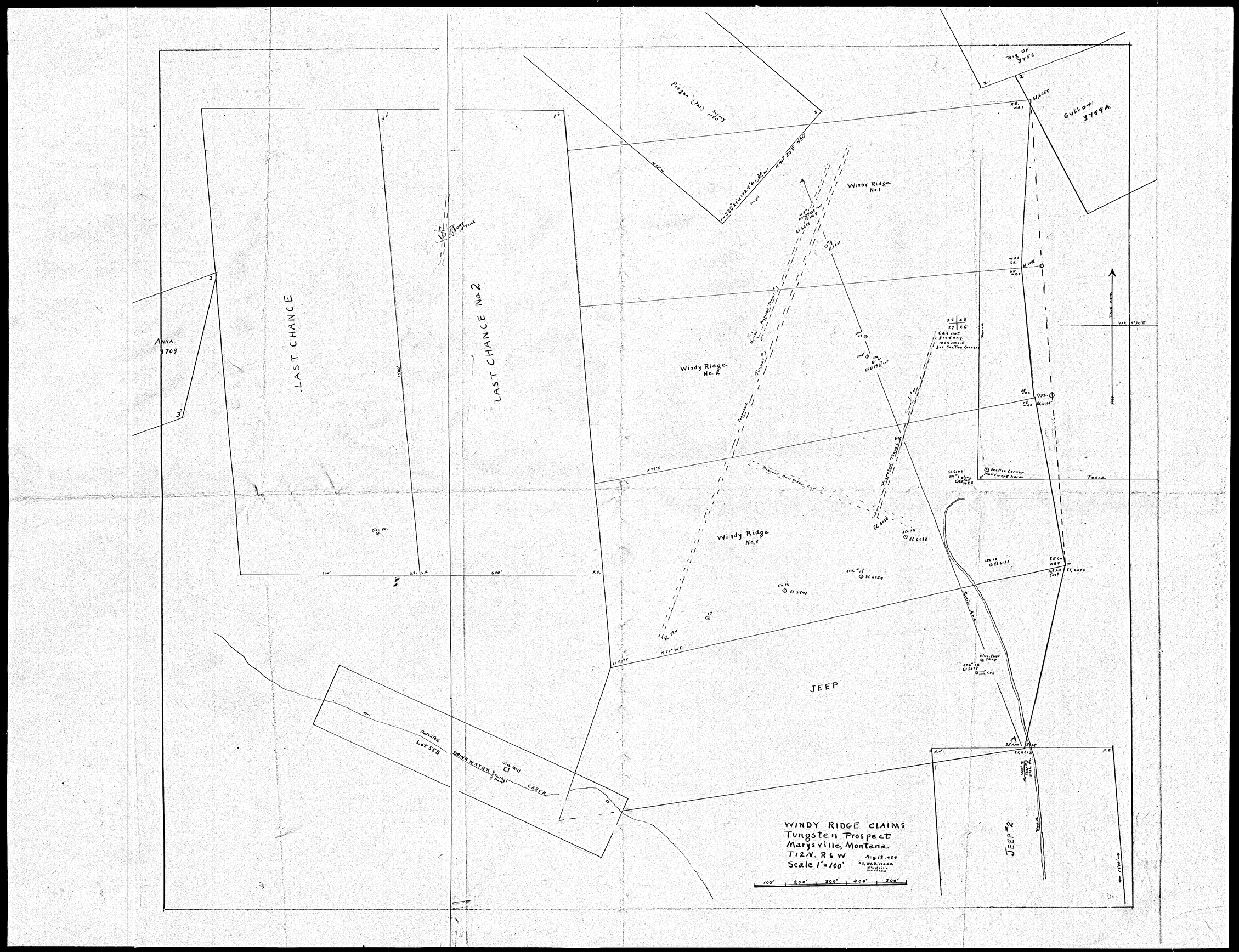
EXPLORATION ADMINISTRATION

[redacted]

OFFICIAL BUSINESS

Mr. George C. Selfridge, Chairman
Operating Committee
Defense Minerals Exploration Administration
Department of the Interior
Washington 25, D. C.

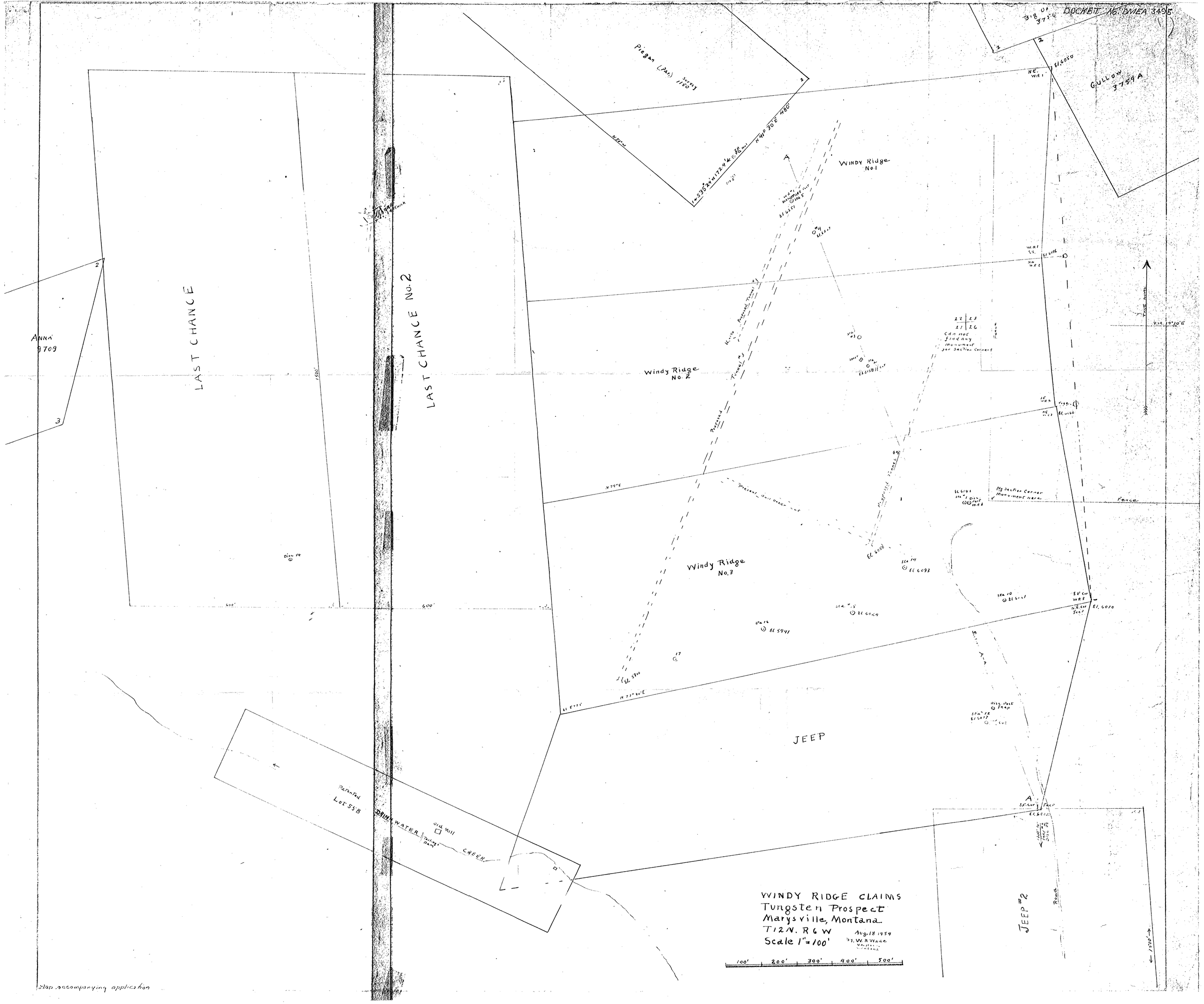
WASHINGTON JY 29 7PM 1954



W. R. Wade
Marysville
Montana

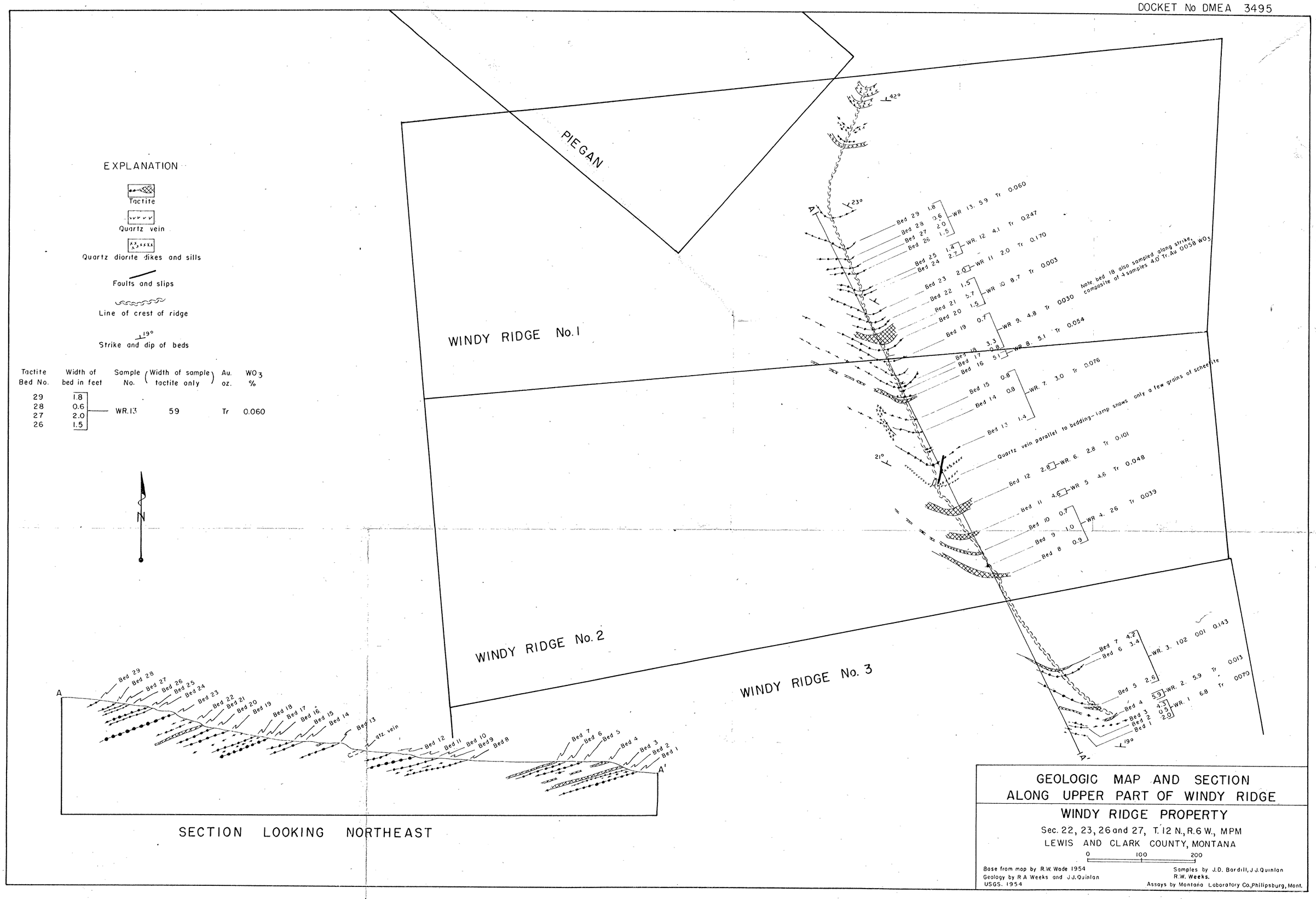
Photostat ½ Scale
1" = 200'

DOCKET No. DMEA 3495



WINDY RIDGE CLAIMS
Tungsten Prospect
Marysville, Montana
T12N. R6W
Scale 1" = 100'
Aug. 18 1954
By W. R. Wade
Marysville Montana

Map accompanying application


EXPLANATION
Tactite
Quartz vein
Quartz diorite dikes and sills
Faults and slips
Line of crest of ridge
19°
Strike and dip of beds
Tactite Bed No. | Width of bed in feet | Sample No. | (Width of sample tactite only) | Au. oz. | WO3 %
29 1.8
28 0.6
27 2.0
26 1.5
WR.13 59 Tr 0.060
N
PIEGAN
WINDY RIDGE No. 1
WINDY RIDGE No. 2
WINDY RIDGE No. 3
42°
23°
21°
19°
A
A'
Bed 29 1.8
Bed 28 0.6
Bed 27 2.0
Bed 26 1.5
WR 13. 59 Tr 0.060
Bed 25 1.4
Bed 24 2.7
WR. 12 4.1 Tr 0.247
Bed 23 2.0
WR 11 2.0 Tr 0.170
Bed 22 1.5
Bed 21 5.7
Bed 20 1.5
WR 10 8.7 Tr 0.003
Bed 19 0.7
WR 9. 4.8 Tr 0030
Note bed 18 also sampled along strike, composite of 4 samples 4.0 Tr. Au 0.058 WO3
Bed 18 3.3
Bed 17 0.8
Bed 16 5.1
WR 8. 5.1 Tr 0.054
Bed 15 0.8
Bed 14 0.8
WR. 7. 3.0 Tr 0.076
Bed 13 1.4
Quartz vein parallel to bedding-lamp shows only a few grains of scheelite
Bed 12 2.8
WR. 6. 2.8 Tr 0.101
Bed 11 4.6
WR 5 4.6 Tr 0.048
Bed 10 0.7
Bed 9 1.0
Bed 8 0.9
WR 4. 2.6 Tr 0.039
Bed 7 4.2
Bed 6 3.4
WR. 3. 102 0.01 0.143
Bed 5 2.6
Bed 4 5.9
Bed 3 4.3
Bed 2 0.5
Bed 1 2.9
WR. 2. 5.9 Tr 0.013
WR. 1 6.8 Tr 0070
qtz. vein
SECTION LOOKING NORTHEAST
GEOLOGIC MAP AND SECTION
ALONG UPPER PART OF WINDY RIDGE
WINDY RIDGE PROPERTY
Sec. 22, 23, 26 and 27, T. 12 N., R. 6 W., MPM
LEWIS AND CLARK COUNTY, MONTANA
0 100 200
Base from map by R.W. Wade 1954
Geology by R.A. Weeks and J.J. Quinlan
USGS. 1954
Samples by J.D. Bardill, J.J. Quinlan
R.W. Weeks.
Assays by Montana Laboratory Co., Philipsburg, Mont.